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Europe

Skills for Competitiveness

Leveraging Skills for Competitiveness in Europe

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EDUCATION GLOBAL PRACTICE
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Executive Summary

Technology and market demands are rapidly transforming, and policymakers, employers, and institutions across the globe know that workforce training systems must keep up with those changes. Lifelong learning is now considered a necessity in a world in which individuals continually need to update their skills long after leaving formal education. Simultaneously, firms are aware of major skills gaps in the workforce. Worldwide, 40 percent of employers' report having difficulty filling positions (Manpower, 2017).

Frontier economies require agile precision training systems that allow individuals to update their skills on demand throughout their careers. Training can often be most efficiently accomplished through employers, which are well positioned to assess market demands and adapt swiftly to changing skills requirements. Gaps in access to training can be met through public-private partnerships (PPPs) and opportunities for individualized learning. These types of training models may also offer valuable approaches for lagging regions working towards economic convergence via large-scale regional development projects.

Leveraging Skills for Competitiveness in Europe proposes a framework for approaching these challenges: 'precision training'. It explores examples of how precision training can leverage workplace training, PPPs, and regional development projects, leading to the following key messages.

Countries need agile, lifelong training systems to reach and stay at the frontier.

As the fourth industrial revolution unfolds, technology, markets, and economies are changing at an ever-increasing pace. This rapid and ongoing change presents a new normal for countries that want to reach, or keep pace with, the 'frontier.' This flexible term refers to countries, firms, and individuals operating at an optimal and efficient state and implies high productivity, innovation, and income. Countries at the frontier are forward-looking, have robust economies, are open to investment and technology, and have competitive, well-matched workforces.

But the frontier is an ever-moving target and keeping up with it requires ongoing strategic investments in human capital. At every level, being at the frontier requires the right skills and training models that allow individuals, firms' employees, and countries' workforces to update their skills frequently and efficiently to meet changing needs.

These challenges are amplified in lagging regions.

Many countries, and regions within countries, are lagging in attaining convergence between workforce skills and market demands. This dilemma is especially apparent in Europe.

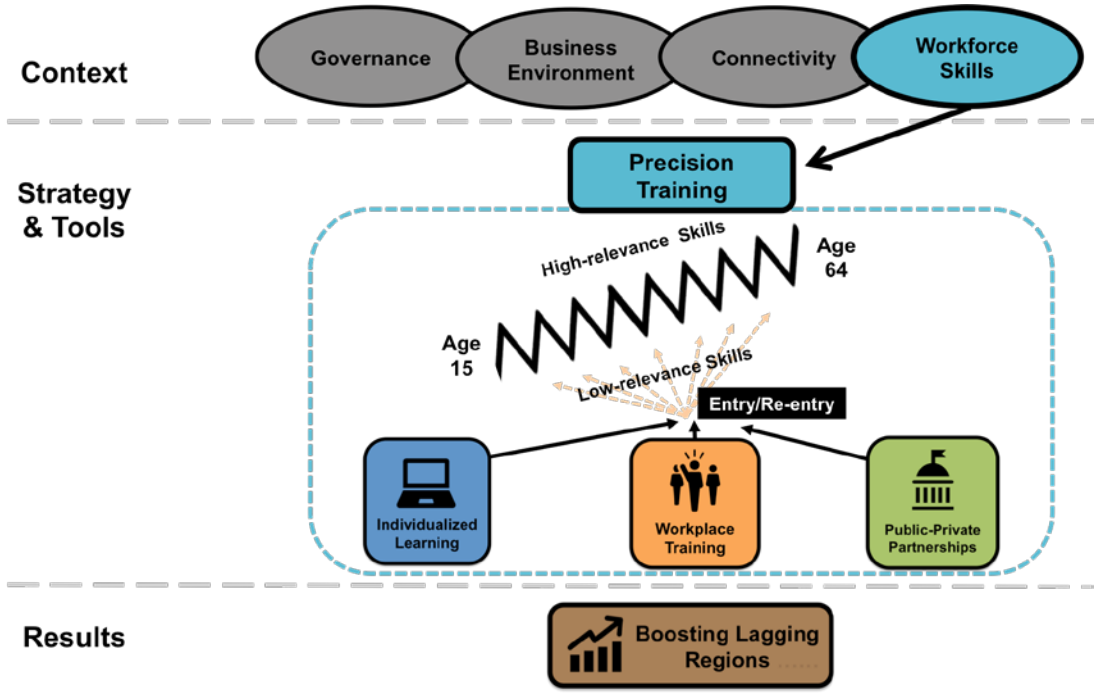
Historically, the European Union (EU) has served as a powerful 'convergence machine', propelling poorer and newer member states to become high-income economies. (World Bank, 2018) However, some regions have been left behind. In 2013, 47 'lagging regions' were

identified in the EU, which were defined as low-growth and low-income regions. (European Commission, 2017) While all countries are concerned about anticipating and meeting future skills needs to ensure their workforces can compete at the frontier, lagging regions face the daunting task of first bridging skills gaps that exist *now*. For example, 72 percent of employers in Romania, 62 percent in Bulgaria, and 57 percent in Hungary report having difficulty filling open positions. (Manpower, 2017)

Precision training offers a model to meet the skills needs of the future.

Traditionally, the lifelong learning model has encouraged investments beyond formal education, promoting opportunities for adult training and education throughout life. What should lifelong learning look like in countries that aspire to reach or remain at the frontier? *Leveraging Skills for Competitiveness in Europe* presents an agile model of lifelong learning that centers on the ability to enter and re-enter training as needed. Precision training hinges on the concept of demand-driven training, offered to individuals where they already are and typically through their employers. PPPs can help to address market failures and a lack of inclusivity by sharing responsibility between firms and governments. Such approaches hold promise for various contexts and economies worldwide, including for lagging regions in Europe.

Figure 1. Precision training framework



The Precision Training Framework starts with conditions necessary for a frontier economic environment: good governance, a dynamic business environment, strong connectivity infrastructure, and a well-training workforce. Although all are important, workforce skills are the focus of this technical note.

Within the concept of precision training, this note presents a 'lifelong learning ladder.' This represents the fluctuation of an individual's skills relevance throughout her working life. At some points, her skills may be in demand and highly relevant; at others, those skills may become outdated and be of low relevance. In a precision training environment, she can re-enter training exactly when, where needed, and in the manner required to update her skills.

The precision training framework identifies three key access points for skills training: individualized learning opportunities offered through technology; workplace training provided by employers; and PPPs to incentivize training and make it accessible to all. All three components are vital in a precision training system.

The result is an agile, demand-driven skills environment in which individuals can receive skills training and re-training through various means throughout their lives. When countries seek to boost their lagging regions through regional development programs, incorporating this model may prove useful in fostering a skilled, frontier-ready workforce.

The most efficient way to make training accessible to individuals is to serve them where many already are: at work.

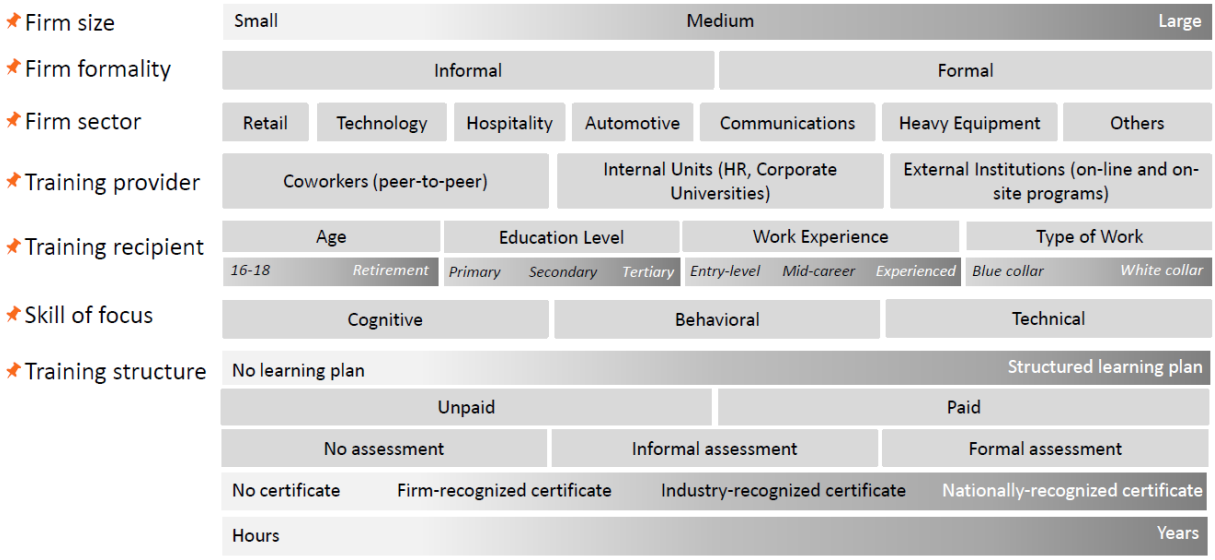
Employers are the primary mechanism for skills training delivery in a precision training environment. Most firms are aware of skills gaps that exist in their industries and regions. Workplace training can benefit employers, which report major skill shortages in numerous sectors worldwide, by increasing productivity and employee engagement. Experimental and quasi-experimental studies show that workplace skills development and training can increase worker productivity by as much as ten percent (de Grip and Sauermann 2012).

Employers are uniquely positioned to offer relevant, in-demand skills training to large numbers of individuals. Compared to traditional education and training institutions, they may be more aware of and adaptive to market trends, better at profiling workers and their skills needs, and better positioned to integrate learning opportunities into real-world contexts. (Manpower, 2017) They may also be better equipped to offer real-time evaluation and support.

This note presents a selection of case studies and examples from firms that have reputations for excellent skills training. Some multinational firms—like Google, Apple, BMI, and Hyundai—are renowned for cutting-edge, data-driven employee training programs that are designed to respond rapidly to market demands. Policymakers often ask: what lessons can be drawn from these programs? How can they be applied to smaller and less-resourced firms in other contexts?

While this note does not conduct a formal analysis of workplace training outcomes, it identifies patterns and extracts lessons from a range of training programs. In general, successful training involves hands-on learning, accountability, and individualized learning plans. Training program design varies greatly among employers, based on factors like firm size, training style, assessment methods, and others (Figure 2).

Figure 2. Elements of workplace training

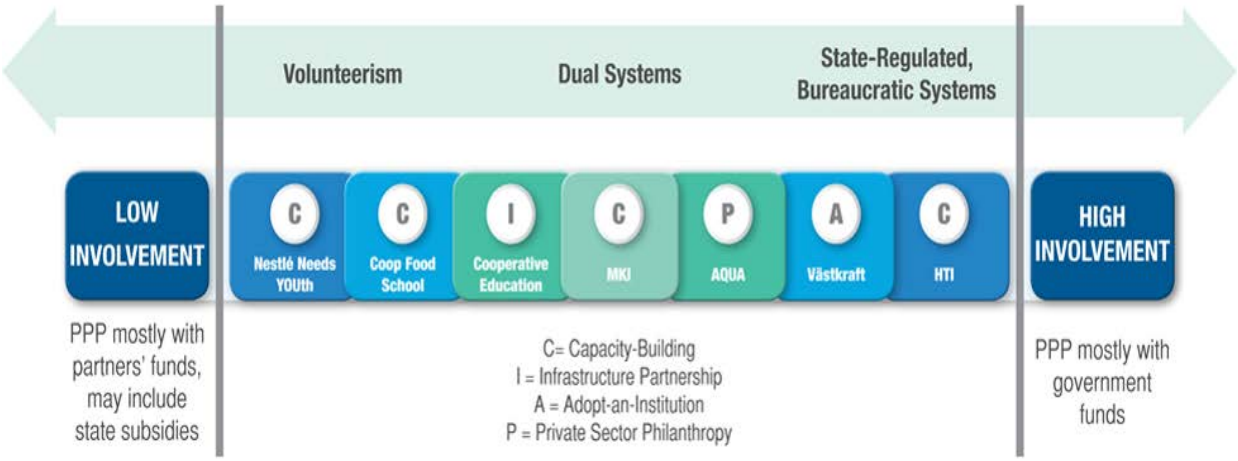


PPPs can address market failures and make training more accessible.

Not all employers offer training to their employees, and not all individuals are employed in the workforce. In many cases, the labor market fails to deliver pre-employment or workplace training to workers at various skill levels. Imperfect credit markets mean that firms and individuals may be unwilling to pay most of the out-of-pocket cost of training upfront (Almeida and Aterido 2010). Lack of coordination between training providers and employers can result in individuals whose skills are not well matched to their jobs (Almeida, Behrman, and Robalino 2012). Firms often fear poaching—why invest in an employee's skills when he can then take those skills to a competitor? Access to training at work may also be more limited for members of marginalized groups and for employees of small and medium enterprises (SMEs), which may lack training resources.

PPPs, the third key component of the precision training model, offer one way to address these market failures. PPPs represent a spectrum of programs characterized by cooperation between government and the private sector, as well as shared risks and rewards. This note categorizes PPPs into three types: the state-regulated, bureaucratic model, the dual system model, and the volunteerism model. From these three types, it is possible to construct a continuum of PPP types based on level of government involvement, from programs with low government funding to those with high government funding.

Figure 3. Continuum of government engagement levels in PPPs



Reviewing PPP programs across this continuum, it becomes clear that a PPP's success is not always dependent on the level of government involvement—government intervention works better in some models than in others. PPPs present a valuable solution both for addressing market failures in training provision and bridging gaps between the demand for workforce skills and knowledge learned in schools.

Promoting frontier-compatible skills development opportunities should not come at the expense of inclusivity. Unemployed or less-educated individuals, members of marginalized groups, and employees of SMEs may not have the same access to training as workers at larger firms. Within the precision training framework, PPPs offer mechanisms to tackle these challenges.

In lagging regions, workforce skills convergence should be a component of large-scale regional investment projects.

In Europe, some regions both lag the rest of the EU economically and in skills. More than a third of EU countries have at least one region that is classified as economically lagging. Likewise, more than 35 percent of 17 EU participant countries in the Programme for the International Assessment of Adult Competencies (PIAAC) have skills-lagging regions. According to the World Development Report 2018 (World Bank, 2017), Europe has a sizable working-age population (close to 55 million) that lacks the fundamental skills required to ensure meaningful labor market participation.

Projects that seek to help lagging regions to achieve economic convergence should also include a skills convergence agenda. Even high-income countries with established training infrastructures, such as the United Kingdom and Germany, have lagging regions that can be helped by using the precision training model.

While regional development programs are common in many countries, information on those that specifically target workforce skills is relatively scarce. To create an organizational

structure for this landscape, this technical note surveys types of regional development programs and maps them across a continuum ranging from employer-centric to worker-centric.

To identify viable entry points for emerging skills development programming, a crucial task is mapping the relationship between local skills context and demands. This requires convening various stakeholders, including government, employers, and workers, to identify existing workforce skills gaps and agree on skills development priorities.

Experiences across Europe and other Organization for Economic Cooperation and Development (OECD) countries suggest that context matters—locally sensitive skills development responses are required. Nevertheless, some general skills development principles stand out. Successful regional skills development projects tend to strengthen employer skills ownership, promote skills use on the job, build employer resource networks, and target youth unemployment and vulnerable workers.

Box 1. Takeaways for Policymakers

- With increased uncertainty and accelerated rates of change arriving in the workplace, **countries should consider new forms of skills development arrangements** that can better support workers through quicker skills depreciation cycles and for different segments of the age profile, and more readily prepare them for re-skilling throughout their lives. One promising model that promotes such continuous skills development is **Precision Training**.
- As key stakeholders of precision training, **employers have much to offer to workforce development**. Case studies from cutting-edge firms suggest that employer-based workplace training can reap productivity gains. Compared to the public sector, employers are usually better able to assess labor market needs and can swiftly adapt training curricula to accommodate shifting skills demand.
- Employers cannot do it all alone. Typically, market failures persist in the provision of employer-based workplace training for various reasons and this requires public-sector interventions. Many **Public-Private-Partnerships** provide mechanisms to better support employers in designing, implementing, and evaluating skills development programs for workers.
- In Europe, **many lagging regions need a boost in productivity and growth, which requires investment in people**. The precision training framework offers a new way to frame relationships between government, employers, and workers, and has potential to jumpstart workforce development.

Introduction

The global technology and innovation frontier[1] pushes forward at a rapid pace, with countries around the world seeking either to keep up or catch up. Countries at the 'frontier' are forward-looking, have robust economies, are open to investment and technology, and have competitive, well-matched workforces. Countries that want frontier-compatible workforces require agile, demand-driven training arrangements that allow for swift entry and re-entry into training. After all, as the fourth industrial revolution unfolds, technology and markets continue to change at ever-increasing speeds, so training systems must adapt to an environment in which skills need frequent updating and find ways to leverage employers' comparative advantage in providing that training. In many cases, this transformation of workforce skills development is already happening: multinational corporations such as Amazon, Apple, and Google are already offering extensive training packages to employees. Countries can proactively learn from these and other experiences.

This technical note seeks to help the public and private sectors to understand what is currently being done to assist in achieving workforce skills convergence and to consider how they might harness public-private partnerships (PPPs) to incentivize training at firms of all sizes. It offers a fresh take on lifelong learning and presents a framework for *precision training*, a demand-driven approach to training that offers workers opportunities to upgrade their skills exactly when, where, and how this is required.

In Europe, this perspective may be particularly useful for countries with lagging regions struggling with low incomes, growth, and skills (such as Romania and Poland). Along with factors like improved business environments, better connectivity, and sound governance, developing workforce skills is a vital ingredient in helping these regions 'converge' economically with more productive areas of their respective countries. However, this technical note is applicable to *all* countries, as well as policymakers, employers, and training institutions. Even high-income countries with cutting-edge training policies, such as Germany and the United Kingdom, have regions that struggle economically and educationally. Precision training also provides a valuable tool for skills development challenges in these contexts.

[1] The term 'frontier' refers to an optimal and efficient state to which countries, firms, and individuals aspire. It encompasses a range of desirable outcomes, including high productivity, innovation, and income. In this technical note, interpretation of this term is intentionally left flexible in its application to different contexts and for different stakeholders. In the case of firms, frontier companies such as Amazon, Apple, and Google have combined market capital of over two trillion dollars and hire more than 600,000 workers. These high-tech company examples occupy a substantial and lucrative segment of the global value chain and provide examples of effective operational and workforce development arrangements that can lend insights to other aspiring companies.

Lifelong Learning: A Demand-side Perspective

Lifelong learning is a well-established concept that centers on providing skills investments and opportunities at various stages throughout a person's life. Borrowing a term from the clinical sciences, this technical note makes the case for a specific lifelong workforce skills development framework: 'precision training'. While precision training is just one of many potential approaches to lifelong learning, it is unique in that it considers this field from the perspective of employers. Most studies on skills development pathways examine the traditional transition from formal education to employment to later training opportunities. This note seeks to make a fresh contribution to the lifelong learning literature by taking stock of what kinds of skills training practices are going on *now* among employers and their government partners at the frontier—asking, who is delivering workforce skills training, and what does it look like?

Presenting formal analyses of program impacts is beyond the scope of the note. Rather, it summarizes industry trends, maps specific programs by various criteria, and presents case studies that may be of relevance to policymakers. Its intention is to provide a point of departure for countries rethinking their training systems to tackle skills shortages and move closer to the frontier. To that end, it offers a wide range of examples from European countries and other contexts worldwide. Where possible, it includes specific data and cases from European countries with multiple lagging regions. While it does not offer a specific operational blueprint, it focuses on central elements of precision training and explores three of the framework's key components in depth:

- How employers provide workplace training;
- How governments incentivize training through public-private partnerships; and
- How these methods can help boost lagging regions.

Methodology

This technical note draws on a diverse literature that includes policy documents, journal articles, company websites and profiles, corporate case studies, news articles, and non-proprietary company training materials. The search strategy comprised the following steps: identifying keywords and index terms; employing those words and terms in an online literature search through Google Scholar, Google, and other relevant databases; collecting the literature and organizing it by author and relevance; and writing notes on the literature and sections of importance. The researchers examined reference lists to look for similar articles and important authors, using the reference lists to follow leads on specific topics and authors (University of Leeds, nd).

The practices described in reference to workplace training are drawn from a range of mostly multinational firms that have reputations for being competitive at the frontier. These firms were selected based on availability of information (via internet search) and use of innovative employee training mechanisms, which the firms themselves typically define as being forward-

thinking in human resources management. While it would be ideal to present quantitative evidence of outcomes and impacts from each initiative, this is not readily available. Many firms do not make this kind of information public for proprietary reasons. Apple, for example, is famous for secretive management of its employee training programs. (Chen, 2014). Gaining access to proprietary data was beyond the scope of this project. In addition, this chapter cites several programs, such as At&T's Workforce 2020, that are new or ongoing and do not yet have reported outcomes.

Consequently, most of the descriptions and data presented are drawn not from academic literature but from firms' publicly available materials. While many are primarily intended for marketing purposes, they do provide the most readily available and detailed background on workplace training at firms currently at or near the frontier. Thus, these snapshots provide policymakers a menu of examples and ideas from cutting-edge firms.

This note also explores the extent to which workforce skills development can play a crucial role in boosting lagging regions. The skills landscape background section draws on statistical data analysis conducted using data from PIAAC, Eurostat, as well as published reports from the European Commission. In the mapping exercise of existing regional skills development programs, program-level examples are identified from a portfolio of published Organization for Economic Cooperation and Development (OECD) and European Union (EU) regional development case and country case profiles and studies. This section attempts to illustrate the importance and pressing nature of workforce skills development in EU's lagging regions and proceeds to present a menu of existing solutions that target workforce skills.

Although expansive, one limitation of the research was that it was mostly limited to English language literature. For some websites, however, Google Translate was used to translate website contents into English. Other limitations included a lack of information on many organizational websites, which did not always give the necessary detail required in reviewing content such as the multinational firms' information and PPP arrangements.

Chapter 1 – Setting the Scene

Since the 1950s, the remarkable reconstruction, growth, and re-emergence of Europe has afforded its citizenry great privilege in enjoying relatively high standards of living and generating broad economic convergence among EU member states (World Bank, 2012). However, in the past decade, global economic, demographic, social, and political changes have reduced certainty about what countries need to do to reach and remain at the frontier. As the fourth industrial revolution accelerates, public and private sectors face increased uncertainty about the future of production, job growth prospects, and the future of work (European Commission 2017). Thus, it is imperative to revisit how investing in people can support growth and bring about greater prosperity.

The continent faces critical challenges in this regard. Slowdowns in productivity have been especially persistent and pronounced in some regions, leading both to widening regional gaps and rising household inequality (World Bank 2018b). At present, 83 million, or one in six, EU residents live in economically lagging regions, while more than one fifth of all sub-national regions are classified as lagging due to either low-income or low-growth (European Commission, 2017). According to the European Commission (2017a, 2017b), there are: 19 low-income lagging regions in Bulgaria, Hungary, Poland, and Romania; 28 in Greece, Italy, Portugal, and Spain; and 22 in Bulgaria, Greece, Poland, Romania, and Spain. Many of these lagging regions have faced prolonged periods of low-growth stagnation. One major challenge facing lagging regions is identifying policies and strategies that can overcome the low-income and low-growth development trajectories that some have experienced for an extended period. To this end, helping European countries, and especially lagging regions within them, reboot and return to the convergence trajectory is imperative to avoid any potential irreversible structural fragmentation and inequality-induced turmoil.

Often, economic progress is determined by geography. Well-located regions with easier access to global markets, better business environments, and advanced technology can grow productively, while others get left behind (World Bank 2009). In Europe, this challenge requires immediate attention (World Bank 2018b). Entire geographical areas within Europe struggle to attract new investment and can become trapped in a cycle of low growth, low income, and low innovation. Further, the continent is challenged by its own demographics, as it is in a sustained period of transition due both to rapidly aging populations and new patterns of migration.

For the most part, SMEs serving local markets often face market size constraints and profit margins that are capped by regional capacities and less likely to benefit from agglomeration. In addition, a lack of economic density results in reduced incentives for firms to invest in the competitiveness-enhancing innovation and productivity-related upgrading that could sustain longer-term growth. In pursuit of better growth prospects, productive and competitive firms are more likely to move out of lagging regions to take advantage of better business environments and connectivity elsewhere, and this can lead to further economic stratification among regions. These factors are further complicated by the spatial segregation of sectoral

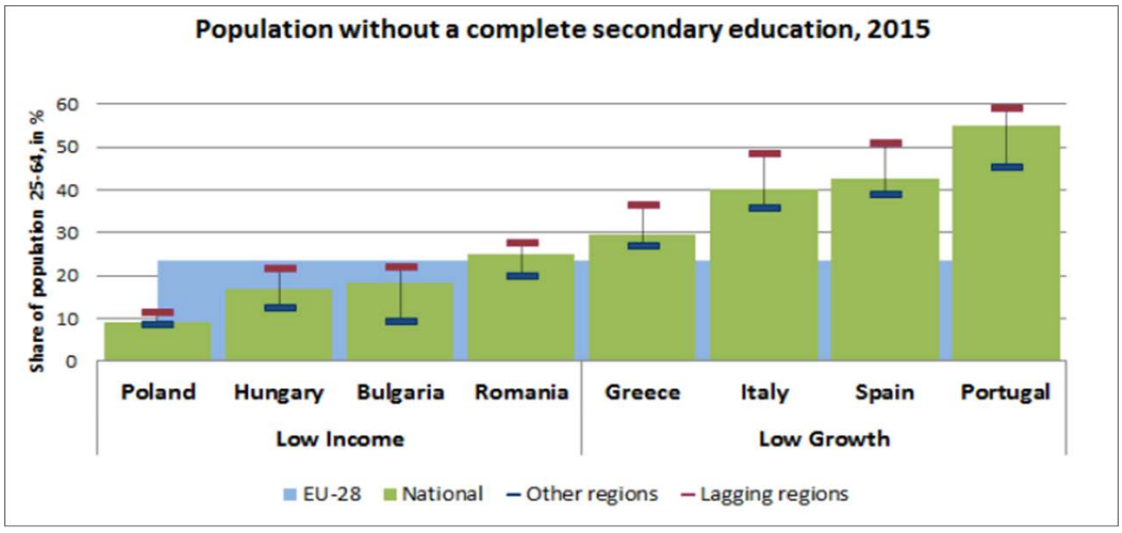
structures, which often attract congregation of agricultural or low-to-medium technology manufacturing, because of low skills supply in the regional workforce, trapping businesses from capturing potential opportunities to innovate or expand.

Breaking away from past trends requires new thinking and policy change. Neo-classical, endogenous growth, and new economic geography theories emphasize a few commonalities on the determinants of growth, namely quantity and quality of capital, workforce skills, and innovation. The consensus is that boosting lagging regions requires rejuvenating the private sector, which faces combinations of regional factors that limit firm-level revenue, investment, innovation, and growth (Farole et al., 2017).

The Case for Investment in Training

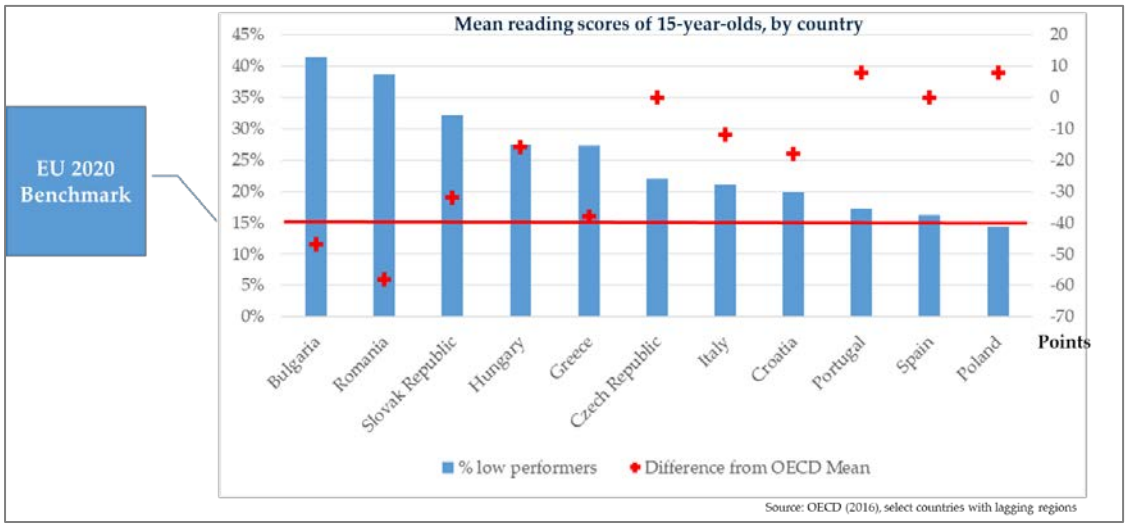
In Europe, while there has been substantive progress in equipping young people and the broader workforce with relevant skills, progress has been variable both across and within countries (European Commission 2017). Secondary education attainment is mixed across countries, but with lagging regions across different national contexts having a higher percentage of individuals without a secondary education than the national average (see Figure 4). Moreover, results from the latest PISA-OECD (2015) assessment show that many countries in Europe score substantially lower than the OECD mean and some still have sizable shares of young people scoring poorly in literacy and numeracy skills. Between 15 to 40 percent of 15-year-olds in Bulgaria, Croatia, the Czech Republic, Greece, Hungary, Poland, Portugal, Romania, and the Slovak Republic score below the minimum Level 2 Proficiency on PISA reading in 2015, which is substantially higher than the EU 2020 benchmark (see Figure 5).

Figure 4. Percentage of population without completed upper secondary education, by country



Source: European Commission Lagging Regions Report (2017), Map 3-1

Figure 5. Mean PISA reading scores, by country



Not surprisingly, at the subnational level, the Programme for the International Assessment of Adult Competencies (PIAAC) OECD (2013) surveys of adult skills also indicate that a large proportion of low-skilled adults in the workforce are inactive, unemployed, or in low-productivity jobs. Analyses of PIAAC (2013) data show that workforce skill is highly variable in Europe. More than 35 percent of the 17 EU participant countries in PIAAC have skills-lagging regions. In addition, there is considerable variation in the mapping between schooling and skills across subnational regions. In some regions, it takes up to six additional years of formal education for at least three-quarters of the population to reach basic Level 2 literacy proficiency (Figure 6). Across contexts, more years of education are generally related to higher literacy proficiency (see Figure 7). Regional differences in education and skills outputs limit growth prospects and obstruct effective regional integration, while their adverse impacts will inevitably become exacerbated in a technology-enhanced age.

Figure 6. Mean literacy proficiency scores of 25–64-year olds, weighted by population size

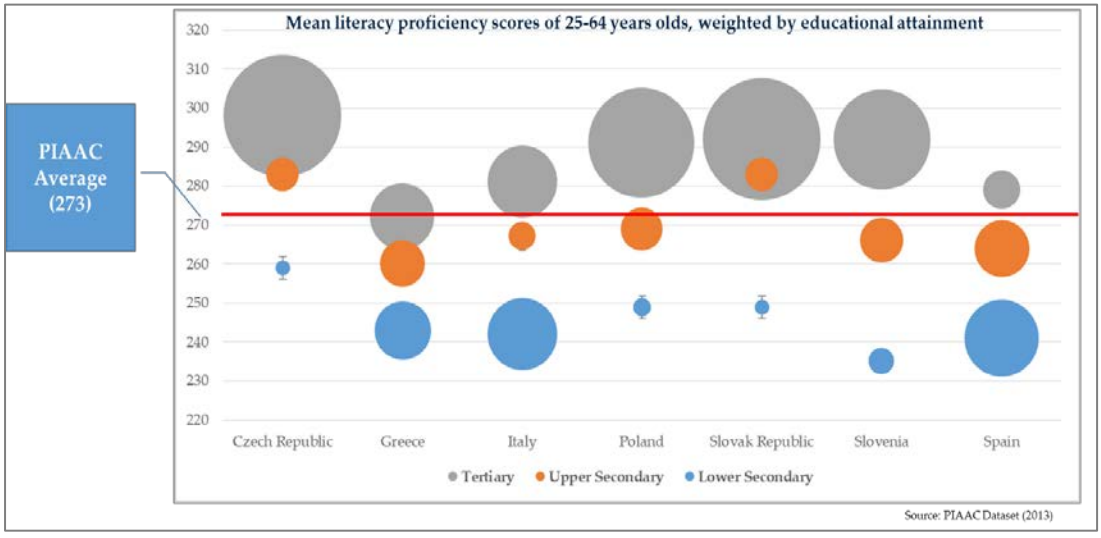
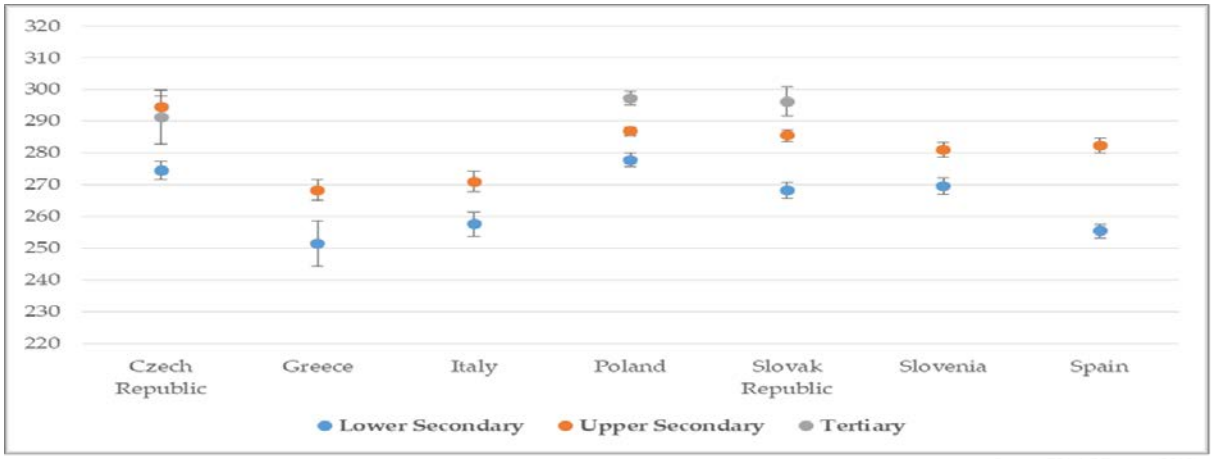


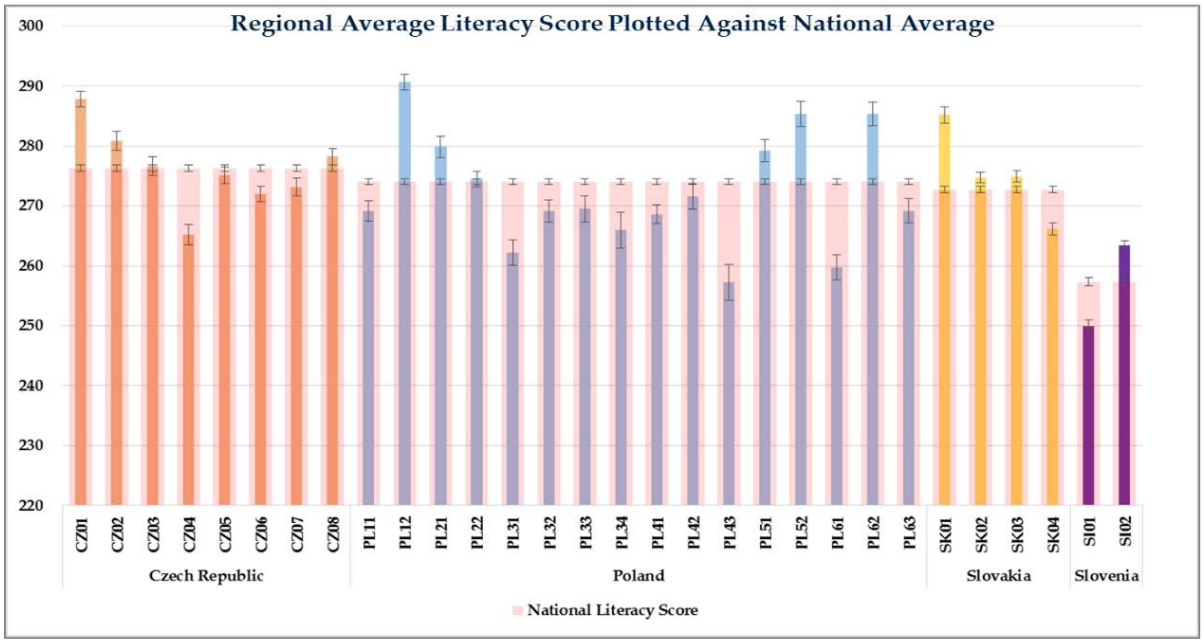
Figure 7. Mean literacy proficiency scores of 16–24-year olds, by country



Source: PIAAC Dataset (2013)

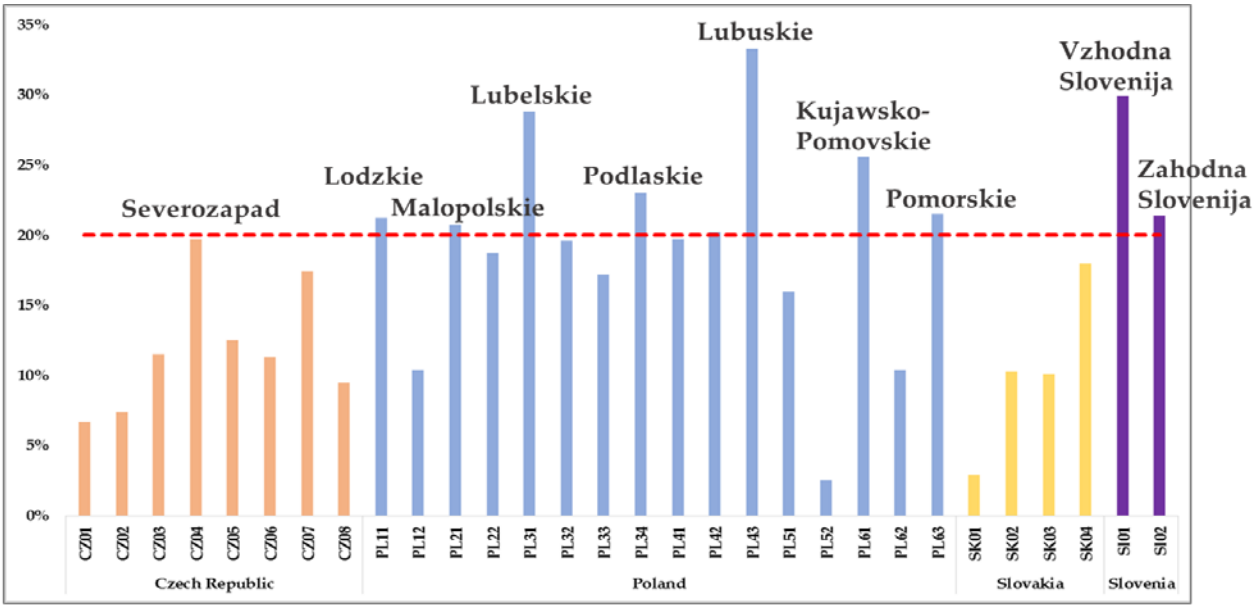
It is useful to look closely at four countries where a sub-national breakdown of workforce skills measurement data is available as examples, namely, the Czech Republic, Poland, the Slovak Republic, and Slovenia. Regional variation in workforce skills level is high, with many regions scoring substantially lower than the national average (see Figure 8). Three of eight regions in the Czech Republic, ten of 16 in Poland, one of four in the Slovak Republic, and one of two in Slovenia score below the national mean on literacy proficiency for prime-age (25-64) workers. When assessing the share of individuals lacking minimum literacy proficiency (below Level 2), some regions have more than one fifth of the working population missing this foundational skill to participate meaningfully in the labor market (see Figure 9). These individuals will also be most vulnerable in the face of recessions and automation.

Figure 8. Regional average literacy score and national average, by region



Own Calculations, PIAAC Dataset (2011-13); Note: Shaded area represent national mean

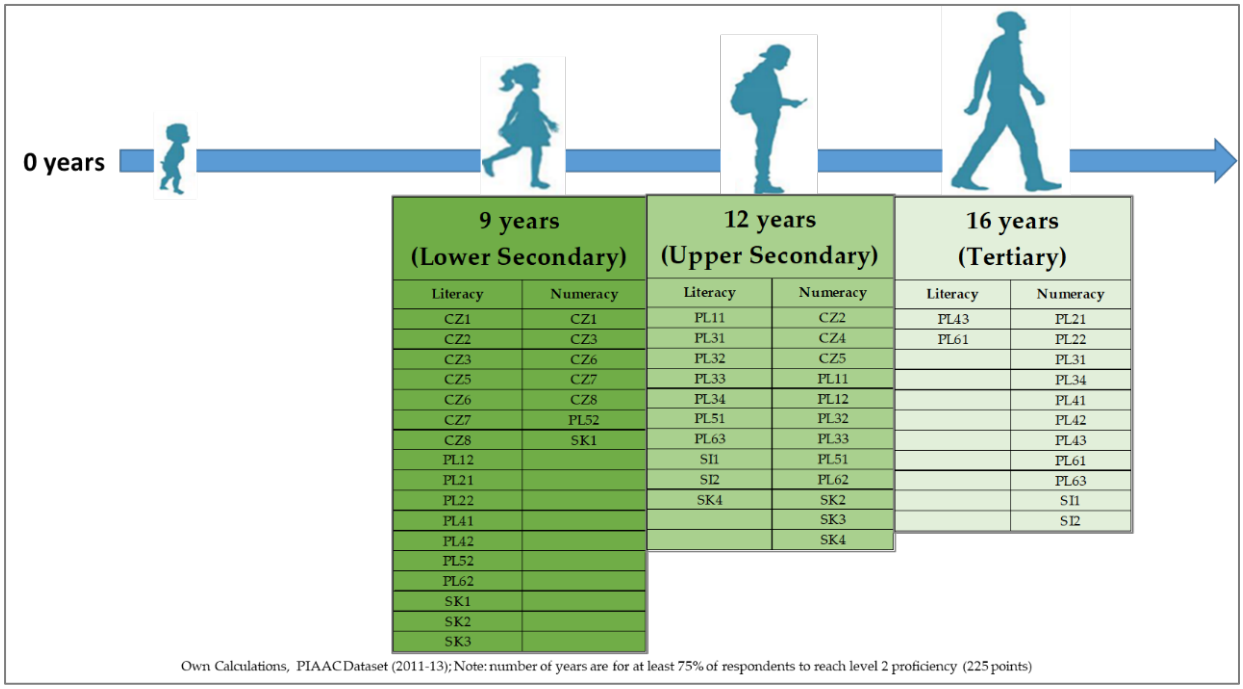
Figure 9. Percent of working population below level 2, by region



Own Calculations, PIAAC Dataset (2011-13)

In addition, regional differences in how efficiently formal education systems foster skills development are substantial. In some regions, it takes up to six additional years of formal education for at least three-quarters of the population to reach basic Level 2 literacy proficiency (see Figure 10). Finally, across regions, workplace training is offered more often to those who already have more skills (see Figure 11).

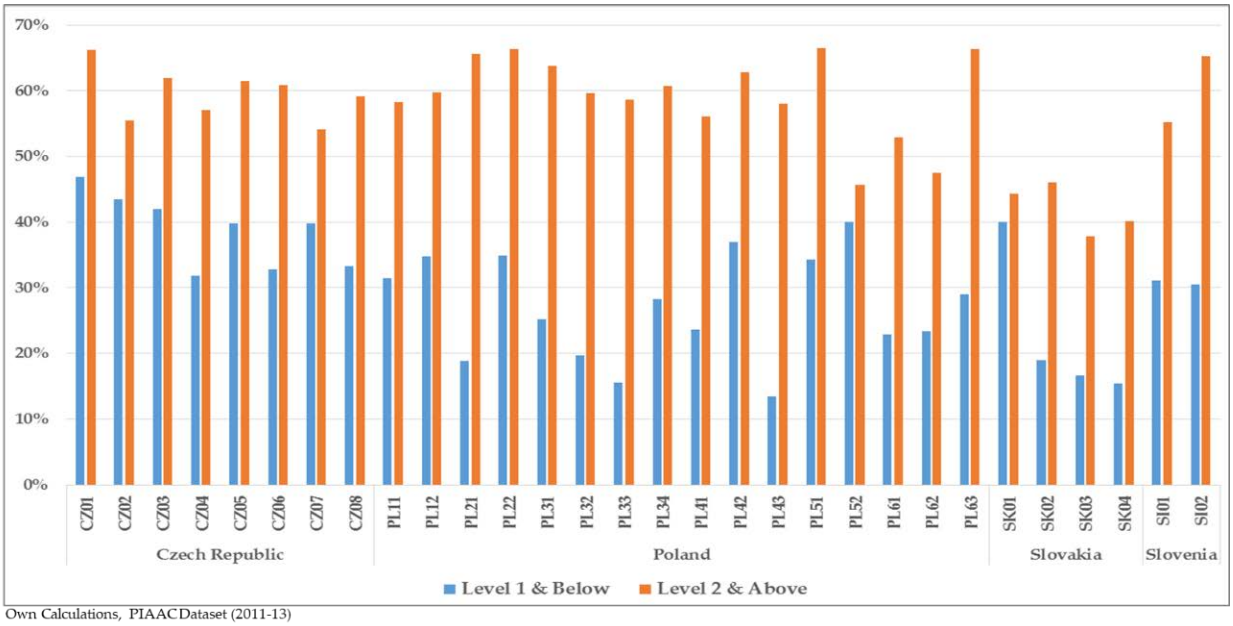
Figure 10. Years of formal education needed for at least three-quarters of the population to reach basic Level 2 literacy proficiency, by region



9 years (Lower Secondary)		12 years (Upper Secondary)		16 years (Tertiary)	
Literacy	Numeracy	Literacy	Numeracy	Literacy	Numeracy
CZ1	CZ1	PL11	CZ2	PL43	PL21
CZ2	CZ3	PL31	CZ4	PL61	PL22
CZ3	CZ6	PL32	CZ5		PL31
CZ5	CZ7	PL33	PL11		PL34
CZ6	CZ8	PL34	PL12		PL41
CZ7	PL52	PL51	PL32		PL42
CZ8	SK1	PL63	PL33		PL43
PL12		SI1	PL51		PL61
PL21		SI2	PL62		PL63
PL22		SK4	SK2		SI1
PL41			SK3		SI2
PL42			SK4		
PL52					
PL62					
SK1					
SK2					
SK3					

Own Calculations, PIAAC Dataset (2011-13); Note: number of years are for at least 75% of respondents to reach level 2 proficiency (225 points)

Figure 11. Percent of working population receiving workplace training, by region



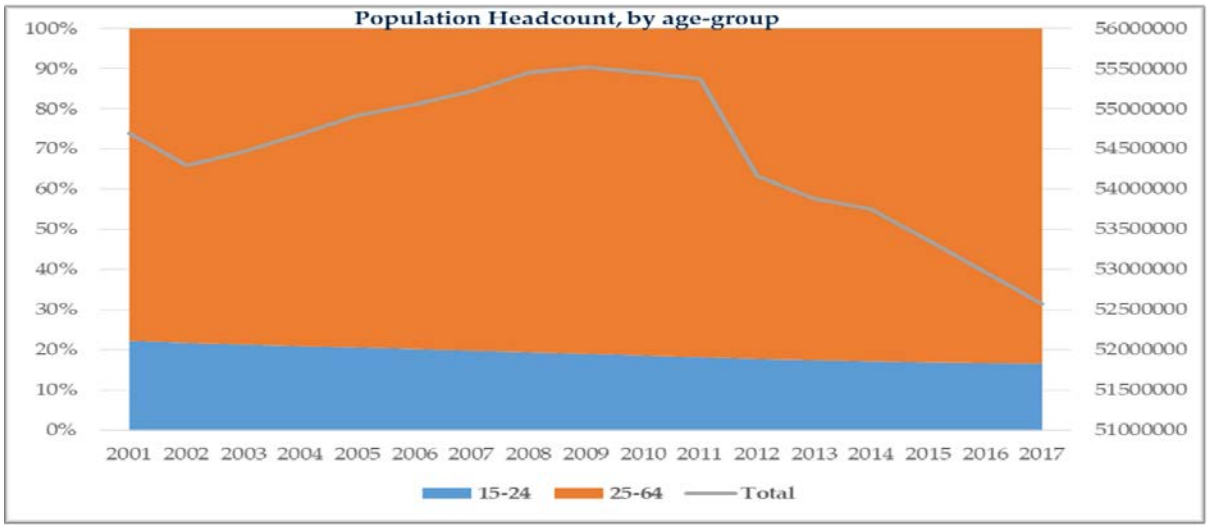
Own Calculations, PIAAC Dataset (2011-13)

As a result, European youth from low-income and disadvantaged backgrounds are less likely to reach basic proficiency in reading, mathematics, and science (World Bank 2018b). As the *World Development Report 2018* explains, leaving formal education prematurely without developing necessary foundational skills, then not receiving timely skills upgrading in the workplace, can have serious consequences for workers (World Bank 2017). While relatively smaller compared to other developing regions, Europe still has a sizable working-age population that is lacking the most fundamental skills to ensure meaningful labor market participation and sustained career growth (World Bank, 2017). At the macro-level, an aggregate business concern for many firms in Europe-28 is dealing with substantial skills gaps. According to Manpower (2017), 72 percent of employers in Romania, 62 percent in Bulgaria, and 57 percent in Hungary report having difficulty filling open positions. Skilled trades (such as electricians and welders), IT staff, and sales representatives are the hardest types of positions to fill globally (Manpower 2017). At the micro-level, young people and prime-age workers without essential foundational skills will inevitably face huge challenges as they transition into the labor market and will also become the most vulnerable to technology disruptions. Drastic changes that have occurred in the nature of work and accelerating pace of change in the labor market have serious implications for low-skilled workers (Bloom, Canning, and Fink 2010). The duality of this macro-micro skills challenge demands high-priority action, because low-skilled adults are more likely than others to be stuck in low-wage, low-productivity jobs and ill-prepared to partake in the skills upgrading activities needed to access the jobs that emerge from the fourth industrial revolution. This can adversely impact individuals and trap entire regions in a low-growth, low-income equilibrium.

In the Europe-28, the above issues are complicated by the geographical overlap of economically lagging and skills-lagging regions (European Commission 2017). According to the World Development Report 2018 (World Bank 2017), Europe has close to 55 million

working-age adults who lack appropriate literacy proficiency to ensure meaningful labor market participation to fulfil their goals. According to Eurostat (2018), lagging regions in Europe also face a dual problem of declining working populations and increasing youth headcount (see Figure 12). For instance, in Europe-28 countries, the ratio between young (15-24 years) and prime-age (25-64 years) workers is about one to ten, but this number is halved in lagging regions, meaning that there are only five prime age workers for every young worker. Fewer workers and more dependents mean that, if productivity levels do not rise, these regions face even harsher growth prospects. In addition, the regional human capital stock will be increasingly reliant on the skills with which young people finish formal education, which is directly linked to the quality of education they receive.

Figure 12. Population headcount, by age-group



Source: Eurostat (2018), numbers are for 47 lagging regions

To facilitate better skills development in formal education, countries must prioritize improving learning in schools, otherwise, regions may continue to be trapped in 'low skills, low growth' traps. To tackle this challenge more broadly however, European countries need to rethink education and training to identify innovative and proven practices that can enhance existing human capital investments.

Chapter 2 – The Precision Training Framework

A Conceptual Framework for Precision Training

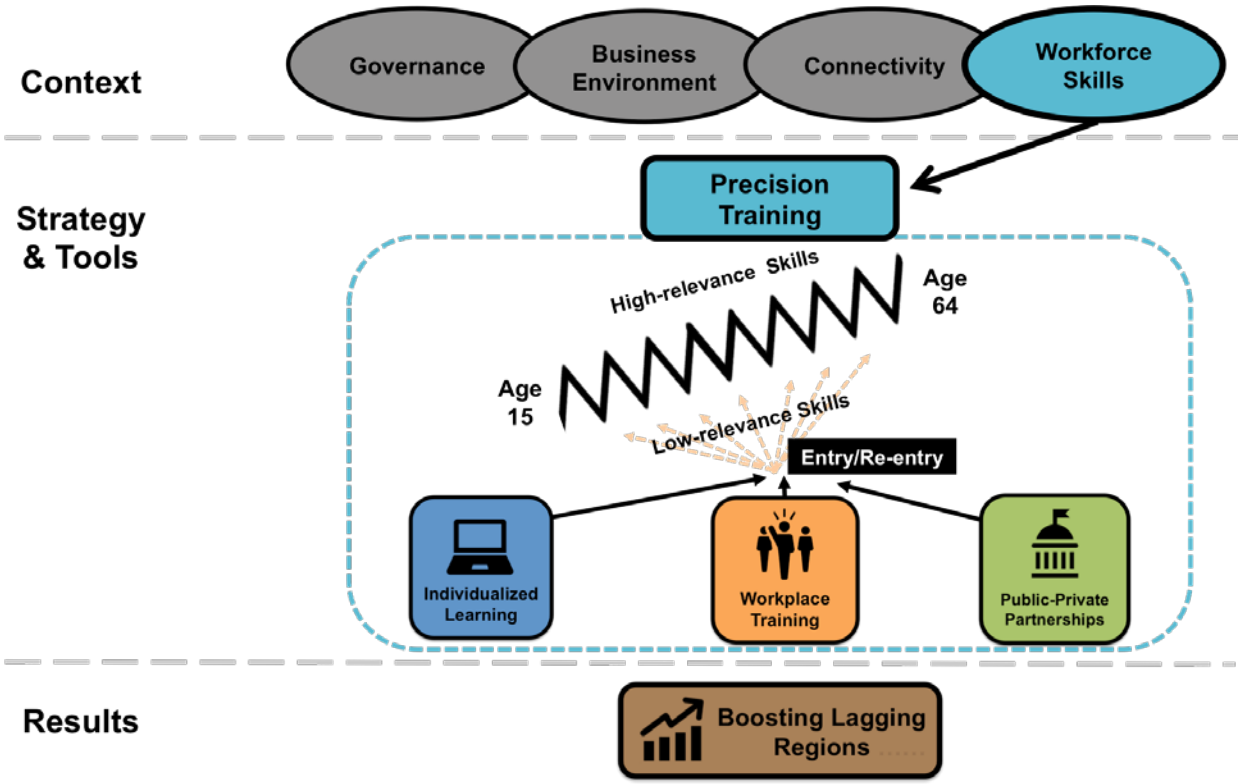
Experiences around the world have shown that investing in people can yield significant returns, but there are still knowledge gaps in determining how to help countries to prepare their workforces for the frontier. Precision training is an emerging, practice-driven concept to help countries in Europe to rethink workforce development and training, both in lagging regions and countries close to the frontier. The precision training framework hinges on an agile skills-development approach in which individuals can access training wherever they work and live, precisely when they need it, and in the format through which they learn the best at any point in their life. As used here, the concept of precision has its origins in the clinical sciences (i.e. pharmacogenomics), which has led to cutting-edge medical applications that deliver efficient alternatives to traditional, standardized, one-size-fits-all treatments. In the lifelong learning realm, the precision training framework offers one approach to matching workers and training efficiently by leveraging existing firm- and program-level experiences in training design, partnership building, and service delivery. It situates precision training within a broader priority of developing workforce skills, which, alongside governance, business environment, and connectivity, is crucial for boosting lagging regions. Finally, it integrates a lifelong learning perspective into a type of workforce skills development that focuses on incentivizing individual engagement, taps into employers' comparative advantages, and makes resources available, fostering public-private sector partnerships (PPPs).

Precision training can expand skills upgrading opportunities to workers of all ages. In Europe's 2020 Strategy, Guideline 8 focuses on development of a skilled workforce by promoting lifelong learning, which implies investing in people and encouraging frequent knowledge and skills acquisition for all labor market participants across the age-profile. Particularly for working-age adults (15-64), lifelong learning prompts continued human capital investments beyond formal education and training through provision of adult training and education that is easy to enter and re-enter and fosters meaningful civil participation, as well as realizing productivity gains in the workplace (Hooley 2014; Cummins and Kunkel 2015; Vera-Toscano, Rodrigues and Costa 2017). Precision training leverages lifelong learning's emphasis on a life-cycle approach to human capital investment and skills formation. Yet precision training is distinct from other more traditional formulations of lifelong learning because it advocates a more comprehensive and demand-driven approach to lifelong skills development.

The precision training framework (see Figure 13) can help countries to develop an education and training eco-system that emphasizes: (1) providing ongoing opportunities for worker skills enhancement and upgrading along throughout their lives; (2) leveraging employers' comparative advantage in delivering training; (3) employing technology to meet individuals'

learning needs; (4) encouraging innovative training governance and incentive structures; and (5) boosting lagging regions through workforce skills development.

Figure 13. Precision training framework



When it comes to creating a precision training environment, *context* matters. Developing a skilled workforce prepared for jobs of the future is important, but countries and regions cannot achieve this without tackling other issues. Crucial factors that support growth include: (1) governance structures that are capable, efficient, and effective; (2) welcoming business environments that can attract quality new investments; (3) excellent physical and virtual connectivity infrastructure networks that can facilitate efficient management of information, goods, and payments; and (4) an energetic, skilled, and updated workforce that is readily available. The precision training framework incorporates these contextual elements to emphasize underlying conditions that can aid or hinder the skills development environment.

First, *good governance* plays a vital role in boosting lagging regions. As the 2017 World Development Report found, meeting major development challenges requires sound institutional structures that are capable of committing, coordinating, and cooperating (World Bank, 2016). Credible government commitments, such as implementing risk-reducing policies and protecting property rights, are widely viewed as staple features of good institutions, which afford firms and individuals a sense of security to invest and produce (Murphy, Schleifer, and Vishny 1989). However, free-acting firms and individuals often face coordination problems, and many market failures arise from missed opportunities caused by ineffective coordination. Therefore, governments should focus on devising policy

arrangements that incentivize collective action (Hoff 2001). Inclusive and sustainable growth also requires willingness to contribute to public goods such as health and education. This means that governments should be able to find solutions to organize, finance, and provision public goods that contribute to national and regional progress (Lindert 2004).

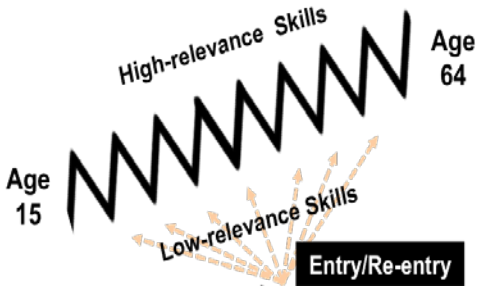
Second, the *business environment* is necessary to consider for investment and growth generation (World Bank 2018a). The legislative climate, such as business taxes and labor market regulations, plays a significant role in investment decisions. For instance, entrepreneurs in many economies face barriers to entry when starting businesses. Fostering a pro-business environment, for example by simplifying redundant procedures and eliminating administrative costs, can help to jumpstart business activity (Love, Martinez-Peria, Soledadand Sandeep 2013; Wrenn and Irwin 2015). Improving business transparency can also reduce information asymmetries, risk, and default rates, leading to higher firm-level efficiency (Doblas-Madrid and Minetti 2013). The business environment also includes access to credit, which determines how well firms can leverage opportunities in capital markets. Challenges in accessing formal credit limit business growth (World Bank 2009).

Third, *physical and virtual connectivity* is of growing importance in today's increasingly globalized trade and digital networks (World Bank 2012). Both physical and virtual infrastructures influence how information and payments are managed. When they are inadequate, both can limit potential benefits from industrial supply chains and frontier production networks (Kunaka 2011). Investing in network infrastructure and leveraging technology workforce productivity premiums can reduce the adverse effects of geographical barriers and improve market access, which can lead to improved economic outcomes (Lendle, Olarreaga, Schropp and Vezina 2012).

Fourth, a *skilled and updated workforce* is a pivotal connector that can help countries to realize the promise of inclusive and sustainable growth. Highly-skilled workers are essential to capture productivity gains from building effective institutions, a welcoming business environment, and swift connectivity. They are also needed to sustain innovation and job creation in a knowledge economy. For individuals, having the right skills is crucial to opening career opportunities and ensuring job mobility and protection. Evidence from twelve middle- and low-income countries has shown that workers with higher levels of literacy and numeracy skills earn higher wages (Roseth, Valerio, Gutierrez 2016), and are more resilient in the face of negative impacts arising from technology- and trade-induced disruptions (Blyde 2016). By contrast, skills deficiencies are linked to negative individual and aggregate well-being, trapping workers in low-wage, unstable jobs, and limiting broader economic prospects that could benefit from improved innovation, productivity, and investments (Dearden, Reed, and van Reenen 2006; Haelermans and Borghans 2012; Dietrich, Pfeifer, and Wenzelmann 2016).

A key element of precision training can be illustrated by the 'life-learning ladder' (Figure 14). Taking the shape of a zigzag line, which may fluctuate up and down while still moving forward, it represents the progression of individuals through life, facing changing demand shifts in the types of skills valued in the labor market. In this process, individual skills are cyclical, entering both high- and low-relevance periods. Consequently, learning and skills development needs to extend beyond classrooms and become integrated into work and training along the life-learning ladder, creating opportunities at frequent intervals for workers to enter and re-enter training as and when skills upgrading is needed. Particularly during low-relevance skills stages, when demand for existing skills is decreasing, individuals can choose to participate or re-participate in training to improve and reach desired high-relevance skills levels that are in demand. This nuanced precision view of lifelong learning, particularly for working-age adults (15–64 years), promotes human capital investments beyond formal education and training, in the form of periodic individual or workplace learning.

Figure 14. Life-learning ladder



What does this agile, ongoing learning and skills development look like? The precision training framework comprises three tools that countries might use to ensure that skills upgrading activities are available throughout workers' lives. These are individualized learning, workplace training, and public-private partnerships.

Individualized learning, made possible through technology, allows individuals to access learning opportunities at flexible locations and times. This typically takes the form of online learning, or e-learning, skills development programs. Extensive literature documents the evidence for, examples of, and operationalization of online learning activities. For this reason, individualized learning will not be covered as one of the topical 'deep-dives' in this technical note. In general, these types of skills upgrading activities vary widely in terms of scale, sector, delivery method, audience, formality, cost, and many other factors; they can range from free massive open online courses (MOOCs) to formal tertiary education programs that charge tuition and offer credits or qualifications. Such programs can play an important role in closing skills gaps in lagging regions.

Frequent and meaningful *workplace training*, at all points of the career path, is a vital component of the precision training framework. It can have large returns for both firms and workers (World Bank, 2017). Experimental and quasi-experimental studies show that

workplace skills development and training can increase worker productivity by as much as 10 percent (de Grip and Sauermann 2012), while firms can achieve returns of similar magnitude from their investments in training and physical capital. In some cases, returns to worker skills can account for nearly two-thirds of all productivity gains (Saraf 2017). In several countries in Europe, studies show wage gains ranging from 3.7 to 21.6 percent, on average, for full-time workers (Bassanini and Brunello 2008). In addition, firm-level analyses from Latin America and the Caribbean show that a one percent increase in the proportion of trained workers in large firms raises aggregate productivity by 0.7 percent (Gonzalez-Velosa, Rosas and Flores 2016).

Employers are well positioned to play a central role in precision training. This is because they are often more agile and better positioned to deliver skills upgrading opportunities than traditional training providers. For one, most of the existing workforce already works for employers in the workplace, so delivery can be timely and targeted to diverse worker profiles. Employers are more sensitive and adaptive to market trends, are better at profiling workers and meeting heterogeneous skills needs and can deliver contextual and integrated learning opportunities in differentiated audience applications (Manpower 2017). On-the-job training (OJT) or workplace-based skills development is widely viewed as an important pathway to build and upgrade skills. Such methods of training delivery create a win-win scenario for both firms and workers by substantially lowering transactional costs of OJT for firms and reducing the opportunity costs associated with training participation for low-skilled employees (Almeida, Behrman, and Robalino 2012; Konings and Vanormelingen 2015).

Training programs that develop skills for the frontier—whether offered by employers or undertaken by individuals—require considerable resources in terms of financial investment, time, and person power. How can governments, particularly in lagging regions, incentivize training in the workplace, and ensure that individualized learning opportunities are accessible to those who are marginalized? The answer comes from the third strategy presented in the precision training framework: public-private partnerships.

Building *innovative PPPs* that incentivize employer support for worker skills upgrading is crucial. Many definitions and forms of PPPs exist, referring to different levels and kinds of public-private engagement—ranging from simple financial, technical, and operational cooperation to more complex risk-sharing mechanisms in the design, financing, building and operation stages (Kruss, Peterson, Fongwa, Tele and Rust 2017). While workplace training can bring positive benefits to both workers and firms, participation rates are still low across contexts (Almeida and Carneiro 2009; Cabrales, Dolado, and Mora 2014). The World Development Report 2018 shows that on average, across country-contexts, less than 20 percent of all workers receive any workplace training (World Bank 2017). Those who do receive

training often already have more years of education than those who do not and have already met basic skills requirements. In Europe, provision of training and education to working-age adults is particularly weak in low-income regions (Bodewig and Hirshleifer 2011).

These challenges persist because various types of market failures are common in workforce development. For instance, firms do not capture all the potential productivity gains achieved from training workers (Brunello and de Paola 2009). Imperfect credit markets also make both firms and workers less willing to engage in training, because both must pay most of the cost out-of-pocket and upfront (Almeida and Aterido 2010). In addition, there is a lack of accurate information on the true cost and benefits of training, which is problematic because individuals and firms end up not making socially optimal training decisions (Brunello and de Paola 2009). Moreover, coordination problems persist in training provision because individuals and employers are often mismatched, leading to a weak equilibrium in which low skills limit innovation and create a negative feedback loop (Almeida, Behrman, Robalino 2012). Finally, social norms and biases also influence training decisions. For instance, women and recent immigrants are less likely to receive training. These are all challenges when timely decisions are needed to lift low-skilled young adults who are trapped in low-wage, unstable jobs.

Building effective and sustainable PPPs is a promising approach to tackle these problems. Examples of PPPs, such as career academies in the United States and Brazil, the dual-system in Germany, and industry-specific cluster PPPs in Thailand and Bangladesh, have shown that such partnerships provide promising solutions to market failures in the training sphere (Amornvuthivorn 2016). The competitive nature of PPP contracts enables the public sector to choose from various training mechanisms and provide resources to more agile and effective firms and providers. This incentivizes individual engagement and innovation in meeting heterogeneous skills gaps, as well as ensuring that resources are used more equitably and efficiently.

While precision training may be a new term, many successful frontier countries and industries are already designing and delivering frontier-compatible, employer-led, partnership-friendly training. In Europe, the most competitive economies invest a relatively higher share of GDP in human capital development and have higher participation rates in formal education and workplace training (Eurostat, 2016). Private sector investment in workplace training is crucial both from a public finance perspective and for efficiency, because enterprises are comparatively better positioned to fine-tune and adapt training arrangements to market needs. Examples from two frontier countries illustrate this well.

In Germany, the automotive industry is updating a long-standing tradition of employing dual system training, in which work placements in a company are combined with technical training in vocational settings for incumbent workers to acquire sufficient skills for productive engagements on the job. Better production-aligned work placements of longer duration help the company to recoup its investment as apprentices spend more time in productive work. BMW, for example, had an annual employee training budget of 349 million Euros, an average of four training days per fiscal year, and more than 4,750 apprentices in 2017. Their

realignment of the dual system has been happening in the context of rapid digitalization and technology change. STEM (science, technology, engineering, and mathematics) subjects and digitalized learning and teaching have been integrated into new worker training networks. Under the 'Today for Tomorrow' strategy, the company offers employees vocational training up to management qualifications and a wide range of courses, from personal, technical, and socioemotional development to intercultural workplace language learning.

In South Korea, there has been a long history of private-sector and employer-based engagement in training delivery. Samsung and LG are global frontrunners in both technology innovation and providing first-class workplace skills development opportunities. For instance, Samsung employees participated in 131 hours of workplace training per worker in 2014 and LG provides individualized skills diagnostics to workers who enroll in more than 800 different skills courses through LG's Business Function College. For Korean small and medium-sized enterprises (SMEs), extensive worker training opportunities are offered through Learning Organizations, enterprise-based diagnosis and certification, and core-competency improvement and e-learning programs. At the national level, developments in the Korean National Competency Standards and Work-Learning Dual System also help to facilitate skills demand anticipation by promoting a competency-oriented society with lifelong access to job training and skill upgrading opportunities.

The overarching objective of precision training is to ensure that appropriate workforce development arrangements are in place that can help employers to amplify their comparative advantages by creating a pro-training environment that is agile and effective in supporting inclusive and sustainable growth. The next chapter makes a case for why and how workplace training can make a meaningful contribution to helping lagging regions reach the frontier.

Chapter 3 – Making the Case for Workplace Training

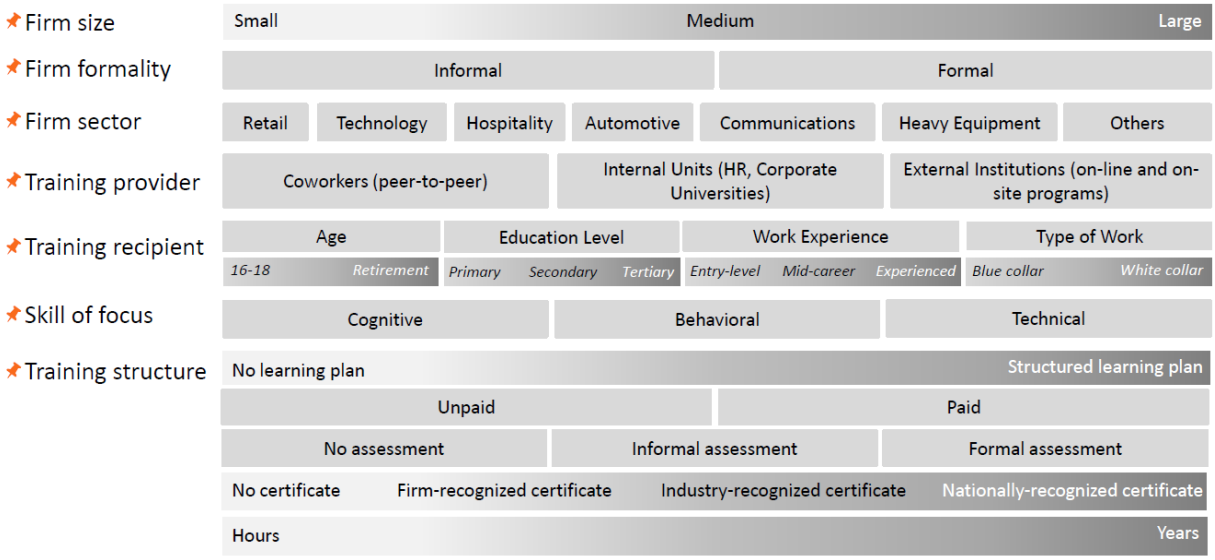
The life-learning ladder illustrates the skills development path of an individual from a lifelong learning perspective. At any point in life, she may possess high-demand skills, only to find a few years later that those skills are out of date and in low demand. In a training environment that is truly at the frontier, opportunities would abound for skills upgrading. For instance, individualized, online learning programs – such as virtual courses and certification programs—can help adults to gain the skills they need to access jobs of the future. Indeed, these are an essential component of a truly flexible precision training framework and can serve as a bridge between education and the workforce. However, formal individualized learning outside of work can require large time commitments, well-established noncognitive skills like self-discipline and study skills, and often a financial commitment. Such barriers can prevent individuals from accessing learning opportunities when they are needed most.

An alternative, more efficient means of providing individuals skills upgrading is to meet workers where they already spend much of their time: at their jobs. For job-relevant training that occurs outside of the workday, employers can offer compensation or tuition subsidies, flexible scheduling, and other incentives. In Europe, whether a prime-age worker participates in learning activities is significantly determined by the extent of their employer's involvement in such opportunities. The European Commission's Adult Education Survey (AES) found that, of adults who reported engaging in non-formal learning in the past six months, 84 percent did so for job-related purposes, while 74 percent had their learning activity sponsored at least in part by their employer (Eurostat 2011).

An Overview of Workplace Training

Workplace training is a concept often understood almost intuitively, but it is conducted via so many different formats that it has no universal definition. It has two main characteristics. First, the decision to provide training is typically made by an employer or firm with a specific business or operational need in mind. Second, at least part of the training takes place in the working environment under normal working conditions. Beyond these two characteristics, workplace training is highly heterogeneous.

Figure 15. Elements of workplace training



As Figure 15 illustrates, workplace training is shaped by many factors, which can be organized into almost limitless combinations. Firm size greatly impacts the type and amount of training provided. Small and medium enterprises typically possess fewer recourses and incentives to train employees. Employers within the formal arena are also typically better situated to provide training than informal employers. Of course, almost all workplace training is sector-specific. For example, industries that are particularly vulnerable to automation or technology changes may find keeping employees' skills up-to-date especially vital. Across firms, the actual training provider may vary from informal mentoring among coworkers to established internal training programs or providing training externally by sponsoring employees to learn online or off-site.

Employers also vary regarding whom they target or select for training. Age, education level, years of work experience, and type of work are all factors that may impact training opportunities. The content of workplace training can include technical skills specifically related to job duties, but also more general and transferable domains like cognitive skills (for example, writing or a foreign language) or behavioral skills (such as leadership or conflict resolution). Training structure describes the pedagogy of the program, including the type of learning plan, means of assessment, timeframe, and recognition received after training is complete. Some combination of these factors covers most firm-wide workplace training practices, particularly in small organizations that offer limited training options to a few selected employees. For larger firms that can provide arrays of training opportunities to a wide range of employees and non-employees, workplace training can take different forms within the same organization.

While conventional regional development programs have emphasized the importance of governance, business environment, and connectivity, workforce skills have a central role to play in unlocking those potentials. Workforce skills can be traced to both positive individual and aggregate well-being, but deficiencies are capable of trapping workers in low-wage, unstable jobs and limiting broader economic prospects from improved innovation,

productivity, and investments (Dearden, Reed, and van Reenen 2006; Haelermans and Borghans 2012; Dietrich, Pfeifer, and Wenzelmann 2016). As the World Development Report 2018 (World Bank, 2017) notes, higher skills levels are both correlated with more frequent skills use in the workplace and productivity on the job.

One key requirement to overcoming the challenges that lagging regions face is to invest in and equip a workforce that is ready for production on the frontier, so that countries can attract and benefit from quality investments, as well as creating business environments that are agile and supportive of growth. For some countries, the immediate task is to raise workforce productivity levels, enabling workers and entrepreneurs to benefit from global technology diffusion and market integration. For example, almost 50 percent of all current jobs in Slovakia, the Czech Republic, and Poland that rely heavily on routine, low-skill tasks face medium- to high-risks of job loss due to automation (Amtz, Gregory and Zierahn, 2016). Ensuring that these workers transition smoothly to cope with the changing nature of work is vital. For other countries, especially those that are already at or close to the frontier, the goal is to ensure that future growth is both sustainable and inclusive. In Germany and the United Kingdom, for instance, wide regional skills gaps present a unique challenge for national cohesion and effective regional collaborations and must be treated with high priority and caution (OECD, 2009).

Trends in Workplace Training

Do Employers Invest in Workplace Training?

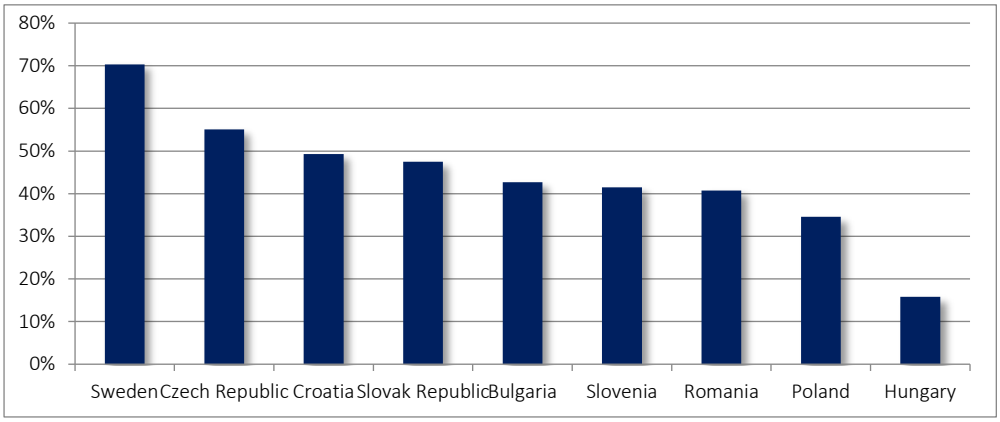
The World Bank's 2017 Doing Business data indicate that, globally, about one third of firms invest in workplace training. The report suggests that employee training is more commonly offered in Latin America, where over 40 percent of firms' report investing in it. The Middle East and North Africa fall far below the global average, with less than 20 percent of firms reporting any investment at all. On average, about half of full-time, permanent employees worldwide receive some form of training at work. This does not include part-time or temporary workers, who make up a large and growing portion of the global workforce. The share of full-time and permanent employees who receive training in East Asia, the Pacific, and Latin America is higher than the global average, where firms report providing training to more than 65 percent of such employees. High-income countries fall slightly above the global average both in terms of the share of firms that provide training and the percentage of full-time employees who receive training.[2] In Europe, as of 2011, an average of 41 percent of prime-age workers reported participating in any kind of training, in or outside of work, in the previous 12 months (Eurostat 2014).

[2] It is important to note that other studies (for example, see https://www.manpowergroup.us/campaigns/talent-shortage/assets/pdf/2016-Global-Talent-Shortage-Infographic.pdf) report a higher prevalence of workplace training (of around 50 percent). Differences can be explained by variations in methodology, including the instruments to collect data, the definition of training, the number of companies covered, and their geographic location and sector.

Expanding workplace training is important for employers themselves and is also an immediate need in many European countries and industries. Data from the 2014 European Jobs and Skills survey make this need clear. Of surveyed employees, 44 percent fall into the category of 'unnourished talent', meaning that their skills were lower than those needed to undertake and progress in their jobs. Likewise, 22 percent reported not having developed their skills since starting their current job (Cedefop 2015). As technology and economies undergo rapid shifts, this will need to change if employers want to compete at the frontier.

Workplace training opportunities can help workers to develop and accumulate skills for better career growth and aid firms in coping with skills shortages. Yet workplace training participation rates are very low in many EU countries. A key goal for Europe 2020 was that at least 15 percent of adults aged between 25 and 64 years should participate in continued learning and training in the workplace. At present, however, many workers lack meaningful engagement in regularly-scheduled skills upgrading activities after they enter the labor market. According to Eurostat (2016), only about one in ten prime-age workers (25-64) receive training in the workplace. Further, analyses show that, even when workplace training opportunities are available, they are more likely to be given to those with higher educational or who have more skills. Regional differences within Europe are also pronounced, with Denmark, Sweden, and Finland training close to a third of their workforce on a regular basis, compared to less than four percent in Romania, Bulgaria, Slovakia, Croatia, and Poland (Eurostat, 2016). One reason for these large regional variations is the low availability of employer-provided workplace training (see Figure 16). In Sweden, more than 70 percent of firms' report offering formal worker training, compared to about half that in Bulgaria, Slovenia, Romania, Poland, and Hungary (Enterprise Surveys, 2014). Minimal training participation in the workplace and underuse of firm expertise in delivering training that meets labor demand is a missed opportunity.

Figure 16. Percent of firms offering formal workplace training, by country



Source: Enterprise Surveys, 2014.

To better achieve broad economic convergence, Europe must make skills convergence a serious priority. Countries will need to ensure that education and training eco-systems are upgraded to offer frontier-compatible training arrangements capable of creating skilled workers ready to be productive on the frontier. Enhanced workforce training and

development could positively affect economic growth, productivity, and competitiveness, as well as providing inclusive pathways for young people and working-age adults to acquire the skills they need to live independent and prosperous lives—whether by finding employment or creating their own. Thus, countries should consider effective approaches to incentivize namely workers and firms.

Effective workforce development systems can help countries remain competitive at the frontier. However, traditional arrangements in how workforce skills development is organized will not meet increasing skills demand or keep pace with rapid technology and global trade disruptions in the labor market, nor will they leverage all opportunities to make training arrangements more agile and accessible to all. Creating frontier-ready workforces requires frontier-compatible education and training arrangements (ILO, 2011). In Europe, rethinking current practices and moving towards an agile, supportive, and effective training framework can support equal opportunities to build relevant skills, benefit workers at various stages in their careers and boost lagging regions towards the frontier.

Boosting lagging regions through workforce skills can generate many benefits. Human capital investments have been shown to be stronger predictors of regional long-term growth and innovation in Europe than other investment categories, such as research and development (Annoni and Catalina-Rubianes 2016). Yet SMEs often do not benefit from such skills-centric development strategies. For instance, compared to larger companies, SMEs face poorer access to credit which undermines their capacity to provide meaningful workplace learning opportunities (Doing Business, 2018). In addition, building a skilled labor force can help lagging regions better respond to external shocks that arrive with changing global conditions through rapid processing and organizational innovations (Crescenzi, Luca, and Milio 2016). Given today's swift technology advancements and shorter skills depreciation cycles, an adeptly educated and trained workforce that is readily equipped to tackle and cope with new market challenges and competition is necessary to enable both countries and regions to move toward and stay at the frontier.

Existing human capital gaps across regions are also significant. Concerning education attainment, lagging regions on average have considerably higher shares of early school-leavers when compared to the EU-average (Eurostat 2016). This difference in education attainment translates into significant skills variance across localities, with working-age adults in lagging regions scoring substantially lower on several skill vectors than the European average. Many of these low-skilled working-age adults do not receive the skills upgrading that they need to participate meaningfully in the labor market (Bassanini et al. 2005) and remain most vulnerable to increasing rates of automation and outsourcing.

In *Economic Challenges of Lagging Regions* report, the European Commission (2017a) relates the lagging region phenomenon to the persistent issue of under-skilled and low-productivity workforce. The report identified low-skills as a major constraint. In Bulgaria, for example, sectoral representation is overwhelmingly agriculture, low-tech industry, wholesale, and retail, but under-represented in public services and knowledge services. Bulgaria ranks last

out of 28 for quality of institutions, and 25th for basic education, two factors that are crucial in attaining high levels of productivity and competitiveness. In Hungary, lagging regions also suffer from under-investment, low innovation, low levels of educational achievement, and slow growth in high value, high skilled industries. A challenge for firm production in the country is the relatively high unit labor costs despite low productivity of the workforce. In Poland, sectoral composition is largely constrained by availability of qualified workers. The common low-productivity and under-skilled issue is further exacerbated by a high net emigration rate, creating complications of brain drain. In Romania, sectoral challenges are attributable to scant investments in human capital and infrastructure of the kind that might enable firms to engage in high-growth production. Educational attainment and innovation are substantially lower in eastern lagging regions.

Why Do Employers Invest in Workplace Training?

Training decisions at firms are complex and take place at multiple levels. In general, organization-wide training initiatives tend to be motivated by specific needs, including addressing persistent skills shortages, improving productivity and competitiveness, and preparing for industry changes.

Skill shortages are a major challenge for employers worldwide and can make updating current employees' skills more feasible than attempting to find the right skills externally. According to the 2017 Global Talent Survey conducted by Manpower, 40 percent of employers' report having difficulty filling positions. Manpower annually ranks the types of skills most in demand. In 2017, the three industries in which appropriately-skilled workers were most difficult to find were (1) skilled trades (for example, electricians, carpenters, welders, and plumbers), (2) information technology professionals (for example, developers, programmers, and database administrators), and (3) sales representatives (for example, sales executives and retail salespeople). Turkey, Bulgaria, Greece, and Hungary are among the ten countries that have the most difficulty filling vacancies. Approximately 53 percent of surveyed firms that could not find qualified job candidates reported offering training and development opportunities to existing staff to meet their talent needs. While these figures confirm that employers understand the need for training and talent development, a growing literature documents the impact of other factors, such as poor job quality and low wages, on the ability of firms to recruit skilled individuals.[3]

Offering workplace training can improve productivity and competitiveness. According to the 2018 IBM Global C-suite study, 61 percent of 12,500 business leaders around the world believe

[3] Literature on the skills deficit vs. poor working conditions is abundant. For example, Rick Wartzman (https://www.npr.org/2017/07/05/535626109/the-end-of-loyalty-and-the-decline-of-good-jobs-in-america), Lolade Fadulu (https://www.theatlantic.com/education/archive/2018/01/why-is-the-us-so-bad-at-protecting-workers-from-automation/549185/), Patrick Gillespie (http://money.cnn.com/2017/07/11/news/economy/job-skills-gap-employer-pay/index.html), and Scott A Hurrell (http://journals.sagepub.com/doi/abs/10.1177/0018726715591636) offer interesting perspectives on this debate.

that skills will impact their businesses in the next three years. This places talent development among the top three concerns of firms globally. Remarks from leading executive on these issues are frequent and widespread.

Employers must also reskill employees to prepare for industry changes. As the world witnesses the fourth industrial revolution, employers at the frontier are already exploring how to make more use of artificial intelligence and the implication of this transition to expand their human capital. A 2018 McKinsey study indicates that more than half of surveyed companies believe that addressing the potential skills gaps related to automation is among their top ten priorities. About 40 percent of these companies plan to address skills gaps by retraining their current employees, while 41 percent have a strategy that combines retraining and hiring new talent. Only 18 percent plan to fulfil their skills gaps mainly by intensifying their recruitment efforts.

Box 2. Case Study: AT&T's Workforce 2020

Global telecommunications giant AT&T, based in the United States, has chosen to close potential skills gaps by retraining currently employees. Once a leader at the forefront of expanding telephone infrastructure, the company now faces the challenge of staying relevant as cloud and internet technology replace traditional communications hardware. To address this, AT&T introduced a massive reskilling initiative, Workforce 2020, in 2013.

According to the *Harvard Business Review*, AT&T estimates that average employee tenure is about 22 years at the firm (excluding call center workers), meaning that most of its talent was hired in a different era and trained in very different skills. To update those skills, the firm has, since 2013, invested $250 million in employee education and professional development programs. Currently, about 140,000 of AT&T's 280,000 employees are actively involved in skills training for newly created roles, and the expectation is that, in four years, those employees will be retrained.

While the initiative is too new to report results, the firm claims that, over 18 months from 2015 to 2016, AT&T has reduced its product development cycle by 40 percent and accelerated time to revenue by 32 percent (Donovan and Benko, 2016). Additional details of the Workforce 2020 initiative are presented in Appendix A.

For Whom Are Employers More Likely to Invest in Training?

Firms often provide training in expectation of quick and significant returns, so it is not surprising that they tend to choose employees who are already highly skilled when selecting beneficiaries of training. In fact, according to the OECD, participation in formal and/or non-formal education in all countries is strongly related to proficiency levels in key skills and educational attainment.[4] In other words, those who are skilled and highly educated are more likely to be offered workplace training than those with lower educational attainment and less complex skillsets. In addition, OECD's PIACC data and other studies[5] indicate that men are

[4] For more information, see OECD (2016). Skills matter: Further Results from the Survey of Adult Skills.

[5] For some additional details on these studies, see Saraf (2017).

much more likely than women (regardless of whether they have children) to be engaged in workplace training. Full-time, permanent workers are more likely to receive workplace training than workers hired under more flexible contracts. The European Commission describes this dynamic in Europe as follows:

> *In-work access to training is highly dependent on the type of contract: almost one in two employees on permanent contracts receive training compared to 32 percent of employees with fixed contracts and 19 percent of self-employed. Often, those who need training the most are those who have the least access to it.*[6]

What Challenges Do Employers Face in Training Their Employees?

Given the importance of workplace training for firms to meet their skills needs, improve competitiveness and productivity, and prepare for the fourth industrial revolution, it seems counterintuitive that only one third of firms worldwide invest in it. There may be various reasons for this reluctance. For example, employers may face uncertainty about returns. Indeed, perhaps the most commonly cited reason for employers to ignore workplace training is fear of poaching. Why invest money and other resources to upgrading an employee's skills when he might use those new skills to find employment elsewhere? However, while this can be the case in certain sectors and under certain labor dynamics, many firms now determine that investing in employee training can have the opposite effect, fostering employee loyalty and reduce staff turnover.

For example, in the United States, the food service industry has one of the lowest retention rates of any sector; 72 percent of U.S. food service or hospitality workers left their jobs in 2017 (U.S. Bureau of Labor Statistics, 2018). Fast food brands like McDonalds, Starbucks, and Chipotle are experimenting with offering some employees college tuition subsidies in exchange for their commitment to continue at the company. Starbucks found that participants in the program were 50 percent more likely to remain at their jobs (Whitten, 2018). However, many employers have difficulties determining the kinds of skills they need with the level of specificity required for training decisions. Under such circumstances and considering the complexity of correlating training with learning and productivity outcomes, it is easy to understand why many employers, particularly SMEs, cannot calculate the return on their investment in training.

Other factors that mitigate employers' willingness and ability to provide training include lack of information, the cost of training, and organizational inertia. Employers are often overburdened with information on training programs, institutions, and methods. As a result, in small firms, where training decisions are made by managers, there is a tendency to dismiss training or opt for informal, unstructured, internally-created programs. Added to this, the costs of procuring, planning, and delivering training, combined with the short-term productivity loss of employees who participate in training, can be prohibitive. Organizational culture also plays a crucial role in decisions about workplace training. While some employers

[6] See EC (2016), 'The future of Work: Skills and Resilience for a World of Change'

are committed to promoting a learning culture, others may not see talent development as a priority. Firms with low adoption rates of innovative technologies, reluctance to change, and limited strategic human resources management are less likely to invest in training.

Examples of Good Practice in Workplace Training

How Do Employers Approach Training Decisions?

Globally, the specific practices that firms use to train employees are many and varied. The decision to offer training to employees is complex and rarely limited to delivery of the training itself. Rather, employers approach training decisions in distinct phases. The sophistication and formality with which this process takes place varies across countries (depending, for example, on labor and training regulations), sectors (based on factors like market conditions and the labor demand and supply), firms (as larger organizations are more likely to establish formal protocols to decide on training than SMEs), and even firms' internal units (as the types of occupations and skills needs are likely to be different). Broadly, employers approach training decisions in four phases, as illustrated in Figure 17: identifying skills needs, strategizing how these skills should be acquired, targeting the beneficiaries of training, and delivering training.

Figure 17. Phases of training decisions

Phase 1 - Identify Skills Needs

Traditionally, large organizations use human resources (HR) offices to fulfil units' requests for specific positions, not skills. Their role is usually reactive and transactional in nature, with limited means to think strategically about future needs. Little is usually done to identify skills needs, as HR offices typically recruit to fill positions rather than to fulfil skills needs and use educational attainment and work history as proxies for skills. In SMEs, identifying skills needs is usually done by business managers or owners. The sophistication and formality of such exercises depends on the extent to which the business manager or firm values employee development. However, traditional HR practices may not suffice in an economy in which employers need to anticipate rapid changes in technology and skills needs. A survey by

consulting firm Deloitte suggests that only 22 percent of business leaders feel that their HR departments are 'adapting to the changing needs of the workforce;' and only 20 percent say that they can 'adequately plan for the company's future talent needs' (Bersin by Deloitte 2014).

Employers at the frontier are exploring new ways to empower HR offices to improve talent acquisition and management. The growing consensus in the HR industry is that, for firms to use talent as a competitive edge, they must re-think the role and functions of their HR departments (Lindzon 2015). Firms are encouraged to transform these departments into strategic units with data analysis abilities that can bring value to the firm by attracting and retaining the best talent. For instance, the India-based Aditya Birla Group (ABG), one of the world's largest global conglomerates, piloted an 'HR leadership master class' in partnership with external experts to equip its senior HR leaders with knowledge of trends in technology, business, and HR. The goal was to support HR leaders in thinking about long-term skills needs and strategies (Deloitte 2015). In the same vein, another goal for frontier-facing human resources offices should be to move away from human-intensive processes and disengaged employee management styles to automatized processes and a greater concern for employee welfare and engagement.

Cutting-edge employers also use big data and 'people analytics' to facilitate talent acquisition and management. Global management consulting firms such as McKinsey, IBM, Deloitte, and Accenture promote and provide services to use big data to identify cognitive, technical, and socio-emotional skills that drive performance. Firms that compete at the frontier use data analysis to disaggregate positions into skills and tasks, which allows them to tap into alternative talent pools and to set the stage for effective collaboration between employees and artificial intelligence. For example, Accenture Strategy worked with Dynamic Group, a U.S. manufacturing firm, which was having trouble finding enough employees with the skills it needed for its injection molding business. The company used artificial intelligence (AI) technology to re-allocate tasks among existing employees and high-tech robots, ensuring that employees were assigned roles for which their skills were not wasted. This change reportedly 'quadrupled the efficiency of the process' (Shook and Knickrehm 2018).

Phase 2 – Strategize to Acquire Needed Skills

Traditionally, firms meet their skills needs either by developing the skills they need internally or looking for them on the market. To satisfy needs in the short-term, some firms look for new workers to fill skills gaps through traditional recruitment processes that rely heavily on academic qualifications and work experience, while reskilling existing workers is a path that others pursue. The latter approach typically relies on training methods such as lectures and theoretical classroom training, e-learning, and workshop hands-on training. Some firms also engage in medium-term initiatives such as partnerships with training institutions or universities to skill potential workers.

However, firms at the frontier are reinventing and expanding their talent acquisition and development options. For example, in addition to traditional recruitment methods, they are tapping into new talent pools by using alternative methods to assess skills that do not involve

educational attainment or using games and competitions to determine skills and knowledge. For example, Opportunity@Work, Skillful, Tech Hire, Good&Co, and True Talent Advisory offer recruitment services that do not focus on educational attainment, but rather use different mechanisms to assess the skills of a potential applicant. For instance, Skillful, a project based in the U.S. state of Colorado, offers local SMEs in the information technology and advanced manufacturing sectors a toolkit to help map the specific competencies they need (Skillful 2018).

Multinational employers like IBM, Linkedin, Expeditors, JetBlue, and Nestlé have also explored alternative candidate assessments. A McKinsey study suggests that offering a 30-minute screening assessment that compares an applicant's skills with those of a firm's top performers can help reduce employee attrition and raise productivity by three to four percent (Lund et al. 2016). Other firms, such Knack, Klujo, BunchBall, CaptainUp, and Games for Business, offer gamification services to improve recruitment processes. Employers like Unilever, Google, and Marriot have used gamification for employee recruitment. These approaches, which are all examples of hiring based on competencies, rather than education and resumé prestige, are essential in a precision training system. After all, if individuals receive training through various means throughout their careers, the skills they acquire are only valuable if employers can recognize and capitalize on them. Appendix A contains additional case studies of innovative recruitment methods.

The most cutting-edge firms do not stop there. As technology and market continue to change at an increasing pace, reskilling employees at various levels and points in their careers is also essential for employers in a precision training context. Through people analytics, they can assess the skills of current employees in detail and devise means to use untapped skills better. Many employers partner with online training firms that provide MOOCs to skill and reskill employees in a cost-efficient manner. Some employers also engage in programs that have good short-term benefits in the form of perception, reputation, and community appreciation, but are also likely to be beneficial in the long-term. These include partnerships with high school and after-school programs, online and public access courses for individuals with work experience, and partnerships to train workers from SMEs.

Phase 3 – Target Beneficiaries of Training

Traditionally, employers use unstructured methods to establish who should benefit from training. On one end of the spectrum, firms determine the content and beneficiaries of training centrally. This method usually results in large-scale retreats, learning events, and conferences that provide general content and leave it to the employees to determine how to apply it to their day-to-day work. On the other end, firms identify training beneficiaries on a case-by-case basis, through performance assessments by direct supervisors or HR managers, employee requests, customer or peer feedback, questionnaires or surveys, or formal examinations.

This flexibility and room for variation is unsurprising and necessary. As they do in employee recruitment, employers at the frontier combine these traditional methods with people

analytics and digital programs. Data-intensive workforce planning software allows employers to identify current and future skills needs and plan accordingly. For instance, Kiran Analytics, a U.S. company that serves the financial sector, offers 'workforce optimization solutions' via software that can collect and analyze data from online customer transactions and human resources systems, alongside bank branch observations that they conduct in person (Kiran 2018). Such software can forecast future staffing and training needs for individual bank branches.

Employers like 3M and Google use their own customized software to offer targeted training to employees. Just as online job platforms help employers to find employees with the right skills externally, such software can help firms to target who to train internally to acquire the right skills. For example, in the retail industry, stores often face high employee turnover and changing numbers of customers based on the season. They constantly need to evaluate, hire, and train employees in an efficient and ongoing manner. Internal labor platforms can help such companies to 'identify high-performing workers for advancement and to provide them with tailored training—a priority in an industry where best-in-class organizations source 80 to 90 percent of their managers internally' (Lund et al. 2016). McKinsey estimates that using digital programs to target trainees can increase an individual store's output by three percent and reduce hiring costs by five percent (Lund et al. 2016).

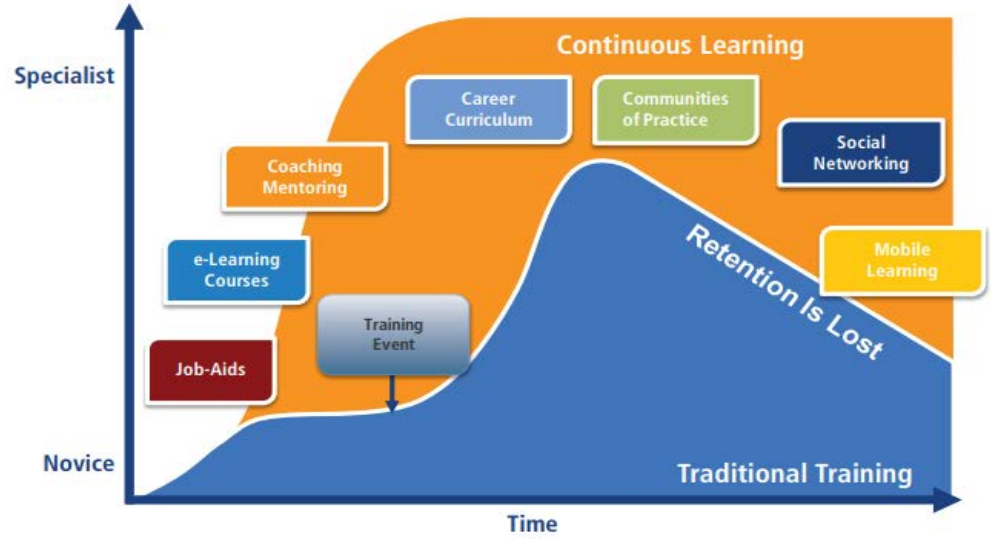
Some firms use technology to train a specific group of employees. For example, the Dutch firm Appical helps employers of all sizes to offer onboarding training for new hires. In one case study, Appical highlights Baker Tilly Berk, an accounting firm in the Netherlands with about 750 employees. It had an onboarding program but provided little structure. Appical created an app for new employees that included information about both the company culture and practical issues (like setting up an email account). The flexibility and 'playful' nature of the app reportedly helped to add structure to the onboarding program (Appical *nd*).

Phase 4 – Deliver Training

Of course, offering training for employees does not automatically lead to gains in terms of skills or outputs. The training that employers provide must take place in a format that is engaging, relevant, and evidence-based. Unfortunately, this is often not the case when it comes to workplace training. Many firms offer employees both in-person and online training options that are managed digitally via Learning Management Systems (LMSs). The variety of training options available to employees varies across firms. Some focus on traditional training (the blue area in the graph in Figure 18), while others offer a wide variety of options, setting the stage for a culture of continuous learning (the orange area on the graph). LMSs are more likely to be used in large firms than in SMEs, but this ultimately depends on the complexity, formality, and sophistication of employee training. In most cases, LMSs serve as a repository of courses that is difficult to navigate for both employers and the employees they hope to train. Common issues with such systems include frustration with frequent platform migration and the challenges of sorting through what a leading digital instructional designer recently

called 'an overbuilt system with too many features that you may never use' (Finkelstein and Goudzwaard 2016).

Figure 18. Continuum of workplace training



Source: Bersin by Deloitte (2014), Predictions for 2014: Building a Strong Talent Pipeline for the Global Economic Recovery.

Cutting-edge employers must continually seek to innovate and improve their training programs to compete at the frontier. In general, they aim for programs that are better planned, better designed, and better assessed.

Better planned training programs provide employees time to focus on training, away from distractions. This is especially important for technical subjects that have steep learning curves and require focused, uninterrupted study (Li 2016). Such programs also require alignment with the strategic needs of teams, units, and, ultimately, entire organizations. Digital training firm WalkMe cites four necessary components for new employee training: defined objectives, milestones and an established timeline, opportunities for feedback, and ongoing reinforcement and learning opportunities (WalkMe 2017.) In addition, training programs should be personalized and should not necessarily require the trainee to master the full breadth of information by the end of a designated onboarding period. Instead, they should be broken down into smaller steps and milestones, integrated into an ongoing learning process in the workplace and throughout the employee's tenure. Essentially, such programs—sometimes called 'micro-learning—should mirror the precision training framework on a much smaller scale.

Box 3. Case Study: Google Whisper

One example of 'micro-learning' in a firm at the frontier is Google's 'Whisper Course,' a technique that new managers learn as a part of their training program. Over the course of ten weeks, managers receive a series of emails that each contain one simple suggestion—called a 'whisper'—to try at meetings and with the employees they supervise.

The goal of this technique is to quickly and seamlessly integrate learning into the workday. Google has used whisper courses to train employees in a variety of topics, including creating a sense of psychological safety on a team, coaching techniques, and inclusion. For example, in a whisper course for managers on team culture, one 'nudge email' offered a short tip about acknowledging and appreciating team members and prompted managers to try out that technique in their next meeting. The shortness of the lessons helps employees to retain what is important, rather than getting overwhelmed receiving a glut of information at once. The whisper emails contain simple techniques that employees can try out right away, making learning feel more immediate and relevant.

In each whisper email, Google prompted employees to rate the usefulness of the learning tip, and 95 percent of participants in one course indicated that they would recommend it others. (Newhouse and Getz-Kikuchi, 2017) More information about Google's employee training, including an example 'whisper', is presented in Appendix A.

Better designed training methods involve active learning methods that are relevant and immediately applicable in the workplace. Active learning includes hands-on practice via projects, laboratories, or on-the-job training. Learning this way has long-established, measurable benefits. For example, a 2002 study at Bucknell University found that mechanical and electrical engineering students who were 'active learners' performed better than their peers who were 'passive' (Shooter and McNeill 2002). Sound program design also offers employees alternative schedules that allow for practice and reinforcement, encourage contextual learning methods, and take training beyond PowerPoint slides and informational videos (Beer et al. 2016). One example of this type of interactive training experience comes from international hotel chain Marriott, which offers potential hires access to a 'My Marriott Hotel' online game[7] that challenges users to build their own restaurant, from purchasing ingredients and hiring employees to keeping guests happy, all scored with points and with the goal of making the restaurant profitable (Marriot Blog 2011). Such training is both interactive and flexible. Having the module available online lets users learn at their own pace.

Better assessed training evaluates employee participation and learning in real time, facilitating ongoing feedback and embedded mechanisms for targeted support. For example, MasterCard, a global company with a diverse employee population, transitioned its sales training boot camp from 'training in a classroom…with a packed itinerary spanning from 8am to 5pm' into online webinar courses (WalkMe 2017). However, this method still was not optimal because, without face-to-face interaction, there were no metrics to determine how much employees learned, or even if they were paying attention. A 'learning pathways'

[7] See http://www.blogs.marriott.com/marriott-on-the-move/2011/06/get-a-taste-for-what-it-takes-at-my-marriott-hotel.html.

program on an LMS helped employees choose learning modules at their own pace, but it was complicated to maintain and use. Thus, MasterCard's current system embeds training materials directly in the company's sales software, allowing training to reflect actual workflows, offer guidance in real-time as employees used the program, prompt check-ins and quizzes as refreshers, and collect data on performance so employees could improve (WalkMe 2017). Better assessed training also helps to encourage a culture of learning within organizations. In 2015, HP launched a new learning platform called 'Brain Candy,' and crowdsourced employee feedback to assess its utility and relevance. This helped to generate excitement about a new learning system and ensured it was crafted to meet employee needs (Steinhage 2018).

Considerations for Employers and Governments

The examples above are drawn from firms that are truly at the frontier or at least are considered good practices. However, training systems are often not this sophisticated, particularly in lagging regions and in SMEs. For example, a study of SMEs in Poland found that such firms are less likely to offer training. When asked why, these employers cited 'no time,' too expensive,' and 'no need' as the main reasons. Just 23 percent of smaller enterprises and 33 percent of medium enterprises reporting having completed 'major training activities' in the year prior to the survey (CVTS 2005). Employers with few resources and incentives may need additional support to offer training for employees.

Many employers, particularly those in lagging regions, require outside incentives, support, and reinforcement to develop truly frontier-compatible workforce training programs that can sustain a precision training environment. Along with individualized learning and workforce training, the precision training framework includes a third essential 'tool' for creating agile, lifelong learning systems: public-private partnerships. These government incentive structures are crucial to fill skills gaps and reskill workers to lift lagging regions to the frontier. Chapter 4 provides a comprehensive overview of types of PPPs.

In seeking to support innovative training at work, governments can facilitate connections and cooperative training agreements. These can take place between large businesses and sub-contractors, among SMEs, or between education and training organizations. For example, in South Korea, the Human Resources Development Service (HRD Korea) connects apprenticeship programs with SMEs seeking skilled workers. Similarly, Skillnet Ireland groups companies in the same industries and with similar training needs and then provides these groups subsidized training programs for their teams. In Chicago, the City Colleges College to Career Program (C2C) sets up partnerships between community colleges and industry leaders, which provide students with practical experience and helps to align schools' curricula better with the needs of current employers. Governments can also support connections among initiatives that advocate for innovation in skills development. Austria, for instance, created the KPlus Competence Centre Programme in the 1990s. It is jointly funded by the government and private enterprises and works to increase science-based innovation by funding grants to research institutions and their industrial partners. This program helped

Austria grow its knowledge economy and increase its national research and development target of three percent (more than many neighboring countries).

Governments can also work to eliminate barriers to workplace training. This might involve: providing financial support to employee training through mechanisms that work well in the context (for example, sector levies, subsidies, tax deductions, earmarked funds, vouchers, grants, and individual learning accounts); improving firm capacity to deliver training; working with firms and unions as in Costa Rica;[8] working with sector-specific employers as in India;[9] and creating more flexible learning pathways[10] to allow learners to combine formal education, workplace training, and non-traditional learning more easily,[11] thereby promote flexible work and education arrangements so that employees can more easily engage in training.

Examples of Good Practice

Cleary, Europe has reason to be concerned with the geographic overlap of economically lagging and skills-lagging regions. This poses two questions: what is the role of workforce skills in regional development and cohesion and how can workforce skills development boost lagging regions? This section explores some examples of good practice that provide tentative answers to these questions.

Classification of Regional Development Programs

While regional development programs are common in many countries, information on those that target developing workforce skills is relatively scarce. However, this section identifies regional skills development initiatives from both European and OECD countries and maps them to a multi-dimensional plane that categorizes their program characteristics on three separate axes: geographic scope, program focus, and participant profile. Regional development programs can be organized to target inter-provincial, provincial, municipal, and township-based geographic regions. The size of interventions mostly depends on administrative objectives and capacity, as well as a need to optimize program effectiveness for given geographic regions. For instance, youth skills development programs in Slovenia and apprenticeship programs in Turkey are implemented beyond provincial boundaries at the inter-provincial level. Conversely, Malmö, Sweden's 'Vision 2015' and Poland's Dolnośląski Regional VET programs are more contained, focusing on meeting specific municipality skills development demands.

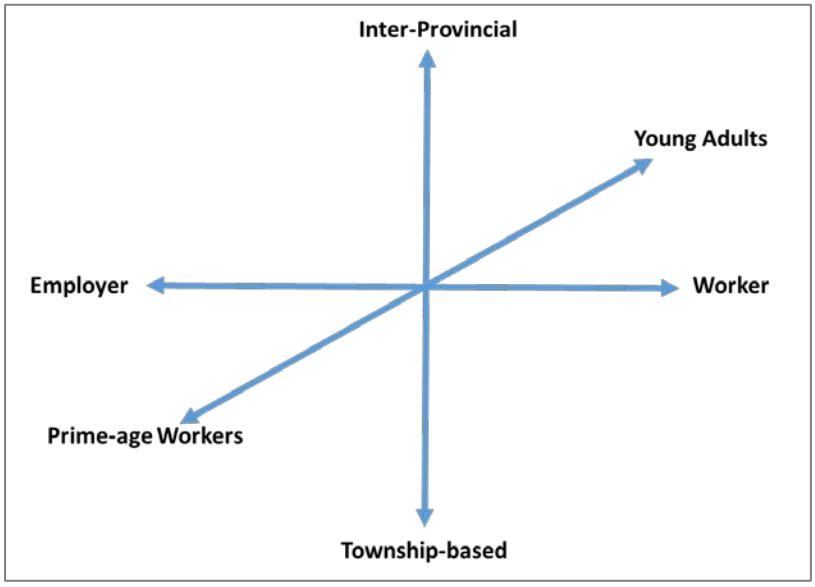
Skills development programs can have different focuses, depending on program design. This differentiated program emphasis often occurs along a continuum between focusing more on

[8] See http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_547528.pdf.
[9] See https://www.weforum.org/agenda/2014/09/ten-ways-countries-can-improve-competitiveness/.
[10] See https://dev-edcentral.pantheon.io/speaking-career-pathways/.
[11] See http://www.cedefop.europa.eu/en/news-and-press/news/learning-while-working-how-skills-development-can-be-supported-through-workplace.

employer-needs (employer-centric) or prioritizing worker-needs (worker-centric). In some regions, such as in Malmö, Sweden and Poznan, Poland, regional skills development programs are designed with the objective of jumpstarting employer involvement in workforce skills development. In other regions, such as in Choctaw, Tennessee, and New York City in the United States, emphasis is placed on assisting workers in skills development and use. Programs can also differ in their target participant profile, which in broad terms, can focus either on new labor market entrants (human capital flow-focused) or on jumpstarting skills development for prime-age workers (human capital stock-focused).

On these three separate dimensions, regional skills development programs have the promise of meeting heterogeneous local skills demands effectively and providing timely skills upgrading opportunities (illustrated in Figure 19).

Figure 19. Multi-dimensional foci of regional skills development programs



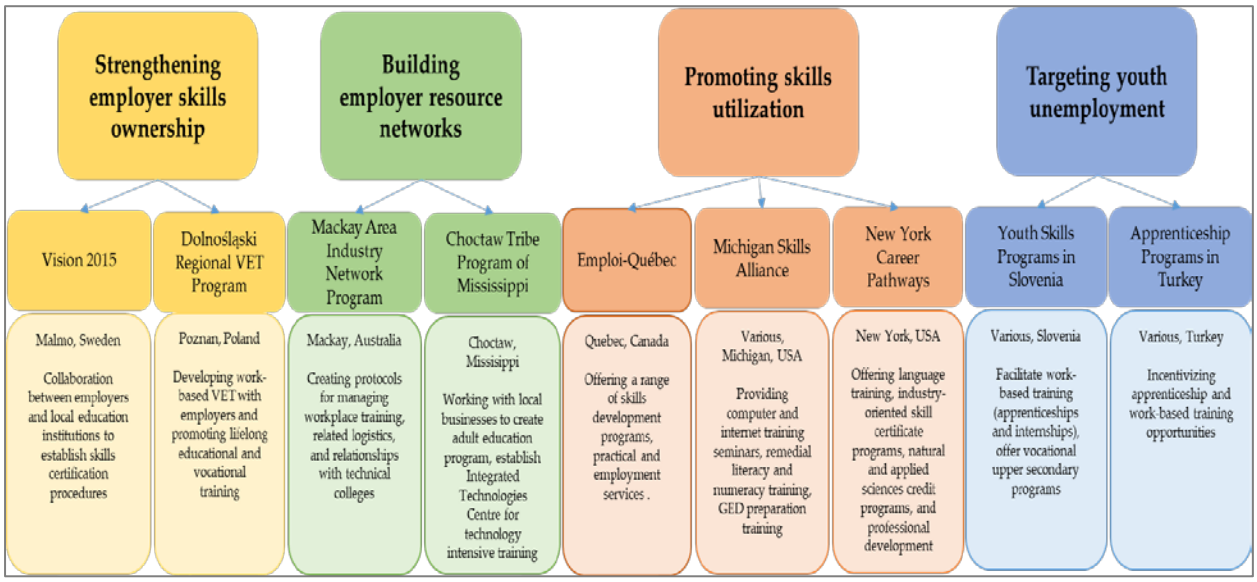
To identify viable entry points for emerging skills development programming, a crucial task is mapping the relationship between local skills context and demands. This requires convening various stakeholders, including the public sector, private sectors, and workers, to identify existing workforce skills gaps and agree on future skills development priorities. Targeted strategies will be very different depending on locality. For instance, in Slovenia and Turkey, where solving youth unemployment is a high priority, regional skills programs often prioritize investing in new labor-market entrants, whereas in the North American contexts of Michigan and Quebec, the programming focuses are more age-inclusive. Programs can also prioritize employer-side interventions, such as those in Mackay, Australia and Malmo, Sweden, or implement policies that are more focused on workers, such as in New York.

Although evidence on regional skills development interventions is limited, some successful program principles are consistent. These principles are drawn where possible from program evaluations, but, given the shortage of rigorous research, are also taken from existing reviews of regional skills development programs, such as those published by the OECD and European

Commission. While spatially differentiated approaches are necessary to meet individualized needs of localities, four common themes emerge for programs to be successful:

1) Strengthening employer skills ownership;
2) Building employer resource networks;
3) Promoting skills use;
4) Targeting youth unemployment.

Figure 20. Common themes across existing regional skills development programs



Strengthening Employer Skills Ownership

Incentivizing employer participation and ownership of workforce development lies at the heart of the precision training agenda. From the demand-side, employers are more agile and better positioned to deliver skills upgrading opportunities, as most of the existing workforce already works for employers, and they are more sensitive and adaptive to shifting market trends. Thus, encouraging and strengthening employer ownership of workforce skills development is crucial to deliver contextually meaningful learning opportunities. Employer ownership of worker skills development requires substantive engagements at the vision, design, execution, and evaluation level.

For example, Malmö's 'Vision 2015' strategy benefits from a high level of direct involvement and cooperation between local and municipal education officials, labor exchange offices and employers. As part of Vision 2015, the local education and training system for disadvantaged groups was re-orientated towards a more bottom-up approach, involving employers first. This strategy to prioritize employer training involvement is one key aspect of provisioning precision training. To start, there was a move to create a 'one-stop shop' approach for different target population groups. Whereas before, different public-sector organizations (state and municipality) handled the same target groups differently, using a variety of approaches, authority was passed on to a local organization with a single broad workforce management framework – leaving very little room for employer engagement. Now, a consolidated

partnership is established to coordinate training efforts aimed at skills upgrading. Simultaneously, by involving firm-level training expertise, the city moved from an occupation-based, standardized, and time-fixed training system to individual needs-based learning comprised of formal training, on the-job training, or regular work experience, modular courses – improving the precision of workforce training.

In the case of Poznań, Poland, a city with the second highest income after Warsaw, the Dolnośląski Regional VET Program provides a good example of workforce skills development by improving substantive coordination and engagement with VET partners in the region, which requires the establishment of a good partnership infrastructure among various service delivery entities, securing roles and responsibilities of different key actors, and program implementation in a planned and systematic manner based on employer needs. These partnerships are established with special consideration of the local labor market structures and create ample room for locally-driven employer engagement and training provision to better fit local needs for economic development.

Building Employer Resource Networks

In most workforce development scenarios, employers remain an untapped resource. Too often, the public-sector relies on manpower-planning and implements supply-side active labor market programs (ALMPs), which have shown limited impact. By contrast, precision training focuses on leveraging the huge potential from partnering with employers and working from the demand-side. Synthesizing the comparative expertise and extensive practical experience that employers bring to workforce development presents a promising approach to rethinking workforce development and training. To this end, building networks of employers and aggregating firm knowledge in different segments of skills upgrading pipeline can fill existing information gaps, provide viable alternatives, and amplify program impacts.

In Mackay, Australia, where mining and sugar production are the main contributors to the economy, recent efforts to develop industry cluster networks have shown promise in addressing workforce skills shortages. The 'Mackay Area Industry Network' (MAIN) is a private-sector driven workforce development skills strategy that focuses on building a 'consortium' of employers and educational institutions, and leverages support from government and partners with industry, result in recruiting new apprentices, managing apprentices and trainees in the companies, and skills upgrading for the workforce. The broader MAIN 'consortium' network comprises of the Australian Industry Group, the Mackay Regional Development Economic Corporation (REDEC), 17 DETA and TAFE Technical Colleges. Such wide-scope collaborations between partners illustrate the range of possibilities in leveraging industry and employer resources in delivering agile, adapted, and precision-minded training that most fit the labor market skills demand.

Located in a relatively low-growth, low-income region within the state of Tennessee, USA, the Choctaw Tribe Program works closely with firms and uses employer networks to routinely assess the types of skills needed for current and prospective employers and refit

training programs to ensure these market needs can be addressed. In the past, regional labor market demands were mostly led by manufacturing firms, but more recently, the tribal governance has worked actively with different partners to support a broad transition towards technology intensive production, especially those requiring higher-levels of worker skills. Such a transition would not be possible without the employer resource network infrastructure that has been put in place to encourage information and curriculum sharing, as well as team-learning and needs assessment. By building these extensive employer resource networks, the tribal governance office can routinely assess the types of skills needed for current and prospective employers and work with training programs to ensure these needs can be met.

Promoting Skills Use

The promise of precision training cannot be achieved if workers are not using their skills meaningfully on the job. Therefore, combining skills training and skills use in workplace settings is important to translate learning gains into increased productivity. Traditional training approaches are often more concerned with curriculum design and delivery, but few pay attention to fostering worker skills use post-program on the job. Importantly, human capital investments depreciate over time if not maintained and used in meaningful ways, which creates concerns over frequency of skills use during and after training participation.

In Montreal, Canada, Emploi-Québec is a regionally-organized initiative that offers a comprehensive range of skills-related training services with the core objective to meet skills needs of prospective trainees. Workers on the program are profiled and matched with the appropriate training and firm to ensure that skills acquired are maintained and used meaningfully. Throughout the training program, workers are monitored by their designated program advisor on their skills development progress, paying attention to skills use.

In Michigan, USA, the Michigan Regional Skills Alliance (MiRSA) partners with employers to increase worker training effectiveness and efficiency by building team-like learning transition environments between training facilities and employers with a common focus on increasing skills levels and use. A key feature of the regional skills development program is that it functions as a workforce intermediary in promoting customized sector-based skills upgrading and training partnerships for workers and follows individuals through skills acquisition and use.

In New York City, USA, the NYC Career Pathway program focuses on placing worker trainees in workplace learning settings and ensuring practical learning on the job. By giving the workplace a central role in training and learning, the program promotes better transition to the labor market. Additionally, multiple entry and exit points along 'career pathway' have the flexibility to meet diverse skill levels and job needs, from those needing some combination of language, occupational, and basic skills development to access entry-level employment to incumbent workers needing additional skills or education to advance to higher-level positions.

Targeting Youth Unemployment

Regional skills development programs targeting youth unemployment also show promise of affecting positive change and playing a central role in putting lagging regions back on the convergence path. While formal workplace training has been shown to benefit firm productivity and worker earnings, youths across most geography regions are unlikely to receive such training, thus missing the opportunity to benefit from career boosts that come with increased skills proficiency. Thus, comprehensive skills programming that targets youths can fill important workforce development gaps and provide effective solutions to the youth unemployment crisis present in many lagging regions. To reach and meet youth, though, programs that target youth unemployment must profile youth needs and tailor training solutions to fit diverse youth populations.

In Slovenia, where raising sub-national growth and income levels has become a challenge, youth unemployment has added another layer of complexity. Many young people leave the formal education system prematurely without the skills needed to participate meaningfully in the labor market. Further, once they are in the labor market, few skills development opportunities are available. As a solution, the Slovenian Institute for Adult Education (SIAE) partners with local employers and public-sector organizations to offer special training for young adults, some of which are based in inter-company training centers (MIC – Medpodjetniški Izobraževalni Center). These training programs develop both non-formal and formal education suitable for on- and off-the-job learning and focus on improving foundational skills such as adult literacy. They also seek to improving access to training opportunities for vulnerable or marginalized groups of young adults.

In Turkey, there is high policy demand to place young people into jobs. From a governance perspective, policy makers are interested in mitigating the mismatch between education systems and the labor market, empowering youth with skills to find and stay in employment. The Turkish Public Employment Agency collaborates with multiple partners at the inter-provincial level to offer youth employment programs and coordinates youth-employment skills programming. Programs focus on increasing the number of career counselors for young people and building employer partnerships to better match job seekers to employers. During implementation, the Turkish Public Employment Agency also solicits suggestions from Provincial Employment and Vocational Training Boards to make improvements to youth employment training courses and other skills programming details.

The above is a sample menu of viable workforce skills solutions to help jumpstart the EU regional development agenda through an emphasis on workforce skills. The objective is simple and clear. Workers are at the core of all business and investing in their skills is no different from investing in any other factor of production. Workforce skills act as the pivotal connector in productivity improvements and are the crucial link to realizing potential of all other forms of factor. Workforce skills gaps remain a major constraint placed on many lagging regions in Europe and leveraging successful skills development experiences can help to rethink the role of workforce development in boosting lagging regions and may also reshape

future investment priorities in the EU in delivering precision training to prepare workers for production at the frontier.

Chapter 4 – Examining PPPs: Innovating Governance and Incentives in Training

Exponential technological progress and changes in workforce demands have come at a time when the labor market has, in many ways, failed to deliver pre-employment and employment training opportunities to workers of varying skill levels. The reasons behind these market failures include imperfect credit markets that make firms and workers less willing to engage in training because both must pay most of the cost out-of-pocket and up front (Almeida and Aterido 2010), lack of coordination in training provision where individuals and employers are often mismatched (Almeida, Behrman, Robalino 2012), and the theory of poaching, which suggests that it does not benefit firms to provide workers with skills that can be transferred from job to job because employees could easily leave for better employment opportunities. Fear of poaching has, in turn, left a skills gap due to many employers' reluctance to provide training opportunities to staff. Another market failure is labor market immobility, in terms of which employees cannot move to where their labor is needed, whether this is due to geography, industrial specializations (which mean that skills are not transferable between industries), or occupational immobility where workers cannot change jobs within their industry (Economics Online, 2018).

Rapid changes in labor market conditions, coupled with market failures, provide a context that demands innovation in how workforce training is conceptualized, planned, and conducted. PPPs provide a useful vehicle to carry out workforce training by establishing incentives and governance mechanisms within the precision training framework. In this framework, employers have a comparative advantage in providing relevant, future-facing skills upgrading to employees, while individualized learning opportunities help to address skills gaps outside the workplace. In so doing, PPPs enable partners in both the public and private sector to pool resources to respond to the demands of the labor market effectively (Kruss, Peterson, Fongwa, Tele and Rust, 2017).

PPPs have been structured differently around the world. As a result, diverse definitions of PPPs exist, some of which are contested and refer to differing levels of public and private sector involvement along several dimensions, including financing, compensation, risk, and agreed responsibilities. For example, the South African National Treasury's PPP Unit notes that one definition of PPPs is: 'a contract between a public-sector institution/municipality and a private party, in which the private party assumes substantial financial, technical and operational risk in the design, financing, building and operation of a project' (South African National Treasury in Kruss, Peterson, Fongwa, Tele and Rust 2017: 3). In comparison, the PPP Knowledge Lab (2018) defines a PPP as follows:

> *A long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.*

In some cases, a PPP is conceptualized as an equal sharing of risk and reward between private and public partners, while, in others, any involvement between private and public partners is classified as a PPP. Governments also use the term to refer to an established procurement model that incorporates policy guidance, rules, and regulations. PPPs can be divided into two types: Contractual PPPs (CPPPs) and Institutional PPPs (IPPPs). CPPPs are created based on exclusively contractual relationships between partners (or concession contracts), while the IPPP entails participation of the private sector partner(s) together with the public one(s) in a joint capital entity (a joint venture or business enterprise). Although there are numerous definitions of PPPs, most possess common characteristics. These include:

- A formal relationship between two or more partners, often by way of a contract, in which there are defined outcomes or results to be delivered within a specified timeframe.
- A private sector partner that typically invests in a capital asset or provides a public service and is responsible for maintaining and operating it over the life of the contract.
- A focus on services provided and not on assets used.
- An element of risk-sharing between the private and public partners. Because the project is shared, risk and reward are also shared.
- An element of risk transfer in which risks traditionally borne by the public sector are transferred to the private partner. The allocation of sizable elements of risk to the private partner is key in distinguishing a PPP from more traditional public-sector models of service delivery (Deloitte 2010).
- Often, an agreement that government assets are to be transferred or made available to the private party.
- Financial rewards provided to the private partner, corresponding with the achievement of predetermined outputs (Neil Butcher and Associates 2015).

Background

The term *training*, sometimes known more specifically as *Technical Vocational Education and Training (TVET)*, as used in this chapter, refers to a sector within the broader educational system that is specifically concerned with the acquisition of knowledge and skills for the world of work (UNESCO-UNEVOC 2017). It includes 'education, training, and skills development relating to a wide range of occupational fields, production, services, and livelihoods' (UNESCO 2015: 2). Training incorporates the concept of lifelong learning and can occur at various levels of education, including secondary, post-secondary, and tertiary, as well as workplace training and continuing training and professional development. Training encompasses a 'wide range of skills development opportunities attuned to national and local contexts. Learning to learn, the development of literacy and numeracy skills, transversal skills and citizenship skills' (UNESCO 2015: 2) are all essential elements of this.

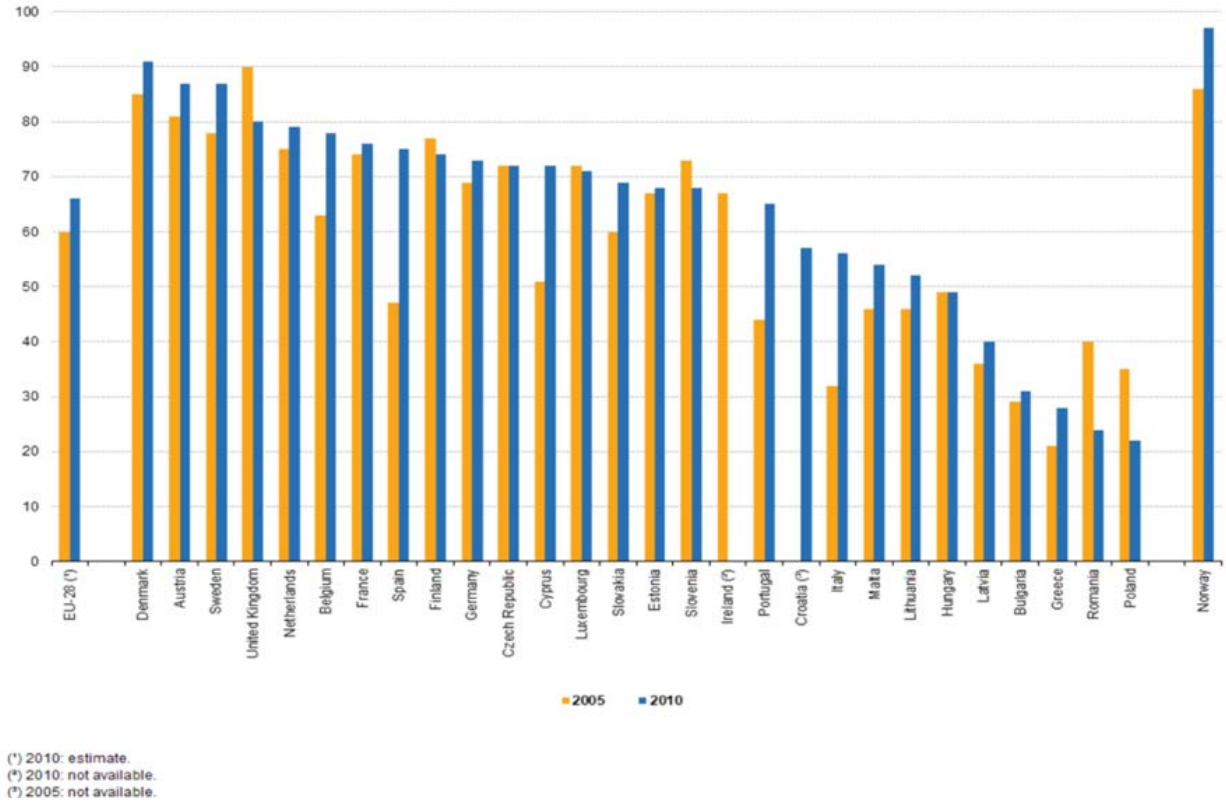
It is important to note that what this section refers to as TVET can extend beyond what is typically understood as 'vocational' training. Vocational training can refer to the frontier-compatible skills discussed in previous Chapters. It can provide a means of reducing regional

inequalities and assisting lagging regions in preparing for the frontier by equipping their workforces with the skills that will be required on the frontier. As has been explained, investment in workforce skills development can provide countries more opportunities to invite and benefit from investment opportunities. It can also lead to advancement of business environments that are responsive to change and supportive of growth.

Demography and changes in job content demonstrate the relevance of continuing vocational training in a shifting labor force. Targeted reskilling and upskilling of the workforce is expected to aid Europe's aging labor force to adapt to changes brought about by technological advances, growing mechanization of many jobs, less structured types of work organization, innovative procedures, regulatory changes, and the need for environmental sustainability.

According to the European Union, nearly a quarter of enterprises in the Europe-28's economy provided Initial Vocational Training (IVT) in 2010, although there was great variation in the percentage between countries. Interestingly, only five of the 27 EU states with training data reported IVT training above the Europe-28 average, 'with around a third of all enterprises in and the Netherlands providing IVT, around one half in Austria and Denmark, and more than three fifths in Germany' (Eurostat 2017). In addition, 2015 results indicate that 47.3 percent of upper secondary school students in these countries were enrolled in vocational programs (Eurostat 2017).

Figure 21. Percentage of enterprises providing continuing vocational training, 2005 and 2010



(*) 2010: estimate.
(*) 2010: not available.
(*) 2005: not available.

Lagging regions stand to gain by improving the quality and quantity of Continuing Vocational Training (CVT) programs, and PPPs can play an instrumental role in fostering

improvement in CVT. PPPs have served as a vital component of workforce training and skills development for decades. They provide a workable solution for the frequently noted disconnect between training and workforce skills that are required by businesses. Numerous countries have used PPPs to transfer skills between the private and public sectors, thereby making training more relevant and producing graduates who are well prepared for the workplace. Examples range from career academies in the United States and Brazil to the well-known dual-system in Germany, and industry-specific cluster PPPs in countries such as Thailand and Bangladesh (Amornvuthivorn, 2016). Another reason that PPPs that incentivize training are important is that these partnerships can encompass and contribute to all elements of workforce skills training, including 'financing, infrastructure, quality, in-service training of instructors, establishment and review of vocational trades, and technical courses' (Sharma 2015:1).

Case Studies on the PPP Continuum

Table 1 summarizes selected examples of PPPs in training. Appendix B contains detailed case studies of these programs.

Table 1. Selected examples of PPPs

Name of PPP	Country(ies) of Operation
Nestlé Needs Youth	Multinational- Europe
The Institute of Technical Education (ITE)	Singapore
Väśtkraft Partnership	Sweden
The Career Academies Programme	United States of America
Mubarak-Kohl-Initiative	Egypt
Higher Technical Institutes (HTI)	Italy
Coop Food School	Denmark
Workplace-oriented qualification for unemployed (AQUA)	Austria
Proactif	Luxembourg
Step Ahead	Slovakia, Czech Republic and United Kingdom
Educate for Business	Latvia and Lithuania
Regional pacts for employment and social inclusion	Romania
The Introduction of Cooperative Education and the Reform of Training	Serbia
Munich Employment and Qualification Initiative	Germany
Techwise Twente	the Netherlands
Swiss-South African Cooperation Initiative (SSACI)	South Africa
Skillful	U.S.A.

Creating a Conceptual Framework to Organize Different Programming Approaches

There are hybrid PPP models within workforce training all around the world, and classification of different types of PPPs within the training sector varies. According to Latham

(2009), there are seven broad types of PPPs within the education sector. These types have been adapted for the purposes of this study:

Table 2. Types of PPPs in the Education Sector[12]

Type of PPP	Description
Adopt-an-Institution Programs	Private sector partners provide financial and in-kind resources to accompany government funding of institutions. The main aim of the training programs is to ensure that quality, access, infrastructure, and community participation are improved within the institution. In these cases, it is common to have a facilitator between the relevant institutions and the adopting body. Examples of these programs include the Philippines and the Sindh Province of Pakistan
Private Sector Philanthropy	One of the main objectives of these initiatives is to increase the number and effectiveness of corporate-sector philanthropy as a means of helping the poor to gain access to good-quality, effective education. Private sector philanthropic initiatives can range from solely philanthropic to those that have a profit element although overarching all of them is the aim to create sustainable models for education reform in the developing world through PPPs.
Capacity-Building Programs	In these programs, the private sector partners support public training institutions in a number of areas including curricular and pedagogical, managerial and administrative training, textbook provision, teacher training, and quality assurance.
Outsourcing of institutional Management	These initiatives rely on public-sector authorities establishing contracts directly with private providers to operate public institutions or manage aspects of public institutional operations. While these institutions are privately managed, they are publicly owned and funded. Often, there is a management contract that details the partnership such as the performance targets, accountabilities, timeline, and arbitration procedures.
Government Purchasing Programs	One characteristic of these programs is that the government contracts with private institutions to deliver education at public expense, often in the form of a subsidy per student enrolled in an accredited or eligible private institution.
Voucher Programs	Voucher and voucher-like initiatives also involve government funding of students so that the students can attend private institutions. However, one difference from Government Purchasing Programs is that the transaction involves a voucher–a document or entitlement that the student can use to pay for their education.
Institutional Infrastructure Partnerships	These initiatives involve the design, financing, constructing, and sometimes operating of public institution infrastructure under long-term contracts by private sector parties in partnership with the government. Essentially, under these infrastructure PPPs, the government leases a facility that has been financed, built and operated by the private operator while the government continues to retain its responsibility for the delivery of the core educational service provision.

[12] Adapted from Latham, M. (2009:3-4).

In addition, USAID (2014) provides three technical training models based on type of funding, all giving expression to different forms of PPPs and the levels of government involvement they entail. First, in the *state-regulated bureaucratic model* (examples include programs in France, Italy, Sweden, and Finland), national education systems 'define, provide, and finance training. PPPs with firms, industries, and labour unions operate, for the most part, on a consultative level' (USAID 2014: 4). Within the state-regulated model, training is usually an extension of the national education system and has historically underperformed because of theoretical curricula and students' inadequate exposure to the workplace with on-the-job training. The national curriculum determines the content of the courses, but often fails to reflect the realities of local labor demands (USAID 2014:4).

Second, in the *dual system model* (seen, for example, in Germany, Austria, Switzerland, Denmark, and Norway), design, development, and implementation of training all involve many public and private stakeholders. This might include trade unions, state agencies, and NGOs. The dual system is characterized by strong collaboration between private and public partners; 'enterprises finance apprenticeship training and state agencies finance the vocational training schools' (USAID, 2014:4). PPPs form 'intermediary' institutions. They are independent of both the state and private companies but regulate vocational education qualifications. These PPPs ensure stability of training during economic change and serve to limit the control that the state and the market might have on the training system. The main shortcomings of this model are the finite number of apprenticeship openings in firms and the high cost of vocational education in comparison to general secondary education (USAID, 2014). At the heart of the German dual system is a delegation of responsibility for curriculum and assessment to a coalition of labour representatives, businesses, and educators. Factors that facilitate the dual system include:

1. A legislative framework that requires firms to invest in training of newly hired workers;
2. A funding mechanism through a combination of federal, regional, and business spending;
3. The capacity to carry out job analysis and curriculum development;
4. Local institutions that represent the interests of businesses; and
5. Trained professional instructors and administrators (Hawley, nd:3).

Third, the *volunteerism model* focuses on workplace training and apprenticeships, often paid for by the private employer or firm. The British model, for example, engages private employers who voluntarily carry out workplace training and apprenticeships. This model is greatly dependent on companies' willingness to participate in and bear the expenses of training programs. As a result, the number of apprenticeships in Britain has steadily declined. Volunteerism has proved challenging in several industries, and, in recent reforms, the British government has begun to promote this kind of training and human capital investment in small business and for adults transitioning to new career pathways. Britain has subsequently implemented special programs using vouchers to underwrite private training for key target beneficiaries. These programs have investigated ways of promoting public-private solutions

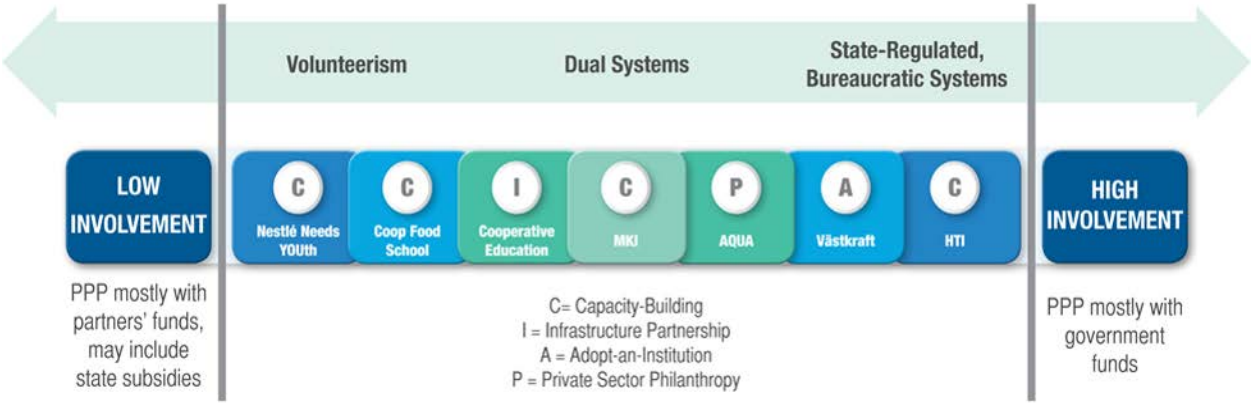
in a market-led model (Cuddy & Leney, 2005). Because broader professional degrees and certifications receive less emphasis in this model, it is not clear whether skills learned in one company would be applicable in another company or professional setting (Cuddy & Leney, 2005; USAID, 2014: 5).

Governments can participate in funding PPPs by providing debt, equity, or guarantees. This can either occur directly or 'through government-owned financial institutions such as development banks and pension funds' (World Bank, the Asian Development Bank (ADB) and the Inter-American Development Bank (IDB) 2014: 53). There are many reasons governments might choose to finance or co-finance a PPP, including:

- To avoid excessive risk premiums that are charged by the private sector
- To mitigate government risk by providing upfront payment or subsidies instead of ongoing payments
- To improve availability or reducing cost of finance, particularly in contexts where capital markets are underdeveloped, so governments choose to provide financing on terms that would otherwise be unavailable (World Bank, the Asian Development Bank, & the Inter- American Development Bank 2014).

Drawing on these models, it is possible to construct a continuum of government engagement in PPPs, which indicates varying levels of government involvement (Figure 22).

Figure 22. Continuum of government engagement levels in PPPs



On one end of the continuum sits the state-regulated, bureaucratic model. Here, the focus is on workforce development through government policy and influence. As a result, the government has an important level of involvement in all aspects of training, including funding, implementation, and monitoring. Examples of these types of PPPs exist in France, Italy, Malaysia, Singapore, and Sweden. The dual system, which involves numerous actors from both sectors, would primarily be situated at the center of the continuum, as these systems typically involve moderate to high degrees of government intervention. Volunteerism is more likely to fall on the other side of the continuum and can be found in countries such as Britain, Japan, and the United States. This model is less reliant upon government intervention and largely depends on private companies volunteering to participate. These systems are

sometimes blurred, so the characteristics of some PPPs can fall into more than one system, depending on how the given country's education system operates and how training occurs.

Benefits of PPPs

Partnership examples find expression in many ways, including direct government interventions such as mandating payback clauses and apprenticeship contracts, issuing training certifications, providing tax incentives, or improving access to training provision through channels such as unionization and enforcement of minimum wage policies (Brunello & de Paola, 2009). More complex and structural partnerships often take the form of sectoral or industry partnerships (King, 2014). These types of programming approach play a prominent role in workforce skills development because they meet the staffing needs of multiple employers at once, thereby reducing individual employers' transaction costs associated with searching for qualified workers and training new staff.

Box 4. Mubarak-Kohl Initiative

The Mubarak-Kohl Initiative (MKI) adopted a customized version of the German Dual System, which concentrates on a combination of on-the-job learning and classroom learning to train students for the workforce. The Initiative was a bilateral development program between the German and Egyptian governments, which involved the business community in planning, implementing, evaluating, and accrediting vocational training in Egypt (Balasundaram, 2015). MKI was aimed at students who had finished their basic education and had been admitted to Technical Secondary School (TSS).

As of 2009, the Initiative had achieved the following:

- Expansion of MKI-DS from an initial 3 city sites to its coverage of 22 out of Egypt's 27 governorates;
- From just a few to 76 technical secondary schools identified as MKI-DS schools;
- 1,900 companies providing training places for students;
- 24,000 graduates with 13% women;
- 13,000 trainees enrolled with 19% women;
- 32 occupational profiles developed with industry input;
- An estimated enrolment of 10,200 in 2010 compared to 5,900 in 2009 (Adams, 2010).

For more information, see Appendix B

Many international organizations endorse PPPs as a means of tackling persistent issues around the world, including access, budgetary constraints, and a lack of competition and incentives in training provision (Verger 2012). Under the correct circumstances, PPPs can provide an innovative solution to these issues by reaching more people and providing a viable source of funding. This became evident in cases such as AQUA, which was funded by local and regional governments and targeted people who would otherwise find it difficult to find employment and training opportunities. The Mubarak-Kohl Initiative, detailed above, was jointly funded by the German and Egyptian governments and had a wide-ranging reach to 76 technical secondary schools, 24,000 graduates, and 13,000 trainees enrolled, 19 percent of whom were women. In addition, a coherent PPP approach can be used to rethink training systems by leveraging, pooling, and coordinating private- and public-sector resources.

Cooperation between public and private stakeholders is a crucial element of connecting the world of learning and the world of work (Fares & Puerto 2009).

Governments around the world have used various employer incentives, including tax exemptions, training levies, and government vouchers, to support their drive to provide placement for apprentice learners (Dunbar 2013). Three overlapping models of training levies exist, revenue-raising, levy-disbursements, and, levy-grants, all of which are used to incentivize employers either to provide workplace training or to contribute to a skills development fund. The Technical Education and Skills Development Authority (TESDA), for example, coordinates training activities in the Philippines. TESDA provides incentives to industry to generate support and commitment by the private sector for 'training, expanding and purposively directing scholarships and other assistance to fund the development of critical and hard-to find skills, higher technologies and to incentivize the Technical Vocational Institutions (TVI)' (OECD 2016).

Another example of a PPP that includes incentives for workplace training is the Work-based Learning System in Korea. This Dual System Programme uses in-company trainers to train workers inside a company rather than a school or vocational training institute. Government and industry both issue certification for the training. The Korean government provides suitable financial incentives for companies to participate in such PPPs. Introduction of a new legal framework by the Ministry of Labor and mechanisms such as the Employment Insurance Scheme have created sustainable incentives for workplace training (Kruss, Petersen, Fongwa, Tele & Rust, 2017; OECD 2016). This example provides insight into how employers might be incentivized to participate in PPPs.

The changing nature of the labor force requires innovative approaches to employment, reskilling, and upskilling. Increasingly, employees require job security and satisfaction while employers seek flexible staff structures that can react faster and more effectively to market opportunities and threats from competitors. Nowhere is this more evident than in efforts to reach the frontier. The requirements from both parties is termed 'flexicurity', which includes, amongst other measures, introduction of flexible and reliable contractual arrangements between agents and implementation of comprehensive lifelong learning strategies during professional life (Arellano, Felgueroso, Vázquez and González, 2008: 2). PPPs offer an innovative solution to providing flexicurity and overcoming the effects of market failures. For example, training and job search programs like the Munich Employment and Qualification Initiative, which focus on disadvantaged groups, overcome the obstacle of exclusion, and allow those who have been pushed out of the job market to re-enter.

Box 5. Nestlé Needs YOUth

Nestlé collaborates with more than 200 companies in a pan-European partnership, all of which have committed themselves to the cause of widening the labor market in Europe. The umbrella partnership between these companies is called Alliance4YOUth and it consults various training institutes and universities in Europe to update curricula, inform them about apprenticeships, set up dual-learning tracks with training institutes, update teaching methods by using multi- and social media, and provide employability trainings at educational institutes to align them with the needs of the private sector. Nestlé has encouraged more than 200 businesses to join its own employment initiative, Nestlé Needs YOUth. Nestlé Needs YOUth offers a work-based learning program that created 20,000 new jobs, traineeships, and apprenticeships for people under the age of 30 between 2014 and 2016. The transnational program focused mostly on improving mobility and developing initial vocational education and training with an emphasis on work-based learning. It also provided employability workshops for young people who were already employed by the company (Vroonhof, Durazzi, Secher, Stoumann, Broek, Haan, van den Ende, & van Loo, 2017).

For more information, see Appendix B.

PPPs are also able to create competition within the market and reduce monopoly over educational provision. As can be seen in the case of Nestlé Needs YOUth's (see box above), plans for expansion indicated that the need for qualified professionals in the industry, together with the goal of reaching thousands of youth through the program, created an environment in which each success was built upon.

Because of the nature of PPP contracts, governments can choose private providers for training services through a process of open bidding. This benefit became evident in the case of Västkraft, which sources training providers through a public procurement process. Choosing service providers allows governments to define specific requirements for the quality of training and level of service delivery for which they are looking (Patrinos, Barrera-Osorio & Guaqueta 2009).

The potential of PPPs to reduce unemployment is key, considering the vast number of youths in Europe who are neither employed nor at school, particularly in lagging regions. Youth unemployment rates are up to double or more than unemployment rates for all ages in the Europe-28 (Eurostat 2018). By upskilling the existing workforce or potential workforce, PPPs can contribute to making individuals more employable. PPPs can also provide a viable option for workforce development in future because, when carried out effectively, they can be inclusive and comprehensive mechanisms for skills development that produce well-rounded individuals who can contribute effectively to the workplace.

PPPs are also able to hold partners accountable through contracts to ensure that high quality training is provided, which in turn can help companies reach the frontier. Hyundai, for example, offers most of its training through the Hyundai Heavy Industries Technical Education Institute (see Appendix A). Under a government-sponsored program called 'National HRD Consortium', Hyundai provides training to employees of SMEs. The tri-partite

agreement allows SMEs to participate in workforce training and actively select trainer companies, training programs, and trainees. Hyundai provides training (using national competency standards) and career counseling to those selected by SMEs. Government covers the costs of training, including equipment, consumables, and other operational costs. In addition, the company participates in the 'Work-Learning Dual System', a government-sponsored program for youth apprentices that provides structured education programs based on national competency standards. These kinds of efforts ensure consistency in the type and quality of training provided; they can be used as a tool to help companies reach the frontier by teaching requisite skills in a structured environment.

Lagging regions could benefit from the introduction of PPPs and associated networks as such partnerships can help to build a workforce that is highly skilled and proficient in 21st century skills, including digital literacy, critical thinking, and teamwork. PPPs also provide a viable option for workforce development because, when carried out effectively, they can be inclusive and comprehensive mechanisms for skills development that produce well-rounded individuals who can contribute effectively to the workplace. Precision training can be used as a method within this context, as targeted technology like data analytics can identify opportunities for individuals or groups in lagging regions according to skillsets and positions in the life cycle. These individuals' skills could then be upgraded according to their locations, needs, and preferred learning format.

Challenges in Implementing PPPs

Implementing PPPs to train workforces in lagging regions with frontier-ready skills clearly comes with extensive benefits, but there are also challenges. For example, models that work in some contexts are not always workable in others. However, adaptation of specific models to suit local contexts can prove effective. This is evident in the introduction of Cooperative Education and the Reform of training in Serbia, which borrowed from the German dual model but adapted it to fit local circumstances.

Another challenge is that PPPs encourage privatization of training. The issue here is twofold. First, privatization could lead to exclusivity and a lack of access. Second, government has less control over the quality of training when it is privatized. One might argue that standardization of education through government processes ensures that students are equally equipped with workforce skills, whereas privatization leads to unequal distribution and adoption of workforce skills. In the same vein, PPPs could potentially lead public education authorities such as Ministries of Education to lose some control over workforce skills development. The formation of a PPP can also result in a lack of accountability to the public.

Poorly-designed contracts can expose the government to financial and performance risks (Latham 2009). This is a significant risk when considering public spending and the need to provide an acceptable quality and level of training.

Workplace training is largely seen as a valuable means of strengthening and upgrading relevant skills. When instituted effectively, research indicates that these programs can boost

productivity by more than ten percent (De Grip & Sauermann 2012). However, as observed in Part 2, companies can be reluctant to provide workplace training. This might be for financial reasons, as training workers regularly can be expensive and costs productivity time. However, with the right legal frameworks in place, PPPs can incentivize private partners into upskilling their employees by providing financial incentives such as tax exemptions or government vouchers. Companies are also far more likely to provide continuous training for workers who they believe are more likely to stay at the organization, as employers rarely want to incentivize mobility. But with the rise of increased part-time, informal, and gig-based employment, firms in some industries do incentivize mobility, are more likely to be faced with low worker retention and are therefore unlikely to invest in training. This issue has been highlighted, for example, in the German continuous training system (USAID 2014). Over the short- to medium-term, lagging regions will continue to face a substantial stock of low-skilled workers and the challenge of upgrading their skills. For these individuals, skills development often occurs through workplace training or in ALMPs which, as recent evidence suggests, have little to no impact on worker or firm outcomes (Card, Kluve, and Weber 2015). These conventional training arrangements have been mostly top-down, cookie-cutter, and system-design-based. They tend to drain public sector capacities, take too long, and have little impact that translates into program offerings, implementation, and results (McKenzie 2017).

Considerations for Successful Implementation

Even while facing these challenges, governments can take steps to maximize their chances of PPP success. While this technical note does not provide specific policy recommendations or operational guidelines, we call attention to four strategies for governments to consider.

First, governments would do well to *weigh risks and rewards* when considering which type of PPP, they might form with a private partner. They must determine what level of risk they are willing to take on, relative to the goals they hope to achieve. Factors to consider include rapid changes in technology; changes skills requirements and demands; continuous national curriculum reforms; increasing competition; and intangible and uncertain returns on investment. Greater government involvement means that the government shares greater risk, but also that the reward can potentially be greater (Pillay & Hearn 2010).

Second, governments should judiciously *compare formal and structured modalities and informal and unstructured modalities*. The level of structure that a government desires in the partnership is directly related to risk, in that a lack of monitoring and regulation in the procedure used to select and carry out a project with a private partner could mean that the PPP uses resources without providing the necessary outputs (Pârvu & Voicu-Olteanu 2009). Thus, a government needs to consider their relationship with the private partners, how they would like it to function, and what kinds of regulations are or should be in place to ensure that all parties are held accountable.

Third, determining the right *funding mechanisms* is another crucial consideration. Government funding can range from providing initial funding at the beginning of the project to

contributions of resources in kind throughout the project. Much of a government's involvement depends on the funding mechanisms that they would like to use; greater involvement and control lies within a state-regulated, bureaucratic model, while less government involvement and control over activities and funds can be found in volunteerism.

Fourth, the *context of implementation* matters. Countries are highly varied in terms of economic capacities, social configurations, and legal structures and not all country contexts suit PPPs. In some cases, there are potentially less costly approaches to public and private sector collaboration, which might provide better or more viable options than a new PPP (Asian Development Bank, 2008). Hence, the type of PPP that a government decides to use in workforce training should be based on the government's assessment of its desired and most suitable role in workforce training, measured against the relative costs and benefits of private involvement in the sector (Neil Butcher and Associates 2015).

From the list of cases examined (see Appendix B), it is apparent that certain PPP models may fit specific levels of government readiness and country contexts. The volunteerism model, for example, is characterized by a strong private sector. In some cases, a government's willingness to facilitate training through mechanisms such as vouchers allow the private sector to take the lead in training, while, in others, the onus is on the private sector to fund and resource training initiatives. Within this model, private sector philanthropy and capacity building programs have seemed to work particularly well, as was seen Nestlé Needs YOUth, where Nestlé has taken the lead in designing and implementing a capacity-building program. Coop Food School in Denmark also provided an effective capacity-building program. Seeing as the countries of implementation varied greatly in these two cases, ranging from North African countries to Europe, no strong conclusions can be drawn about which countries are best suited to a volunteerism model. What can be ascertained, however, is that successful PPPs using the volunteerism model have strong private partners but most importantly, private companies need to be willing and must have the requisite resources to participate in the PPP.

Similarly, the dual system sees strong collaboration between private and public parties and is more suited to environments in which design, development, and implementation of training programmes can be overseen by all stakeholders. The Mubarak-Kohl Initiative (MKI) adopted a customized version of the German Dual System, which focused on a combination of on-the-job learning with classroom learning to train students for the workforce. Here, The Ministry of Education would grant a three-year diploma, while the relevant business would provide a certificate for proof of practical training. Customization of the dual system to fit the Egyptian context indicates that the dual system is adaptable to environments where there is strong collaboration between partners. Moreover, PPPs in the dual system appear to be more resilient during times of political or economic change because they form separate entities from private enterprises or governments.

Finally, the state-regulated, bureaucratic model relies heavily on state resources to design, fund, and implement. Within this model, it would be necessary for a government to have the requisite resources and to be able to use them effectively and efficiently. One example of this

model could be found in Sweden with the Västkraft PPP. Västkraft was primarily owned by the Gothenburg municipality, who worked with nine partners, and sourced education providers through a public procurement process. Sweden's financially decentralized, well-resourced and predominantly publicly-funded education system appears to create good conditions for the state-regulated, bureaucratic model to thrive (European Commission, 2016). The country invests heavily in education and training, with Swedish government expenditure on education amongst the highest in the EU. The Västkraft case seems to suggest that state-regulated, bureaucratic PPPs can prove highly effective if there are extensive funding and resourcing mechanisms in place.

Conclusion

Europe's excellent track record of delivering broad convergence towards high living-standards, well-being, and innovation is facing new challenges as one in six European Union (EU) residents live in economically lagging regions and one in five sub-national regions are classified as lagging. Across Europe, the arrival of artificial intelligence and a range of technology-driven automation disruptions will generate new waves of uncertainty about lifting individuals and entire regions out of low-income, low-growth equilibrium. Large proportions of the workforce of many of Europe's regions are unprepared, which further confounds efforts to achieve convergence. If this skills-lag is not dealt with carefully and effectively, the European convergence machine risks significant loss of momentum.

A key strategy will be to invest in people and workforce skills, particularly by provisioning precision training that offers an agile skills-development approach in which individuals can access training wherever they work and live, precisely when they need it, at any point in throughout their lives, and in the format through which they learn the best. Thus, precision training offers a point of departure for Europe to tackle the dual challenges of existing skills-lags and accelerating technology disruptions. As part of this, frontier companies have much to offer and can do more to help entire regions jumpstart workforce development.

A flexible precision training system is one that helps workers access training where they are—and usually, 'where they are' means 'at work.' Workforce skills act as the pivotal connector in productivity improvements and are the crucial link to realizing potential of all other forms of factor. There are four main building blocks in organizing skills programming focuses: strengthening employer skills ownership; building employer resource networks; promoting skills use; and targeting youth unemployment. In the precision training framework, employers are at the center of building an effective and agile training eco-system that can swiftly adapt to changing market needs and meet heterogeneous worker skills needs. Therefore, it is crucial for emerging training eco-systems to pay close attention to building employer ownership of worker skills development. Employers are better positioned with resources and information to deliver skills upgrading opportunities: workers requiring training can receive them on the job. Likewise, they are direct beneficiaries of improved productivity and worker retention. In this process, leveraging the comparative advantage in employer resource networks can reap huge benefits as demand-side information, resources, and expertise are pooled. Helping workers to acquire, maintain, retain, and use new skills can ensure effective and efficient skills delivery. Finally, program designs targeting youth and young adults who often lack skills upgrading opportunities can fill substantive gaps in existing skills development and delivery efforts.

Leveraging successful skills development experiences can both help to rethink the role of workforce development in boosting lagging regions and to reshape future investment priorities in the EU in delivering precision training to prepare workers for production at the frontier.

For those who are not working, or at jobs that do not or cannot offer training, individualized learning technology can fill important gaps. But for those who are employed in a future-facing field, workplace training is a logical and efficient way to upskill large numbers of working-age adults. Throughout a lifetime, a person living in a precision training environment would ideally receive ongoing training on the job and then fill any gaps through online, individualized learning. Of course, both training approaches come at a cost to employers and individuals, one that they may be unable or unwilling to cover. This is where government partnerships become essential.

When looking at government involvement, different models of PPPs around the world are suited to specific training systems, government types, and contexts. The continuum of government levels of engagement in PPPs highlights important factors to consider when determining how to encourage workforce training through PPPs. Although there are great benefits in using PPPs as a vehicle for delivering a frontier-ready workforce, the challenges associated with doing so also need to be considered. Governments would do well to carefully reflect on what form and intensity of involvement they would like to undertake, as well as their ultimate goals for the partnership. Chapter 5 highlighted how PPPs can push companies closer to the frontier by tackling market failures. While it does not claim causality between PPP arrangements and the creation of frontier-ready countries, PPPs can be used as a tool to support, encourage, and provide guidance for skills upgrading, particularly in economically lagging regions in which employers may lack resources and direction when it comes to offering workplace training.

PPPs offer a valuable solution for bridging the gap between demand for workforce skills and dissemination of knowledge in schools. Lagging countries in Europe would do well to consider this tool to support skills development, as all parties involved in a PPP can benefit if there are realistic goals, effective plans, and concerted involvement and collaboration. As a part of a precision training environment, there are also considerable opportunities for individualized learning through PPPs. This, in turn, means that PPPs can capitalize on opportunities for learning at scale, increasing access to skills development through individualized digital interventions and training that can be tailor-made to fit the individual's preferences, skill-set, and job demands. PPPs can encourage training for all types of workers. They can bolster workforce development at different skills levels and in various industries.

Promoting frontier-compatible skills development opportunities should not come at the expense of inclusivity. It is important to consider the workforce dynamic that would best serve economies at the frontier—presumably, a demographically inclusive one. A skills training PPP is only successful if it incorporates individuals from all areas of its operation, including marginalized groups. This is particularly vital in a world with an increasingly global, diverse workforce. The success of the Nestlé Needs YOUth initiative, for example, lay in its inclusive, transnational approach, while the Munich Employment and Qualification Initiative sought to target people from all areas of society, which included disadvantaged people, women, and immigrants. PPPs can effectively redistribute income through training and upskilling and, in so doing, can play a significant role in addressing upcoming global changes in economic

activities and processes in the face of increased automation and the rapid development of AI (McKinsey Global Institute 2018). The PPP Skillful, a non-profit project that helps workers without a college degree upgrade their skills, is a testament to the importance of consistently improving upon both hard and soft skills in a technological environment that is constantly shifting (Tyson 2018).

As the Asia-Pacific Economic Cooperation (APEC) notes: 'With an increasingly global workforce, more integrated national economies and rapid technological change, it is likely that the use of PPPs in addressing skills and labor shortages will become even more crucial, drawing on the strengths of government, industry, and education and training institutions' (APEC, 2009: 14). Private and public partners' possible lack of experience in structuring, procuring, and managing PPPs should not act as a deterrent to pursuing these partnerships. Instead, building the PPP market to achieve beneficial conditions and confidence levels will help to attract potential domestic and international partners and will help countries take steps towards the frontier.

This technical note has provided an array of examples and considerations for countries, especially those with lagging regions, that want to develop frontier-ready workforces. Via the precision training model, they can take steps to operationalize programs and policies that incentivize individual engagement, tap into employers' comparative advantages, and make resources available to foster public-private partnerships and regional development projects.

Future Applications

This technical note provides a point of departure for countries aiming to create a frontier-ready workforce and thus requiring frontier-compatible training systems. The authors envision a range of potential country-level applications of the precision training model. These include:

- *Country- or region-specific stock taking.* This note has taken stock of workforce training methods, strategies for PPPs, and regional development programs on a global scale. A future report might do the same, but at the country or regional level. In a given country, who *is* providing training—government institutions, employers, a combination of both? And who is receiving that training? In addition, it would be useful to take stock of existing PPPs and regional programs that already exist in a given context. Could these partnerships be leveraged to include workplace training incentives—or is an entirely new partnership necessary?
- *Operationalizing at various levels.* Once a country or region has taken stock of its training and employment ecosystem, employers, policymakers, and education institutions can explore PPPs and other interventions to help make precision training a reality.
- *Helping employers see the 'big picture.'* Governments can provide guidance to employers on how to best engage in workplace training. They can offer hard evidence on the return on investment of employee training to industry leaders, facilitate information on the talent development techniques and options to firms, offer more information on

training options to current and potential employees, and disseminate knowledge on workplace training.

- *Informing policy.* Governance mechanisms can enhance workplace training. This can involve giving local governments the mandate (with time and resources) to promote workplace training like the United States and G20 countries have done, focusing on priority sectors and understanding sector dynamics, and promoting bodies that can coordinate training and foster partnerships.

The skills convergence agenda is of increasing priority as the fourth industrial revolution unfolds at unprecedented speeds. Globalization and technology disruptions will inevitably bring about new waves of uncertainty about how European countries at the frontier can stay there, along with the immense task ahead to lift individuals and entire regions out of a low-income, low-growth equilibrium. Demand-driven, lifelong workforce skills development holds immense promise for those who reside in lagging regions and beyond.

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Appendix A: Workplace Training Trends, Practices and Solutions – Examples from firms at the frontier

Amazon

Business: Consumer/Retail, IT Infrastructure

Size: 541,900 (as of October 2017)

International presence: 15 countries

HQ: Seattle, United States

Career Choice Program

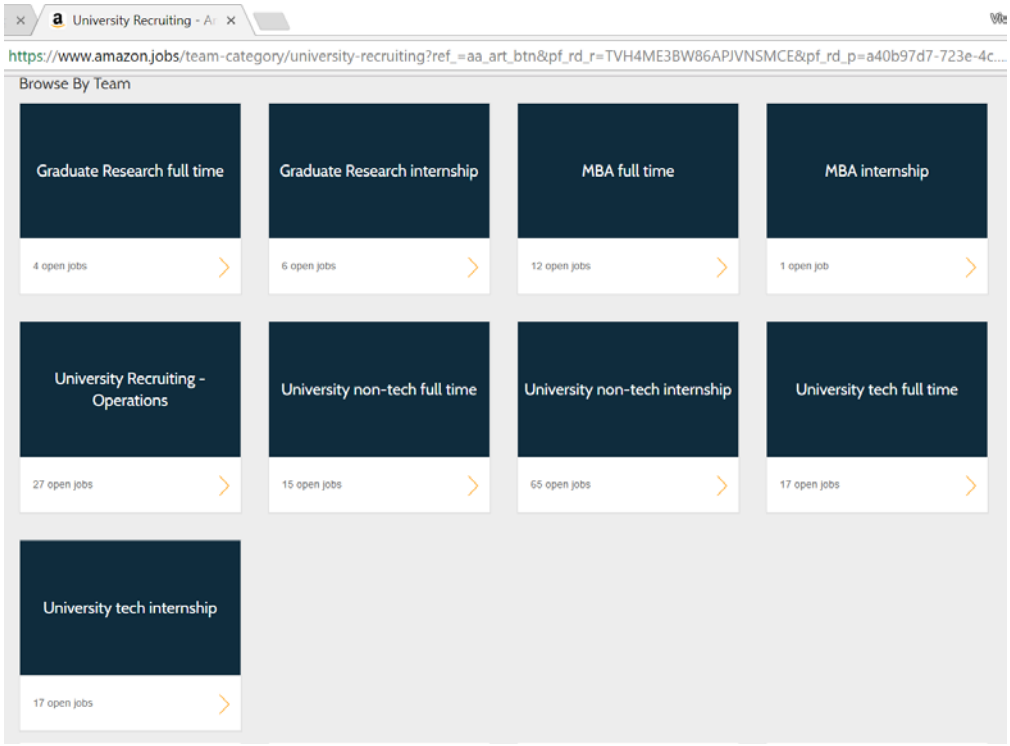
- Associates working with Amazon for at least one continuous year are eligible to participate. The Program pre-pays 95% of tuition and fees and reimburses 95% of textbook costs (cap is US$12,000).
- Certificate and associate degrees must be in high-demand occupations. Amazon partnered with the US Bureau of Labor Statistics to identify the sectors with high demand for low-medium- skill jobs.
- Amazon partnered with community colleges and vocational centers so that employees can take classes in on-site classrooms at their fulfillment centers. This arrangement has three intended effects.
    - It motivates others: Classrooms are fishbowl style glass doors that aim at enticing other associates to enroll in training
    - It reduces the costs of training: employees can coordinate work, life and training responsibilities.
    - It builds a learning ecosystem: colleagues are also classmates who work on group assignments, join study groups and support each other.
- By 2017, 10,000 employees had benefited from Career Choice. Areas of training include mechanics, computer-aided design, medical technologies, and nursing.

AWS Training Program

Part of Amazon's IT Infrastructure business, the AWS Training Program is aimed at improving the skills of IT professionals and their expertise in Amazon Cloud Services. Being a leader in the sector, Amazon has developed more than 200 courses, learning pathways and a certification system. Many AWS certifications have value for many companies in addition to Amazon.

Internship Program

- Open to higher education students (from BA to PhD).
- Disciplines include IT (from coding to machine learning or business intelligence), business management (from HR to sales and marketing), engineering.
- As of March, 2018, the company had 158 internship openings around the world:



Apple

Business: Technology

Size: 80,000 employees (as of 2016) – approximately 70% in retail (in 2012).

International presence: 19 countries

HQ: Cupertino, United States

Training for Prospective Workers

- Apple partnered with the National Center for Women & Information Technology, which works to increase the participation of girls and women in the field of technology.
- The company also partnered with Historically Black Colleges and Universities (HBCU), to prepare students for upcoming internships at Apple since 2016.
- Apple has created free coding curricula for K-12 students. In 2017, it extended this effort to selected community colleges which receive a free year-long app development curriculum.

For Corporate Employees

- Apple University: The company established its corporate campus in 2008 to inculcate employees into Apple's business culture and educate them about its history. The company's training is highly secretive.
- Courses are created and taught by full-time faculty, some from prestigious universities such as MIT, Yale, Harvard, Stanford, etc. Some courses teach Apple culture (for new employees or recently acquired startups), others use case studies built on the company's

past business decisions, some target communication skills (not only with costumers, but also with peers), product design, and project management. Courses are offered year-round.
- Some courses are required, some are only recommended. Most sources report that employees sign up for courses tailored to their positions and backgrounds on Apple's internal website.
- Other sources refer to courses that are by invitation only, targeting Apple's corporate managers at the director level and above. Relatively junior managers are invited to some classes, but training increase as they rise through the ranks.
- Classes are usually in person, last a few hours a day for two to three days, and, in 2015, they seemed to have between 15 to 20 people in them.

For Retail Employees

- Apple selects candidates from applicants to its website, who are invited to an in-person event to screen for three main characteristics: affability, self-directedness, and product loyalty. This creates a culture of pride and eagerness that is exploited and fostered during training. Most applicants have college degrees.
- Retail employees include sales workers (specialists and experts), customer support workers (geniuses, creatives, and technical support specialists), and store leaders.
- All selected candidates receive a 'Core Training' that covers customer service protocols (i.e. ask permission to touch phone, acknowledge the problem, not promise instant fixes), and instill the company's culture of 'enriching people's lives' or working for a greater good.
- Training lasts from days to months, depending on the location and type of job. Geniuses, for example, train for 14 days on diagnostics, apple device components, and additional customer service etiquette.

Google

Business: Information technology

Size: 72,053 employees (as of 2017)

International presence: 42 countries

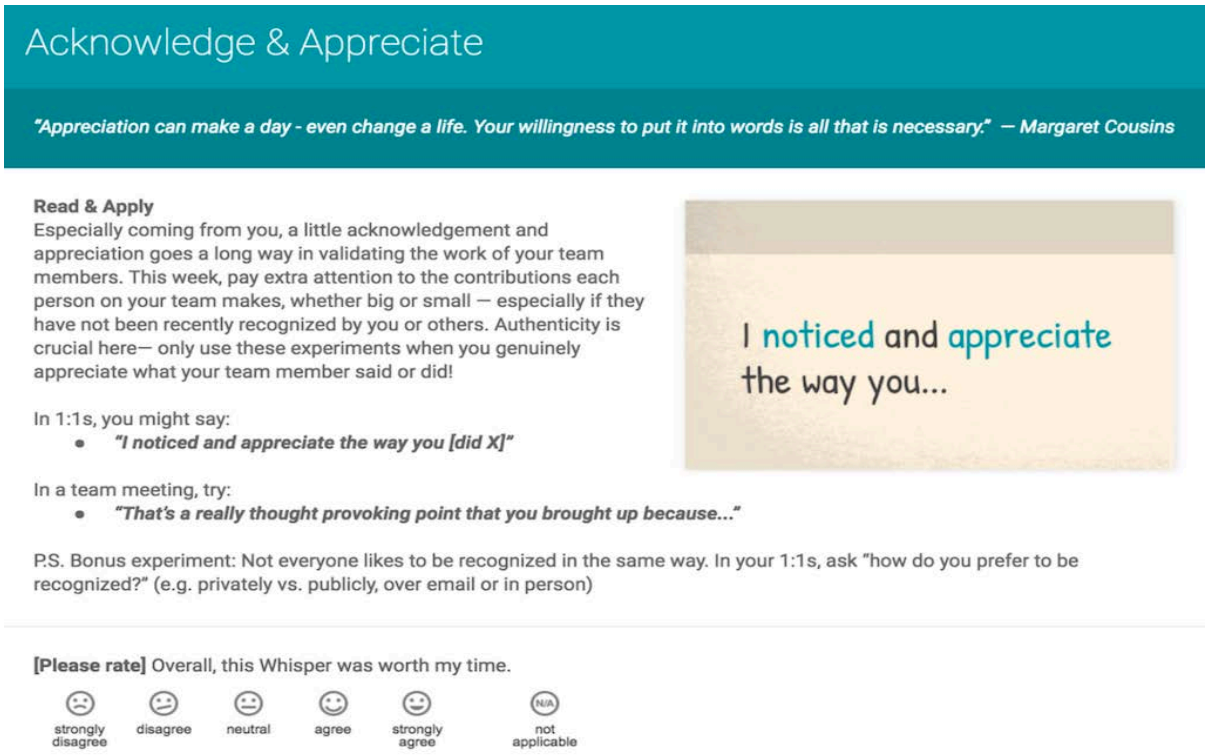
HQ: Mountain View, United States

For Entry Level Staff

- 'Core curriculum': includes an orientation, courses on management, public speaking (presentation skills), content development, and leadership.
- In early 2018 Google turned its internal IT training program into a Coursera course and it offered scholarships to up to 10,000 Americans who wished to enroll. Google aims to use this program to tap a new 'non-traditional' applicant pool (high school education or less, without formal training), and hire the best of those who take their courses.

For Management

- 'Whisper Course': a series of emails over 10 weeks, each with a simple suggestion, or 'whisper,' for a manager to try in their meetings. This is part of the concept of 'micro-learning'. A sample template for a whisper course is available online (see https://docs.google.com/document/d/1XKmeej5Q3O9aaLSyjF4xABiYnAHsd5cR7WY_WY5s4JY/edit).



- 'GoogleEDU': As of 2013 it was the company's leadership-development program. It relied on data analytics to ensure it is teaching employees what they need to know: it uses employee reviews of managers to suggest courses to managers, it offers a special class for new managers on the Google culture and ways, it offers just in time training (rather than train a new manager in performance evaluations as soon as s/he is hired, they'll receive the training just before performance reviews begin.

For Engineers

- 'engEDU': In addition to orientation and the core training, engineers receive mentoring and further training under 'engEDU'. Programs are designed by engineers for engineers.
- There are special reimbursement plans for the Google engineers if they want to pursue further education at Stanford MS in specific technical areas. Google covers the full cost (up to USD$150,000) and allows up to 5 years of leave.

For All

- 'Googler to Googler': the program places employees from across departments into teaching roles that would otherwise be filled by the HR department. All initiated, designed

and led by employees: some courses include 'Creative Skills for Innovation', How Not To Dance Like A Middle-Schooler At Weddings, Intro To Taxes, Search Inside Yourself (SIY), Are You Fiscally Fit? Buying A Home, Superhero Play: What Does It All Mean?, Beekeeping. The goal is to promote a culture of learning, 'Giving employees teaching roles, says Google's head of people operations, Karen May, makes learning part of the way employees work together rather than something HR is making them do.' Google believes that teaching motivates employees to do their best (teachers are evaluated and have found to have similar performance as HR instructors). Google's advice: 'Put the support structures in place to make it happen and then get out of the way.' Google offers an online guide to create and employee-to-employee learning program.

- Other courses have been developed with partner universities: Advanced Negotiations, Introduction to Programming (I2P), Data Visualization, Marketing Academy.

AT&T

Business: Telecommunications services

Size: 268,000 employees (as of May 2017)

International presence: 44 countries

HQ: Dallas, United States

Training Programs

'Workforce 2020': AT&T initiative to retrain 100,000 of its current employees by 2020. It entails a more than billion-dollar investment in training programs and new facilities to re-educate workers. The initiative has been deployed in phases:

1. Restructuring of the company's organizational chart: to harmonize positions and determine associated skills.
2. Setting 'Career Intelligence': helps employees navigate the new organizational chart, explore alternative jobs and the skills associated with them, the number of positions available, and potential salary.
3. Deploying training: As part of an 'opt in' mindset, employees must take the initiative to browse the training catalogue, identify and enroll in a training program. Some programs are time-intensive and require dedication beyond work hours.
4. Providing opportunities for employee growth: To encourage participation in training, once the employee inputs his/her skills in the system, it assigns him/her a specific future job that can be attainable with additional training.

Workforce 2020 is still underway, but it is showing promising results: In 2016 more than 40% of 40,000 job vacancies were filled with internal candidates.

AT&T has partnered with a training and corporate internship program for disadvantaged high school students to offer entry-level internships in some states in the United States

AT&T has an internal internship program that lets workers who have recently acquired new skills to try a new position for a limited test run.

In partnership with Udacity, Inc., AT&T has helped create and launch several self-paced, fast-track technical credentials called Nanodegrees on web and mobile development, data analytics, and tech entrepreneurship, among others. AT&T provides scholarships to all employees who wish to attend classes and improve their technical skills. As of 2018, AT&T employees have completed over 2.7 million mini-courses. Completing a set of courses in a specific area, like cybersecurity or project management, grants the employee a virtual 'badge' on his or her profile page. AT&T has given out 177,000 so far to about 57,000 employees.

In partnership with AT&T, Georgia Tech and Udacity, designed an Online Master in Computer Science (OMS CS) program. AT&T reimburses up to US$8,000/year in tuition fees of employees (technologists) who wish to enroll in this program. In 2014, about 18% of the 1,268 students enrolled in Georgia Tech's computer science master's program were AT&T employees.

AT&T University is an executive-led program focused on leadership and management development housed at their Dallas headquarters, with satellite campuses across the U.S.

Accor SA

Business: Hospitality

Size: 250,000 employees (as of Jan 2018)

International presence: 100 countries

HQ: Paris, France

Accor Académie

180,000 employees trained (as of 2017)

It is a hotel school network composed of 18 academies around the world, in Auckland, Bangkok, Brussels, Budapest, Carrollton, Casablanca, Dubai, Evry, London, Madrid, Milan, Munich, Quebec City, São Paulo, Schiphol and Sydney.

The Académie offers more than 250 training modules in 18 areas, from cooking to financial management. In 2015 training was provided to 91% of employees.

Examples of some certifications offered by the Académie:

- 'Train the Trainer': Training offered to team leaders on talent management and development.

- Leadership Development Program: It combines classroom training with the development and implementation of a Performance Development Plan in close collaboration with a mentor
- Communication Certification: All employees are exposed to and learn about different forms of communication with the aim to facilitate cordial interactions with clients and among staff.

As early as 2011 the Académie was using video-games to train employees on diversity and non-discrimination in a virtual hotel.

In 2017, the company partnered with NEEVA to deliver harmonized training programs across the school network.

Schools of Excellence:

12-month program for hospitality students at partner schools who speak English and a second language that guarantees a position in a luxury brand hotel as an operations supervisor.

In 2015, the company launched a new Learning and Development strategy.

Graduate Development Program

18-month leadership program for Australian or New Zealand residents/citizens with a bachelor's degree in Hospitality. The program includes classroom training, hotel rotations and mentorship. Participation in the program is the first step to a fast track General Management career.

Executive Leadership Program

Two-year program with face-to-face workshops, virtual classrooms and mentorship. The program fast tracks participants (who must have a college degree on tourism and two years of leadership experience and be Australian or New Zealand residents/citizens), into general management or senior leadership positions.

Accor Indigenous Traineeship

6-month program for Australian indigenous populations and islanders that offers practical paid training, coaching, career development support, and access to online university training courses at the Accor Académie. Candidates can also gain a nationally recognized certificate in Hospitality Operations.

Management Apprentice Program

Targeted to 16- to 23-year-old Europeans who do not have a degree are looking to start a career in hospitality in the UK. The program is divided in two levels: a year-long foundation apprenticeship where apprentices learn the basics in the area of their choosing, and a year- to 18-month advanced apprenticeship where the apprentice begins to lead a team. Apprentices

who complete both levels are awarded a nationally recognized 'Diploma in Hospitality Supervision and Leadership' in the area in which they worked. The program was launched in 2005 and, as of 2015, 500 apprentices had completed the program. Back in 2015, the company pledged to increase the number of apprenticeship placements to 300 in 2016.

Career Development Programs

Accor Hotels has a series of programs that aim to enable employees to grow within an administrative area. For example, it offers a General Management Pass, which is a 12-month long international program aimed at employees who have worked for 3 years as heads of departments.

Subsidiaries also offer programs to their employees: Accor Plus. The Accor member program that operates in 12 countries in Asia Pacific, offers various types of career development and employee training programs.

Other Training Initiatives

'Digital Deployment Days': Days to discuss and share ideas with hotel managers and their teams to bring them on board with digital innovations at the company. As of 2015, Accor had dedicated 124 days to present 23 digital projects and tools to 4,000 employees.

Employee-to-employee learning: The company launched Yammer in 2015. It is an internal social network accessible via a mobile app that turns employees into an active community that learns from each other by sharing good practices and creating groups. Training is provided in four areas:

- Guest service
- Position-specific protocols (Front Office, Reception, Restaurants, Housekeeping, etc.)
- Management and leadership
- Sales and operations.

The company has also adapted Digit'all, a mobile web-based learning tool that allows employees to learn remotely, through infographics, videos, quiz, short e-learning modules or virtual classrooms.

Training services for hire: Accor Académie offers tailored courses for other hotels.

BMW

Business: Automotive, Motorcycles and Financial Services

Size: 129,932 employees (as of 2017)

International presence: Represented in 150 countries, with plants in 31 countries, sales subsidiaries in 43 countries and R+D locations in 16 countries

HQ: Munich, Germany

Training Programs

The BMW group in Germany offers its employees different kinds of opportunities: vocational training up to management qualifications, professional development programs (e.g. project management or an MBA qualification), personal development training (e. g. moderation and working techniques), intercultural programs that go far beyond language training courses, temporary positions abroad.

Programs in Germany:

- Junior Campus at BMW Welt in Munich and the German Museum of Technology in Berlin and technology camp for girls
- Internships for college students: Internships are full-time, last 4-6 months and cover several areas such as development and production, administration, purchasing, sales and marketing, human resources, press and public relations or finance. Internship opportunities abroad are also available.
- Internships for high school students: Internships are full-time, last between one and three weeks (depending on the location), and cover a few programs in vehicle technology and production, electronics and systems engineering, information technology, financial management and service, and surface finishing.
- Apprenticeships: Individuals with a school level certificate can enroll in 3.5-year long apprenticeships in numerous programs under five areas: vehicle technology and production, surface finishing, electronics and systems engineering, information technology and business administration and service.
- Drive Program: BMW's on boarding program for every new employee. It provides content throughout the first 12 months of employment at the company. Employees can choose training components based on their field of work. The program includes onboarding events with senior business representatives, work experience in the production department and with major interface partners to better understand car making and corporate processes.
- Dual Curriculum: Participants in this program take theoretical courses combined with on-the-job practice over 4.5 years. At the end of the program they receive a bachelor's degree.

Programs in the United States:

- BMW Scholars: Apprenticeship program in South Carolina. Students pile a full-time technical-college course load over two years onto 20 hours a week of paid training at the plant. Launched in 2011, the program's 128 graduates have all been offered BMW contracts (it enrolls 35 apprentices a year). Students go to classes Monday through Thursday, and work 10-hour days Friday and Saturday. The program was set in partnership with three local community colleges. BMW employees assist colleges on curriculum development and have enabled some of them to receive millions in grants from the US Department of Labor.

- BMW Internships: For students at the South Carolina's four-year colleges, BMW has an internship program under which students take a semester off from school to work at the plant in areas such as automotive engineering, finance and logistics.
- BMW is also a partner of Clemson University's International Center for Automotive Research. Founded in 2007, CU-ICAR is an advanced-technology research campus where Clemson offers the nation's only doctorate in automotive engineering. For high school students BMW sponsors an academic summer camp with the University of South Carolina.
- BMW also has a 4-month long training program for active members of the military who are getting ready to transition to civil life.

Programs around the world:

- Global Leader Development Program: College or Master's graduates with between six months and two years of relevant experience can enroll in this 18-month long program as a first step in a leadership path at BMW. The program is available in various countries.
- BMW Group Academy UK: Opened in 2006. It includes workshops, training rooms, show rooms to simulate a dealer environment, a dedicated apprenticeship area with residential accommodation.
- BMW Training Center in Mexico: Opened in 2017. Starting in 2019, the Center will offer training programs on industrial engineering, electrics, electronics, production, robotics and IT among others. It will also train employees and apprentices on leadership and management.
- Young Apprentices Program (Brazil): BMW Brazil, in ship with SENAI-SC, hosts the industrial apprentice course in mechanics for vehicle production. The program takes place over two years and includes theory classes led by SENAI and practical classes in BMW's Araquari plant.
- Skill Next (India): Launched in early 2018, this program includes training instructors and donating 365 BMW engines and transmission units to leading engineering and technical institutions across India by the end of 2018. The program will be first implemented at the College of Engineering at Anna University.
- BMW Training Academy (South Africa): In February 2018 BMW South Africa launched the Plant Rosslyn Training Academy, a 6,000 square meter and USD 6 million facility that will offer training to those interested in working in the motor industry. The Academy will focus on modern manufacturing skills, such as robot programming, advanced computer numerical control simulation and training on electric vehicles. The Academy includes an accredited Trade Test Centre, which means that successful students can achieve trade qualifications in-house.
- Intensive training for professional drivers: BMW offers this 2-day long program that covers theory of driving dynamics and practical driving, particularly to handle the car in emergency and/or high-speed situations. A similar program, for motorbike riders is also available in Australia.
- BMW Australia partnered offers training to its employees via an InductNow platform that offers custom training for each employee and allows managers to track the progress and performance of employees on their training program.

Hyundai Heavy Industries

Business: Heavy equipment

Size: 22,015 (as of May 2017)

International presence: 9 countries

HQ: Ulsan, South Korea

Training Education Institute

The company offers most of its training through the Hyundai Heavy Industries Technical Education Institute:

	Ulsan Headquarters	Gunsan Branch	Yongyeon Branch
Capacity	740 trainees	200 trainees	50 trainees
Training	Welding, mechanics, electricity, painting, design software	Welding, training of trainers	Welding
Facilities	14 classrooms, 10 work-shops, auditorium, dorms	2 classrooms, 2 workshops, dorms	1 classroom, 2 workshops

There is an internal learning assessment and qualification system that allows employees to progress professionally as they gain experience and training. They begin as 'Young Meisters'; after 3-5 years of work experience in the company they can enroll in training to become 'Junior Meisters'. Then, after 5-10 years of in company work and relevant training they can become 'Senior Meisters'. The highest qualification level is 'Meister', which employees can receive after having worked 15 years or more for HHI and having taken the relevant training. Training takes place after work. Employees receive monetary incentives to take qualification tests and move to the next level

Training for SME Workers

Under the government-sponsored program called 'National HRD Consortium', the company provides training to employees of SMEs. The Consortium is a tri-partite agreement under which SMEs commit to participate in workforce training and actively selecting trainer companies, training programs and trainees. Hyundai commits to provide training (using national competency standards) and career counseling to those selected by SMEs. The Government commits to cover the costs of training, including equipment, consumables and other training and operative costs.

Work-Learning Dual System

The company also participates in the government-sponsored program for young apprentices (graduates of specialized and Meister high schools) called 'Work-Learning Dual System'.

Under this program Hyundai provides structured education programs based on the national competency standards.

As of 2017, the company provided training on three areas: welding, mechanics and electricity.

Training programs initiate with 3 months of classroom training at the company's Technical Training Institute and continue with 9 months of on-the-job training at the company's manufacturing department.

As of 2017, the company had provided training to 280 students under this program

HHI Technical College

The company's corporate college focuses on training for managerial staff and technical/specialized employees with higher education degrees.

The college is divided into two departments: shipbuilding and marine engineering, and mechanical and electrical engineering.

The College began operating in 1999 with mainly one-year programs. In 2013 the College launched a new generation of programs that take two years to complete.

At least 1,300 employees have received training at the HHI Technical College as of 2018.

Appendix B: Innovating Governance and Incentives in Training

Nestlé Needs Youth

Partners: i) public: government bodies, educational institutes ii) private: various partners including DHL, Twitter, Google, Facebook, Ernst & Young, Alliance4YOUth

Type of partnership: Transnational Capacity-building, Firm-level Volunteerism

Intensity of partnership: Weak government involvement

Information About the Partnership

Nestlé Needs YOUth is an initiative led by the multinational food and beverage company Nestlé. Nestlé collaborates with more than 200 companies in a pan-European partnership, all of which have committed themselves to the cause of widening the labour market in Europe.

This umbrella partnership between these companies is called Alliance4YOUth and it consults with various training institutes and universities in Europe to update curricula, inform them about apprenticeships, set up dual-learning tracks with training institutes, update teaching methods by using multi- and social media, and provide employability trainings at educational institutes in order to align them with the needs of the private sector. Nestlé has encouraged more than 200 businesses to join their own employment initiative – Nestlé Needs YOUth.[13]

Nestlé Needs YOUth offers a work-based learning programme which created 20,000 new jobs, traineeships and apprenticeships for people under the age of 30 between 2014 and 2016. The transnational programme focuses mostly on improving mobility and developing initial vocational education and training with an emphasis on work-based learning. It also provides employability workshops for young people who are already employed by the company. Nestlé also recruits from schools and universities and organizes sessions such as career events, CV clinics, interview preparation, and advice on how to enter the job market.[14]

The initiative's scope of intervention is wide-ranging as it aims to create a feedback loop, hence it has 120 ambassadors that provide guidance to 60,000 SME's that have demonstrated an interest in providing work-based learning opportunities through apprenticeships. The SME's are from various sectors including hotel, restaurant finance, manufacturing, logistics, transport, human resources, engineering and research and development.[15] They have all either had a business relationship with Nestlé in the past, or they form part of the current production chain. Nestlé continues to extend its footprint using the youth initiative – the company plans to provide youth in Europe, the Middle-East and North-Africa with 35,000 job opportunities by 2020.[16] The company's overarching aim is to help 10 million young people around the world have access to economic opportunities by 2030.[17]

In terms of the initiative's replicability and scalability, the World Economic Forum reports that it would be difficult for other companies to replicate this model because the strength of the initiative lies in the intricate network of communication and execution within the organization and its partners. Scaling the project on the other hand would be easy, seeing as once the project is running, it can be leveraged to include a large number of participants.[18]

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[13] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[14] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[15] World Economic Forum. (nd). Nestlé Needs YOUth. Retrieved March 8, 2018 from here

[16] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[17] Nestlé. (2018). Global youth Initiative: Nestlé Needs YOUth. Retrieved March 8, 2018 from here

[18] World Economic Forum. (nd). Nestlé Needs YOUth. Retrieved March 8, 2018 from here

The Institute of Technical Education (ITE), Singapore

Partners: i) public: Singaporean government ii) private: various businesses including ST Microelectronics Pte Ltd, Scoot Pte Ltd, Tiger Airways Singapore Pte Ltd, Home-Fix D.I.Y. Pte Ltd, Lane Crawford Singapore Pte Ltd and Cushman & Wakefield

Type of partnership: Volunteerism, Adopt-an Institution

Intensity of partnership: Medium government involvement

Information About the Partnership

Established by the Ministry of Education in 1992, ITE is the leading provider of career and technical education in Singapore. An annual cohort of approximately 25% of secondary school graduates (about 13,000 students) enroll at ITE while total enrolment is about double that amount. The Institute has a staff of approximately 2,500 and the total enrolment in 2014 was 28,742– 84% of whom graduated.[19] Results improved by 2017 where there was a student enrolment rate of 28,100, a graduation rate of 87%, and an employment rate of 86% for full-time graduates.[20]

Educational programs at ITE incorporate different private partners in various ways including i) Centres of Technology and Centres of Excellence, which are created to provide job-relevant certification in collaboration with ITE's industrial partners; ii) traineeships, in which employers and secondary school graduates collaborate so that the graduates are taught relevant skills; iii) approved training centres; iv) certified on-the-job training centres; v) industry projects; vi) career service centres; and vii) training grant funding.[21]

The ITE programme includes both on- and off-the-job training which are either conducted by ITE or approved training centres and since the emphasis is on practical training, about 70% of time spent on a programme is practical while 30% of time is focused on theory.[22] ITE is funded through various mechanisms, including tax incentives, donations, scholarships, and matching government grants.[23]

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[19] Amornvuthivorn, K. (2016). Public-Private Partnerships (PPPs) in Technical Vocational Education and Training (TVET): Lessons Learned from Singapore and U.S.A. and Implications for Public Management in Thailand. Retrieved February 14, 2018 from here

[20] Institute of Technical Education. (2017). Annual Report 2016/2017 for the year ended 31 March 2017. Retrieved March 8, 2018 from here

[21] Amornvuthivorn, K. (2016). Public-Private Partnerships (PPPs) in Technical Vocational Education and Training (TVET): Lessons Learned from Singapore and U.S.A. and Implications for Public Management in Thailand. Retrieved February 14, 2018 from here

[22] Kingombe, C. (2011). Lessons for Developing Countries from Experience with Technical and Vocational Education and Training.

[23] Kruss, G., Petersen, I., Fongwa, S., Tele, A. and Rust. J. (2017). Synthetic analysis on the skills development and economic responsiveness role of education and training institutions in South Africa:

In 2017, ITE signed 11 new local MOUs with companies like ST Microelectronics Pte Ltd, Scoot Pte Ltd, Tiger Airways Singapore Pte Ltd, Home-Fix D.I.Y. Pte Ltd, Lane Crawford Singapore Pte Ltd and Cushman & Wakefield in FY2016. By the end of the financial year, ITE had built industry alliances with 109 local MOUs. These partners assist in curriculum development, technology transfer, equipment donation and opportunities for enhanced internships in the industry for three to six months. In terms of its cost of implementation, the Annual Report indicates that the ITE's annual expenditure was just over $512,403,000 in 2017 and $515,467,000 in 2016, while government grants totaled approximately $450,000,000 per year.[24]

Västkraft Partnership, Gothenburg Region, Sweden

Partners: i) public: Gothenburg municipality ii) private: various companies including Arbetsförmedlingen

Type of partnership: State-regulated, bureaucratic model, Adopt-an-institution

Intensity of partnership: Moderate to High government involvement

Information About the Partnership

Västkraft is a Public Private Partnership in the Gothenburg region of Sweden. The two-year project was launched in 2009 in response to the regional decline in the labour market and aims to upskill employees and redundant workers in technology-related sectors. The PPP particularly focuses on employees and sub-contractors in the automotive industry, although the skills taught are not always unique to that industry. The initiative is financed by the European Social Fund (ESF) with €5.3 million (SEK 50 million).[25]

The primary owner of the initiative is the Gothenburg municipality, who works with nine partners, including Arbetsförmedlingen, Business Region Göteborg. Education providers are sourced through a public procurement process. The objectives of the project are threefold: i) to improve workers' skills and promote entrepreneurship and therefore contribute to the region's economic growth; ii) To encourage collaboration between municipalities in the region within adult education; and iii) to cater to the needs of local businesses by designing education with them in mind.[26] Västkraft's role is to organize different types of training and education in line with what local companies and trade unions require. In 2009, 1,500 students graduated from Västkraft while about 2,000 graduated in 2010. More than 80 local companies became

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Towards and Integrated Public-Private Partnership Strategy for Skills Development in the TVET College System. Retrieved February 20, 2018 from here

[24] Institute of Technical Education. (2017). Annual Report 2016/2017 for the year ended 31 March 2017. Retrieved March 8, 2018 from here

[25] Bäckman, C. and Persson, J. (2011). Join Public-Private Local Partnerships to Cope with Recession. Retrieved March 2, 2018 from here

[26] Bäckman, C. and Persson, J. (2011). Join Public-Private Local Partnerships to Cope with Recession. Retrieved March 2, 2018 from here

involved in the initiative, many of them SMEs.[27] Further information about the project's impact and implementation is unavailable.

The Career Academies Programme, U.S.A.

Partners: i) public: state government and local school district management ii) private: various companies, dependent on the academy and skills specializations in the community

Type of partnership: State-regulated elements, Adopt-an-Institution, but varies across Career Academies

Intensity of partnership: Moderate-high government involvement

Information About the Partnership

The Career Academies Programme is more than four decades old. At their inception, the Academies aimed to reduce student dropout rates and provide applicable, effective vocational training. However, they have taken on additional roles, including preparing students for their four-year college degrees as well as training them for the workplace. This model has been successful in improving upon student outcomes during and after high school and has the unique quality of preparing students for numerous vocations including health, engineering, technology and law enforcement while still focusing on their academic development. By the year 2010, there were over 7,000 Career Academies across the U.S.A with a total enrolment of over one million students. Programme design for the Academies is widely variable and is largely dependent on the partners involved in a given Career Academy, as well as the interests and aptitudes of the students and the available jobs in the community.[28]

The Academies 'link students with peers, teachers, and community partners in a structured environment that fosters academic success. The career academy concept has three key elements:

- A small learning community (SLC)
- A college-prep sequential curriculum with a career theme
- An advisory board that forges partnerships with employers, higher education institutions, and the community.'[29]

Career Academies attain public grants through local school district departments, but they can only be accessed by consortia of local education agencies. The consortium that governs the

[27] European Foundation for the Improvement of Living and Working Conditions. (nd). Joint public-private local partnerships for employment to cope with the recession. Retrieved March 5, 2018 from here

[28] Amornvuthivorn, K. (2016). Public-Private Partnerships (PPPs) in Technical Vocational Education and Training (TVET): Lessons Learned from Singapore and U.S.A. and Implications for Public Management in Thailand. Retrieved February 14, 2018 from here

[29] National Career Academy Coalition. (nd). Career Academies Change Lives Everyday. Retrieved March 8, 2018 from here

agency would consist of post-secondary institutes, employers, employer associations, local organizations and sometimes even research universities involved in skills training. The provision of state funding is dependent on the Career Academy developing a competitive plan explaining how the funds will be used. In addition, each state must raise matching private resources in the form of cash, equipment, training facilities, start-up capital or technical training assistance in order to meet a matching requirement. Funds are distributed based on the strength of the applicant's motivation as well as the consortium's ability to implement high career technical education training programs for high demand occupations and for students from all backgrounds.[30]

The success of the Career Academies model can, in large part, be attributed to the decentralization of the American school system and the associated empowerment of the states and local school districts. Additionally, strong public and private stakeholder involvement has been assisted by a well-planned federal funding scheme that creates the conditions for high-performing programs together supporting technical assistance by states. Private partners also play a significant role in each academy's success by providing financial and technical support for students as well as sponsoring committee advisors. In many cases, they also provide speakers, mentors, internships, field trips, and sometimes even faculty for the programs. [31]

Research by institutions such as Johns Hopkins and UC Berkeley indicates that the career academies have had a significant impact at various levels, including academic, socio-economic, and workforce development.[32] It was also found that:

> *For eight years after scheduled graduation from high school, academies produced sustained earnings gains that averaged 11 percent (or $2,088) more per year for Academy group members than for individuals in the non-Academy group — a $16,704 boost in total earnings over the eight years of follow-up… Academies also produced an increase in the percentage of young people living independently with children and a spouse or partner. Young men also experienced positive impacts on marriage and being custodial parents.*[33]

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[30] Kruss, G., Petersen, I., Fongwa, S., Tele, A. and Rust. J. (2017). Synthetic analysis on the skills development and economic responsiveness role of education and training institutions in South Africa: Towards and Integrated Public-Private Partnership Strategy for Skills Development in the TVET College System. Retrieved February 20, 2018 from here

[31] Amornvuthivorn, K. (2016). Public-Private Partnerships (PPPs) in Technical Vocational Education and Training (TVET): Lessons Learned from Singapore and U.S.A. and Implications for Public Management in Thailand. Retrieved February 14, 2018 from here

[32] National Career Academy Coalition. (nd). Career Academies Change Lives Everyday. Retrieved March 8, 2018 from here

[33] Kemple (2004, 2008) in Stern, D., Dayton, C., and Raby, M. (2010). Career Academies: A Proven Strategy
to Prepare High School Students for College and Careers. Retrieved March 8, 2018 from here

Mubarak-Kohl-Initiative, Egypt

Partners: i) public: Egyptian Ministry of Education (TSS Department and Directorates), German government ii) private: various businesses

Type of partnership: Dual System, Capacity-building

Intensity of partnership: Moderate-high government involvement

Information About the Partnership

The Mubarak-Kohl Initiative (MKI) adopted a customized version of the German Dual System, which concentrates on a combination of on-the-job learning with classroom learning in an effort to train students for the workforce. The Initiative was a bilateral development programme between the German and Egyptian governments which involved the business community in planning, implementing, evaluating and accrediting vocational training in Egypt.[34] German technical cooperation between 1994 and 2007 totaled €28.5 million.[35] MKI was aimed at students who had finished their basic education and had been admitted to Technical Secondary School (TSS).

According to Grunwald (2008): 'The MKI involves carrying out theoretical instruction in the TSS-MKI for two days a week and practical training in companies for four days a week. A three-year diploma is granted by the Ministry of Education (MoE) and the business sector provides a certificate for successful practical training.'[36]

Implementation partners included the Ministry of Education (MoE) under which falls the TSS Department and Directorates in the Governorates and at District level, through the TSS-MKI institutions as well as the business organizations with the Regional Units for Implementing a Dual System (RUDS) and companies. The MoE would grant a three-year diploma, while the relevant business would provide a certificate for proof of practical training. As well as the diploma, short-term courses are created in partnership with the private sector for the existing workforce. Private sector staff are used as trainers and curriculum consultants. This ensures that theoretical and practical training are both relevant and that the current workforce does not fall behind in skills development. The results of the partnership were widespread. By 2004, the Egyptian dual system was established in 28 trades, and in 24 (out of 26) governorates. A

[34] Balasundaram, R.N. (2015). Public-Private Partnerships in Education in the Arab World: Experiments and Modalities- Part I. Retrieved March 1, 2018 from here
[35] Adams, A.A. (2010). Mubarak-Kohl Initiative for Dual System (MKI-DS): An Assessment of its Impact on the School to Work Transition. Retrieved March 6, 2018 from here
[36] Grunwald, E. (2008). Beyond Primary Education: Challenges of and Approaches to Expanding Learning Opportunities in Africa- Public-Private Partnership Models in TVET and their Impact on the Role of Government. Retrieved February 16, 2018 from here

total of approximately 15,000 trainees and 1,500 companies were participating in the system with 7,200 graduates by that same year, of which nearly 15% were women.[37]

As of 2009, the Initiative had achieved the following:

- Expansion of MKI-DS from an initial 3 city sites to its coverage of 22 out of Egypt's 27 governorates;
- From just a few to 76 technical secondary schools identified as MKI-DS schools;
- 1,900 companies now provide training places for students;
- 24,000 graduates with 13% women;
- 13,000 trainees enrolled with 19% women;
- 32 occupational profiles have been developed with industry input;
- An estimated enrolment of 10,200 in 2010 compared to 5,900 in 2009.[38]

MKI graduates are also in high demand: More than 85% of MKI-DS students are offered employment immediately after graduation and about 70% of MKI-DS graduates are currently working while most of the others pursue a higher education.[39]

Higher Technical Institutes (HTI) – Italy

Partners: i) public: local authorities and education and training systems ii) private: companies, universities, scientific and technological research institutions

Type of partnership: Capacity-building, dual system elements, state regulation

Intensity of partnership: Moderate to High government involvement

Information About the Partnership

The Higher Technical Institutes (Istituti Tecnici Superiori) are non-profit PPPs that were established in 2010 by the Italian government with the objective of providing technical and technological skills in strategic areas for the country's socio-economic development. There are 93 HTI partnerships in Italy which relate to six technologically strategic, future-oriented areas that will benefit the country's economy:

1. Sustainable mobility
2. Energy efficiency
3. Innovative technologies for cultural assets and activities - Tourism
4. Information and communication technologies
5. New technologies of life

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[37] Grunwald, E. (2008). Beyond Primary Education: Challenges of and Approaches to Expanding Learning Opportunities in Africa- Public-Private Partnership Models in TVET and their Impact on the Role of Government. Retrieved February 16, 2018 from here

[38] Adams, A.A. (2010). Mubarak-Kohl Initiative for Dual System (MKI-DS): An Assessment of its Impact on the School to Work Transition. Retrieved March 6, 2018 from here

[39] No author. (2014). Mubarak-Kohl Initiative- Dual System (MKI-DS) in Egypt: achievements of 14 years. Retrieved March 8, 2018 from here

6. New technologies for Made in Italy (mechanical system, fashion system, agri-food system, home system, business services).[40]

HTIs are realized according to the organizational model of the Foundation. This comprises participation in partnership with companies, universities, scientific and technological research institutions, local authorities as well as education and training systems. At least one of each of these participants is expected to be involved in the formation and running of an HTI. HTI's provide training at the tertiary level, but the qualifications attained are not classified as higher education degrees. Programs last for two or three years (4/6 semesters - for a total of 1800/2000 hours). As of 2017, there were approximately 370 training programs offered across HTI's in the country with over 2,000 partners including 681 firms, 93 employers' associations, 404 upper secondary professional or technical schools, 295 training providers, 193 local government branches, 97 university departments, 62 research centres, not to mention a number of other partners such as chambers of commerce and trade unions.[41]

The involved partners in a given HTI pool their expertise to design and deliver good-quality educational programs. In addition, there is a compulsory internship which accounts for 30% of the total time spent on the programme. The work experience in the company can also be undertaken with an apprenticeship contract for advanced training and research.[42]

The HTIs operate across Italy, but collaboration can be best characterized as regional-level cooperation between partners that operate in the same economic sector. Training is also arranged regionally to suit the economic needs of the region. An evaluation that was conducted based on 97 programs indicated that 42 of the 57 programs were high performing across indicators, within which 33 were given 'premium' status and have led to very high employment rates (over 90%).[43] Information about the cost of implementation and further impact was not available at the time of this writing.

Coop Food School – Denmark

Partners: Private: Coop, Public: Zealand Business College

Type of Partnership: Capacity-building, volunteerism

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[40] Istituto Nazionale Documentazione Innovazione Ricerca Educativa. (nd) *ITS - Higher Technical Institutes*
Retrieved March 6, 2018 from here

[41] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[42] Istituto Nazionale Documentazione Innovazione Ricerca Educativa. (nd) *ITS - Higher Technical Institutes*
Retrieved March 6, 2018 from here

[43] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

Intensity of Partnership: Low government intervention

Information About the Partnership

The Danish retail chain Coop developed its own training programme in 2016 for butchers, bakers and delicatessen assistants. The programme was developed in response to a low number of recruits for these areas due to attractiveness of the jobs. About 400 of Coop's 1,200 stores are involved in the programme. The Coop Food School is aligned with national requirements for the aforementioned professions and collaborates with Zealand Business College (ZBC), a public and national accredited vocational training provider. Both publicly and privately funded, the Food School gained popularity rather rapidly– in 2016, about 50% of all enrolled butchery students in Denmark in the second semester were enrolled at Coop Food School.[44] The cost of implementation of the Food School was not available at the time of this writing.

All programs are very hands-on. Students attend classes at the Food School for 20 weeks in three separate blocks. They live at the school during this period. In between the school blocks, they work at one of the Coop stores. After the first six months, the students have to decide which of the three professions they want to specialize in. The aim of the higher degree of work-based learning is to improve vocational skills through hands-on work, which can be particularly attractive for young people with weaker academic skills, and fewer successful experiences during regular school. In this way, one of the main aims behind the programme is to increase the social mobility of the young people who become involved.[45]

No official results or evaluations regarding the success of the programme are available, although there have been favorable reviews from students, parents, advisors, and other training institutions. The aforementioned popularity of the food school also attests to its success thus far. Moreover, teachers from ZBC and HR consultants from Coop have gauged that student enthusiasm is very high, which might be one of the main reasons why the drop-out rate has been lower than that of other training programs.

Workplace-oriented Qualification for Unemployed – Austria (AQUA)

Partners: businesses and workforce training providers, with the PES and a private cooperation partner

Type of Partnership: Dual model, private sector philanthropy

[44] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[45] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

Intensity of Partnership: Government funded and Regulated, Moderate-high government involvement

Information About the Partnership

Initiated in 2010, AQUA is an active labor market programme of the Austrian Public Employment Service (AMS) that targets underqualified and unemployed people who want to join the Austrian labor market but are unable to. Funding for the programme came from a mix of funding from national and regional governments.

Training targets the following people:

- People who have not had any occupational training, or training which is not (or no longer) useful
- Young people with social and or economic issues entering the labor market
- People who have been on the margins of working life for a long period
- Older people who want to re-enter the labor force
- People with a partial labor disability.[46]

According to Vroonhof *et al* (2017):

> *The rationale of the programme and its approach to reducing unemployment is based on the fact that a large portion of Austria's unemployed people do not have a certification beyond primary or secondary school levels. Making the education free of charge for those unemployed people creates an incentive to apply for a VET track. Because AQUA participants work for companies, participating enterprises profit from what is essentially free labour, so the project also provides added value to the private sector. Lastly, the programme offers a clear way out of unemployment, which is an overall goal of the PES.*[47]

Training lasts for at least 13 weeks and up to one year. The standard format of the programme is that a student spends three or four days a week in a company and one to two days a week focusing on theoretical aspects in a training institute. The company that the individual trains at finances the costs of training while the Public Employment Service takes care of the subsistence allowance for the participants.[48] AQUA, in partnership with the cooperating vocational training institution and company, creates a customized education plan that is particular to the unemployed individual. Borrowing from the dual model, a third of the individual's time is spend on theoretical training and two thirds on practical, in-company training. The program's results have been favorable with 3,000 participants in total and a

[46] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[47] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[48] AMS. (2018). Job-related Qualification (AQUA). Retrieved March 6, 2018 from here

dropout rate of 35%. Approximately 2,000 people receive a qualification annually, 65% of whom are still employed three months after they complete their qualification. However, information to date does not provide any evaluation of these results.[49]

In principle, it would be easy to operationalize this type of project in another context as long as there were a significant number of unemployed people with insufficient qualifications or skills to enter into the market. There would also need to be a favorable policy environment.

Proactif, Luxembourg

Partners: i) public: National Action Plan for Employment, municipal governments, labor unions ii) private: local businesses

Type of partnership: Capacity-building, dual system

Intensity of partnership: Moderate government involvement

Information About the Partnership

Initiated in 1998 by the Confederation of Christian Trade Unions (LCGB) under the regional and local action for employment branch of the National Action Plan for Employment, ProActif is a non-profit organization that focuses on skills development for unemployed people in the region. Proactif works with municipal governments, labor unions and local businesses through their training center in Lintgen, which provides an eight-week training course for people looking for jobs. Each project is developed with partners who contribute to the cost of the project. In particular, they may be municipalities, intercommunal unions, trade unions initiatives, associations, companies or individuals. The course consists of both social and technical training, including short-term placements[50] and aims to supervise, reintegrate, initiate and support jobseekers.[51] An indication of the scope of the project was not available publicly.

According to their website:

> *A large part of ProActif's turnover comes from agreements with municipalities, initiative unions and associations. ProActif offers various possibilities for collaboration, including the provision of labor for specific work or services for the elderly with financial participation and from the municipality.*

[49] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[50] European Foundation for the Improvement of Living and Working Conditions. (nd). Joint public-private local partnerships for employment to cope with the recession. Retrieved March 5, 2018 from here

[51] ProActif a.s.b.l. (2014). Social Object. Retrieved March 5, 2018 from here

To better serve its customers ProActive offers a multitude of services sought by customers. For any event ProActive can provide teams to set up and dismantle the necessary infrastructure or deliver the meal for a small private or public party. Chalets built by them in modular pieces are available for rent and sale. In addition to daily tasks, the kitchen provides a small catering service. ProActif can deliver hot and cold meals with or without buffet service to the customer.[52]

The results of the partnership have been favorable. In 2016, 294 internships were organized, meaning that a total of 166 people were able to participate in an internship. However, not all internships led to hiring. There is an average of 75% attendance at workshops that are assigned to job seekers.[53] The cost of implementation of the project was not available at the time of this writing.

Step Ahead - Slovakia, Czech Republic, and United Kingdom

Partners: i) public: Slovak schools and ii) private: SOŠA Bratislava (coordinator of the project), INAK oz (SK), NAPA Trucks (CZ), Institute of Motor Industry (UK) and Automotive Technician Training (UK).

Type of partnership: sectoral, transnational cooperation, capacity-building, Dual Education System

Intensity of partnership: low to mid-level government involvement

Information About the Partnership

Step Ahead was a transnational cooperation venture between training schools, private companies, and NGOs. It was initiated by the Erasmus+ programme and ran from September 2015 until August 2017 with an implementation grant of €193,251.95.[54] The project aimed to ensure that the supply of skilled car technicians corresponded with the demand from the automotive industry by encouraging cooperation and exchange of innovative practices through strategic partnerships in workforce training. Step Ahead achieved this by providing relevant digital materials and methodologies for the automotive industry as well as for teachers through training programs and conferences.[55]

Step Ahead stemmed out of a need for qualified workforce training teachers, relevant programs and specialized skills in a context where there are 200,000 positions to fill in the

[52] ProActif a.s.b.l. (2014). Social Object. Retrieved March 5, 2018 from here
[53] ProActif a.s.b.l. (2016). Rapport Annuel, Retrieved March 8, 2018 from here
[54] European Commission. (2018). 'Step Ahead- The Support of Professional Development of VET teachers and trainers in Following of New Trends in Automotive Industry'. Retrieved March 5, 2018 from http://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/03991500-8e11-46c6-9b8c-668486684afa
[55] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

Slovak automotive industry– about 9% of the total employed population for 2015. The project's main objective was to assist teachers in developing relevant, effective education programs as well as to provide comprehensive teaching materials about the automotive sector to schools. These materials, which included online modules and the roll-out of interactive screens, covered all aspects of the automotive industry including new innovations and methodologies. The materials are now used in about 11 schools in Slovakia and the Czech Republic, with close collaboration between the public and private partners.[56]

The scope of intervention of the project included the following:

- 11 teachers of STREDNÁ ODBORNÁ ŠKOLA AUTOMOBILOVÁ, Bratislava and subsequently 250 students.
- 15 teachers of vocational subjects and foreign language teachers from the automotive professions from 5 other Slovak schools.
- 25 teachers from the automotive professions from 8 Slovak schools, not directly involved in the project, who will be involved in testing of the materials with 400 students.
- 500 teachers from the automotive professions from total number of 87 schools, covering these professions in Slovakia, in the position of future users of teaching materials, with approximately 21 750 students in these professions.
- 120 participants of 3 conferences, organized by the project.
- 10 key staff members of partner institutions involved in the project.[57]

At the time of this writing, there was no extensive report on the results of the initiative, although available information indicated that adoption of the materials had started occurring and that the following outputs were expected:

- 200 interactive screens with content of selected innovations designed to teach professional subjects and AI by CLIL through secondary technical colleges and universities of technical focus, compiled in accordance with the 20 themes selected in an online survey conducted between SEN pedagogues and employers;
- 20 Supporting Methodologies - Suggestions for induction of specific lessons for teachers, OV masters, lifelong lecturers.[58]

Educate for Business - Latvia and Lithuania

Partners: i) public: Utena district municipality administration; Kraslava local municipality ii) private: Alanta school of technology and business; local businesses; Middle Latgale vocational secondary school; Austrum Latgale vocational secondary school

[56] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here
[57] Taken verbatim from: European Commission. (2018). 'Step Ahead- The Support of Professional Development of VET teachers and trainers in Following of New Trends in Automotive Industry'. Retrieved March 5, 2018 from here
[58] Step Ahead. (nd). Project Outputs. Retrieved March 5, 2018 from here

Type of partnership: local PPP, capacity-building, government-regulated, elements of dual system

Intensity of partnership: moderate government involvement in the form of funding

Information About the Partnership

Launched by the Council of the Euro region the 'Country of Lakes', Educate for Business is a cross-border project between seven training institutions and two governmental bodies in Lithuania and Latvia. Running from 2012 to 2014, it focused on upskilling students by linking businesses and educational institutions to make education more relevant. The total budget for the project was €791 280.56, with the European Regional Development Fund (ERDF) co-financing €672 588.48 and national funding comprising €117 727,14. The target groups for the project were students in Latvia and Lithuania, as well as teachers and businesses within the region.[59]

The main objective of the project was to contribute to consistent socio-economic development of the Latvian-Lithuanian border region by assisting in creating a productive, employable and entrepreneurial labor force. The main driver of this was growing concern that people entering the labor force or trying to find jobs after being unemployed did not have the requisite skills needed by companies in the region. These skills included more general vocational skills as well as specialized skills. This stemmed from a lack of training opportunities in the region. Educate for Business sought to bridge the divide between educational institutions that focus on vocational training, students, and the skills demands of local businesses in five ways: i) by providing opportunities for apprenticeships through participating companies; ii) purchasing new machinery in vocational schools to match those in local companies;[60] iii) improving upon training curricula by consulting with local companies and developing training programs aligned with their business needs;[61] iv) developing teachers' competencies through company stationing; and v) fostering entrepreneurial skills and facilitating entrepreneurial activity.[62]

No official evaluation of the Educate for Business initiative has taken place. The results that are available indicate the following:

- Curricula were updated in five Lithuanian and two Latvian schools to reflect a closer connection between business and education in various areas including transport, mechanics, service and tourism and wood processing and carpentry
- There was an improvement in infrastructure with new equipment and study materials

[59] Deutsche gesellschaft für internationale zusammenarbeit (GIZ). (nd). Cooperative Education in Serbia: Good Practise Examples. Retrieved February 28, 2018 from here
[60] Deutsche gesellschaft für internationale zusammenarbeit (GIZ). (nd). Cooperative Education in Serbia: Good Practise Examples. Retrieved February 28, 2018 from here
[61] Latvia-Lithuania Programme. (2014). Educate for Business. Retrieved March 5, 2018 from here
[62] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

in five Latvian and two Lithuanian training schools which suited the needs of local businesses
- There was an increase in quality and quantity of apprenticeships at local businesses for students which led to 78 students taking part in international work-based learning.
- There were better opportunities for teachers in the region to participate in company exchanges– during the project, 20 teachers took part in competency training– eight of whom were in the transport and mechanic sector, six in service and tourism, and six in wood processing and carpentry.
- There was also the development of a training network between participating schools.[63]

Regional Pacts for Employment and Social Inclusion- Romania

Partners: i) public: trade unions, regional development agencies, prefectures, county councils, local offices of the central public institutions (including the PES, the National Agency for Employment (ANOFM), educational establishments; ii) private: research institutes, educational establishments, and the business community

Type of partnership: regional and local PPPs, capacity-building, state-regulated

Intensity of partnership: moderate- high level government involvement

Information About the Partnership

Romania has recognized eight non-administrative subdivisions since 1998, and a government decision based on the National Development Plan enabled public and private entities to jointly decide the priorities for economic and social growth within their respective regions. Stemming from this, eight Regional Pacts for Employment and Social Inclusion were introduced for the periods 2006-2008 and 2009-2013.[64] Included in these agreements were trade unions, regional development agencies, prefectures, county councils, local offices of the central public institutions (including the PES, the National Agency for Employment (ANOFM), research institutes, educational establishments, social partners and the business community and civil society representatives, including NGOs.)[65]

The regional pacts provide a means for fostering the development of long-standing regional and local partnerships enabling them to deliver employment initiatives. They also facilitate access to European funds by offering advisory services and technical assistance such as

[63] Vroonhof, P., Durazzi, N., Secher, J., Stoumann, J., Broek, S., Haan, L., van den Ende, I., & van Loo, S. (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

[64] Duchemin, C., and Irving, P. (2011). Joint public-private local partnerships for employment to cope with the recession. Retrieved February 7, 2018 from here

[65] Harris, L. (2008). Employment and social inclusion Pacts in Romania (ESF supporting Governance structures) Partnership Community of Practice Malta, 17th January 2008 Danut. Retrieved February 28, 2018 from here

training. Regional plans are coordinated by a centralized secretariat, which determines the portfolio of projects to be developed in partnership focus on:

> *the joint provision of labour market integration services (job exchanges and job fairs, career guidance, employment counselling and placement services), the identification of local vocational training needs and the tailored provision of vocational training services and practical on-the-job schemes, the promotion of entrepreneurship (support to business incubators, industrial parks and related consultancy services) or on addressing corporate or sectoral restructuring affecting the local economy (for example, in mono-industrial/mining regions).*[66]

The types of projects that are facilitated by the partnerships vary. One example is the Ruhama Foundation, which seeks to mobilize significant social actors in order to promote economic and social cohesion through employment and social inclusion in the North-West Region of Romania.[67]

At the time of this writing, no concrete information was available regarding the impact or cost of implementation of the regional pacts.

The Introduction of Cooperative Education and the Reform of Training- Serbia

Partners: i) public: Serbian secondary schools; Federal Ministry for Economic Cooperation and Development, Germany (BMZ); Ministry of Education, Science and Technological Development of the Republic of Serbia (MoESTD) and ii) private: 25 private companies to date with another 25 expected to begin

Type of partnership: sectoral, national and local cooperation (national scope, cooperation between schools and local companies), dual system school infrastructure project

Intensity of partnership: state funding, mid to high-level government involvement

Information About the Partnership

The Cooperative Education Project is a response to the relatively high employment rate in Serbia of 14%. According to a recent report by the European Commission, 'a disproportionate share of unemployed people has secondary vocational education. Yet at the same time, employers report a shortage of skilled workers with appropriate skills for the modern workplace, due to the outdated and ineffective system of secondary vocational education in Serbia'.[68]

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[66] Duchemin, C., and Irving, P. (2011). Joint public-private local partnerships for employment to cope with the recession. Retrieved February 7, 2018 from here

[67] Ruhama Foundation. (2018). Ruhama Foundation joined the Association North-west Regional Pact for Employment and Social Inclusion –PACT. Retrieved February 28, 2018 from here

[68] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

Commissioned by the Federal Ministry for Economic Cooperation and Development (BMZ), the Cooperative Education project aims to address these issues by borrowing elements of the company-based German dual education system and introducing them into the Serbian secondary vocational school system. To do this, it modernized three vocational profiles of three years each and partnered with companies involved in these vocations: locksmith-welder, electrician and industrial mechanic. Instead of being company-based, the project is school-based and allows for a 'cooperative education' approach. Secondary vocational students are given a day release to companies that are involved in the project. Here, they receive work-based training through trained mentors. The intensity of the training increases over the three-year period where students receive workshop training once a week in their first year, practical experience in a company for two days a week in their second year, and then for three days a week in their third year. To implement the modernized curricula effectively, the project implemented professional development for teachers, headmasters and company mentors.[69]

To date, 16 schools and 25 companies have contributed to the project and the results have been favorable, with the first group of secondary vocational school graduates all having found jobs at various participating companies and the second cohort nearly ready to enter the job market.[70]

Determining factors in the project's success have been stakeholder involvement in the training process design as well as the effective adaptation of the German vocational training model to fit the Serbian context. One of the challenges highlighted in the project was to increase the participation and motivation of students from disadvantaged backgrounds and well as increasing the enrolment of Roma and female students.[71]

Munich Employment and Qualification Initiative, Germany

Partners: i) public: Munich municipality ii) private:

Type of partnership: dual system, private sector philanthropy

Intensity of partnership: high-level government intervention

Information About the Partnership

The Munich Employment and Qualification Initiative targets people who can work but cannot find employment due to social, health or personal issues. It is Germany's widest-ranging employment-related government programme with a budget of €28.7 million in 2011.

[69] German-Serbian Development Cooperation. (2015). Reform of Vocational Education and Training in Serbia. Retrieved March 1, 2018 from here
[70] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here
[71] Deutsche gesellschaft für internationale zusammenarbeit (GIZ). (nd). Cooperative Education in Serbia: Good Practise Examples. Retrieved February 28, 2018 from here

Launched in 1993, the initiative comprises an element of the city of Munich's attempt at reducing the rate of unemployment in the city and facilitating workforce skills development.[72] The objective is to assist in the transition from school to vocational training and work, as well as to promote gender equality and adjustment to structural and social change.[73]

Programs target different groups and skillsets. Some examples of these include:

- *Reduction of long term employment*, which targets socially disadvantaged people that have been affected by long-term unemployment and often require a lot of support. Here, the emphasis is on real work experience
- *Equal opportunities for women and men*, which focuses on parents who are returning to work after a three-year absence due to childcare responsibilities.
- *Development of skills and expertise in companies and industries*, which targets the development of SMEs by locals and immigrants alike

Starting in 2007, a network of local training organizations and the local joint assistance agency have assisted in provided training. By 2010, about 110 projects were either partially or fully funded by the municipality's budget and disseminated by local private partners. Additionally, the organizations that facilitate the projects can apply for supplementary funding. The initiative has had great success, with 6,000 youth participating in mentoring, profiling and training activities annually and nearly 5,500 people attending vocational or language training in 2009.[74]

Techwise Twente – the Netherlands

Partners: i) public: governmental bodies including the Ministry of Education, training institutes ii) private: training institutes, businesses, business organizations in the High Tech Systems and Materials (HTSM) sector

Type of partnership: Dual System, Capacity-building

Intensity of partnership: Moderate government involvement

Information About the Partnership

Techwise Twente was started in the Netherlands in 2013. It receives public funding from both local and regional government. The overall objective of the PPP is 'to facilitate the cooperation

[72] Cucca, R. and Ranci, C. (2016). Unequal Cities: The Challenge of Post-Industrial Transition in Times of Austerity. Retrieved February 28, 2018 from here
[73] Duchemin, C., and Irving, P. (2011). Joint public-private local partnerships for employment to cope with the recession. Retrieved February 7, 2018 from here
[74] Duchemin, C., and Irving, P. (2011). Joint public-private local partnerships for employment to cope with the recession. Retrieved February 7, 2018 from here

between education providers and business organizations to organize (higher) training which responds to the needs of the manufacturing industry.'[75]

The founders of the PPP noticed that there was a gap in the market for workers with high-tech practical skills and knowledge in the High-Tech Systems and Materials (HTSM) sector due to a mismatch between skills that were demanded in the market and those taught in training institutes.[76]

Techwise Twente's approach sees businesses and business organizations play a guiding role in that they provide input for the initiative. It operates independently of educational institutes, although they continue to work closely with them. The approach includes three main elements: i) work-based learning and ii) raising attractiveness of training for prospective students and employees, and iii) digitalization.[77]

The results of the initiative are uncertain, seeing as they do not release their targets and do not indicate the number of students who have been educated or provided with opportunities for apprenticeships. Interviews of respondents from the organization indicate that targets have been consistently met. Since its inception, four new private enterprises have joined the initiative, which suggests that it is growing and is able to expand. In addition, Techwise has introduced courses and apprenticeship schemes in innovate technologies that aim to teach students how to use them. Techwise's excellent performance in national and international competitions for skills such as welding are also an indication of their success to date.[78]

In terms of replicating this model in a different context, Vroonhof et al (2017) note that policy-makers: 'should make sure the representatives of stakeholders in the cooperation have the power to act quickly and have decision-making power within their organizations to avoid principal-agent problems between the organization and its partners'.[79]

Swiss-South African Cooperation Initiative (SSACI) – South Africa

Partners: i) public: government departments, TVET colleges, SETAs, universities ii) private: NGOs and private sector companies including ABB, AfriSam, Bühler, Ciba, Clariant, Credit Suisse, Hilti, Novartis, Schindler, Swiss Re, Tevrida, UBS and Xstrata

Type of partnership: Capacity Building, Dual system

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[75] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here
[76] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here
[77] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here
[78] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here
[79] Vroonhof, P. *et al* (2017). Business cooperating with vocational education and training providers for quality skills and attractive futures. Retrieved February 14, 2018 from here

Intensity of partnership: Moderate to high government involvement

Information About the Partnership

SSACI was a non-profit pilot PPP that was initiated in 2001 with the objective of developing the skills and technical knowledge of lecturers and youth at public training colleges by means of introducing work-integrated learning (WIL). To achieve this, SSACI has a four-pronged approach:

- Linking public TVET colleges to industry
- Initiating and implementing proof-of-concept projects in skills development
- Catalyzing government initiatives and supporting their implementation
- Feeding lessons from these interventions into government policy and programmes[80]

Once SSACI had developed an industry-based WIL model for lecturers and the model could be implemented systematically in different colleges, the project was extended to an additional 18 public colleges from 2014 to 2016. Funded by the parastatal education and training sector, the following results were reported:

- 28 public TVET colleges have been assisted to develop and implement standard policies and procedures for implementing industry-based WIL
- An instructional manual, guidebooks for colleges and companies, and templates for related documents have been developed
- Over 650 lecturers have undertaken industry placements[81]

In addition to this, SSACI has yielded the following results:

- Enrolled over 5,000 youths in technical training programmes and placed over 4,000 graduates of these programmes in permanent, skilled employment
- Created over 1'300 entirely new jobs through small business development
- Developed new national qualifications and training programmes in agriculture, construction, early childhood development, engineering, hospitality and tourism
- Produced manuals and handbooks on implementing college-industry partnerships, workplace experience for college lecturers and students and technical skills training for out-of-school youths, mentoring young entrepreneurs, as well as research reports into the state of entrepreneurship in South Africa
- Established internship programmes for college graduates and workplace experience programmes for college students
- Implemented accelerated apprenticeships in small-to-medium sized enterprises.[82]

[80] Eicker, F., Haseloff, G., & Lennartz, B. (eds). (2017). Vocational Education and Training in Sub-Saharan Africa: Current Situation and Development. Retrieved February 7, 2018 from here
[81] Eicker, F., Haseloff, G., & Lennartz, B. (eds). (2017). Vocational Education and Training in Sub-Saharan Africa: Current Situation and Development. Retrieved February 7, 2018 from here
[82] The Swiss-South African Cooperation Initiative. (nd). Overview. Retrieved March 12, 2018 from here

Skillful – Colorado, U.S.A.

Partners: i) public: the state of Colorado, educators ii) private: Markle Foundation, non-profit organizations, local and international businesses including Microsoft and LinkedIn

Type of partnership: Capacity Building, Dual system, elements of volunteerism

Intensity of partnership: Moderate government involvement

Information About the Partnership

Skillful is a non-profit venture that began in the state of Colorado. It aims to integrate the activities of businesses, state government, non-profits, and educators to create access to new opportunities.[83] Skillful is running a pilot project that seeks to help employees who do not have a college degree upgrade and promote their skills.[84]

Set against a backdrop of automation and rapid technological advances that have and will continue to have an impact on the workforce, Skillful' s goal is to reskill a workforce that will be under threat of redundancy in the next few years. Estimates are variable, with the McKinsey Global Institute estimating that within the next decade, 9-32% of the workforce in the developed world could become displaced.[85] What is evident however, is that upskilling a workforce is beneficial for the economy and the individual.

Skillful uses data and technology tools such as industry and geographical data to provide transparency around the merit of educational and training programs. This allows workers to discover marketable skills that they currently have or might want to acquire and where they might pursue professional development opportunities.[86]

By encouraging collaboration between several partners, the venture provides information to educators about what kinds of skills are in demand in their subject or industry. It also connects with businesses by demonstrating what skills are available within their applicant pool, all in an effort to allow job seekers to 'access a variety of choices to achieve lasting career success; for employers to find the skilled talent they need to grow; and for educators to train people with the skills required to compete in today's economy.'[87] Moreover, Skillful advocates for state and local governments to highlight the competitive strengths of their jurisdictions' workforce and emerging opportunities.[88]

In addition to these activities, Skillful and the Governor of Colorado, John Hickenlooper have begun an intensive programme to train career coaches. These coaches will assist workers in

[83]Markle Foundation. (2018). Skillful, Overview. Retrieved April 18, 2018 from here
[84] Tyson, Laura. (2018). No Worker Left Behind. Project Syndicate. Retrieved April 18, 2018 from here
[85] Tyson, Laura. (2018). No Worker Left Behind. Project Syndicate. Retrieved April 18, 2018 from here
[86] Tyson, Laura. (2018). No Worker Left Behind. Project Syndicate. Retrieved April 18, 2018 from here
[87]Markle Foundation. (2018). Skillful, Overview. Retrieved April 18, 2018 from here
[88] Tyson, Laura. (2018). No Worker Left Behind. Project Syndicate. Retrieved April 18, 2018 from here

identifying 'the skills and training they need for the jobs they want. And 20 state governors, both Republicans and Democrats, have created a Skillful State Network to collaborate on innovations in workforce development.'[89]

[89] Tyson, Laura. (2018). No Worker Left Behind. Project Syndicate. Retrieved April 18, 2018 from here

Appendix C: Boosting Lagging Regions and Workforce Skills

Program 1 – Vision 2015

Location: Malmö, Sweden

Target Population: Disadvantaged groups including refugees and immigrants

Objectives: Improve labor market integration of immigrants

Main Activities: Collaborate between local education institutions and employers to establish Center for Validation for immigrants without local education, offer language and industry-focused skills training

Program Description

In the mid-1990s Malmö was in the middle of economic restructuring. The consequences were alarming – sharp decreases in employment, tax revenues and a rapid increase in the costs of social allowances – and led to the need for more central budget funding. The socio-economic impact of the crisis also instigated closer co-operation between the two opposing political parties – the Social Democratic Party and the Conservative Party – representatives of local large companies, and private housing companies, which led to the drafting of a local development vision statement, the so-called Vision 2015. The vision was developed through a series of informal meetings led by the mayor, assisted by various local, national and international experts.

Malmö's 'Vision 2015' strategy benefits from a high level of direct involvement and co-operation between local education officials, labor exchange offices and employers. As part of the Vision 2015, the local education and training system for disadvantaged groups was re-orientated towards a more bottom-up approach. To start with, there was a move to create a 'one-stop shop' approach for particular target groups. Whereas before, different organizations (state and municipality) handled the same target groups differently, using a variety of approaches, authority was passed on to a local organization with a single broad management framework. At the same time, the city moved from occupation-based, standardized and time-fixed training programs to individual needs-based learning (formal training, on the-job training or regular work experience, modular courses); and from an emphasis on passive to active labor market policy.

Since January 2004 the number of new vacancies for both low-skilled and high-skilled categories – as published by the public employment services (labor market boards) in Malmö, Göteborg and Stockholm – has been increasing in all three cities, with Malmö showing the highest level. In 2004 around 50 000 individuals commuted into Malmö to work while about 22 000 individuals living in Malmö worked outside the city. Compared to 1994, the number of individuals commuting into Malmö increased by 19% and those commuting out of the city increased by 68%. Overall, the Vision appears to have been beneficial in helping Malmö to

recover from previous economic downturns and build its new role as an open and attractive global city. Migration flows of Swedes and immigrants have increased the population steadily during this period and changed the ethnic mix of the city. Economic restructuring has also accelerated, and small- and medium sized firms in the new economy have replaced the old industrial plants. Economic growth has returned to average for Sweden, although it was not as high as in the industrial booming days of the 1940s, 1950s and 1960s.

Source: OECD (2009), Designing Local Skills Strategies.

Program 2 – Dolnośląski Regional VET Program

Location: Poznań sub-regions, Poland

Target Population: Local unemployed individuals

Objectives: Improve qualification of VET teachers; develop work-based VET with employers and lifelong educational and vocational training

Main Activities: Set up vocational training centers for important economic sectors, provide additional lessons for students, intensive co-operation with local employees, educational and vocational counseling for students

Program Description

For the past several years, the Polish government has designated vocational education and training as one of its priorities for educational policy and labor market policy. The Ministry of National Education and the Ministry of Family, Labour and Social Policy underline the importance of increasing the quality of VET, its attractiveness to students, and better matching it to the needs of the labor market. The Ministry of Economic Development also supports this approach.

In the Dolnośląski Region they planned a regional program of vocational education development, including the selection of seven economic sectors of special importance for the regional labor market, and then set up vocational training centers related to these sectors in nine counties. The distribution of the centers was spread evenly throughout the region. The Program included investments in infrastructure (modern equipment for vocational education), as well as investments in the competences of teachers and students (additional lessons for students, intensive co-operation with local employers, educational and vocational counselling for students). This program is a good example of the co-ordination of VET development in a region, which requires the establishment of a good partnership among regional and local authorities, implementation in a planned and systematic manner, and a selective approach to the improvement of the quality of vocational education. It is also an example of good co-ordination between different instruments: investments in the infrastructure were financed by the European Regional Development Fund (ERDF), while investments in competences were finance by the European Social Fund (ESF).

Source: OECD (2016), Employment and Skills Strategies in Poland, OECD Reviews on Local Job Creation.

Program 3 – Choctaw Tribe Program of Mississippi

Location: Mississippi Choctaw Reservation, USA

Target Population: Skilled and unskilled workers

Objectives: Tribal vocational rehabilitation, workforce development, and college program

Main Activities: Collaborate with local businesses to create adult education program, establish Integrated Technologies Centre for technology intensive training for workers and scholarships for college students

Program Description

In the 1990s, manufacturing was the main source of income for the tribe and the focus of workforce development was basic skills and skill enhancements as needed by the employers. More recently, to support the transition into a technology intensive economy, the tribe has aggressively moved into skill development for technology intensive jobs coupled with active target industry analysis and industry recruitment. This includes development in 2006 of the Integrated Technologies Centre, a state-of-the-art workforce training facility located on the reservation and staffed and operated by the East Central Community College (ECCC).The focus of the facility is to select, assess, train, upgrade and transition employees using customized standards for technology intensive industry. The tribe's Office of Economic Development also routinely assesses the types of skills needed for current and prospective employers and works with the training programs to ensure these needs can be addressed. They find that skill needs are relatively easy to determine, as most enterprises operate on contracts that are 12 to 24 months out in the future, so have time to determine the skills needed and set up training. In 2006, the tribe developed a collaborative relationship with the East Central Community College, which includes the provision of staffing to the center.

The Integrated Technologies Centre offers customized training to regional employers to meet technical and professional workforce needs. The center is staffed by East Central Community College faculty and adjunct faculty (specialists in the major training areas). It is funded by one state of Mississippi and federal program funding; employers also fund some of the customized training programs. Services and available training include: technical training capabilities, small business development, basic skills, human resources, and computer applications. The facility at the Choctaw reservation focuses on providing both worker skill upgrading and development of new skills for younger workers as well – all with an emphasis on advanced manufacturing and systems technologies. To encourage entry into the workforce, the Youth Opportunity Program provides on the job experience and training for high school students.

The results have been remarkable, with poverty and unemployment rates dropping significantly since the early 1970's from highs of 80% to a low of 2% in 2007. The focus for workforce development is on technology intensive manufacturing as well as the hospitality industry, aimed at upgrading the skills of workers, while also training those without skills. The emphasis is also on tribally-owned and managed enterprises to foster self-reliance.

Source: OECD (2009), Designing Local Skills Strategies.

Program 4 – Mackay Area Industry Network CARE Program

Location: Mackay, Australia

Target Population: Skilled workers, long-term unemployed, indigenous people, and women

Objectives: Address skills shortage; employer-led initiatives to recruit, select, and manage apprentices in the workplace

Main Activities: Create apprentice management to ensure workplace and technical college training, organize the logistics of training courses and inductions that the technical colleges or other organizations deliver

Program Description

The region of Mackay in Australia has experienced unprecedented growth and wealth creation since 2004, putting significant pressure on company development. In response, manufacturing companies in Mackay have formed an industry cluster named 'Mackay Area Industry Network' (MAIN) with the purpose of addressing skills shortages quickly and effectively. The result was the MAIN CARE Program – designed to recruit, select and manage apprentices in the workplace.

The MAIN CARE Program, although driven by the private sector is a strategy designed in co-operation with the Australian Industry Group, the Mackay Regional Development Economic Corporation (REDEC), 17 DETA, and the TAFE Technical College. The implementation of the strategy is coordinated by an Apprentice Master who liaises with public and private organizations, coordinating all inductions into apprentice programs in collaboration with the technical colleges. The program also looks after all management and health and safety aspects of the deployment of apprentices into the workplace. MAIN CARE uses a 'consortium' type model of delivery, where the professional services of educational institutions, support from government, and partnerships with industry, result in recruiting new apprentices, managing apprentices and trainees in the companies, and training the workforce.

MAIN CARE program has also been able to introduce hard-to-reach groups (the long-term unemployed, people from indigenous backgrounds, and women) into the workforce, although this is not the focus of the program. MAIN acts as an intermediary agent connecting industry with education agents; they organize all bookings for all of their apprentices, and they also focus on the sort of gaps prospective employers might have in the near future. The

role of the program is not to train – other organizations such as the technical colleges do that – but to organize the logistics of training courses and inductions that the technical colleges or other organizations deliver. MAIN also take care of the basic information needs of apprentices, explaining the expectations of the job from inside the workplace; important information on which companies are usually too busy to expend time on. The main success of the scheme has been improving retention rates within the apprenticeship program which previously had high drop-out rates.

Source: OECD (2009), Designing Local Skills Strategies.

Program 5 – Programs in Czech Republic

Location: Various programs in Czech Republic

Target Population: Existing employees, individuals lacking formal education

Objectives: Promote qualified, competitive human capital, guarantee equal opportunities

Main Activities: VET training programs and courses are delivered directly schools or are outsourced to the private sector

Program Description

While youth unemployment remains lower than the EU average, it is a growing concern as young people find it increasingly difficult to integrate into the labor market. Since 2008, the Czech Republic has introduced significant reforms within the employment and training system, which has altered the institutional landscape and the way in which policies and programs are managed at the local level. The Human Resource Development Strategy was prepared in 2000 in response to the opportunities and risks that emerged after accession to the EU, and it addressed strategic human capital issues. It can be considered to be a national skills strategy. It included forecasts of global and national skills challenges in the Czech Republic. The main strategic objective was to achieve the highest possible level of competitiveness, raise the future employability of Czech citizens, and make it an attractive destination for domestic and foreign investors.

The Ministry of Labour and Social Affairs has recently drawn up a measure to support job creation for young people up to the age of 30 through an internship project called 'work experience for young people up to 30'. For a maximum period of one year, employers can be granted a monthly subsidy of CZK 24 000 for newly hired young people and additional financial aid is available to cover the cost of establishing the job. Young people are eligible for the internships if they have been registered with the Labour Office for more than four months and have little or no work experience. The expected number of participants is 3 200. The Ministry will also assist recent graduates in job search. In June 2013, regional projects for expanding individual counselling on job search or graduate training were launched and up to CZK 1 billion has been allocated.

Labor productivity in the Czech Republic is low and declined further during the downturn. There are no specific sector strategies or initiatives to improve work organization or productivity, but some public programs contain elements of innovation leading to improved labor productivity. Universities and education and training institutions are actively involved in delivering and supporting applied research in a broad range of fields relevant to the regional economy. In the South-Moravian region, the research activities of universities are promoted by regional policies to boost regional innovation potential. Projects such as CEITEC, IT4Innovations, Bio-technology Incubator and Innovation Vouchers are examples of such cooperation. Training programs are generally adapted to broadly defined 'at-risk' groups (e.g. persons over 55s, youth, the disabled, women, residents in socially deprived areas and the Roma minority). In addition, regional projects (RIPs) are targeted to more specific disadvantaged groups based on analysis of the regional labor market.

Source: OECD (2014), Employment and Skills Strategies in the Czech Republic, OECD Reviews on Local Job Creation.

Program 6 – Emploi-Québec

Location: Montreal, Canada

Target Population: Unemployed, individuals lacking formal education, disadvantaged groups

Objectives: Create productive local economy, skills value-added, and avoid low skills equilibrium

Main Activities: Over 75 skills, literacy, and language training programs, preparation for employment, self-employment, wage subsidies, recognition of qualifications, social assistance

Program Description

Employment and training policies for unemployed people in Montreal are primarily devised at provincial level by the central office of the Emploi-Québec public employment service. They consist of universal services accessible to any interested person or organization, encompassing reception, registration, referral, advice, labor market information (LMI), as well as an online placement service (matching job seekers with job providers). They also include other measures, access to which is determined based on the profile and needs of the individual, and by their employment insurance or welfare contribution status.

Emploi-Québec offers a range of measures concerning training, preparation for employment, self-employment, and wage subsidies, recognition of qualifications, social assistance and aid. The customer and their local branch officer determine together which measures suit each individual case, taking into account the individual's characteristics, their aspirations and aptitudes, as well as the needs of the local labor market. The individual will then be referred

to specialist organizations at different stages of their pathway, and they will be monitored throughout this by their Emploi-Québec adviser.

Beyond the services delivered by the public employment service, training for adults, including training focused on literacy, francization, English as a second language or vocational training, are offered by the school boards (CS) and general and vocational colleges (CEGEP). The school boards can issue skills training certificates (STC) without ministerial approval for short training courses, and the CEGEPs can produce attestations of college studies (ACS) for short training courses focused on the needs of the labor market. Emploi-Québec funds numerous individuals' participation in these training courses.

Source: OECD (2017), City of Talent Montreal: An Action Plan for Boosting Employment, Innovation and Skills, OECD Reviews on Local Job Creation.

Program 7 – Michigan Regional Skills Alliances

Location: 12 regions in Michigan, USA

Target Population: Local business employees

Objectives: Attraction and retention of skilled workers; skill upgrading; integrating the hard-to-serve into the workforce

Main Activities: Work with local key stakeholders, provide computer and internet training seminars, remedial literacy and numeracy training, GED preparation training

Program Description

In response to Michigan's economic circumstances, the Governor initiated the Regional Skills Alliance program to help improve the effectiveness and efficiency of its educational system and its workforce development activities in order to better meet the needs of a struggling state economy. MiRSA initiative is to increase the skills and labor market success of individuals in a region and to provide a collaborative mechanism through which local employers would reap significant benefits in having access to a more skilled workforce. For workers, the potential benefits of a MiRSA include outcomes such as an increase in skill levels, increased employment entry rate and job retention, progression along a career ladder, higher earnings levels and benefits, and earnings growth. For employers, the expected benefits are lower labor turnover, greater productivity and profitability, and fewer job vacancies. While not patterned after any one prior initiative, the MiRSA concept follows several previous activities across the nation that established workforce intermediaries, often referred to as sectoral, skill, or employment initiatives, to help bring together businesses and workforce development and educational systems. A unique feature of the MiRSA initiative is the partnership between the state government and a charitable foundation.

Other communications from the state indicated that more than 2100 individuals received training and 813 individuals were placed into employment through MiRSAs. Business leaders

were quoted to say that it contributed to their businesses' bottom line and makes Michigan a more attractive place to do business by attending to the specific needs of business. They commented that MiRSAs improved their profitability through job training grants that flowed through MiRSAs, through providing a team-like environment that encouraged companies to flourish, allowing local communities to customize programs to meet their local needs rather than having programs handed down and mandated from state government, and providing a vehicle for employers to understand each other's business challenges and to find solutions.

Source: OECD (2009), Designing Local Skills Strategies.

Program 8 – New York City Career Pathways

Location: New York City, USA

Target Population: Local low-income immigrants

Objectives: CUNY created 8 local career pathway programs to upgrade unemployed or low-wage immigrant workers' skills through career pathway models in health, hospitality, and retail sectors

Main Activities: Offer language training, industry-oriented skill certificate programs, natural and applied sciences credit programs, and professional development

Program Description

City University of New York (CUNY) colleges and their partners are attempting to address these barriers and upgrade immigrant workers' skills through 'career pathways' programs. Career pathways are defined as a 'series of connected education and training programs and support services that enable individuals to secure employment within a specific industry or occupational sector, and to advance over time to successively higher levels of education and employment in that sector' (Jenkins and Spence, 2006).

A number of different pathway models have been developed in the health care, retail, hospitality and tourism sectors: Foreign Born Registered Nurse Program/Foreign Trained Physician to Registered Nurse Program, Health Careers College Core Curriculum (HC4), LaGuardia Community College's Allied Healthcare Career Pathway, Project Welcome, Hotel T.E.A.C.H, and VESL for the Successful Worker Project, The Fast Food Fast Track VESL Project. The career pathway model appears well-suited to helping immigrants in low-wage jobs or with low-skills overcome various labor market or educational barriers, in a number of ways. The multiple entry and exit points along a pathway responds to the very diverse skill levels and needs of immigrants, from those needing some combination of language, occupational and/or other basic skills to access entry-level employment, to incumbent workers needing additional skills or education to advance to higher-level positions. Fully 'mapped out' pathways can provide information that many immigrants lack about both the US educational system and the labor market, to allow for more informed decision-making.

As of spring 2007, 82 of the 1034 HC4 participants had earned CUNY academic degrees, with most in nursing, usually at the Associate Degree level. There is also some early evidence to suggest that Latino students who participate in the HC4 programs do better in nursing programs than non-HC4 Latino students. Borough of Manhattan Community College and its CUNY partners were still evaluating the outcomes from the VESL for a Successful Worker project during this study, but early analysis suggested that 85% of completers improved at least one level in their standardized language test scores. Twenty-seven per cent of the completers moved up three levels in their test scores. Program staff believe at least 10% of completers have already enrolled in ESL classes at participating colleges and several students have enrolled in college degree programs.

Source: OECD (2009), Designing Local Skills Strategies.

Program 9 – Youth Skills Programs in Slovenia

Location: Slovenia

Target Population: Youth (15-29), workplace employees, unemployed

Objectives: Increase competitiveness and growth by boosting innovation potential; promote sustainable development; reduce youth unemployment

Main Activities: Facilitate work-based training (apprenticeships and internships), offer vocational upper secondary programs

Program Description

Several national strategies form the basis for the national government's labor market policy goals. These include the Strategy for Economic Development of Slovenia 2006-13, which sets a number of goals around increasing competitiveness and growth; boosting investments in research and development; improving institutional competitiveness and the overall functioning of the state; creating a modern welfare system and labor market; and promoting sustainable development. The most important and recent strategy adopted by the government and approved by the European Commission in autumn 2015 is the Smart Specialization Strategy of Slovenia. This strategy aims to 1) boost Slovenian competitiveness by increasing its innovation potential, 2) diversify the existing industrial structure (both in the manufacturing and services sector) and 3) promote the development and growth of SMEs. The strategy plays a key role in integrating development priorities outlined through the Slovenia's Development Strategy 2006-13, the Slovenian industrial policy and the Digital Agenda.

Adult education programs are overseen by the Slovenian Institute for Adult Education (SIAE), the main national institution for research and development, quality and education, guidance and validation, and promotional and informative activities in the field of adult education. SIAE drafts professional bases and evaluations, and monitors the development of the adult

education system, develops various non-formal and formal forms of learning, develops programs to improve adult literacy, and pays particular attention to improving access by vulnerable groups of adults to education and learning. In doing so, it develops the necessary infrastructure to support learning, develops models for the self-evaluation of quality and the validation of prior learning, and provides professional education and training for adult educators. Vocational schools also offer higher educational programs and special training for companies – some have specific inter-company training centers (MIC – Medpodjetniški izobraževalni cente). Their activities are often supported by local partners – for example, the higher education unit in Maribor's training center has 84 partners.

Source: OECD (2017), OECD Employment and Skills Strategies in Slovenia, OECD Reviews on Local Job Creation.

Program 10 – Programs in Turkey

Location: Turkey

Target Population: Local individuals lacking in formal education and unemployed

Objectives: Raise education and skills levels; increase productivity and employment

Main Activities: Design specialized skills training program, offer VET programs, and promote apprenticeships and work-based training opportunities

Program Description

The Turkish Government initiated a series of reforms and long-term commitments as set out in various laws, strategic documents, action plans and programs, all of which have recognized the critical importance of employment and skills policies. For example, the Strengthening Vocational and Technical Education and Training (SVET) project, conducted between 2002 and 2007, aimed to address 'the mismatch between education/training programs and the needs of the labor market,' starting with a review of existing practices and policies which paved the way to set new standards for vocational education and training (VET). Launched for the same purpose, the Modernization of Vocational Education and Training (MVET) project included initiatives 'to improve VET teacher quality, such as the introduction of VET teacher competencies and quality assurance based on the European Network System.'

There is a strong emphasis in Turkey on placing young people into jobs. ISKUR which is the Turkish Public Employment Agency has significantly increased the number of job and vocational counsellors within the employment system to better match job seekers to employers. Provincial Employment and Vocational Training Boards (PEVTBs) across Turkey assist in the process of creating employment policies at the local level and provide suggestions to KUR about the training courses available for unemployed persons. Unemployment stood at 11.7% in 2016, which is above the OECD average and contrasts with recent downward trends across many OECD countries. More than 30% of young people in Turkey aged 15-29

were classified as NEET (i.e. not in education, employment or training) in 2014. This value is sharply lower than in 2005, but well above the OECD average of 15.2%.

Source: OECD (2017), Employment and Skills Strategies in Turkey, OECD Reviews on Local Job Creation.