LIFELONG LEARNING FOR AGING SOCIETIES – POLICY OPTIONS FOR POLAND

Policy Paper for the World Bank Central Europe and the Baltics Aging Project (P133203)

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Lifelong Learning for Aging Societies – Policy Options for Poland[1]

Executive Summary

Europe is in the middle of massive demographic transitions which also affect other parts of the world. Populations are aging and there is a significant demographic decline, putting pressure on public budgets and leading to the question how competitiveness and growth can be ensure in the decades to come.

Lifelong learning can be transformed into a key concept to mitigate some of the impacts of demographic decline. In order for this to happen, it needs to lose its – in policy debates often too narrow - focus on adult learning and become a concept which ensures the development and transmission of knowledge, skills and competences from the early years to old age. Governments need to put significant emphasis on early childhood learning as the returns to investment at that level are the highest and children can be put on track to become lifelong learners.

Lifelong learning also needs to explicitly embrace formal schooling and help setting the right priorities in terms of learning outcomes and educational modalities. The development of the European and national frameworks for lifelong learning was an important step in this direction; however, further steps need to follow.

This paper discusses how education and skills development can help a country like Poland to tackle the aging challenge and what are some of the key policies to be taken forward.

Introduction

Europe is currently undergoing a massive demographic transformation. The number of people over age 65 will double by 2050 and working age populations will shrink in most countries (in some countries by up to 40 percent). Poland is one of the countries which is strongly affected by demographic change.

However, demographic change is not only a threat to prosperous societies. The fact that we live longer and healthier lives is very positive. The challenge at hand is now how to turn longer lives into longer productive lives which allow countries to maintain their standard of living and to continue to grow and to innovate. Education and training plays a key role in this respect. Recent neuroscience indicates that the brain continues to change and is able to maintain its plasticity far into the middle ages. This is good news for societies who will strongly depend on the contributions skilled workers make to the labor market beyond their 50s, 60s and even 70s birthday. While some adult training programs yield high rates of return, attempts to skill up low-skilled workers, for example after the closure of state-owned enterprises, do not seem to have triggered impressive results.

[1] This note was prepared by Nina Arnhold and Jaroslaw Gorniak with Vitus Puttmann in 2013/14 based on a background report by Jaroslaw Gorniak and previous work of Professor Gorniak and his team at the University of Krakow on a Human Capital Inventory for Poland. The development of the note was supported under the World Bank ECCU5 (Central and Eastern Europe) "The Prospective of Active Aging" Economic and Sector Work (P133203) which was led by Emily Sinnott.

Thus, lifelong learning works – but for some more than others. It is not automatic that mature workers will be able to improve their knowledge, skills and competences; there needs to be a pre-condition allowing them to do so. The good news is that this pre-condition is not a 'fate'. Families, educators and policy makers have the tools at hand to put youngsters on the lifelong learning pathway. Skills acquired at young ages will lead to more skills. However, while the OECD notes that 'the *learning rich* get richer' (OECD, 2004), unfortunately, also the opposite it true: The *learning poor* get poorer. And with increasing age it becomes more and more difficult to catch up on key skills and competences like 'learning how to learn', 'ability to work in teams' and so on. It is still possible but in economic terms, the return on investment is highest for early childhood development.

The report at hand will discuss demographic issues and questions of human capital formation in Poland. While it will take a close look at the status quo of skills formation, it sets out to **provide policy makers with options for gearing their education system towards lifelong learning and by doing so turn from 'victims of demography' into active designers of the way we will learn and work** in the decades to come, allowing our societies to maintain high living standards and to innovate.

The demographic challenge and human capital in Poland

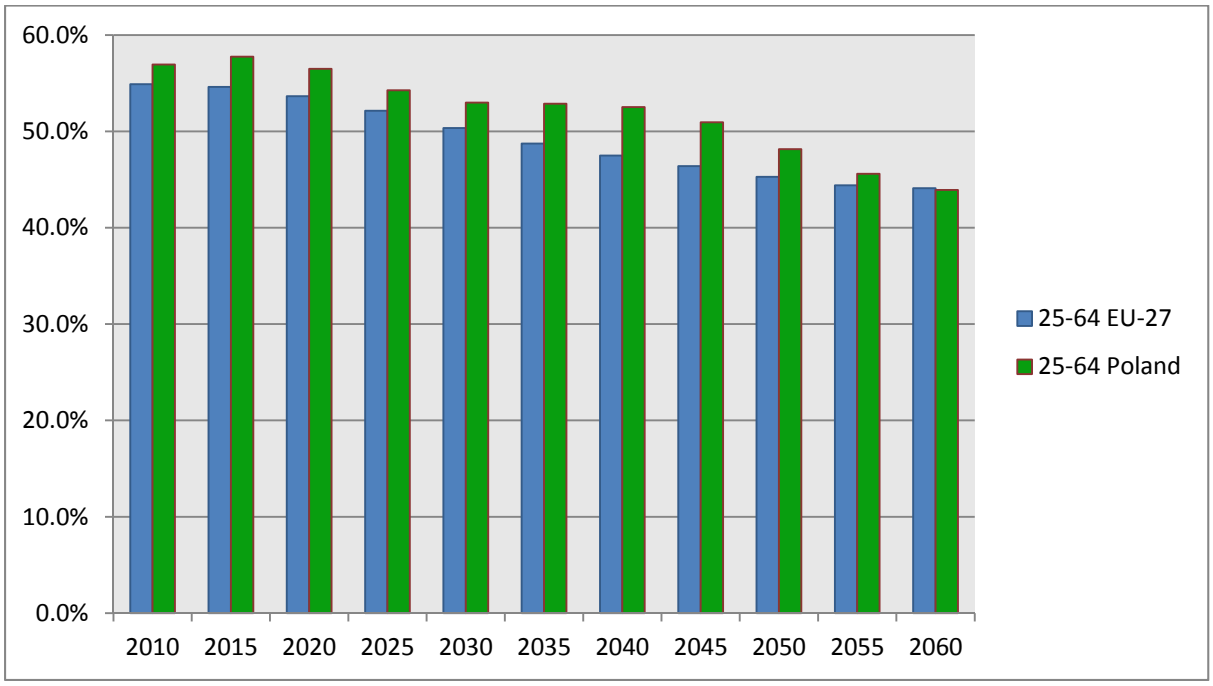
According to EUROSTAT's population projections, the population of Poland will both shrink and become significantly older over the next 50 years. Until 2035, the population will have shrunk by 3.4 percent (minus 1.3 million), and in 2060 it will have shrunk by 14.5 percent (minus 5.5 million). The share of people aged 65 plus which was one of the lowest in Europe in 2010 (13.5 percent), will jump up to 43.5 percent in 2060, **locating Poland at the top of the list of the oldest populations in Europe, just behind Lithuania and Romania**. Poland suffers – similar to other Central and Eastern European countries – from declining fertility and high emigration rates, while simultaneously experiencing increased life expectancy. Ageing developments in Poland, excluding the impact of migrations, can be well illustrated by observing changes in demographic trees compared in 20 years intervals (see Annex 1). The demographic structures reveal some major problems:

1. **The dramatically growing old age dependency ratio** is the first problem, i.e. the ratio of the population aged 65 plus to the population aged 15-64. In all European countries the average age is expected to get higher, even though some countries will significantly increase their population. In EU-27, the share of the population in productive age will decrease and the old age dependency ratio will systematically increase from 26 percent in 2010 (26.8 in 2012) to 50 percent in 2050 and 53.5 percent in 2060. **According to EUROSTAT, in Poland the old age dependency ratio will increase from 19.4 percent in 2012 to 56 in 2050 and 69 in 2060**.
2. The second problem is best visible in the first part of Annex 1, which illustrates the demographic situation in 2010. **The post-war baby-boomers have started to reach the pension age**. After 2020 the vast majority of this cohort, especially females, will be in the pension age. At the same time the baby-boomers from the eighties will already have entered the labour market and there will be no replacement for the cohort leaving the labour market.

3. The demographic tree presented does not include the effects of migrations. **It is estimated that around 2 million Poles have left the country to find jobs and better living standard in other countries**, especially in the wealthier EU member states. Many of them, especially from the young generation of the second baby boom, will not return. If economic growth is to be based on labour intensive sectors, the demographic gap will create tensions on the labour market. Also, the growing number of older people will need more services of various kinds, all of which are labour intensive.

Figure 1 illustrates the problem of the shrinking labor force more specifically, showing expected changes in the share of 25-64 year-olds in the population of Poland and EU-27 (according to the demographic projection of Eurostat in: *EUROPOP2010 - Convergence scenario, national level*). This age group is the main recruitment base for the active labor force in European societies and it is an age group with high participation in tertiary education. It is visible that its share will drop significantly after 2020 both in Poland and in the rest of the EU. It is, however, expected to stabilize in Poland after 2030. Towards the year 2060 rates in Poland and in the whole EU will converge below 45 percent.

Figure 1. Demographic projection of the share of 25-64 years old in total population of Poland



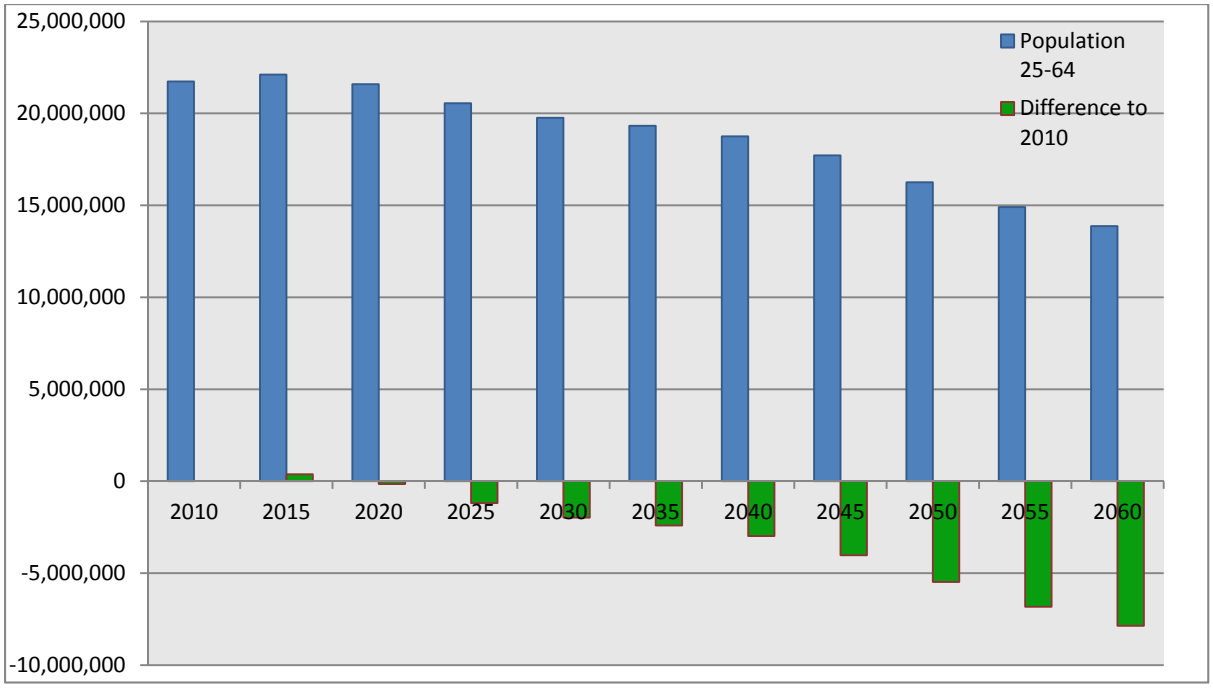
Source: Calculations based on EUROSTAT data

Figure 2 and Figure 3 illustrate this trend in absolute numbers and show the expected difference between the number of 25-64 years old in respective years and in the year 2010. The Polish labor market will suffer from the effects of the shrinking recruitment base for the labor force, the numbers further reduced by emigration, which will be in turn getting more common due to labor force deficits in the wealthier countries of EU.

By 2030, Poland will have about 2 million less people in the 25-64 age group. Even more importantly, the age group 20-24 will shrink by one million. Around the same time the EU population of 25-64 years old will have shrunk by 27.5 million (5.5 million in the group 20-24). Neighboring countries not belonging

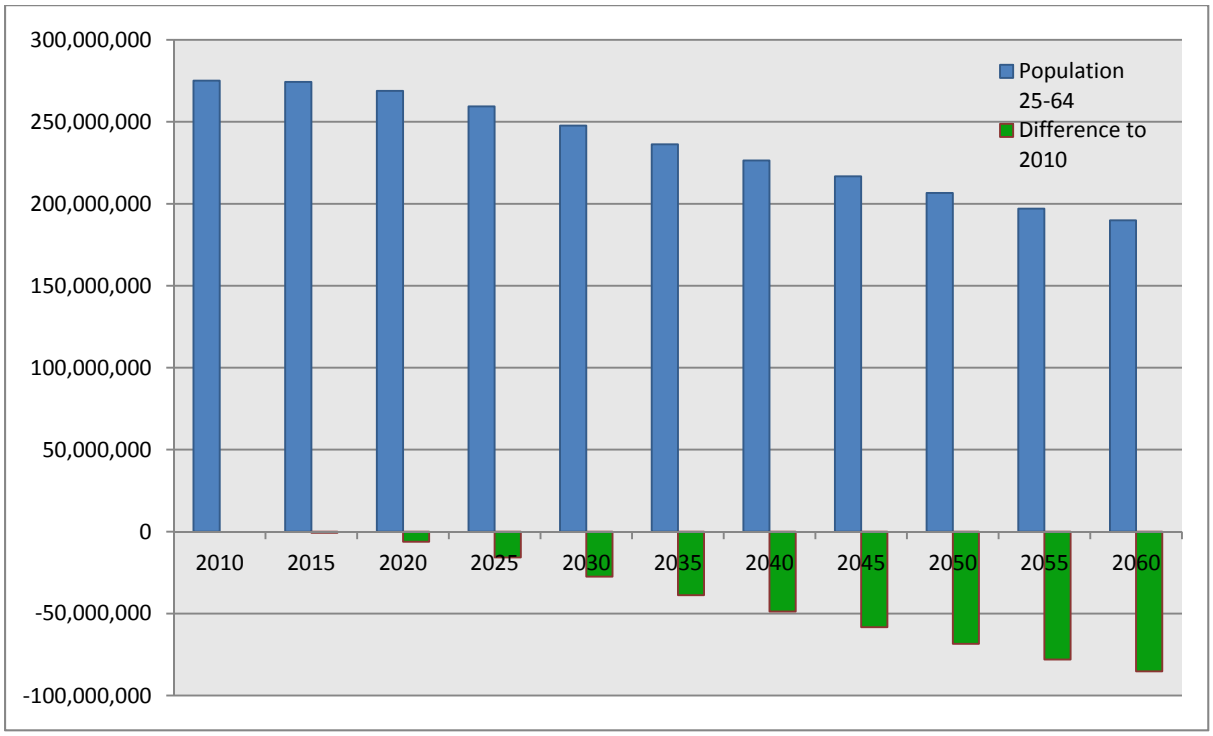
to the EU, like Russia and Ukraine, find themselves in a similar demographic trap. **It is debatable if Poland, being far from convergence to at least average of EU GDP per capita, can expect them to be the source of a significant inflow of immigrants**. The better-off competitors in Western and Northern Europe might be more attractive as migrants' destinations.

Figure 2. Demographic projection of the number of 25-64 years old people in Poland until 2060



Source: Computation based on EUROSTAT data

Figure 3. Demographic projection of the number of 25-64 years old people in EU-27 until 2060



Source: Calculations based on EUROSTAT data

Poland has a very low birth rate and its chance of catching up in terms of fertility is declining. The baby boomers born between 1975 and 1990 will soon pass their fertility age. Without a radical change in family policy and significant changes in early childhood provision, the demographic situation will follow the aforementioned patterns. Its negative impact on economic growth will be very difficult to overcome. The *World Development Report 2013* states:

> "The growth of gross domestic product (GDP) certainly matters for employment growth, but in the medium term it matters less than demographics and participation rates. Data from 97 countries over the past decade confirm that a positive relationship exists between the growth of the GDP per capita and the growth of employment per capita (…). The relationship is not very strong, but only in very few cases was growth truly jobless."[2]

Additionally, the growing number of older people will challenge the sustainability of the social welfare system. How to finance the growing costs of pension systems, healthcare and eldercare in an economy with a shrinking number of employees is a complex problem. The key to solve it is well known: on the one hand productivity needs to increase; on the other hand, radical changes in family policy would need to be made. However the results still remain uncertain.

[2] World Bank, *World Development Report 2013: Jobs,* World Bank, Washington DC 2012, p. 98-99.

Education plays a crucial role in solving this problem, in particular with regard to the productivity challenge and its potential impact on the prolonged labor activity of older people**.** Thus, this report focuses on the role education and lifelong learning can play in addressing problems of aging societies.

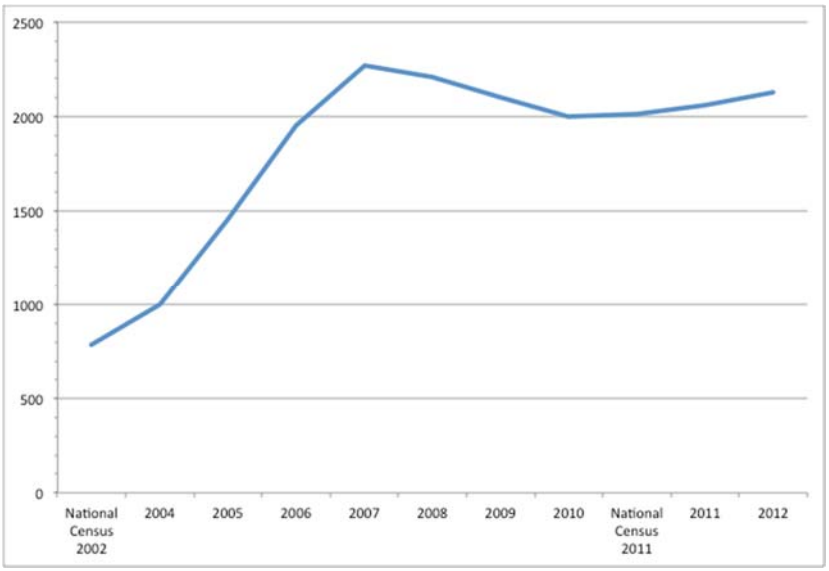
Education is also important for increasing labor market participation as those with a higher level of formal education tend to have a significantly higher employment rate.[3] Labor market participation is still low in Poland compared to the EU average; thus, there is significant potential in this regard.

In summary, the aging of the Polish population carries the following risks:

- Reduced labour force in medium term perspective;
- Increased pressure on state expenditures resulting from growing demand for publicly supported eldercare and healthcare for senior citizens;
- Growing old age dependency ratio and its consequences for tax policy and labour costs;
- Possible impact of prevalence of older staff on innovation capacity and speed.

The demographic situation is aggravated by mass migration of Polish citizens and families.[4] The biggest shares of those who emigrate are man and women in their fertile age. This fact adds to other social and cultural factors determining the extremely low birth rate. Faster economic growth and job creation is the major condition of reversing trends in migration.

Figure 4. Estimation of the temporary emigration over 3 months from Poland in 2004-2012 (in thousands)



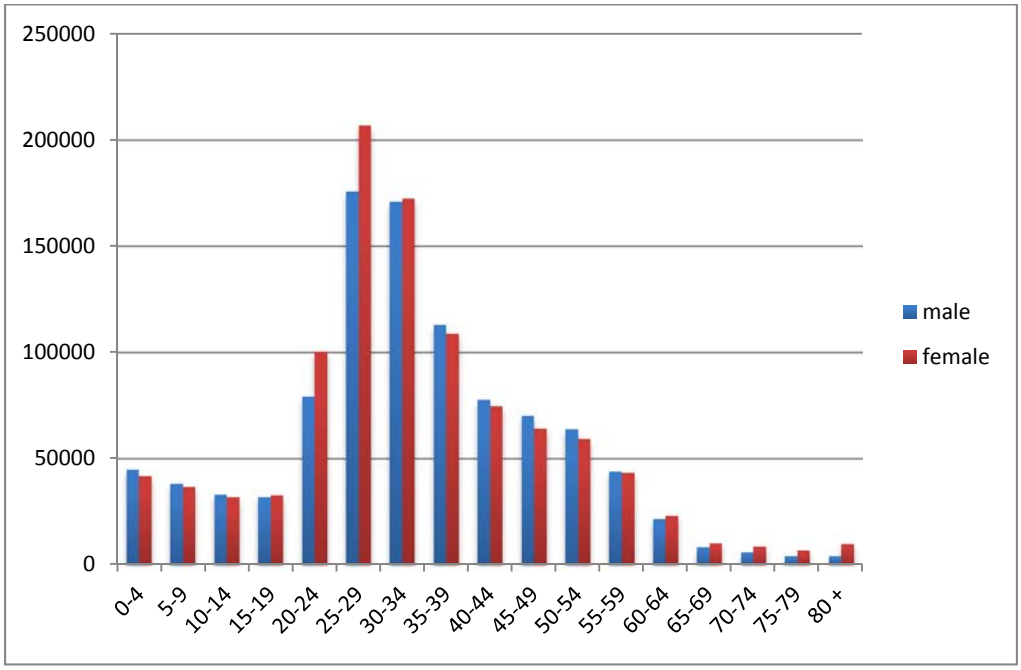
Source: Central Statistical Office, Informacja o rozmiarach i kierunkach emigracji z Polski w latach 2004 – 2012, Warszawa, October 2013.

[3] They are more attractive for employers but also more motivated to find a job due to a higher level of investment in their human capital.

[4] Who, coincidentally, display different demographic patterns when living abroad.

Note: Immigration was established by the National Census 2011 at the level of 40 097 persons. Even if the figure seems underestimated, it illustrates a significant migration issue.

Figure 5. Emigrants over 3 months from Poland by age and gender (in thousands)



Source: Central Statistical Office, Migracje zagraniczne ludności. Narodowy Spis Powszechny Ludności i Mieszkań 2011, Warszawa, 2013 (National Census 2011).

The combined demographic and migration developments are a wake-up call for policy makers: In future, less young people will need to bear the fiscal costs of an aging society. **The new generation entering the labor market will need to work more *and* be more productive. This cannot be ensured without rethinking the education system and approach to lifelong learning.**

Education reform in Poland post-1990: setting the scene for the development of 21st century skills[5]

Poland has seen as series of major education reforms in the last two decades. However, there are concerns that school education is still characterized by a focus on encyclopedic knowledge, repetition and individual achievements rather than creativity, reasoning, technological literacy, communication

[5] While in principle, three types of learning outcomes can be distinguished, namely knowledge, skills and competences (with the latter primarily being defined as more general attitudes towards learning and working), the terms skills and competences are used here in a wider manner as applicable learning outcomes ('what the learner is able to do').

and teamwork. Traditional modes of delivery continue to be rooted in the methods of educating teachers at the universities. The problem has been thoroughly analyzed, in particular in the "Report on Polish Education 2010" and published by the Educational Research Institute.[6]

The strong influence of the socio-economic status of students and their families on school achievements has been known and researched for a long time. Even during the communist years, the educational achievement of students was dependent on their social background; the higher the parents' educational status, the higher the probability that the child would achieve at least the same attainment level (this is particularly visible in case of those born after 1960[7]). This pattern seems particularly hard to overcome.

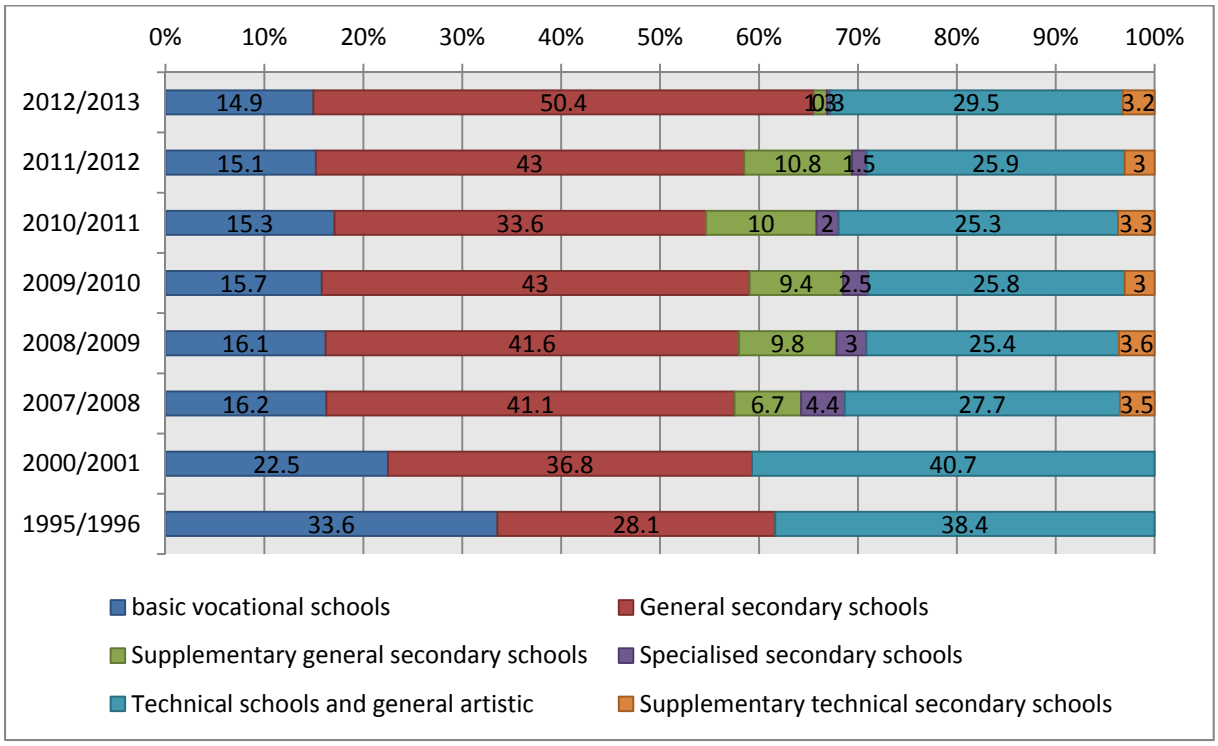
During the last twenty years, the main beneficiaries of free tertiary education were children from better-off families, while children of less well-off families often enrolled in programs requiring students to pay, which are often of lower quality. This phenomenon is caused by the relatively strong relationship between social status and school achievements which is not or not sufficiently mitigated by current policies.

However, significant changes in education were triggered by the educational aspirations of thousands of young people. This factor caused the number of students in vocational schools to decrease dramatically in the 1990s. Instead of choosing the vocational training path, most of these young people chose general secondary education, followed by tertiary education at universities. Instead of Technical and Vocational Training (TVET) students decide to enroll in (general) upper secondary education, which paves the way to tertiary education. One of the reasons is that traditional vocational schools did not adapt to the new reality and did not provide skills enabling their students to compete in the labor market. Also, vocational training appears as a one way road (e.g. there are only insufficient options for further formal learning) while acquiring high level generic or technical skills seems to be a more promising avenue for success in the labor market. This development, i.e. the decreasing attractiveness of vocational training, is illustrated in Figure 6.

[6] "Raport o stanie edukacji 2010": http://eduentuzjasci.pl/pl/component/content/article/126-informacje/artykul/233-raport-o-stanie-edukacji-2010.html?showall=&limitstart=
see especially Chapter IX about mathematical education.

[7] See: Adamski, W., Bialecki, I., Staszynska K. „Pokoleniowe aspekty konfliktu interesow", p. 85-104. In: W. Adamski (ed.) 1990. Interesy i konflikt. Studia nad dynamika struktury spolecznej w Polsce. Warszawa: Ossolineum 1990. or: Górniak, J., „Poland", in: V. Mikhalev (ed.), Inequality and Social Structure during the Transition, UNU/WIDER, Palgrave Macmillan 2003.

Figure 6. Students of first classes in secondary schools (including schools for adults)



Source: Central Statistical Office, Education in 2012/13 School Year, Warsaw 2013.

The situation on the labor market gave strong signals that achieving at least full secondary education carried a higher probability to be employed with a higher than average income. The closure of many basic vocational schools in the 1990s was not so much a planned move of the government than rather an adjustment at the local level to the actual demand from young people and their parents.

The decrease in VET students went hand-in-hand with a rapid increase of participation in tertiary education and the rapid development of a prosperous private tertiary education sector. The tertiary education enrolment rates skyrocketed, as mentioned, with the main driver of change being the educational aspirations of the students and their parents. This is well illustrated by the results of public opinion polls conducted systematically by the Public Opinion Research Center CBOS[8], which are presented in Table 1.

Box 1: Expansion of tertiary education in Poland

In Poland, an important part of the post-1989 transformation process was a radical change in the educational aspirations of young people. The tertiary education enrolment rate quadrupled in a short time: from 10 percent in 1990/91 to 31 in 2000/01, 38 in 2005/06 and 41 percent in 2010/11 and 2011/12[9]. The number of students at this level increased from 404k in the school year 1990/91 to 1.954,

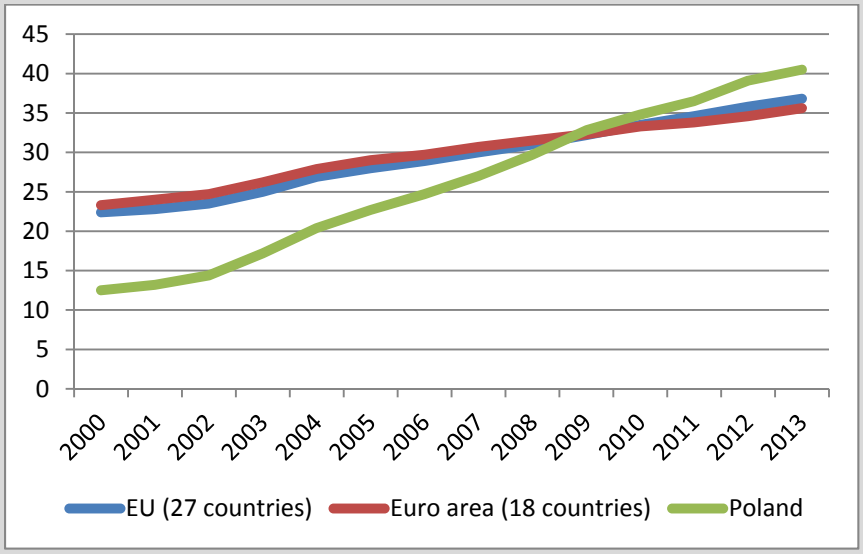
[8] CBOS Report BS/96/2013: „Wykształcenie ma znaczenie?" (*Education matters?*), elaborated by Natalia Hipsz.
[9] According to Central Statistical Office: „Higher Education Institutions and their Finances in 2011. Warsaw 2012.

in 2005/06. Until recently, up to 60 percent of them paid the full costs of their studies (this changed recently because of the demographic developments). This increase in the number of students was caused by the wave of the second post-war baby boomers completing secondary education in combination with higher educational aspirations of this generation. While enrollment and the number of graduates increased, there were concerns about the quality of provision related to the speed of the expansion. During the first 15 years after the beginning of the transformation the number of students grew by almost factor five, while the number of academic teachers did so by 60 percent only[10].

The expansion was mainly achieved through increased access in humanities and social sciences including education, law, economics and management. The share of graduates of mathematics, science and technology increased from 15 percent in 2002/03 to 19 in 2005/06 and oscillated between 17.5-19 percent in the consecutive years[11] and is thus far below the targets set in national strategies.

Nevertheless, the majority of baby boomers have been absorbed by a dynamic labor market, in particular before the financial crisis and partly by other European economies in the context of migration and search for better jobs. Even in the uncertain and stagnant years from 2009-11, graduates with Masters degrees had relatively good prospects in the labor market, even though the situation was gradually worsening. In the last twenty years, the service sector significantly expanded and produced jobs demanding high level generic but not always particular technical skills. However, in order to increase competitiveness and innovation based on full human capital utilization, the number of highly skilled graduates of MINT subjects has to increase significantly.

Figure 7. Tertiary educational attainment in the age group 30-34.



Source: EUROSTAT

[10] Diagnoza stanu szkolnictwa Wyższego w Polsce (Diagnosis of Higher Education in Poland). Ernst & Young, Instytut Badań nad Gospodarką Rynkową, 2009. Report commissioned by the Ministry of Science and Higher Education.

[11] Central Statistical Office, Strategia Rozwoju Kraju. Podstawowe wskaźniki realizacji. (Strategy of National Development. Basic performance indicators). Spreadsheet.

The recent downward trend of the percentage of affirmative opinions might indicate some "disappointment" with tertiary education as an "automatic protection" against unemployment and saturation of the gains from the achieved level of formal education.[12] Despite this slightly decreasing valuation of education, the educational aspirations in the Polish society remain amazingly high: 85 percent of respondents desire a higher education for their daughters and 81 percent for their sons.[13] Only 2 percent of respondents want basic vocational education as the final level of education for their children.

The level of aspirations is quite stable since the mid-1990s and is independent of the opinions about the current market value of higher education degrees. It the 2013 poll one can observe a slight increase in preference for upper secondary technical education, especially for sons and gradually falling aspirations for them to achieve the title of doctor.[14] Similar results were obtained by the Central Statistical Office in a special survey of educational decisions in households conducted in the third quarter of 2011 together with the household budget survey: 92 percent of parents expected that their children will attain at least upper secondary education, and 75 percent expected higher degrees (83 percent in towns and cities and 65 percent in villages)[15].

[12] With tertiary education becoming a mass commodity, the signaling function of diplomas decreases. Employers are more interested in the 'real' knowledge, skills, and attitudes critical for the production of goods and services which are decisive for promotion or remuneration. It is skills rather than diplomas that constitute the real "currency" of human capital, as discussed by Sondergaard and Murthi, 2012.

[13] Respondents were requested to answer the question independently of really being a parent or not.

[14] CBOS Report BS/96/2013.

[15] GUS, Wybory ścieżki kształcenia a sytuacja zawodowa Polaków, Warszawa 2013.

Table 1. Public opinion in Poland on the value of education

According to you, is it nowadays worth to get an education, to learn, or not?	Distribution of responses by the date of poll													
	XI '93		X '02		IV '04		IV '07		IV '09		XI '09		VI '13	
	In percent													
Definitely worth	42	76	66	91	76	93	70	93	68	91	63	89	49	82
Rather worth	34		25		17		23		23		26		33	
Rather not worth	16	20	5	7	4	5	4	5	6	7	8	10	13	16
Definitely not worth	4		2		1		1		1		2		3	
Hard to say	4	4	2	2	2	2	2	2	2	1	1	1	2	2

Source: CBOS Report BS/96/2013

Note: Public opinions explain the spontaneous reduction of enrolment rates in vocational schools, enrollment in which still seems to be considered as a 'sad necessity' for some, rather than an opportunity for getting a satisfactory education and a good preparation for the future. It also confirms how motivated young people are to attain tertiary education. The correlation between opinions and the saturation of gains from higher education is also visible and can have some impact on educational decisions in the future.

The 1999 reforms and their impact on PISA results

The first major post-1990 educational reform at the primary and secondary level was implemented in 1999 and is known as the "Handke reform" (coined after the then Minister of Education, Professor Mirosław Handke). It replaced the 8-year primary school followed by 4-year general secondary, 5-year technical secondary or 3-year vocational schools with a 6-year primary school and 3-year junior secondary school (*gimnazjum*) followed by a 3-year general secondary or profiled secondary, 4-year technical or 3-year vocational school.

Modification of the national curriculum in order to make it more competence based was also an important aspect of the reform [Marciniak paper] as well as the introduction of a system of teacher's promotions based on skill enhancement and qualifications. It did not, however, have appropriate financial fundaments and was criticized as being rather 'formalistic' (see next paragraph). Another crucial part of this reform was the introduction of a system of national school leaving tests concluding all three levels of education.

The 1999 reform is sometimes criticized for its fundamental pillars:

- Introduction of the *gimnazjum* – the junior secondary school;

- Multiple choice test form of final exams, and for introducing examinations at the primary level;
- For its role in the selection process for the *gimnazjum*, especially in cities which provide opportunities to choose a school.

In public debate, tests were accused of narrowing the scope of teaching ('teaching for tests') and schools blamed for lowering students' competences in verbal and oral communication, in reasoning and analytical skills and there were also concerns regarding the general ability to study. Professional educators, however, were concerned with the content of the national curriculum. It was argued that it did not consider the change in educational aspirations which brought the enrolment in general secondary schools up to 80 percent of the respective year groups. Experts also criticized the repetition of the general education curriculum at the level of junior and senior secondary school and the prevalence of encyclopedic knowledge. This criticism resulted in a further curriculum reform which was gradually implemented in primary and secondary education as of 2009/10.

Comparison of the PISA results, however, before and after the implementation of the 1999 reform show that the average test score for Poland significantly increased, the share of poor performers decreased and the differences between schools diminished. This was also the effect of educating young people at the age of 15 in one type of school, which is a major difference to the pre-reform situation. Nevertheless, the differences are still strong at age 16 when young people choose the path for further secondary education. The test results of 2009, published by the OECD, show that Polish students were above the international average in reading and science tests, but lower in mathematics. Polish students had problems with tasks demanding mathematical reasoning. The issue of mathematics teaching approaches has been recognized and subsequently investigated by experts and policy makers.[16]

The PISA 2012 results (see Annex 2), again, present a very positive picture of the skills level of the young generation of Poles. Especially in mathematics, which was a focal theme of the recent PISA test, Polish students reached a level not statistically significantly different from Finland with Finland being the benchmark for education policy in Poland (as in many other countries). Some observers attribute this success to the recent reform of the general curriculum in junior high schools (*gimnazjum*). There is still a need to confirm the sustainability of achievements. Nevertheless, this success backed up policy makers committed to modernize curricula and gear them towards modern skills and competences.

The Polish National Qualifications Framework and recent reforms

The establishment of a European Qualifications Framework on Lifelong Learning in 2008 triggered important reform steps in EU member states and confirmed that Lifelong Learning is a concept embracing all levels of learning. Subsequently, the Polish Qualifications Framework was elaborated for all levels of education. *Referencing to the EQF* was completed and presented to the public in May 2013; it forms a general roadmap for changes in Poland's lifelong learning system. Following this step, some important regulations have been issued by the Ministry of Education, such as the *Regulation of the Minister of National Education from 11 January 2012 on lifelong education in out-of-school educational*

[16] See e.g. discussions at the *Second Congress of Polish Education*, June 2013.

forms and other regulations concerning the core curriculum and specific programmes of professional education.

The new national curriculum for pre-schools, primary schools and secondary schools has been implemented since 2009. Like previous reforms, it was heavily debated; history teaching, which is considered a key factor of national identity, was one of the main points of discussion. Mathematics, science and technological competences, however, received much less interest, even though they do not seem to be less crucial from the point of view of developmental challenges.

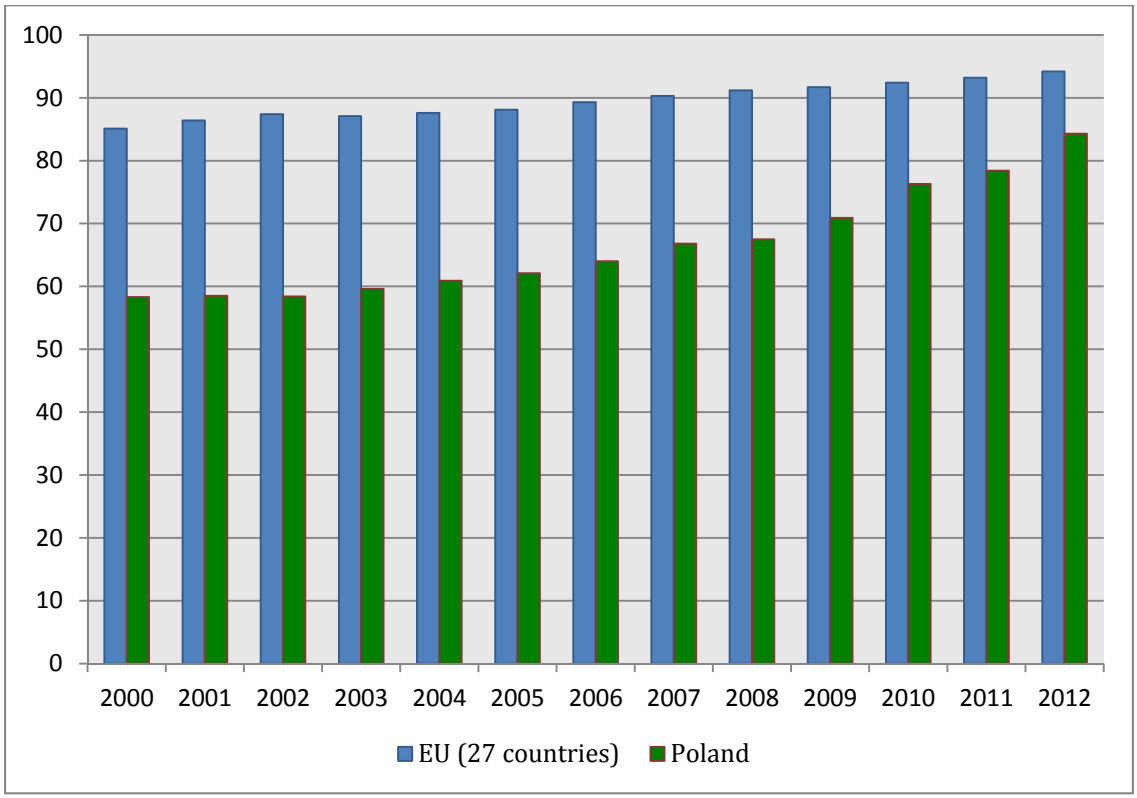
In 2009 the Ministry of Education implemented a new system of evaluation for schools and other educational institutions. The team of the evaluation project already gathered considerable experience and the project itself is in the process of further development. The main idea behind this programme is to foster the development of schools by providing them with external formative evaluations rather than a compliance audit. It is an important innovation, which has significant potential.

Other recent reforms were even more controversial. **From a policy point of view, the lowering of school entrance age (and/or beginning of compulsory education) seems important in a lifelong learning perspective.** Nevertheless, the reform lowering the school starting age from 7 to 6 years was associated with problems and the consequences of this step (e.g. for kindergartens) were not well thought through. Another unsolved problem is the insufficient number of places in nurseries.

The importance of Early Childhood Development (ECD) for Lifelong Learning cannot be overestimated and there is a growing body of literature showing the impact of quality ECD program on later labor market outcomes and social status. However, Figure 6 shows the gap in the participation in early childhood education between Poland and the EU-27 average. There is a positive, even slightly exponential, trend in the area, but the demand for childcare for age 3-5 and below is still far from saturation.

The insufficient number of ECD places is a serious social problem, with a negative impact on birth rates. The costs of childcare constitute yet another concern. The costs of a place in a private nursery is often at the level of the minimum wage or two thirds of the salary of a university assistant or a young teacher. The less expensive places in community nurseries are unavailable for most. Lack of ECD facilities, either directly influences the decision of young people as to whether or not they should have children (long term impact on population ageing) or the labour activity of parents, who often cannot afford to pay for the nursery and decide to stay at home to raise children (immediate impact on economic performance).

Figure 8. Participation in early childhood education: % of the age group between 4-years-old and the starting age of compulsory education



Source: EUROSTAT

Note: The situation in early childhood education in Poling is improving; however there is still a gap between the demand and supply for places in kindergartens, and also in nurseries, which has a negative impact on birth rate.

The Polish Qualifications Framework also impacts on the way tertiary education is organized and is supposed to gear it towards a learning outcomes approach. Representatives of academic institutions have prepared a set of core descriptors for various disciplines and domains of studies. The Ministry is preparing changes in the law on higher education, which will introduce practically oriented studies along with the traditional academic ones.

However, the strongest potential trigger for changes in tertiary education is the radical decrease in the number of young people, caused by the demographic decline. Since their resources are dependent on the number of students, universities start to seriously compete for young people. This phenomenon can now be increasingly observed even at the most prosperous and prestigious higher education institutions. The government will need to consider taking a more active role with a view to the unavoidable consolidation of the sector and with a view to related opportunities for lifelong learning.

Box 2: The Polish Qualifications Framework (PQF)

The Polish Qualifications Framework (PQF) distinguishes **eight levels of qualifications**. Each level within the framework is described by generic descriptors, which characterize the required learning outcomes for each level. The aim of the PQF's descriptors is to capture the full spectrum of learning outcomes, from the lowest to the highest level.

Descriptors take into consideration both learning that takes place in the workplace, as well as in an educational setting. This also includes initial education or training (in school/at a higher education institution) and learning occurring at later stages (after having completed education in school/at a higher education institution, for example, during vocational work). The PQF takes into account learning outcomes achieved in the formal and non-formal educational systems, as well as through informal learning.

As in the EQF, the PQF divides learning outcomes into three groups, as follows:

- Knowledge – a set of substantiated judgements (a body of facts, theories and principles of conduct) resulting from the cognitive activity of a human being. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual.
- Skills – the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).
- Social competence – the proven ability (in work, study situations and personal development) to use knowledge and skills within the context of an internalized system of values. The EQF describes social competence in terms of responsibility and autonomy.

Descriptors of each successive qualification level in the PQF differ from those of the preceding (lower) levels. These differences are significant and relate to the amount and depth of knowledge, degree of complexity/difficulty of required skills and the level of independence and ability to assume responsibility for one's own work, activities or study (and at higher levels, also that of other persons).

In accordance with the approved concept of qualifications frameworks in Europe, level descriptors in the Polish Qualifications Framework are generic, that is, they are generally formulated, and as such can refer to various fields. Descriptors in the European Qualifications Framework serve as the reference for the structure of the Polish Qualifications Framework. This enables the proposed Polish qualification levels to be clearly referenced to the eight levels distinguished in the EQF.

The Polish Qualifications Framework has descriptors that vary in their level of detail and field they describe. The PQF distinguishes three degrees of descriptor genericness. The first degree is generic descriptors with a universal character. These relate to learning outcomes at all levels and refer to general, higher and vocational education. The second degree is generic descriptors that describe the

differences occurring between general, vocational and higher education. These include:

- learning outcome descriptors appropriate for **general education**. These descriptors may be applied to other sectors, but they are not universal. They describe the learning outcomes for levels 1-4.

- learning outcome descriptors appropriate for **vocational education**. These descriptors may be applied to other sectors, but they are not universal. They describe the learning outcomes for levels 1-8.

- learning outcome descriptors appropriate for **higher education**. These descriptors may be applied to other sectors, but they are not universal. They describe the learning outcomes for levels 5-8.

Source: IBE; http://www.kwalifikacje.edu.pl/en/glossary/41-en/informacje-en/217-polish-framework

External quality assurance in tertiary education is coordinated by the State Accreditation Committee. Its main functions are to secure the basic standards of education at that level and identify and constrain underperforming programs and institutions. A new program of institutional assessment was recently implemented, with the aim to stimulate internal quality assurance, strategic management and cooperation of universities with their external environment.

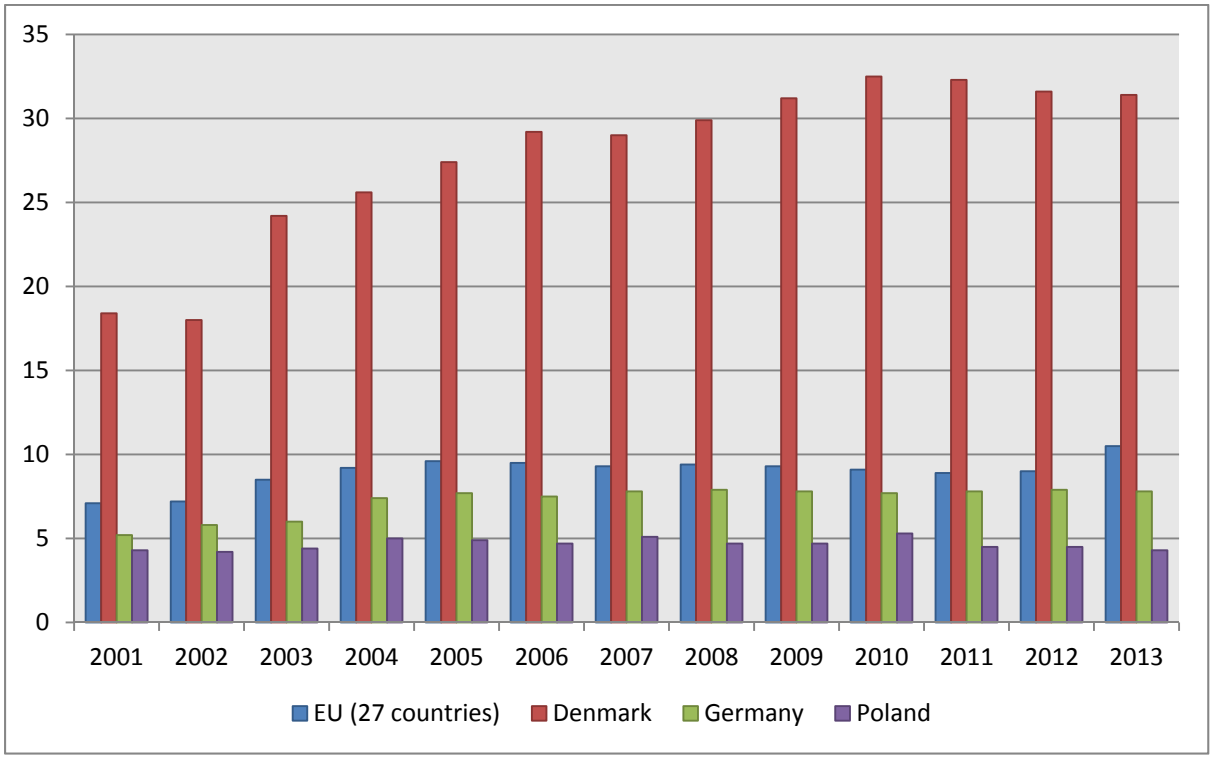
'Lifelong learning' as adult education – a success story in Poland?

'Lifelong learning' in its form of adult education has received attention by policy makers in recent years, inter alia, due to the low labor market participation rate. The European Social Fund made considerable financial contributions to lifelong learning in Poland. The funds were used, among other things, for formal education of young people – enhancing schools and other learning facilities, and for adult education – supporting enhancement of competences of employees, especially from the older group of labor market participants and the unemployed. Despite significant expenditures, the impact of these activities on adult education is rather modest. **The participation in adult education did not increase (see Figure 7) following the inflow of structural funds**, as measured by the standard indicator of the proportion of persons aged 25 to 64 in EU-27 receiving some form of education or training in the four weeks preceding the labor force survey.

Poland belongs to the countries with low levels of participation in adult learning, especially in comparison to the EU leader in Lifelong Learning: Denmark. France and Italy share the same position and Germany is not very far ahead. Nordic countries, together with Switzerland are at the top of the ranking. It is possible though, that the indicator underestimates the real level of participation in Poland.[17] It seems that European funds do not have any noticeable impact on learning activities.

[17] However the time series is based on the same measurement instrument, so the dynamics is not biased.

Figure 9. Participation in life-long learning (adults 25-64) in percent



Source: EUROSTAT

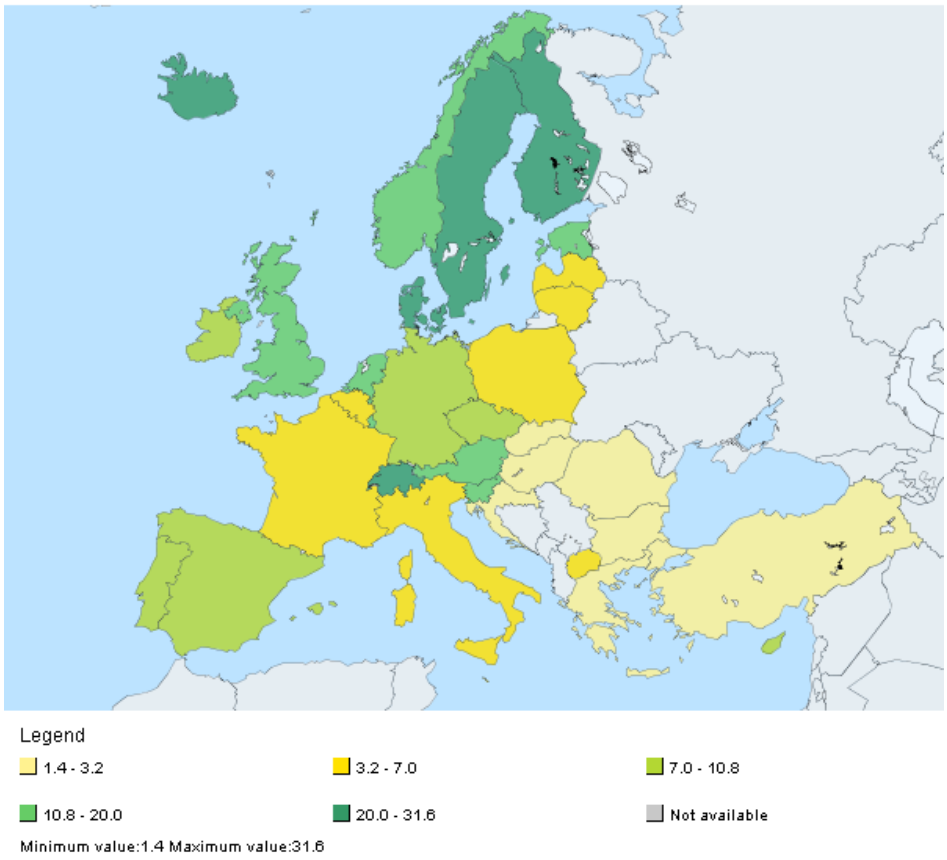
In 2010, the Ministry of Regional Development commissioned an Impact Evaluation of Cohesion Policy implementation in Poland. In the report titled: "The Impact of Cohesion Policy on the Level and Quality of Employment in Poland" the authors[18] concluded:

> "No significant net effect has been noted nationwide for the entire 2004-2006 programming period, apart from the lock-in effect, which delayed the ultimate beneficiaries' employment by approximately one month. A more in-depth analysis showed, however, that the zero net effect is the sum of a negative net effect in the initial intervention implementation period and a positive net effect towards the end of this period. This could be the result of a gradual increase in training quality. The results suggest that the negative net effect in the initial period and the training net effect differences between voivodeships are related to the mass migrations in 2004-2007."

This goes hand in hand with concerns that traditional forms of interventions aimed at skills enhancement of adults are ineffective, or at least do not have visible short term effects. These interventions normally involve commissioning courses and trainings to (external) companies or projects selected through competitions. Finding the cause for this lack of effectiveness is key to understanding the problem of failing adult education policies.

[18] Jerzy Drążkiewicz, Ewa Kusideł, Karolina Jakubowska, Paweł Penszko, Artur Gajdos, and Tomasz Schimanek.

Figure 10. Participation in lifelong learning in percent



Source: EUROSTAT

Adults, like other learners, can upgrade their skills through formal, non-formal and informal learning. The Central Statistical Office estimated the 12-month participation rate in 2011 at 5.4 percent for formal, 21 percent for non-formal, and 29 percent for informal education. Altogether, around 40 percent of adult Poles aged 25 to 64 took part in any form of learning activities.[19] The percentage of people who received any kind of education or training (formal or non-formal) in the 12 months prior to the survey has been estimated by BKL 2012 at the level of 23,3 percent, significantly lower than the 34,9 percent average for the European Union.[20]

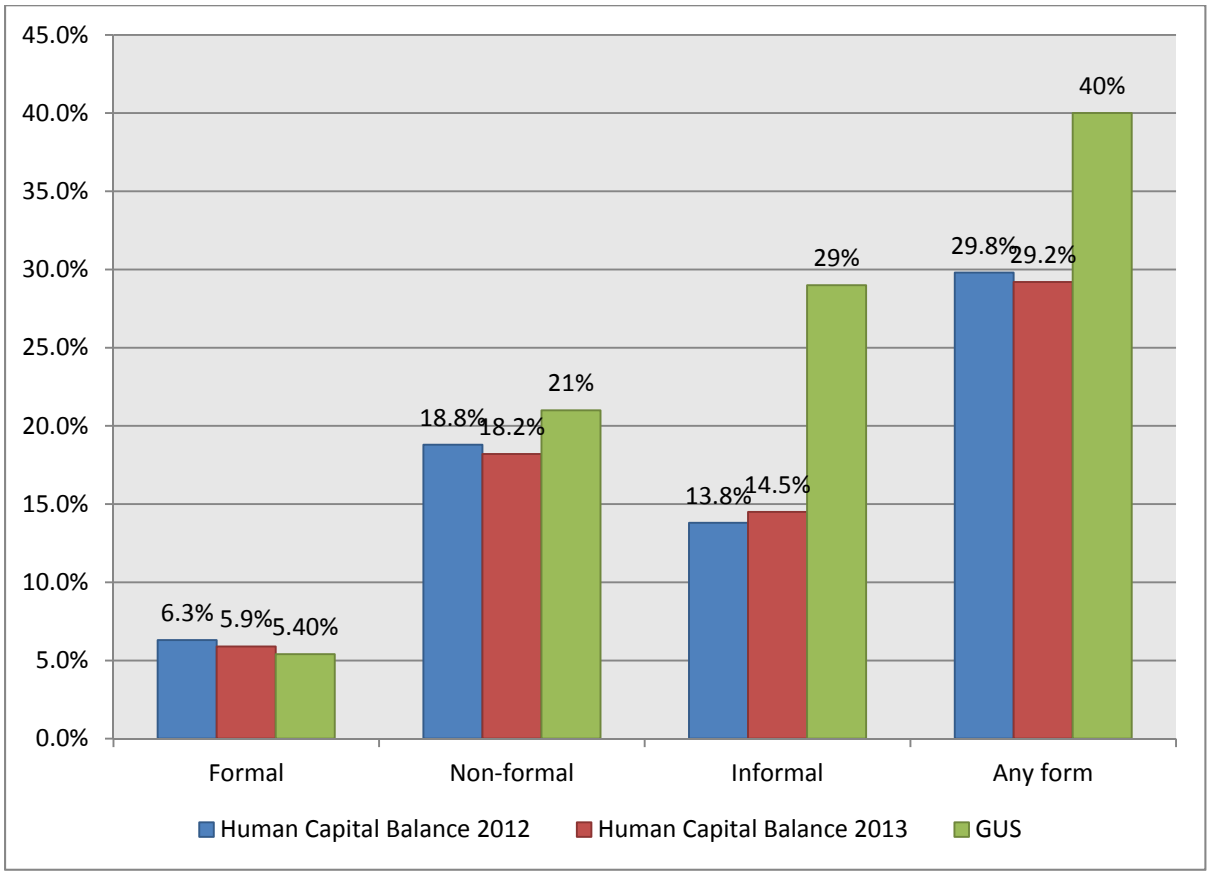
Participation in formal education is in Poland concentrated in the youngest age group (25-29) of statistical adult learners. These are mainly students finishing prolonged studies before entering the labor market or some distance students, who combine work with studies after secondary school. Non-

[19] In the Human Capital Balance survey slightly lower figures have been obtained, especially for informal education, which is the most sensitive to the form of the question. The figures for formal and non-formal learning are similar[19] to those presented in Figure 11.

[20] Eurydice, Adults in Formal Education: Policies and Practice in Europe. Education, Audiovisual and Culture Executive Agency, Brussels 2011, p. 12. EU data is based on 2007 EU Labor Force Survey.

formal education is the main form of the more or less organized training towards improving skills of adults.

Figure 11. Participation of adults (25-64*) in formal, non-formal and informal education in the 12 months prior to the survey



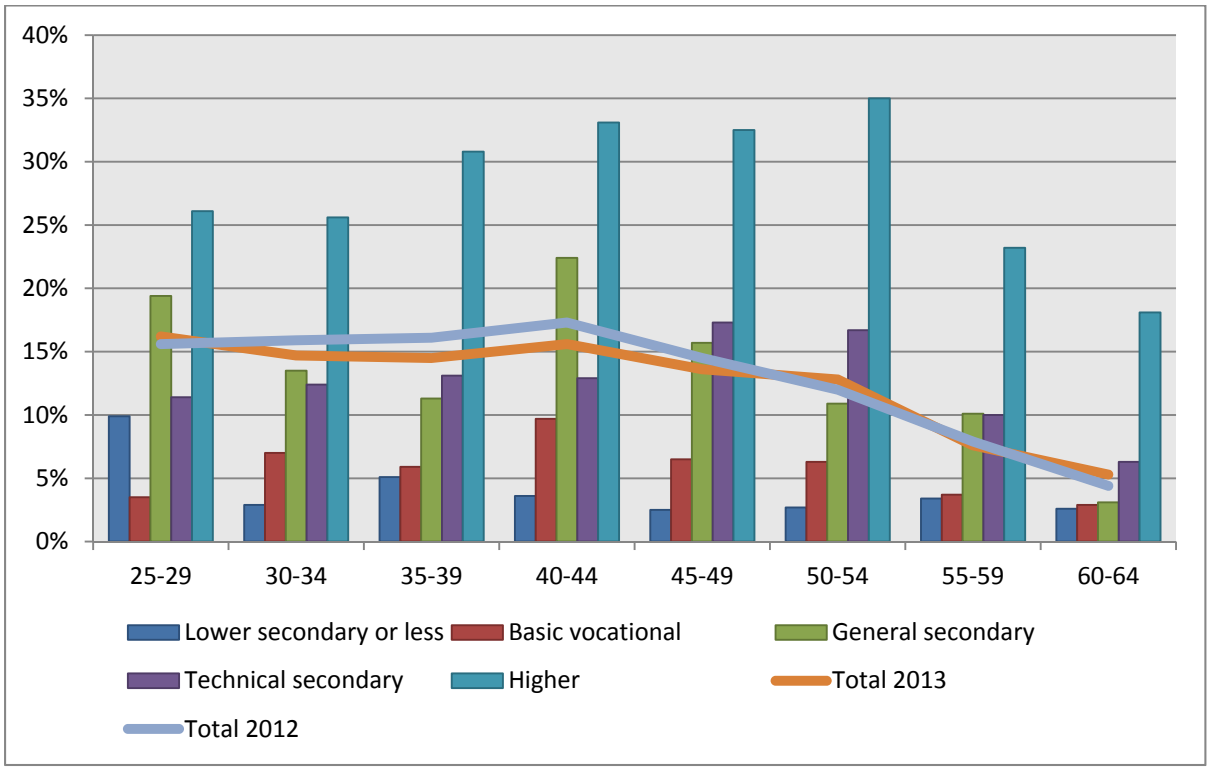
Source: Human Capital Balance 2012; Central Statistical Office (GUS), Kształcenie dorosłych 2011 (Adult Education 2011), GUS, Warsaw 2013.

Note: * In case of BKL (Human Capital Balance) the age range was 25-59 for females and 25-64 for males.

The total participation rate[21] in adult education decreases with age, starting around the age of 45. However, participation in courses, trainings, seminars and similar activities is strongly dependent on the participants' level of education. The decrease in participation starting at the age 45-49 is not equally strong among persons with higher education. However, as mentioned earlier, the share of tertiary education graduates decreases systematically starting from the 40plus group. The rate of participation in education is decreasing for all attainment groups of the older age groups. At the age of 55 even people with higher education seem less inclined to learn.

[21] In Poland some trainings are prescribed by the law – for example courses in industrial safety. Such obligatory courses have been deducted from the indicator of participation in non-formal education presented in Figure 12, in order to analyze exclusively voluntary participation in lifelong learning.

Figure 12. Participation in non-formal education excluding obligatory courses in the last 12 months



Source: Human Capital Balance 2012

Thirty-three percent of the employed participated in training in their firm and 31 percent outside of firms. Among the unemployed and non-active, internships and traineeships were the most popular forms of training. Among working individuals the participation rate is somewhat higher than in the total population aged 25-59/64. The differences between participation rates of men and women are striking in the 45plus categories. Women are definitely more active in non-formal education starting from the category 45-49. One reason could be that women are more often employed in jobs which demand higher formal education (compared to male-dominated jobs).

Those employed persons who participated in courses or training spent a relatively limited amount of time and money on them. However, this indicator is again strongly determined by the level of formal education. **Those with tertiary education spent on average 18 times more on training than employees with basic vocational education. They also allocated three times more hours to training.** Nevertheless, even in the highest attainment group the amount of time devoted to training is rather modest. The highest number of hours was devoted to courses useful in one's current job, the least in courses demanded by employers.

The relatively low participation rate in adult learning activities in Poland seems to coincide with questions around the usefulness of the trainings provided (see Table 2. Main reasons for nonparticipation in courses or trainings in the 12 months prior to the survey (in percent). **Only 3 percent of employed and 11 percent of unemployed nonparticipants indicated high costs as the reason for not**

taking part in courses or trainings. If trainings are available but not considered useful, this, on one hand, raises questions concerning the relevance of the trainings provided, linkages between training providers and the world of work and/or communication of training offers. However, on the other hand it also raises questions concerning the innovation capacity of firms: Employees did not feel the need to update their knowledge and skills because the technology and organization at their workplace remains the same.

Table 2. Main reasons for nonparticipation in courses or trainings in the 12 months prior to the survey (in percent)

	Employed	Unemployed	Non active	Total
Did not need for job	66%	26%	23%	50%
No time for personal reasons	5%	9%	15%	8%
Meaningless in respondent's age	3%	5%	15%	6%
No motivation for learning	4%	10%	9%	6%
Lack of interesting courses nearby	4%	17%	3%	5%
Health problems	1%	2%	17%	5%
No time for professional reasons	6%	1%	1%	4%
Courses were to expensive	3%	10%	3%	4%
Didn't pass formal criteria	1%	8%	2%	2%
No support from employer	3%	3%	1%	2%
Previous didn't contribute much	1%	3%	1%	1%
Other reasons	3%	7%	13%	6%
DK	17%	22%	18%	18%

Source: Human Capital Balance 2013

Those who participated in courses or trainings, however, usually assessed them as useful.

The employers' perspective on investment in human capital

The data at hand show that pprofitable firms which employ new staff and/or implement innovations were significantly more often involved in training their staff. However, the ratio of the number of such qualified firms to stagnant ones is one to three. The difference in commitment to education is particularly apparent in the group of micro enterprises: 87 percent of small firms which develop dynamically invest in workers' education and only 57 percent of the stagnant firms do the same.

The main reason for not educating employees is the employers' satisfaction with their existing skills. This goes hand-in-hand with the reason given by the employees, who indicated that training is not needed for their job. This answer was chosen in majority by the representatives of micro-firms, which are dominant in the Polish economy and the least involved in staff training. The costs of training are an issue for the employers much more often than for employees. There is also a trade-off between investments in human capital and other types of investment. Still, the conviction that the level of employees' skills is sufficient and there is no need for further improvement is the main reason for not training staff. About half of all firms have plans to invest in training for their employees in the next twelve months. Forty-six

percent were involved in training last year and intend to continue training their staff, and 5 percent was not involved in training so far, but plans to change that.

Organization of adult education

Lifelong learning for adults is provided by the formal education sector and includes specialized secondary schools for adults, professional centers, tertiary level schools and universities. 460 tertiary level schools were active in the school year 2011/12, among them 132 public and 328 non-public institutions. Universities and other tertiary level institutions are also involved in adult education. However, as mentioned, formal education does not play a prominent role within adult learning in Poland.

Private tertiary education institutions are active in providing specialized trainings and courses. They react to the falling number of students by providing more opportunities for adults. Public universities are still relatively less active in this area. Also, there are still regulatory obstacles inhibiting the development of this type of activity at public universities. However, another reason for established academic institutions being less active in lifelong learning is that academic careers are still primarily driven by research activities rather than educational performance and the university's service function as well as the current approach to higher education financing.

In Poland, the educational business sector is active, dynamic and prosperous which might be surprising given the moderate interest of individuals in adult education described earlier. Firms in this sector are larger than the average firms in the Polish economy: only 4 percent of businesses can be classified as big firms with 250 and more employees, 16 percent are medium size firms with 50-249 employees, 42 percent are small businesses with 10-49 employees, 33 percent are micro enterprises with 1-9 employees, and 4 percent are self-employed.[22] It is worth noting that overall, more than 95 percent of all Polish enterprises belong to the category of micro enterprises. Adult education providers are usually concentrated in or around big cities, but they are also quite well represented in medium-sized and small towns.

The most prosperous firms can be found in the segments of computer science, accounting and finance, construction and industry, management and law, **personal development and general competences as well as management**, amongst others.[23] Significant financial contributions to this sector came from the EU structural funds, especially from the European Social Fund, as discussed earlier. The Human Capital Balance study estimated that 51 percent of firms have financed at least one project from EU funds in 2011. Larger firms were the most active in applying for such financing: 71 percent implemented at least one project with its help. Among the micro-enterprises only 38 received European financing. There are firms which specialize in managing projects based on EU funds, and many firms

[22] This is an estimation based on the Human Capital Balance research of the education business. There is no well-established register of the firms active in education. The register of companies can be misleading as firms provide educational services not only as a core business. In the Human Capital Inventory, an inclusive definition has been used in identifying relevant companies.

[23] Szczucka A., Turek K., Worek, B. Uczenie się przez całe życie (Lifelong learning). Human Capital Balance, PARP, Krakow-Warsaw 2012.

adapted a greater part of their activities to observe the rules of EU funding or of public commissioning of services.

The current system of financing of educational services from public resources has been criticized for its inefficiency and maladjustment of the offers to actual needs. Subsequently, the Ministry of Labor and Social Policy and regional labor administration have started to pilot projects based on the concept of educational bonds or individual accounts combined with advisory services to increase the effectiveness and efficiency of investments in human capital, especially of unemployed. There are plans to extend this type of financing to other target groups of public interventions.

How is the demand for skills expected to change in Poland in the next decades?

There is ample data on the current demand for skills and formal education in the Polish labor market. **However, the future demand cannot simply be extrapolated from these data.** Drawing far-reaching conclusions about future needs based on opinions expressed in current surveys is also a risky endeavor. Even highly experienced human resource managers are reluctant to answer questions concerning the future demand for competences. Researchers from the Jagiellonian University in Kraków[24] asked HR managers of the rapidly growing sector of Business Process Outsourcing and IT Outsourcing companies in Krakow about the competences which are expected to be in demand in five years' time. The HR managers were very prudent in answering this question. But the answers managed to give the researchers some insights into the area of the modern service industry.

There is an expectation that communication will be a key competence going forward and it ranks equally high in terms of current demands. The high positions of innovativeness and initiative are also noteworthy. Despites its reforms towards more competence-based curricula, it will be difficult for the Polish education system to provide these competences. It is possible to build some recommendations for new curricula based on this research. However, a major issue seems to be the discrepancy in perception of the delivered competences by firms and educational providers.

[24] Team: Piotr Prokopowicz, Grzegorz Żmuda, Diana Malinowska, Joanna Pyrkosz, Katarzyna Jaśko, Marianna Król, Bartłomiej Baryła. Leading experts: Jarosław Górniak, Małgorzata Kossowska.

Table 3. Competences in the BPO/SSC industry, ordered by the growth dynamics

Competence	Dynamics	Competence	Dynamics
Initiative	197	Algorithms and data structures	172
Innovation	197	Operating office software	167
Written communications	197	The ability to test software	159
Oral communications	197	French	143
Goal orientation	197	Mobility	143
Organizing own work	197	General knowledge about insourcing	137
Cooperation	197	General knowledge about outsourcing	135
Involvement	197	Java programming language	132
Inter-cultural "sensitivity"	197	Computer networks	130
English	197	Agile methodology	119
Learning	197	C/C++ programming language	112
Adaptation	197	ASP.NET	105
Dealing with stress	197	HTML	85
Analytical skills	197	German	78
Honesty	197	JavaScript	65
Time availability	187	Selenium	55
Customer-orientation	182	Russian	23
Mathematical skills	182	Sharepoint	20
Taking care of quality	177	C#	5
Influencing others	172	SQL	5

Source: Study of Competences in BBO and ITO in Krakow. Final Report on the Conducted Research. CEAPP & ICORD. Jagiellonian University, Krakow 2012.

The situation is summarized in the report on BPO and ITO in Krakow as follows:

> "The study on the supply of competences expected by BPO/SSC and ITO/IT companies indicate that there are significant discrepancies in the assessment of the actual education level between the companies and universities. **While [for] the level of strictly technical knowledge [and] skills the assessment is similar, in the case of practical and social skills, there is no such similarity**. A lot points to the fact that the main problem lies in adjusting teaching methods [rather] than the educational contents itself. Adapting the educational results of Krakow's universities to the expectations of the labour market primarily requires modification of the teaching methods, which enable the development of the practical skill of applying knowledge in a particular organisational context."[25]

It seems that the main challenge is to change the current teaching methods and those dimensions of the curriculum which are related to developing reasoning, analytical skills, communication and teamwork, as well as creativity, innovativeness, initiative, goal orientation, flexibility and openness to critical assessment. These are some of the key items of the list known as "21st century competences".

As mentioned earlier, 75 percent of Polish employers looking for new staff claim that they cannot find appropriate candidates for the offered jobs (see Annex 3). The authors see arguments that this kind of matching problems are a manifestation of deeper structural trends in the economy.

The skills mismatch which is documented here is not only typical for Poland right now. It is a global phenomenon. As The World Bank' Global Development Report on Jobs emphasizes:

> "[A]round the World, available skills are not fitting well with the demands of the economy. Skills mismatches are arguably growing rather than shrinking. […] Managers of registered, formal firms around the world judge workforce skills as an obstacle of above-average importance in the production process. In countries at all development levels, skills obstacles are also judged to be more acute now than in the first half of the 2000s. Skills shortages are an especially serious constraint for the most dynamic entrepreneurs."[26]

Also in Poland, the more innovative and dynamic employers are, the more frequent they express a need for additional training of their employees.

In policy terms, this situation is aggravated by an often too narrow focus on technical skills of employees transmitted through TVET or other forms of post-compulsory training at the expense of the generic or 'transferable' skills described above.

Focusing on and improving generic skills of the young generation is – in terms of policies – much more difficult and far-reaching than adjusting the delivery of technical skills. Generic skills need to be established from an early age onwards and ideally through high quality Early Childhood Development (ECD). It is of much less use impressing on a mid-career professional the necessity to work in teams and collaborate than to communicate this message to young children through practical, real live interactions.

[25] Study of Competences in BBO and ITO in Kraków. Final Report on the Conducted Research. CEAPP & ICORD. Jagiellonian University, Krakow 2012., p. 77.
[26] World Bank, *World Development Report 2013: Jobs,* Wild Bank, Washington DC 2012, p. 174.

Table 4. Satisfaction of mangers with the competences of employees. Percentage of responses in different types of firms.[27]

	Fully satisfied with competences of own employees	Employees need additional training	Not satisfied with competences of employees	N
Stagnant firms	57	41	2	5673
Poorly developing	47	50	4	4977
Developing	44	54	3	2639
Strongly developing	36	62	2	1003
Total	50	48	3	14292

Source: Human Capital Balance 2012.

In general terms, four main factors drive economic growth: employed capital and labor force, labor productivity and technical progress based on innovations. Changes in these factors are not mutually independent. Innovations change the relative importance of particular skills and jobs and they have an impact on productivity of labor. Innovations do not only lead to visible technical changes in products but also in production processes, organization and management and business choices concerning markets and networks.

The observed skills mismatch does not only show failures on the skills supply side but also documents a growing discrepancy between emerging trends in the economy and available manpower. This is also a result of an extended time-lag between education policy decisions based on current signals from the labor market and individuals completing the chosen formal education and starting to be active in the labor market.

In Poland already during the transition from a centrally planned economy to a market economy, competences of many workers became obsolete. This concerned both technical and administrative jobs. Twenty years later, adaptation processes divided individuals in the productive age into a segment with modernized skills and a segment of structurally unemployed or individuals not active on the labor market.

If through a second transition, the Polish economy would set out to fully modernize and transform into a knowledge-based economy, problems with a growing skills mismatch would become even more

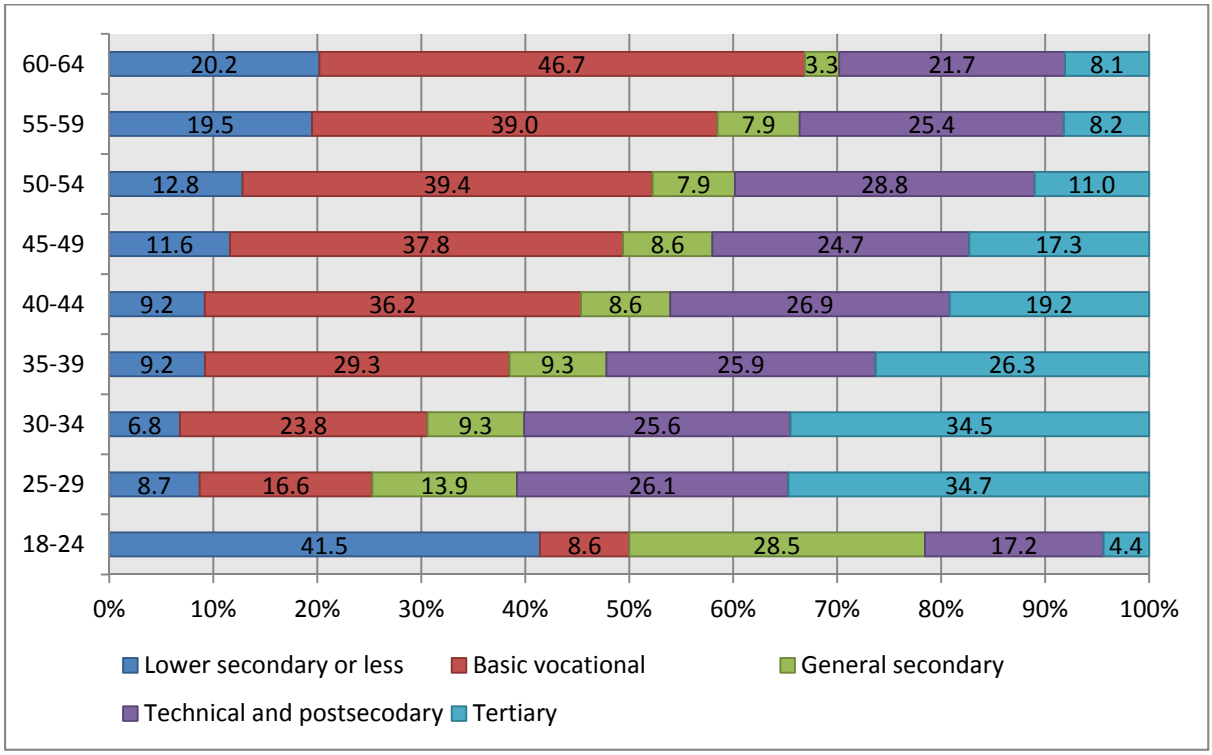
[27] The assessment of the stage of development in the Human Capital Balance study is based on three factors concerning the last 12 months of operation: 1) [introduction and] marketing of new products, services, and/or means of production, 2) increase of employment, 3) increase of earnings (as assessed by firm representative(s)). The businesses meeting all three conditions classified as strongly developing, while stagnant ones met none of the above. The intermediate levels (i.e. “developing” or “developing poorly” corresponded to meeting one or two of the conditions described above.

of an obstacle. The major segment of the 1980s baby boomers was educated mainly in general upper secondary schools and the vast majority of the 40 percent, who decided to enter tertiary education institutions chose nontechnical subjects at the expense of the so-called MINT subjects, i.e. math- and science-oriented fields as well as engineering. However, also students of technical and science subjects were (and still are) to a large extent exposed to teaching concentrated on knowledge transfer rather than the development of advanced skills. The Ministry tries to influence the choice of subjects through certain policy measures.

Intergenerational differences in educational attainment and needs

There are significant inter-generational differences in the level and type of education in Poland. Before 1990 vocational and technical education dominated over general secondary schools, and tertiary education was reserved for a relatively limited part of the population. This radically changed after 1990, as described earlier. The share of people who completed higher education is now four times higher than in the oldest generations still active on the labor market. Across the age groups, a quite stable percentage of people achieved secondary or postsecondary, non-tertiary professional education. There is a consistently falling share of people with basic vocational education, which tends to be lamented in public debates, also by employers (however, it seems that most individuals involved in these debates would not see this as a desirable choice for their own children).

Figure 13. Level of education within age groups in Poland[*)]



[*)] Population in productive age; group of 60-64 includes exclusively males.

Source: Human Capital Balance 2012

The increasing number of well-educated young people is an asset for Poland. It will have a strong impact on participation in adult education which tends to be highly depended on the initial level of education. A better-educated society can more easily address changes in the economy, tackle necessary steps on the way towards a knowledge-based economy and challenges posed by the demographic decline.

In terms of their skills and competences, young people are on average better educated and better equipped with computer skills but tend to have lower social competences – as compared to their older colleagues and they obviously have much less job-related skills and experience. Employers also indicate problems younger employees have with loyalty and commitment. Formal education can and should be significantly improved, with a stronger emphasis on the mode of education rather than just the knowledge content in order to address these shortcomings and impart on young people the competences they need in an evolving labor market.

These conclusions can also be draws from the qualitative interviews with HR managers of BPO and ITO. The researchers asked about the strengths and weaknesses of the graduates of Krakow's higher education institutions (HEIs). The answers have been summarized as follows.

Table x: Strength and weaknesses or graduates of Krakow's HEIs, according to HR managers

Graduate strengths :	**Graduate weaknesses:**
• high level of knowledge	• communication
• good technical education of engineers	• influencing others
• considerable openness	• team work
• competent work organization and task planning	• receiving feedback
• high flexibility	• commitment
• creativity	• practical application of knowledge
• language skills (linguistics)	• work experience
	• English offered by linguists

Source:

However, policy makers need to keep in mind that formal education cannot exclusively solve the employment problems of young people. General economic prosperity and business friendly institutional reforms facilitating job creation for young people are at least equally important.

Box 3: Should Poland decrease enrolment at the tertiary level?

Popular media sometimes argue that the Polish society is formally over-educated and that education does not pay off. In order to underpin such statements they point at the recently growing number of young unemployed people with higher education among registered unemployed. The statement "universities produce unemployed people" can be heard quite frequently.

Indeed, the number of educated unemployed young people is growing; however, afore mentioned statements send a wrong message and don't seem to take other labor makret aspects into account. Unemployment amongst young people who have just completed formal education is usually higher than in other segments of the labor market. This is a universal phenomenon which becomes especially visible in the situation of the current financial and economic crisis when companies stop creating new jobs, or even reduce the number of existing ones. Unemployment rates among young people were even more a source of concern in Poland at the beginning of this millennium; however, eventually higher education paid off.

As argued earlier, Poland will need well-educated young generations which help the country to offset the consequences of demographic decline and ensure growth through higher labor market participation and higher productivity.

Source: Authors.

Table 5. Employment status by education and gender among school leavers from the last 5 years younger than 30 (in percent).

	Employment rate		Unemployment rate		Non-active		Total N	
	Male	Female	Male	Female	Male	Female	Male	Female
Lower secondary or less	19	5	66	80	44	77	84	43
Basic vocational	58	48	35	33	10	29	158	105
General secondary school	50	38	33	42	25	34	119	136
Technical secondary school	71	46	21	45	10	16	240	99
Other secondary	65	54	20	35	20	16	51	89
Bachelor	73	57	21	29	8	20	51	109
Engineer	80	73	15	8	6	20	49	15
Master	77	77	17	18	8	6	116	256

Master - engineer	91	70	9	19	0	14	47	37
Total	63	56	26	30	15	21	917	906

Source: Human Capital Balance study 2012.

Note: The analysis reveals the differences in influence of Bachelor and Master degrees on the employment perspectives. It also illustrates how important higher education is for female jobseekers. Further, there are clear differences in the employability of people who obtained higher education with engineering qualifications and those without them: young male engineers have almost no problems finding employment while female engineers tend to be more often non-active than females with non-engineer Master's degrees. The situation of graduates is reflected in the recent changes in enrolments to higher education institutions: more students chose technical subjects.

In a situation of high unemployment rates among young graduates in Poland (which are, however, not an exception among European countries in the current economic climate) the question of maintaining and developing their competences for future employment possibilities becomes an important issue.

Adult education should thus not only focus on older groups of labor market participants but particularly keep the needs of this younger generation, for now excluded from the labor market, in mind. Another important target group is the group of 30-40-year-old workers who are willing to upgrade their skills or need 're-skilling'. However, the 50plus group, which is the focus of special government programs and a target group of numerous ESF-funded activities or courses, should not be excluded from the target list. However, educating this group will be in the long run less critical (although not negligible) for solving problems of the ageing population in Poland. For the group of senior labor market participants other factors like motivating both employers and employees towards a prolongation of labor activity, will play a leading role and tailor made learning can be one of the instruments to make this happen, as the following example shows.

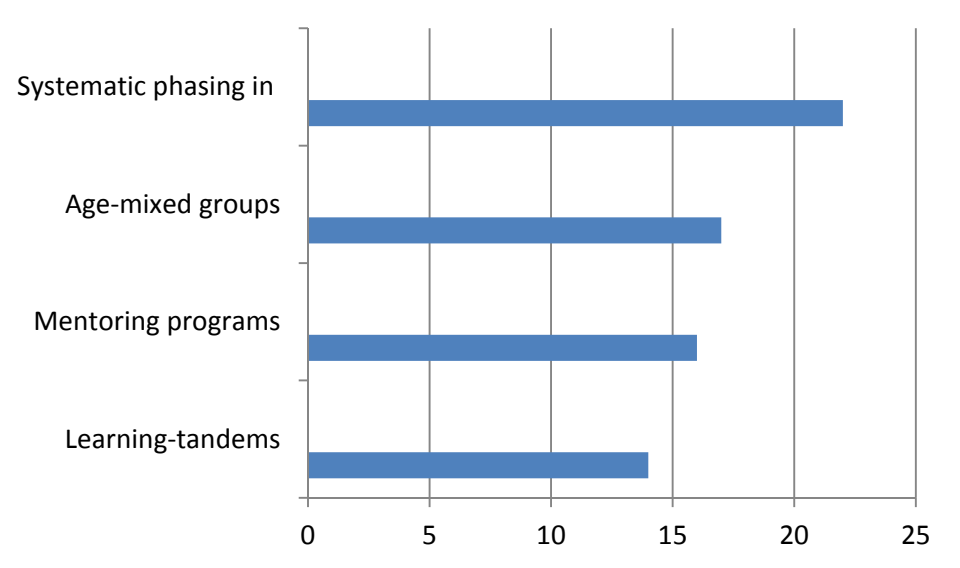
Box 4: Successfull aging at German companies – the contribution of learning

Germany will move towards a pension age of 67 in successive steps; already now, more and more individuals work beyond age 60. Some researchers have even recommended a pensions age of 70.

Implications for **„demographic management"** are under discussion, not only on the state level but also on the level of individual firms. Tools for successful demographic management can for example be found on the following website: www.demowerkzeuge.de

One of the successful approaches is the 'tandem model' under which an older and a younger worker closely collaborate. The older worker shares his or her experience with the younger worker who, in return, shares his or her insights into newer developments and approaches with the older worker. Thereby, both sides profit through a practical and rather informal learning arrangement.

Figure x: Measures to support knowledge transfer between older and younger employees



Source: Berliner Zeitung, 07/08 February 2010; PWC study „Pro 50"

Note: Surveyed companies: 53. Graph informs about absolute number of answers; more than one answer was possible.

Well known by now is the BMW model: The company launched a program to support and maintain the physical and intellectual performance of its older employees under the heading „Today for Tomorrow". The program consists of main fields of engagement which include **inter-generational learning**. The program also includes sensibilization of managers with regard to aging-relevant topics.

A study of the BKK, a German insurance company on „Older Workers – valuable Potential for the Company [Aeltere Arbeitnehmer – wertvolles Potenzial fuer den Betrieb" shows that older worker don't perform less than younger employers, the nature of the performance and peak areas are simply different. The BBK study stresses that older workers find it easier to establish connections between information based on their wealth of experience. This leads to higher performance in many areas and less mistakes. The car producer Audi adjusted its production to these strenght of older workers: mainly older workers ensure the production of the Audi R8 sports car which is complicated and thus needs an attention to detail which Audi combined with a slower pace of production suitable for the workers involved.

Source: Authors based on „Successful Aging [Erfolgreich Altern]", Berliner Zeitung, 07/08 February 2010

Lifelong learning for aging societies: policy options

Without a radical improvement of labor productivity, which seems to be on a stagnant trajectory now, the Polish economy will neither be able to address the challenges of an ageing population nor remain on the track of long term economic growth. **And without further improvement of education and training, radically higher labor productivity is not achievable.** Although high quality, accessible education is not a sufficient factor of sustainable development and growth, it is undoubtedly a necessary one.

In this context, policy makers need to look beyond adult education which is often the focus in debates on the role of education in aging societies. Instead, policy makers will need to consider which reforms are needed to effectively address challenges associated with demographic decline: namely, transforming aging societies into lifelong learning societies by adjusting access and modernizing provision from early childhood development to education for senior citizens.

Development and enhancement of knowledge, skills and competences is important and feasible for all stages of the life cycle. Intuitional frameworks should both stimulate demand for education and training and make them accessible for all age groups. The three primary target segments listed above (young unemployed, mid-career stage, 50plus) are strategically particularly relevant when it comes to adult education. Creating targeted strategies for these cohorts would allow for tailor-made policies and provisions. However, in case of limited resources and necessary trade-offs, priority would need to be given to the younger cohort since, in addition to its higher effectiveness, policies targeted at this segment would also have a positive impact on the further learning of these age groups when they reach the age threshold of the second and third segment.

In a broader perspective, **the challenge for Polish policies makers will be to develop Poland into a lifelong learning society**:

- Providing young individuals with knowledge, skills and competences adequate for the particular requirements of modern societies and their economies, to put them on a lifelong learning path which allows them to *proactively* update their skills over their work and lifecycle.
- Opening up possibilities for older individuals to acquire and update knowledge, skills and competences in order to stay engaged and relevant in the labor market
- *Enabling* all individuals, irrespective of gender, age and level of education, to continuously update their knowledge, skills and competences in line with changing societal needs

The question at hand is now according to which principles an education system needs to be organized in order to become a driver of a lifelong learning society, if the Polish education system is organized in such a way, and what can be done to improve the status quote.

A. Adjusting the Education and Training System

- ***Development of an Integrated Lifelong Learning System***

First of all, education and learning cannot be seen as something that takes place in the first decades of an individual's life and is then 'completed'. Only education systems which consider the entire life-cycle of individuals, which enable entry at any point in life and which continuously foster the individuals' capacity to learn can live up to the demands of modern societies. The realization of this fact has to form

the core of a new attitude towards education. Such a change of attitude requires concerted efforts from all stakeholders in the education system and in particular from governments which can influence this development via political strategies and concrete policies.

An important step in this direction in Poland was the establishment of the "Interdepartmental Taskforce for Lifelong Learning" with representatives from the Ministry of National Education, the Ministry of Science and Higher Education, the Chancellery of the Prime Minister, the Ministry of Economy, the Ministry of Labor and Social Policy, the Ministry of Regional Development, and the Ministry of Foreign Affairs. One outcome of the taskforce's work is the report "The Perspective on Lifelong Learning".

Box 5: Implementing Lifelong Learning Comprehensively – The Examples of Finland and Ireland

The approaches towards lifelong learning in the higher and adult education sector in Finland and Ireland exhibit several of the features identified as important in this note. Both countries embedded the principles of lifelong learning in several education policies. This led to 23.1 percent of the working-age population participating in lifelong learning annually in Finland. In Ireland the participation rate is around 7.5 percent.

Among the actions taken in Finland was **easing entrance into adult education by creating programs that built on prior learning and experience and are of reasonable length**. Building the programs on prior learning and experience shortened the length of study by more than one third. Being part of an overall system of qualifications based on competences without regard for the way in which skills and knowledge are acquired, these programs lead to the **acquisition of competence-based qualifications, which are approved by the labor market and are attractive for individuals active in the workforce**.

In addition, **individual guidance and financial aid for mature students' were introduced and unemployment benefits were tied to training**, further increasing the incentives to pursue adult education. Adult education in Finland is also supported by the Ministry of Education, which spends about 13 percent of its budget for this purpose. Still, the major part of training is funded by employers.

Finland as well as Ireland established courses and qualifications that are **organized in a flexible and modular way**, enabling individual learning paths. Learners have several possibilities for improving their employability and their capacities for further learning. **Flexible hours and forms of delivery**, e.g. open and distance learning, have also been introduced. Learners are furthermore supported by public libraries in both countries. There is a special focus on individuals that dropped out of education. Individuals who discontinued tertiary education, for example, have the possibility to continue their studies.

Finally, lifelong learning is supported by a variety of governance and financing mechanisms that facilitate access to lifelong learning and ensure that programs are designed in accordance with the employers' and employees' needs. In several situations, e.g. when individual employability needs to be improved, programs can be financed together by the employer and the Labor Administration in Finland.

It is worth noting that lifelong learning in Finland also targets enhancing civic activity, community education, social dialogue, and basic information society skills. Reaching out to retirees is fostered as well**. Ireland, on the other hand, explicitly targets disadvantaged groups**, such as less educated individuals, older, unemployed or economically inactive citizens, workers from small companies, and individuals belonging to occupational groups associated with lower income levels.

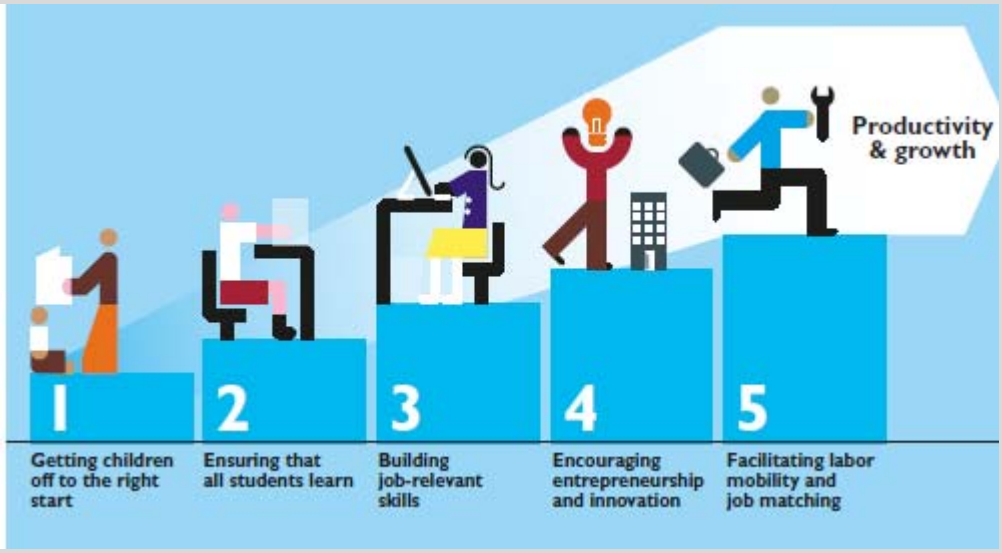
Source: World Bank, 2011, p.111f; authors

There are important implications of such a move for educational sub-sectors. The following sections can only give an idea of the reforms needed at each stage; however the most important point is that there needs to be a comprehensive approach to lifelong learning and approaches at individual sub-levels will need to be developed in accordance with this approach and keep requirements like permeability of learning pathways in mind.

Early Childhood Development

Given that every stage of education builds upon another, with every earlier stage having great influence on the success of the next one**, the very first stage is of crucial importance**. Early childhood development and education (ECD), covers not only early learning but also other aspects of child development like health care, nutrition, appropriate stimulation and interaction with others, preparing the ground for all further learning experiences and their success by promoting cognitive and behavioral (and other) skills. As several studies have shown, the overall impact at this early stage is several times higher than at any later stage – in turn leading the highest returns on investment. This does not only effects on later learning and educational outcomes but also social, health and employment outcomes.

Box 6: The World Bank STEP (Stepping up Skills for More Jobs and Higher Productivity) framework highlights the importance of ECD as basis for skills development, social inclusion and employment



Strong evidence from around the world shows the impact of ECD throughout the lifetime. **Children who participate in quality ECD programs have higher cognitive development and overall school readiness on primary school entry, lower repetition and dropout rates in the early grades, greater learning in school, and higher school completion rates.** Some examples:

- In Bangladesh, children who received center-based preschool education outperformed their peers in the control group by 58% on a standardized test of schoolreadiness.
- In Colombia, children who received a comprehensive community-based ECD intervention were 100% more likely to be enrolled in third grade, indicating lower dropout and repetition rates for program children than for those in the control group.
- In Argentina, one year of preschool was estimated to increase the average third-grade test score in mathematics and Spanish by 8%.
- In Turkey, children who benefited from a mother-child education program that provided cognitive enrichment to children and training and support for mothers were more likely to be in school during their teenage years than those in the control group (86% compared with 67%).
- And in the United States children who received high-quality, comprehensive ECD services were 50% more likely to finish secondary school than those who did not.

These positive outcomes reach far beyond childhood and affect labor productivity. By age 27, children in the United States who took part in a center-based ECD intervention, supplemented by parental training, were 20 percentage points more likely to be earning more than $2,000 a month than the control group. One-third of the program beneficiaries owned homes by age 27, more than twice the 13% for children in the control group.

ECD interventions are among the most cost-effective investments a country can make in its people. OECD countries already spend, on average, 2.3% of GDP on services for families and children aged 0 to 6 years. It has been proposed that all countries should spend at least 1% of GDP on ECD to ensure quality services. Some evidence suggests annual rates of return of 7–16%.

Not only do quality ECD investments have a high benefit-cost ratio, they also have a higher rate of return for each dollar invested than interventions directed at older children and adults. So, ECD investments should be a top priority for efforts to promote employment and productivity later in life in many countries—and for the poorest and most disadvantaged groups in all countries.

Source: World Bank, 2010;
http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/07/07/000334955_20100707020537/Rendered/PDF/555660WP0Box341101061141CT01PUBLIC1.pdf

The benefits of ECD are particularly important for individuals from disadvantaged backgrounds and overall for educational inclusion. Disadvantages at the beginning of the educational life-cycle negatively impact later stages of learning and the entire lives of individuals. Since prevention is a lot more efficient than compensating disadvantages at later stages in life, ECD is an efficient measure to promote equity.

The task at hand for Poland is thus to make ECD truly universal, in particular bridging the rural urban divide in provision. The basis for this is that ECD is available in a sufficient quantity and not only in urban regions or for well-off households. Sufficient ECD coverage will also have positive implications for female labor force participation as is the case in countries whith universal ECD as of age 4 (in particular Scandinavian countries). For ECD to fulfill the key function mapped out in this paper, there is not only a need for a broad coverage, but also for high quality with implications for training of ECD personnel and quality assurance of provision.

General Education

On the next stage of education, primary and secondary education, the inclusive, lifelong learning oriented approach has to be continued. The basis for this is high quality institutions and learning environments. Among the key factors to achieve this are clear learning standards, teachers who are prepared for competence-based teaching and learning and modern modes of delivery, adequate resources and financing mechanisms, and a proper regulatory environment.

The 1999 education reform was important: schooling was restructured; tracking in secondary education was deferred; the curriculum was reformed (around three dimensions of education: acquiring knowledge; developing skills; and shaping attitudes) – this was already a change towards the learning outcomes approach, leading the great improvements in PISA scores – the delayed division of students in secondary education also contributed to the good PISA scores. However, positive changes introduced

under recent reforms have to become sustainable and there is further room for improvement, in particular with regard to initial and continuous teacher training and professional development.

TVET

As discussed earlier, the number of students in vocational schools has decreased significantly over the last two and a half decades (Górniak 2013, 19) – in Poland as well as in other Central and Eastern European countries. **At the same time, quality of TVET has become more of a concern in various European countries, leading through a joint European policy agenda** (formulated under the Copenhagen Process). While joint policy initiatives like the introduction of ECVET (the European credit point system for TVET) are important, key issues of TVET provision have not been tackled in many countries.

Many policy makers take a strong interest in the German Dual System and consider its introduction in different contexts. However, there are a couple of issues, not only associated in general with this kind of "policy borrowing' but also related to the Dual System in particular: it is expensive (though companies tend to break even during the first year after training) and while the connection to employers and the world of work appears as a particularly noteworthy feature, **much of its success derives from the continuous strong focus on the transmission of generic skills** (in combination with mathematics and mother tongue education, for example) which keeps its graduates flexible in the labor market and open up possibilities for further learning.

Poland has taken an important step by developing TVET from a one-way-road into a potential step-stone for tertiary level education. However, questions of quality of TVET are still pressing and will need further action going forward.

Tertiary Education and Further Learning

The most profound changes emerging from the demographic developments and the requirements of modern societies apply to the higher education sector, whose borders with the sector of adult and further education start to cease. One reason for this is that lifelong learning is expected to increase the number of individuals entering this stage of education as well as the frequency with which they do. Another reason is that many of the general challenges for the education system pertain to the higher and adult education sector in particular, e.g. the question concerning the best mix of knowledge, skills and competences and the importance of permeability.

The new functions emerging for the higher and adult education sector are at least partly at odds with the common perspective on this sector and its institutions. **If individuals are in a permanent need to update their skills at different stages in life, and HEIs want to become important players in lifelong learning systems, higher education institutions have to provide offerings as diverse as the learners' needs**. An overall change in the relationship between work, leisure and learning is adding to this. Such diverse functions cannot be fulfilled by one type of institution alone, especially not by the traditional, comprehensive and academically-oriented universities (*cf. The World Bank 2011, 105ff*). There is a need for a variety of institutions, each prepared to assume different functions, to cater to a different clientele,

and to react to and anticipate new developments. This can include institutions providing bridging courses allowing learners to catch up with learning units on which they missed out at earlier stages. However, all institutions need to ensure that they take their students' starting point into account.

One part of creating a flexible and responsive higher and adult education system is to create incentives for diversification. However, the responsiveness of individual institutions can and has to be increased, too. Greater autonomy provides institutions with enough latitude to quickly react to changing knowledge, skills and competences demands and to develop new programs accordingly.

Box 7: Further Education Colleges in the United Kingdom – Catering to Diverse Needs

A good example for a diversified education system providing adequate learning arrangements for a very diverse group of learners can be found in the United Kingdom, for example with the further education colleges. In contrast to many other institutions, all programs offered by these colleges incorporate learning towards a wide range of knowledge, skills and competences, covering elements from five areas of students' achievements: **being healthy, staying safe, learning to learn, making positive contributions, and achieving economic well-being**.

Further education colleges offer work-based programs in a wide range of subjects, such as trades, technology, applied science, business studies, financial services, social services, and health services. They also cover a wide range of educational levels, ranging from entry-level programs and basic skills to Foundation Degrees, which are awarded in partnership with universities.

The target groups to which these institutions cater are equally diverse:

(1) **Youths who acquired the General Certificate of Secondary Education** at the age of 16, but have not qualified for higher education entrance, to which A-level courses are offered through 6th form centers
(2) **Adult learners**, which can choose from a wide range of further education programs
(3) **Enterprises**, which are offered different continuing education and training courses for their employees

The further education colleges are seen as a **part of a wider learning and skills sector**, which also comprises workplace education and other types of non-school, non-university education and training. They are supported by different government initiatives.

Source: World Bank, 2011, p 108; authors

Higher and adult education has to take a wide range of knowledge, skills and competences needs into account, if learners are to be prepared for living and working in modern societies and dynamically developing economies:

- Generic skills and competences, such as analytical thinking which enable individuals to participate in society and to succeed on the labor market and which are demanded by employers;
- Lifelong learning skills and competences, which individuals need for keeping up with new knowledge, skills and competences requirements;
- Entrepreneurship and innovation skills, which modern economies need;
- Job-specific skills sought after by companies, which are also relevant for an individuals' success on the labor market.

If learning outcomes, which are related to the needs of individuals, societies and economies, are at the core of the higher and adult education system, there has to be a continuous exchange on them. Higher and adult education institutions have to be informed by their environment which knowledge, skills and competences are relevant. These stakeholders can also be involved in the design of curricula. Furthermore, many of those learning outcomes cannot be taught in classrooms alone (*The World Bank 2011, 93*). Different stakeholders can, therefore, contribute to the learning process of individuals by providing work placements for students or ensure other forms of real-life experience.

Box 8: Incorporating Diverse Skills Needs – Dual Mode Tertiary Education in Germany

One approach towards ensuring that individuals acquire a set of skills comprising higher level generic as well as job-related skills and competences can be found in Germany. Initiated by companies that were not able to satisfy their particular skills needs, the underlying principle of the dual education system – combining a paid apprenticeship in a company with the attendance of a vocational school – has been transferred from the secondary to the tertiary educational level.

Students pursuing a dual mode tertiary education program are employed by a company and attend university, establishing a direct connection between theoretical knowledge and practical skills. In 2012, around three percent of all students and around ten percent of students at the universities of applied sciences pursued dual mode tertiary education studies (*BMBF 2013, 122*).

Beyond providing learners with a mix of generic and job-related skills and competences, this mode of higher education exhibits features that are crucial for modern education systems:

- In the course of the development of this mode of study, new types of institutions and organizational subunits within existing institutions emerged, designed to account for the specific requirements of this mode of study. Among these requirements are the capability to closely interact with companies and short response times to changing skills needs.
- **Employers are in many cases involved in the process of curricula design and the governance of the institution** or organizational subunit, support the education institutions by providing their staff as teachers, and sometimes directly contribute funds.
- With this mode of higher education being more practically-oriented, students are paid a salary during their studies, and the **prospects of continuing to work for the company are usually high**, individuals who value this sort of security and would otherwise have preferred programs with a greater labor market orientation can be encouraged to pursue higher education studies.
- The close interaction of higher education institutions and companies provides a basis for further cooperation.

This mode of study furthermore hints at an important precondition of lifelong learning, the necessity that employers are willing to invest in the development of their employees, either by releasing them from work for educational purposes or by financially contributing to the education of their employees.

A particular field for cooperation is pre-employment and on-the-job training programs, where higher and adult education institutions, employers and the state can cooperate to create the best conditions for further education. This cooperation can comprise funding as well as quality assurance. In the case of low-skilled workers, for example, state funding for training programs is not sufficient to bring the individuals back into the labor market. Only if employers, education institutions and the state closely cooperate can this be achieved.

Such connections between higher and adult education institutions on the one hand and companies on the other hand can furthermore provide a foundation for further cooperation, e.g. in the form of applied research. This would also be important in the case of Poland, because most of the public R&D spending goes to universities and research institutions, hampering the development of absorption capacities within companies (*The World Bank 2011, 132f*). Cooperation would here be needed to overcome the universities' focus on basic research, at the expense of applied research and experimental development. Higher education institutions have to become environments for innovation, in close connection with companies and the needs of the regions they are located in. Such cooperation could also trigger greater private investment in R&D.

B. Focus on Individual Learners

- ***Prepare individuals to be lifelong learners***

However, creating the formal possibilities of entering and proceeding through the education system is not sufficient. Individuals have to be prepared to make use of these possibilities, too. Individuals need the capability to learn. Starting with acquiring the relevant generic skills for lifelong learning at the earliest stages in life, this capability has to be promoted at every stage of the education system. Lifelong learning starts with early childhood development and spans all stages of education. Thus**, education at any stage has to assume a 'dual' function, consisting of transferring knowledge, skills and competences as well as preparing and motivating learners for future learning.**

- ***Accounting for the Diverse Knowledge, Skills and Competences Needs***

Generic skills that enable lifelong learning have already been identified as relevant for modern education systems. It is also undisputed that education has to prepare individuals for the labor market, especially at the later stages. However, taking the requirements of modern societies and economies into account, broad and transferable skills are becoming more and more important, at the expense of more narrow, job-specific skills (*The World Bank 2011, 78f*). It is important to bear in mind, that not all relevant learning outcomes can be subsumed under the skills heading. More general competences ("attitutes") and capabilities are equally important.

Enabling learners to succeed in reaching these learning outcomes requires adapting curricula, learning materials and the process of teaching and learning itself accordingly. **Generic skills, for example, can only be fostered by challenging learners' problem solving skills and making them interact in teams.**

> "[T]the recent World Summit on Teaching noted that teachers need to help students acquire not only *'the skills that are easiest to teach and easiest to test'* but more importantly, ways of thinking (creativity, critical thinking, problem-solving, decision-making and learning); ways of working (communication and collaboration); tools for working (including information and communications technologies); and skills around citizenship, life and career and personal and social responsibility for success in modern democracies. (World Bank 2013, 79)"

However, accounting for diverse skills needs also means accounting for the diverse knowledge, skills and competences that learners bring to a specific level of learning.

- ***Flexible Paths for Learners and Recognition of Prior Learning***

Making the idea of a truly lifelong learning oriented, inclusive education system become reality requires educational opportunities that are as customized and as individual as learners themselves. This can only be achieved by permeable and flexible education systems. Individuals need the opportunity to enter the education system when necessary, with as few barriers as possible, and to choose a program that fits their former education and experience as well as their knowledge, skills and competences needs.

Permeability and flexibility can be created by shifting the perspective away from certificates and the type of institution that issues them to the knowledge, skills and competences individuals possess or are supposed to acquire. If the content of programs and courses is designed based on these learning outcomes and if these programs and courses are modularized and quality assured, learners are in a position to choose learning arrangements that fit their needs, without having to invest more time and resources than necessary. Possibilities for the recognition of prior learning and experiences are a prerequisite here, having a great impact on easy access.

This focus on learning outcomes, serving as a framework for the whole education system, furthermore makes it possible to bring the different education subsectors and different types of institutions closer together, to the benefit of learners.

The different measures to promote permeability and easier access have to be taken up on the level of higher and adult education. This refers to the shift towards learning outcomes, the qualifications framework as well as the recognition of prior learning. **Many of the potential learners at this stage already acquired a variety of skills and competences** during their lives. **In order to reduce entrance barriers and shorten the duration of programs and courses, these skills and competences should be recognized within the formal education system.** If curricula are based on competences and not on content, implementing the results of non-formal or informal learning processes becomes possible. This is particularly important for policies addressing the most urgent supply-demand-gaps.

Another issue here is the three-cycle degree structure implemented via the Bologna Process. Dividing higher education into distinct cycles increases the flexibility for learners. Individuals can choose whether to study for a shorter, first degree at the Bachelor level, to continue directly with a Master's degree or to gain some work experience in between the two. There is some evidence that the acceptance of the Bachelor's degree correlates with the proliferation of lifelong learning (*The World Bank 2011, 103f*).

- ***Individualized Career Guidance***

Many important decisions concerning further learning and working biographies are taken at the secondary and tertiary level. To make sure that every individual is able to develop its full potential to the without wasting time and resources due to wrong decisions, these choices have to be supported via good career guidance (even if increased permeability facilitates the possibility for 'correcting' previous decisions) and an excellent information basis on employment opportunities as well as performance of educational providers.

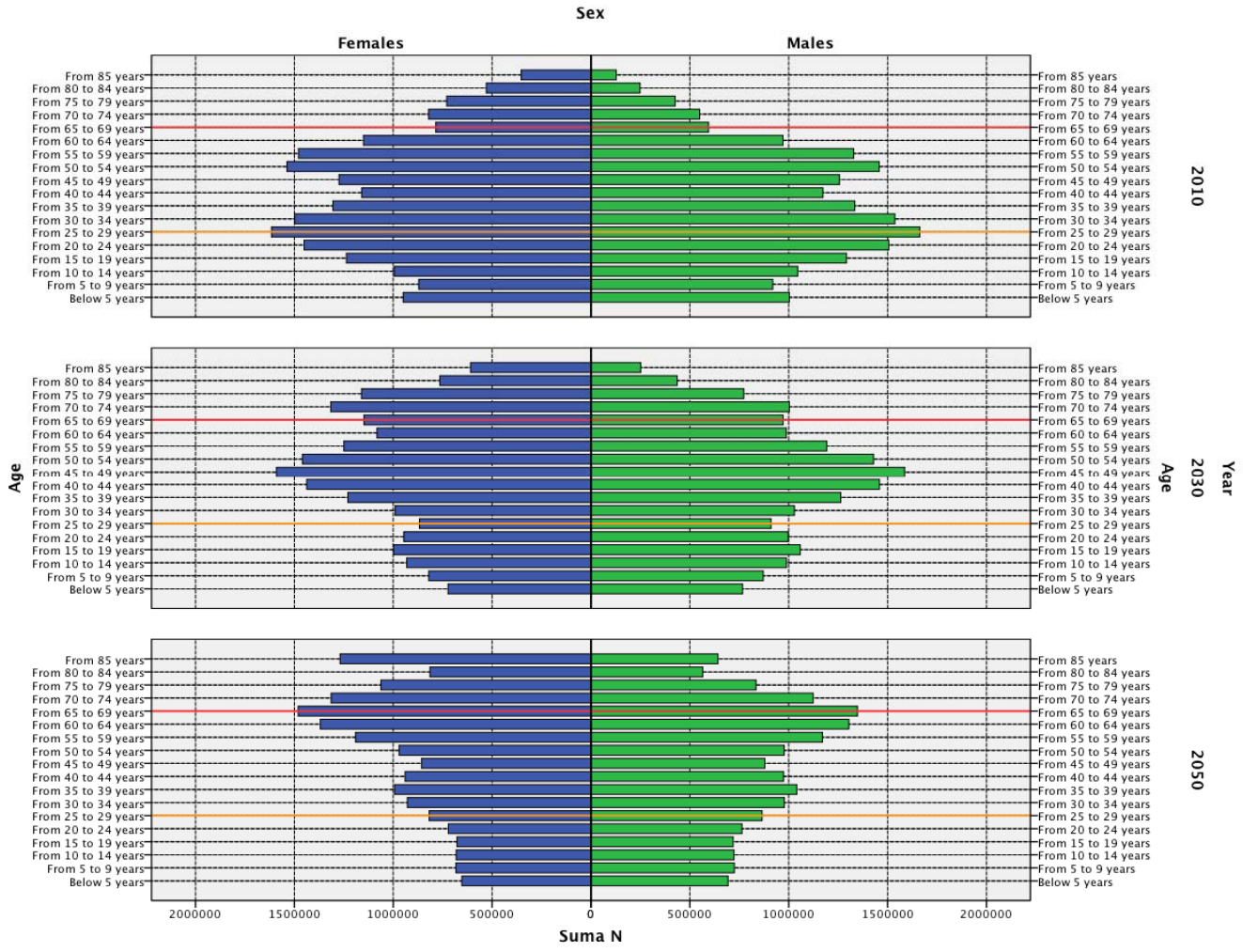
- ***Ensuring that Every Individual Takes Part in Lifelong Learning***

Establishing an inclusive education system necessitates paying particular attention to (educationally) disadvantaged groups. At different stages of the education system, disadvantages can arise from gender, age, ethnicity, place of residency and/or level of education. Each factor requires tailored policies to overcome its impact.

In the case of Poland, intergenerational differences are a major issue, as had been discussed earlier. As the discussion of the skills mismatches has shown, targeting these differences and developing tailor-made learning opportunities – in addition to the broader sector reforms discussed in this section - is crucial for the Polish economy and society.

ANNEXES

Annex 1: Demographic trees of Poland in 2010, 2030 and 2050



Source: EUROSTAT

Annex 2: PISA 2012 - performance in mathematics, reading and science

Countries/economies with a mean performance/share of top performers above the OECD average
Countries/economies with a share of low achievers below the OECD average
Countries/economies with a mean performance/share of low achievers/share of top performers not statistically significantly different from the OECD average
Countries/economies with a mean performance/share of top performers below the OECD average
Countries/economies with a share of low achievers above the OECD average

	Mathematics				Reading		Science	
	Mean score in PISA 2012	Share of low achievers in mathematics (Below Level 2)	Share of top performers in mathematics (Level 5 or 6)	Annualised change in score points	Mean score in PISA 2012	Annualised change in score points	Mean score in PISA 2012	Annualised change in score points
OECD average	494	23.1	12.6	**-0.3**	496	**0.3**	501	**0.5**
Shanghai-China	613	3.8	55.4	**4.2**	570	**4.6**	580	1.8
Singapore	573	8.3	40.0	**3.8**	542	**5.4**	551	**3.3**
Hong Kong-China	561	8.5	33.7	**1.3**	545	**2.3**	555	**2.1**
Chinese Taipei	560	12.8	37.2	1.7	523	**4.5**	523	-1.5
Korea	554	9.1	30.9	1.1	536	**0.9**	538	**2.6**
Macao-China	538	10.8	24.3	**1.0**	509	**0.8**	521	**1.6**
Japan	536	11.1	23.7	0.4	538	**1.5**	547	**2.6**
Liechtenstein	535	14.1	24.8	0.3	516	**1.3**	525	0.4
Switzerland	531	12.4	21.4	0.6	509	**1.0**	515	0.6
Netherlands	523	14.8	19.3	**-1.6**	511	-0.1	522	-0.5
Estonia	521	10.5	14.6	0.9	516	**2.4**	541	1.5
Finland	519	12.3	15.3	**-2.8**	524	**-1.7**	545	**-3.0**
Canada	518	13.8	16.4	**-1.4**	523	**-0.9**	525	**-1.5**
Poland	518	14.4	16.7	**2.6**	518	**2.8**	526	**4.6**
Belgium	515	18.9	19.4	**-1.6**	509	0.1	505	-0.8
Germany	514	17.7	17.5	**1.4**	508	**1.8**	524	1.4
Viet Nam	511	14.2	13.3	m	508	m	528	m
Austria	506	18.7	14.3	0.0	490	-0.2	506	-0.8
Australia	504	19.7	14.8	**-2.2**	512	**-1.4**	521	-0.9
Ireland	501	16.9	10.7	-0.6	523	**-0.9**	522	**2.3**
Slovenia	501	20.1	13.7	-0.6	481	**-2.2**	514	-0.8
Denmark	500	16.8	10.0	**-1.8**	496	0.1	498	0.4
New Zealand	500	22.6	15.0	**-2.5**	512	**-1.1**	516	**-2.5**
Czech Republic	499	21.0	12.9	**-2.5**	493	-0.5	508	-1.0
France	495	22.4	12.9	**-1.5**	505	0.0	499	0.6
United Kingdom	494	21.8	11.8	-0.3	499	0.7	514	-0.1
Iceland	493	21.5	11.2	**-2.2**	483	**-1.3**	478	**-2.0**
Latvia	491	19.9	8.0	0.5	489	**1.9**	502	**2.0**
Luxembourg	490	24.3	11.2	-0.3	488	**0.7**	491	0.9
Norway	489	22.3	9.4	-0.3	504	0.1	495	1.3
Portugal	487	24.9	10.6	**2.8**	488	**1.6**	489	**2.5**
Italy	485	24.7	9.9	**2.7**	490	0.5	494	**3.0**
Spain	484	23.6	8.0	0.1	488	-0.3	496	1.3
Russian Federation	482	24.0	7.8	1.1	475	**1.1**	486	1.0
Slovak Republic	482	27.5	11.0	**-1.4**	463	-0.1	471	**-2.7**
United States	481	25.8	8.8	0.3	498	-0.3	497	1.4
Lithuania	479	26.0	8.1	-1.4	477	1.1	496	1.3
Sweden	478	27.1	8.0	**-3.3**	483	**-2.8**	485	**-3.1**
Hungary	477	28.1	9.3	**-1.3**	488	**1.0**	494	-1.6
Croatia	471	29.9	7.0	0.6	485	1.2	491	-0.3
Israel	466	33.5	9.4	**4.2**	486	**3.7**	470	**2.8**
Greece	453	35.7	3.9	**1.1**	477	0.5	467	-1.1
Serbia	449	38.9	4.6	**2.2**	446	**7.6**	445	1.5
Turkey	448	42.0	5.9	**3.2**	475	**4.1**	463	**6.4**
Romania	445	40.8	3.2	**4.9**	438	1.1	439	**3.4**
Cyprus[1, 2]	440	42.0	3.7	m	449	m	438	m
Bulgaria	439	43.8	4.1	**4.2**	436	0.4	446	2.0
United Arab Emirates	434	46.3	3.5	m	442	m	448	m
Kazakhstan	432	45.2	0.9	**9.0**	393	0.8	425	**8.1**
Thailand	427	49.7	2.6	1.0	441	**1.1**	444	**3.9**
Chile	423	51.5	1.6	**1.9**	441	**3.1**	445	1.1
Malaysia	421	51.8	1.3	**8.1**	398	**-7.8**	420	-1.4
Mexico	413	54.7	0.6	**3.1**	424	**1.1**	415	0.9
Montenegro	410	56.6	1.0	**1.7**	422	**5.0**	410	-0.3
Uruguay	409	55.8	1.4	**-1.4**	411	**-1.8**	416	**-2.1**
Costa Rica	407	59.9	0.6	-1.2	441	-1.0	429	-0.6
Albania	394	60.7	0.8	**5.6**	394	**4.1**	397	2.2
Brazil	391	67.1	0.8	**4.1**	410	**1.2**	405	**2.3**
Argentina	388	66.5	0.3	1.2	396	-1.6	406	2.4
Tunisia	388	67.7	0.8	**3.1**	404	**3.8**	398	**2.2**
Jordan	386	68.6	0.6	0.2	399	-0.3	409	**-2.1**
Colombia	376	73.8	0.3	1.1	403	**3.0**	399	1.8
Qatar	376	69.6	2.0	**9.2**	388	**12.0**	384	**5.4**
Indonesia	375	75.7	0.3	0.7	396	**2.3**	382	-1.9
Peru	368	74.6	0.6	1.0	384	**5.2**	373	1.3

1. Footnote by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
2. Footnote by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

The annualised change is the average annual change in PISA score points from a country's/economy's earliest participation in PISA to PISA 2012. It is calculated taking into account all of a country's/economy's participation in PISA.

Note: Countries/economies in which the annualised change in performance is statistically significant are marked in bold.
Countries and economies are ranked in descending order of the mean mathematics score in PISA 2012.
Source: OECD, PISA 2012 Database; Tables I.2.1a, I.2.1b, I.2.3a, I.2.3b, I.4.3a, I.4.3b, I.5.3a and I.5.3b.

Source: http://www.oecd.org/pisa/keyfindings/PISA-2012-results-snapshot-Volume-I-ENG.pdf

Annex 3. Missing competences indicated by employers having problems with finding proper candidates for jobs: percentage of employers mentioning particular competences

	Managers*	Professionals	Technicians	Clerical*	Service	Craft	Operators	Elem. Workers*	Total
[Vocational]	48	34	56	17	51	62	71	51	**54**
Self-organisation	34	34	16	38	36	32	32	33	**31**
Interpersonal	3	11	13	23	36	1	13	30	**14**
Technical	1	0	1	0	10	18	3	2	**9**
Cognitive	2	12	9	19	5	9	6	0	**8**
Computer	9	25	11	7	2	2	2	0	**7**
Physical	0	1	10	0	5	5	12	16	**6**
[Qualifications]	13	5	3	1	4	7	18	0	**6**
Languages	3	6	10	34	9	0	1	0	**5**
Cultural	0	7	5	0	2	1	0	30	**3**
Availability	0	1	4	43	2	1	9	0	**3**
Managerial	35	0	7	0	0	1	0	0	**2**
Office	22	0	4	11	0	0	2	0	**2**
Other	0	4	0	0	5	1	0	17	**2**
Mathematical	0	2	5	1	0	0	0	0	**1**
N	21	132	139	23	199	349	76	20	959

Source: Human Capital Balance 2012

* Small percentage base – the results should be carefully interpreted