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„Survival of the Fittest!?

Multi-State Population Projections by Education for the EU and the European "Newbies" - Croatia, Macedonia, Montenegro and Turkey"

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Markus Speringer

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Department for Geography and Regional Research, University of Vienna

Survival of the Fittest!?

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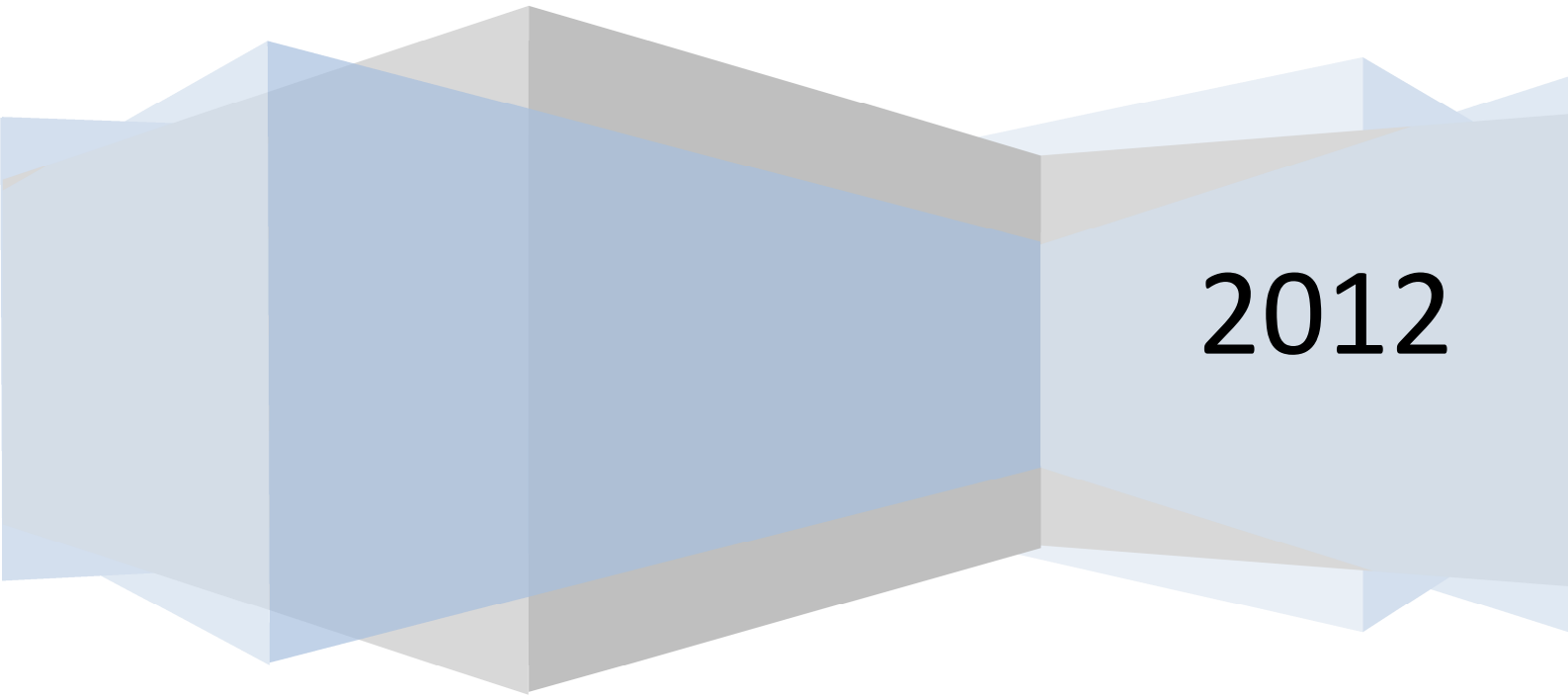

2012

Acknowledgements

When I started my studies at the Department of Geography and Regional Research at the University of Vienna I was torn between the different possibilities and fields of research, like meteorology, geomorphology, urban geography, regional research, spatial planning, human geography and spatial population research. In the course of time my interest for population development emerged and induced me to intensify my personal studies into the field of demography, with a focus on South-East Asia and Europe, its methodological applications and interconnections with other social, political and economic determinants. In this context I am indebted to lecturers like Karl Husa, Alexia Fürnkranz-Prskawetz, Maria Winkler-Dworak, Anne Goujon, Michael Leitner, Ramon Bauer and my advisor Heinz Faßmann, who were great sources of inspiration to me. I owe it to their research commitment and enthusiasm, via lectures, seminars, internships and project works that I have kept trying to stay in the field of (spatial) demography with the choice of my thesis topic and my professional aspirations. It was them who gave me the idea to elaborate my thesis in the field of Population Projections.

Special thanks I want to address to Karl, Anne and Ramon for their advices and guidance that kept me from overshooting my thematic aspirations and straightening me out when I get off the track. The same applies for my advisor, Heinz Fassmann, who managed despite his tight schedule to support me wherever he was able to. He was in the position to help me with settling my thoughts, thesis structure and alignment.

Additionally I want to thank my fellow students, colleagues, friends and family who helped me with words and deeds, like Catrin, Lisi, Alois, Michael, Paul, Judith, Angelika, Renate, my sister Michaela and my parents. Their mental and technical support was irreplaceable. Finally I have to apologize to my adorable and beloved girlfriend for neglecting her and investing so much time in writing my thesis during the last weeks and months. Veronika, you are the best that has ever happened to me! Thank you for your patience and support.

Abstract / Zusammenfassung

"Education is the key", not only to economic and social improvements of a society, but also in demographic processes, like mortality, fertility and migration behaviour. The schooling of the European population played a major role in the Demographic Transition of its nation states from growing to ageing societies in the last 200 years. Additionally, recent studies highlighted the impact of education on the age composition and the size of a population, and therefore on the prospective potential workforce and retired population.

This diploma thesis shall outline the potential impact of educational structure and education policy goals on the future age structure and population size of the European Union and Candidate Countries by setting up different Multi-state Population Projection Scenarios. Those get underlined by assumptions about the influence of demographic processes and political objectives on the prospective path of fertility, mortality, migration and education.

"Bildung ist der Schlüssel" nicht nur zu ökonomischen und sozialen Entwicklung einer Gesellschaft, sondern auch für demographische Prozesse, wie Mortalität, Fertilität und Migrationsverhalten. Die Ausbildung der europäischen Bevölkerung spielte im Demographischen Wandel seiner Nationalstaaten von wachsenden zu alternden Gesellschaften in den letzten 200 Jahren eine wichtige Rolle. Zusätzlich heben aktuelle Studien den Einfluss von Bildung auf die Altersstruktur und Bevölkerungsgröße, und somit auf die zukünftige Arbeitsbevölkerung und Bevölkerung im Ruhestand hervor.

Diese Diplomarbeit soll den potentiellen Einfluss der Bildungsstruktur und bildungspolitischer Ziele auf die zukünftige Altersstruktur und Bevölkerungsgröße in der Europäischen Union und Beitrittskandidatenländer durch die Erstellung von Mehrebenen-Bevölkerungsszenarien herausstreichen. Diese basieren auf Annahmen über den Einfluss demographischer Prozess und politischer Ziele auf die zukünftige Fertilitäts-, Mortalitäts-, Migrations- und Bildungsentwicklung.

Preface

Education is widely considered as key driver of socio-economic development and source of heterogeneity, which determines the past and prospective path and pace of population development. It's impact on demographic and economic development is valid and in the focus of this thesis.

"Education is generally assumed to have far-reaching beneficial consequences. At the individual level more education tends to imply better health, wider economic opportunities, and greater autonomy, especially for women. At the aggregate level the educational composition of the population has long been considered a key factor in economic, institutional, and social development." (Lutz & Goujon, 2001:p.323)

Research Questions

Consequently, my **Research Questions** focus on the Educational Population Structure and Educational Policy in Europe. They can be summed up as followed:

- ***"How could the European Educational Policy affect National Policy and Population Development?"***
- ***"What effects has the educational composition and policy on its prospective population size and structure?"***
- ***"How would the Newbies develop, if they would implement the European Education Policy Goals from the Europe 2020 Strategy?"***

The aim of these research objectives, which I will try to answer in Chapter 5.4, is to illustrate the potential demographic and economic impacts of the educational goals articulated in the Europe 2020 Strategy on the prospective population size and structure in the investigated spatial units described in Chapter 1.4. This will be further set into a context with potential economic and political circumstances and consequences.

Structure of Thesis

The processing of these Research Questions into this thesis takes place in several stages. In Chapter 0 title **"Survival of the Fittest!?"** and the general demographic processes that determined the current demographic structure of Europe will be explained on the basis of the Demographic Transition Model in context with the Demographic Dividend and Human Capital discussion. The demographic effects on the - in Chapter 1.4 defined - spatial investigation units will be illustrated in chapter 2 by means of population size, fertility, mortality, migration, education structure and its past trends. The in this chapter used terms and indicators will get explained in a separated glossary in Annex I – Glossary (by demographic determinant).

In Chapter 3 I will elucidate the importance of education for the societal development, its role in European Policy, and why it is likely to implement social characteristics in population projections. The methodological conversion of education and demographic determinants (fertility, mortality, migration) will be described in Chapter 0 from its basic argumentation for the usage of projections, its applicability, the major methodological approaches and finally the case-specific implementation of the in Chapter 4.3 described Scenarios under certain Assumptions

The projection output regarding the articulated Research Questions is the subject of Chapter 0 , while the entire results in form of Tables (see Chapter 7.3) and Graphs (see Chapter 7.4) can be found in the Annex. In Chapter 0 the projection results will be concluded. The Annex in Chapter 0 forms the closure of my thesis, with an overview about sources, lists of tables, charts, etc. but also with statistical results and age pyramids of the projections.

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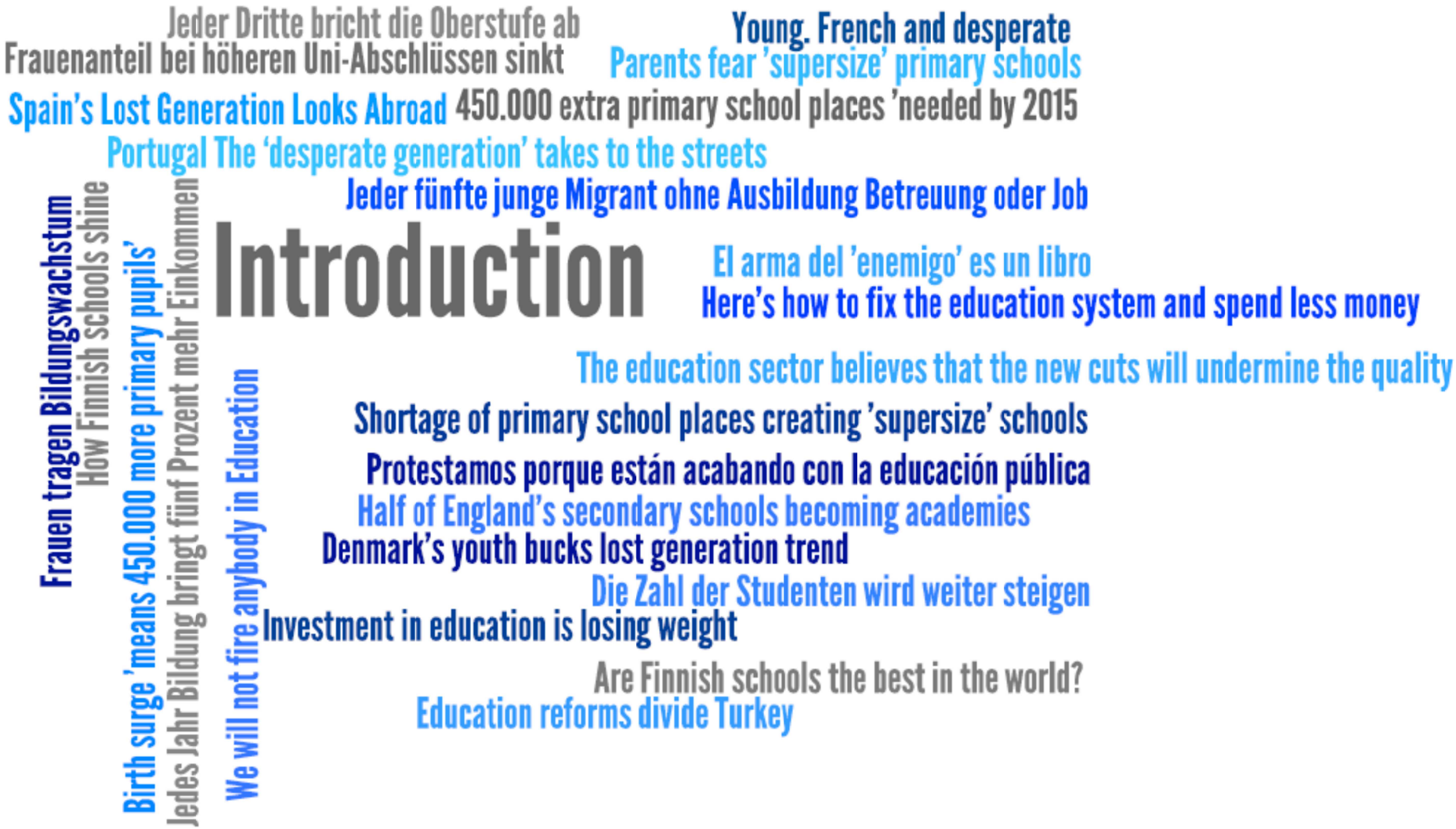
Jeder Dritte bricht die Oberstufe ab
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1 Introduction & Context

1.1 Why "Survival of Fittest"?

This thesis is named **"Survival of the Fittest?"** referring to Herbert Spencer's phrase that he published in 1864 as reply to Charles Darwin's *"Natural Selection"* Theory from 1859, in which he added aspects from sociology and ethics plus facets from Jean-Baptiste Lamarck's *"Larmarckian inheritance"* idea from 1800. (Darwin, 1859; Lamarck, 1802; Spencer, 1864) These phrases coined by Spencer and Darwin indicate to the (genetic) adaptability of organisms and life forms to immediate, local environments in an evolutionary context and not the physical fitness or ability for reproduction of these organisms. (Ederer, Schönpflug, Imhof, & Küblböck, 2007) In my thesis I make use of the phrase itself, not the biological theoretical background, which is for my analysis futile, to outline my own certain approach, which focuses on the educational and economic evolution of the investigated societies: *"The construction of multi-state population projections by educational attainment for the European Union and chosen Candidate and Acceding Countries to show the methodological background and the potential impact of European education policy articulated in the Europe 2020 Strategy"*

Fascinatingly the impetus for Darwin's and Spencer's evolutionary approach is attributed to an as much discussed and scandalised scientist as Darwin and Spencer, namely the British political economist and demographer Thomas R. Malthus. His ***"An Essay on the Principle of Population"*** from 1798 shall decisively urged Darwin to transpose Malthus theories about the increase and decrease of population on behalf of economic and social factors from human societies to all kinds of organisms. Darwin describes more the genetic adaptability of species in opposite to others in the evolutionary process. (Ederer et al., 2007) Why do some species extinct and others prevail in the world's development?

Whereas Malthus was focused on the development and survival of human populations, societies and nation states relating to in his mind *"apparently impending"* overpopulation and lack of resources at that time. He argues that the *"geometric"* population growth exceeds the *"linear"* growing crop production as two out of three of his theoretical premises. The third premise implies that wage level of the low paid working class should kept at the poverty level, because better paid workers would tend to get more children what would cause an oversupply of workforce, population and consequently a resource depletion, what would again cause a decrease of the wage level back to the *"natural"* poverty level. The slack labour and population would reduce itself due increasing mortality rates as equalising element in population growth. (Birg, 2006; Ederer et al., 2007)

In his argumentation the rising growth of the poor and uneducated workers has to be stunted in growth to avoid socio-economic decay and consequently the societal survival. His argumentation line was quite controversial and widely discussed. One of his greatest opponents was David Ricardo, who is along with Adam Smith and John Stuart Mill, the one of the most prominent representative of the Classical Economics. Ricardo coined the law of comparative advantage in favour of free trade between nations and the specialisation of individuals. Both, Ricardo and Smith argued, contrary to the mercantilism or physiocracy, that **labour** or **manpower** are the source of national prosperity, and not money or land. They state the labour division, free trade and comparative advantage in the production of goods and services as key drivers of a prosperous liberal economy. Thereby the governments supply the legislative and institutional framework for a self-regulating economy in which the individual desire for prosperity increases the joint productivity and therefore the wealth of the nation. In the same-named book ***"An inquiry into the Nature and Causes of the Wealth of Nations"*** (1776) Adam Smith stated among others the beneficiaries of public education that above all has to be in charge of the community. (Ederer et al., 2007)

"The education of the common people requires, perhaps, in a civilized and commercial society, the attention of the public, more than that of people of some rank and fortune. (…) the most essential parts of education, however, to read, write, and to account, can be acquired at so early a period of life, that the greater part, even of those who are to bred to the lowest occupations, have time to acquire them before they can be employed in those occupations. For a very small expense, the public can facilitate, can encourage, and can even impose upon almost the whole body of the people, the necessity of acquiring those most essential parts of education." (Smith, 1776:p.328)

Adam Smith and David Ricardo were advocates of public financially situated compulsory schooling to enhance the national wealth and to preserve its continued existence. The individual manpower or qualification of the workforce assures the societal prosperity due the individual persuasion of economic objectives. In the neoclassical economy the English economist Arthur Cecil Pigou named the term human capital firstly in his 1928 published *"A Study of Public Finance"* before 30 years later Jacob Mincer made the term socially acceptable and widely spread in science due his publication *"Investment in Human Capital and Personal Income Distribution"* (1958). Although the designation changed since Smith to human capital the basic statement remains the same and points out the importance *"(…) of the acquired and useful abilities of all the inhabitants or members of the society. The acquisition of such talents, by the maintenance of the acquirer during his education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in his person. Those talents, as they make a part of his fortune, so do they likewise that of the society to which he belongs. The improved dexterity of a workman may be considered in the same light as a machine or instrument of trade which facilitates and abridges labor, and which, though it costs a certain expense, repays that expense with a profit."* (Smith, 1776:p.113)

The prosperous continuity or survival of nations is accordingly to the classical economists reliable on the manpower of its society. The term *"survival"* can refer beside the economic performance of nations also to its demographic development, as the qualification level of the population is a source of heterogeneity in fertility, mortality and migration. All three vital rates exhibit different peculiarities by education and qualification. Therefore the qualification of the human capital influences the economic competitiveness and the demographic structure of a society, whereby these two components influence each other. By coming back to the title *"Survival of the Fittest"* the term *"fittest"* is in the context of this thesis connected to the individual and national qualification and economic fitness to compete on the labour market for citizens respectively the global economic competition between nations.

"The economy of individuals arises from a principle which is universally diffused, and one that is continually in action; the desire of ameliorating their condition. This principle supports the existence and increase of the national wealth, in spite of the prodigality of some individuals, and even triumphs over the profusion and errors of governments." (Smith, 1776:p.xxii)

However, the importance of education for individual and societal economic growth is valid, but it can be useless, when the qualification of the working age population doesn't match to the labour market demands. Otherwise even the best educated workforce can't join the labour market and produces high (youth) unemployment rates.

1.2 Recent Economic and Educational Context

This grievance can be heated up in economically times of unrest as we currently experience. In the recent past newspaper headlines and news report all over Europe are dominated by the Economic & Debt Crisis, the European Stability Mechanism (ESM), the Euro Crisis, upcoming rifts in the European identity on national and individual level, rising (youth) unemployment rates and the financial burdens for the citizens. Thereby the news agencies throw the spotlight on the European and national deficiencies in their economic, political and education systems due pointing out the importance of education for

bringing the economy back on track and to get control of the current economic situation. Even in the recently initiated Europe 2020 Strategy, with the main aim of helping to vanquish the Economic Crisis and to increase Europe's global economic competitiveness, points out the importance of public education.

"Investing in research and development as well as innovation, in education and in resource efficient technologies will benefit traditional sectors, rural areas as well as high skill, service economies. It will reinforce economic, social and territorial cohesion." (European Commission, 2010a:p.9)

The recognition of the importance of education for the economic and political power and stability is not new, but widely propagated by famous authors, artists, statesmen, scientists and politicians. But however formal education for broader parts of the population instead of a small elite is still a relative young societal achievement. Prior the 17th century even elementary education in Europe had been confined to social upper class in very few private or religious schools, but nothing of the sort like compulsory schooling. Scotland was here a pioneer with submitting primary education on voluntary basis to a broad segment of the population organized by each parish in the late 17th century. This system was financed by taxes but not compulsory. (Cook, 1974)

"Education is more than a luxury; it is a responsibility that society owes to itself." (Robin Cook, US-author and doctor)

One of the first modern and free compulsory primary school systems got implemented in Prussia in 1717, accompanied by some other German free states. Other nations like the Habsburg Monarchy (1774) followed delayed in time in the next 150 years, so that in the late 19th century the most European countries had a compulsory primary schooling system. The initial impulse therefore got constituted by a broad Protestant movement in Europe and later by the arising awareness of the importance of education for the social and economic wealth and welfare of a nation. (Cook, 1974)

"Upon the education of the people of this country, the fate of this country depends." (Benjamin Disraeli, British author and Premier, 1804-1881)

With the time this cognition of education as public good got established in the society's mind and is nowadays almost omnipresent, although this attitude got chapped slightly in the last decade by the lack of prospects in the younger generations through the still persistent Economic Crisis in Europe. In the last years countries like Greece, Portugal or Spain made headlines with tremendous cuts in public spending for education and with the lack in transition of higher educated students into the labour market. The consequential dissatisfaction, especially by the young population, has resulted in in numerous public enunciations, demonstrations right up to urban riots in some major cities. The public discontent doesn't necessarily turn on the lacks in the national education systems but mainly against the political perplexity towards the Economic Crisis and the resulting increase in (youth) unemployment mainly in the Mediterranean nations. The imbalance of qualification and labour market needs involves the danger of civil commotions in every nation state.

The Economic crisis has vanished earlier successes in the European Union to reduce the total and youth unemployment rate in all member states from before 2008 and has made political interventions necessary. To recover especially the youth unemployment rate, which has risen in countries like Portugal (30,1%), Latvia (31,0%), Lithuania (32,9%), Slovakia (33,5%), Croatia (36,1%), Greece (44,4%) up to Spain (46,4%) in 2011, accompanied by a decrease of the national Gross Domestic Products (GDP) of in average 7% plus an average national public debt of 80% in the European Union. (European Commission, 2010b)

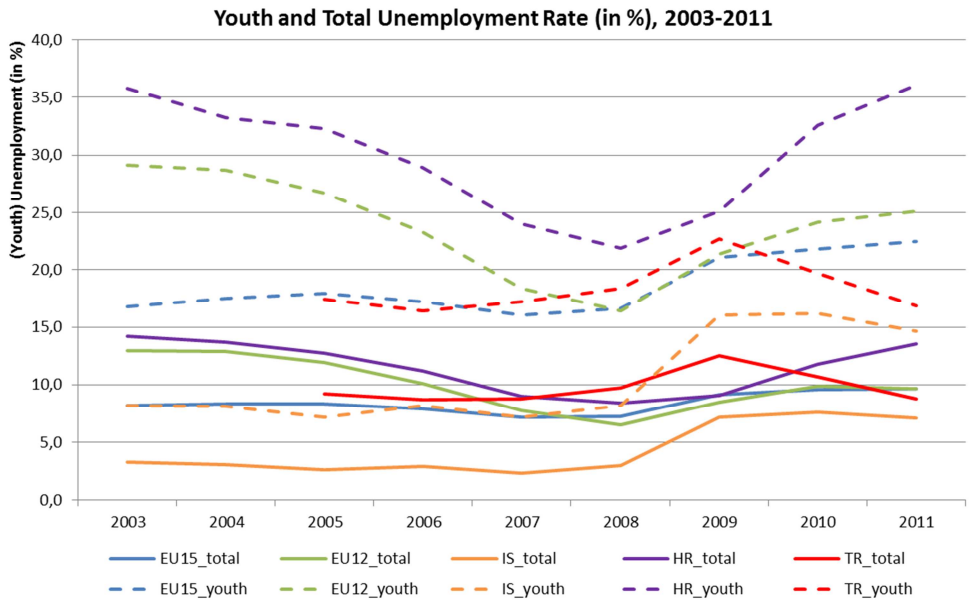


Figure 1 – Youth and Total Unemployment Rate (in %), 2003-2011

Despite these grievances in youth employment there is no paradigmatically change regarding education in the public identifiable. Education is still apprehended in public as key for social upward mobility and wealth. International institutions like the World Bank, United Nation or OECD have attuned to the attitude that (female) education is a significant key factor and driving force for economic, social and political development, especially in developing countries. Therefore those institutions release more and more publications focusing on the impact of education on the society. A paradigmatically change is not in sight, quite the contrary is the case. The educational composition of a population is considered to be a good indicator – despite of some examples - for the economic strength of a society or nation. In this context scientists and reporters are speaking about human capital as reference for the economic potential of a nation state. (Bauer & Fassmann, n.d.; Goujon, 2003; Lutz, 2004; K.C., Barakat, Goujon, Skirbekk, & Lutz, 2010; Lutz, 2008; Raymer, 2005)

Already Adam Smith noted in 1776 a direct link between education and potential of a society by mentioning *"Education helped to increase the productive capacity of workers in the same way as the purchase of new machinery or other forms of physical capital increased the productive capacity of a factory or other enterprise".* (Woodhall, 1995:21) Without using the term human capital itself, he divided each society into three portions, one of them was named fixed capital and included four groups, whereby one contained *"…the acquired and useful abilities of all the inhabitants or members of the society. The acquisition of such talents, by the maintenance of the acquirer during his education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in his person. Those talents, as they make a part of his fortune, so do they likewise that of the society to which he belongs. The improved dexterity of a workman may be considered in the same light as a machine or instrument of trade which facilitates and abridges labour, and which, though it costs a certain expense, repays that expense with a profit."* (Smith, 1996)

Authors like Theodore Schultz, Gary Becker, Robert Solow and the already noted Jacob Mincer took up this idea from Smith in the 1960s, drew back to the from Arthur Cecil Pigou initially used term Human Capital and coined it meaning as we understand it today. Although all of them had a slightly deviant access to the human capital concept, they had in common the linkage of the economic excellence of a society with its education.

The schooling of citizens in modern ages was not from higher interest for politicians and upper classes in Europe till the beginnings of the agricultural, industrial and later technological revolution – summed up aka First and Second Industrial Revolution - in the second half of the 18th century, which got accompanied by the initiations of the so called Demographic Transition in Europe. While the Industrial Revolution or Transition and its economic and social changes were completed till World War I, the Demographic Transition lasted in the most European countries till the late 20th century. These mostly contemporaneous movements were mutually dependent and laid the foundation for the implementation of public school systems all over Europe. This was the case, because the technological and demographic transition made a qualification of a broad class of population necessary to remain competitive towards the other European nations.

1.3 Demographic Transition in Europe

The **First Demographic Transition (FDT)** gets mostly described in four stages from high mortality and fertility rates to a low equilibrium of both rates, starting in Europe in the End of the 18th century enduring until the late 20th century. In the **first stage** both, mortality and fertility rates were at relatively high level, with rather small population growth causing a pyramid shaped age structure. This changed with improvements in food supply, medical care, sanitation and formal education, which increased life expectancy by the reducing number of diseases and Infant Mortality Rate (IMR) during the still mentioned Industrial Revolution. Supported by technological advances in farming and crop breeding, the food supply got stabilized, what caused a drift apart of birth and death rates. Therefore it is plausible to say that modernisation was the driving force of the Demographic Transition in the Europe and the reduced demand for children as workforce. (Bähr, 2010; Husa & Wohlschlägl, 2003)

In this **second stage** mortality started to shrink whereby more people survive in higher age groups widening the age pyramid at the upper cohorts (see Figure 3), while birth rates remained high, what caused a rapid population growth, just *"mitigated"* by pestilential victims, fallen soldiers and war victims due the Napoleonic Wars in the 19th century and the two World wars in the first half of the 20th century. (Bähr, 2010; Husa & Wohlschlägl, 2003)

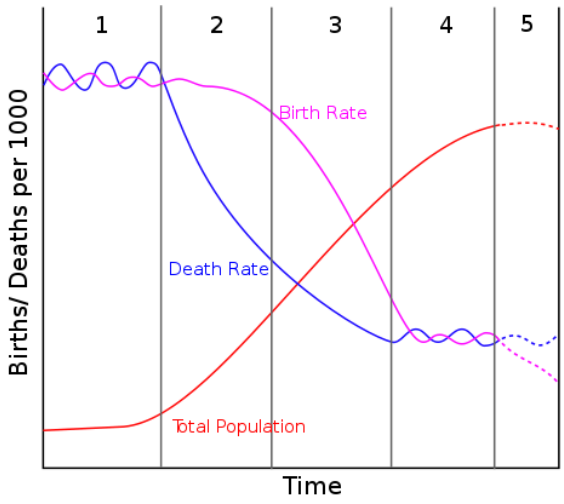


Figure 2 – Schematic illustration of the Demographic Transition Process[1]

The **third stage** with decreasing birth rates, illustrated by the constriction of the age structure at the base, got timed by Warren Thompsen (1929) in Europe just before World War I in the late 19th century due social changes like the access to

[1] Source: http://upload.wikimedia.org/wikipedia/commons/5/5e/Stage5.svg

contraceptives, increasing wages, urbanization, the shift from primary to tertiary labour market, the increasing female education, reduction of child labour and increasing parental investment in child education. Caldwell (1982) writes in this context about opportunity costs or economic benefits parents may derive from their children like with helping in household, income and old age security. When the opportunity costs for children rise, the demand for children starts to decline. According to this theory there happens a change from extended family structures to the child-centred nuclear family as consequence of the reverse of wealth flow from children to parents in the (post-) industrial era to the parents to children relation nowadays. (Bähr, 2010; Caldwell, 1982; Husa & Wohlschlägl, 2003; O'Neill, Balk, Brickman, & Ezra, 2001)

"As children displace parents as beneficiaries of the family, fertility falls. The shift in family structure could be triggered by economic changes, but also by the spread of new ideas." (O'Neill et al., 2001:p.227)

These processes smoothed the path down to **stage four** with again balanced birth and death rates on low level, but with high and stable total population size. The main reason for this transition can be located in the change of individual and family values. The Demographic Transition Model assumes that the fertility falls because society develops the family paradigm changes from quantity to quality, induced in the second stage. In fact there are several theories and ideas why fertility started to decline, but none of them can cover the whole complexity of this transition. It is more accurate to think of transition as consequence of a combination of multiple causes. (Bähr, 2010; Husa & Wohlschlägl, 2003; O'Neill et al., 2001)

Figure 3 – Effect of the Demographic Transition on the Age Structure (self-illustrated)

The demographic transition can be considered as inevitable, it is just about the question when it starts and how long it takes. In the most European societies the DT has reached the final stages of transition so that fertility rates dropped (partly far) beyond the replacement level of 2,1 Births per woman. Only four nations had a Total Fertility Rate (TFR) beyond 2,0. Those were France (2,03), Turkey (2,04), Ireland (2,07) and Iceland (2,20). In the rest of Europe the TFR is mostly far beyond the Net Replacement Level. In eight of 27 EU countries the TFR was in 2010 by below 1,40, with the lowest levels in Latvia (1,17) and Hungary (1,25). (Eurostat, 2012) This Sub-Replacement-Fertility is not a new phenomenon, but a consistent development since the end of World War II. To meet this trend the demographer Dirk J. Van de Kaa and Ron Lesthaeghe extended the original Demographic Transition Model with a **fifth stage** to the so called **Second Demographic Transition**.

This stage describes the effect of changing values and attitudes regarding childbearing, family formation and sexuality on fertility rates as generalizable phenomenon in the developed world with four components:

- Changed values attached to children and parenthood
- More tolerant attitudes towards non-marital childbearing
- The rising popularity of cohabitation and non-family living arrangements
- Changed attitudes towards sex and contraception

(Sobotka, 2008; Van De Kaa, 1987)

Kohler et.al (2006) explains the lowest-low fertility associated with the Second Demographic Transition further due the combination of four specific demographic and social behaviour factors. **(1)** The postponement of fertility as rational response on *economic and social changes*; **(2)** The timing of fertility gets effected by *social interaction processes*, when the responses of the population majority on this new socio-economic conditions prevail individual fertility decisions; **(3)** the fertility postponement and changes in the parity-composition lead to *demographic distortions of period fertility measures* (Bongaarts & Feeney, 1998); **(4)** *Changing institutional settings* favour and reinforces the quantum reduction of fertility because of the delay of childbearing. (Bongaarts & Feeney, 1998; Caldwell, 1982; Kohler, Billari, & Ortega, 2006; Sobotka, 2008)

A further extension of the Demographic Transition Theory, which is the subject of controversial public discussions, is the by the author himself, David Coleman, labelled *Third Demographic Transition (TDM)* which I will explain her shortly for t sake of completeness. Coleman (2006) argues that the population ageing and shrinking associated with the low-fertility regimes in Europe and USA would cause an overprint of the domestic population by high levels of immigration from origins with another ethnic and racial ancestry than the domestic culture. Thereby he overestimates the potential amount of immigrants and coincidently underestimates the empirically verifiable harmonisation effect, which describes the alignment of vital rates in groups of immigrants to the domestic population within two to three generations. Consequently their fertility levels most probably would adapt to the national average and wouldn't change the ethnical composition of population so drastically, that the majority population will become a minority.

The changes of tempo and quantum in childbearing finally affect all ethnical groups and produce a low-fertility regime in the most developed countries and therefore a population ageing and shrinking in the next decades. The Demographic Transition itself involves risks and chances for the future society. A disproportionate number of old and retired people could lead to a social and welfare system out of balance, if political actors and citizens don't instigate appropriate actions in time, like a reform of retirement system, the lifting of retirement age, etc. On the other hand the changing age composition opens a chance to profit from this process in terms of the so called **Demographic Dividend**.

"A demographic dividend is an economic benefit which arises as a population age structure changes through a demographic transition, a transition from a rural agrarian society with high fertility and mortality to an urban industrial society with low fertility and mortality (…) Certainly, a country will have a good opportunity to generate economic growth and improve the standard of living of its people." (Chansarn, 2010:p.195)

The demographic dividend contains two periods, with certain circulations of weightings in the age structure. The **First Demographic Dividend (FDD)** takes place during the transition from second to third stage in the Demographic Transition process, with low mortality rates and declining birth rates, what causes a rapid growth in the proportion of the working age population (15-64years) while the younger age-cohorts (0-14years) are declining in absolute and relative numbers. In this period the working age population is growing faster than the *"dependent"* younger (0-14years) and older (65+ years) age groups. (Chansarn, 2010; Kohler et al., 2006; Mason, 2005)

A society can exploit this inevitable process for their own benefit, but this needs public policies to utilize the growing labour force. In this context scientists talk about the *window of opportunity*, because a well-educated and highly productive labour force can cause an economic growth, low unemployment rates and a rising standard of living as far as the transition to labour market is fluent. But if policymakers neglect to initiate appropriate measures to adapt the increasing potential

workforce to the labour market, they won't catch the opportunity, but run into the so called demographic trap, with an increasing unemployment rate, an economic downturn and loss of living quality. (Kohler et al., 2006; Mason, 2005)

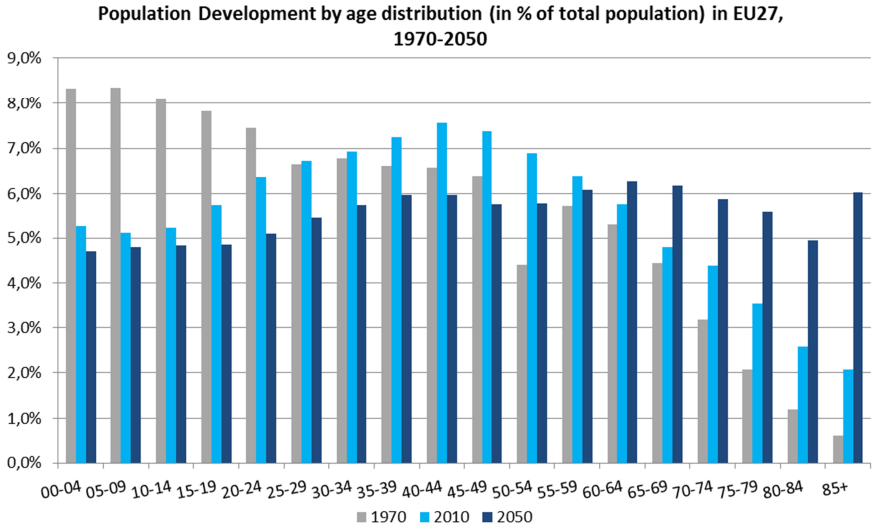


Figure 4 – Change in Age Structure – Demographic Transition, 1970 – 2050 (Eurostat, 2012)

The window shuts when the proportion of the working age population starts to decline at the expense of the population in retirement age. The EU 27 Member States have taken the chance and gained high profits with educating their strong birth cohorts in the 1960s and 70s before they grew out of the school age. The pupils and students of the 70s are the workforce of today. Through the training of these cohorts Europe has gained high profits in the last 40 years, but has now to be aware of the possible negative effects those could have in the next 40 years. The shift of those cohorts from working to retirement age will be a heavy duty for the future national health, welfare and retirement systems. It is necessary to be forearmed to this process, to exploit the so called **Second Demographic Dividend (SDD)**. (Kohler et al., 2006; Mason, 2005)

"Europe is facing unprecedented population ageing caused by a low fertility level for a number of decades as well as a constant increase in life expectancy." (Scherbov & Mamolo, 2006:p.3)

To take advantage of the demographic transition it is necessary to improve the education and qualification of the workforce, which in this context is named Human Capital, to mitigate possible prospective constraints of the ageing and shrinking process. Otherwise the European society could face massive intergenerational conflicts about the preservation of the social, welfare and retirement system. The demographic transition can be outlined as paradigmatic change from the anxiety about shortage of resources due overpopulation in the beginning to the anxiety about the salvage of the social system due the permanent and valid ageing process.

In 2008 about 495,8 million people were living in the European Union 27 of these 77,7 million are beneath 15 years old (15,6%) and 84,4 million are aged 65 years plus (17,0%). Corresponding to the past path and current level of vital rates, like fertility and mortality (see chapter 0), these shares will be most probably redistributed for the gain of the share of elderly people. Demographic determinants are causing and mirroring past, current and future economic, environmental, political, and social changes. Recent studies try to picture this influence on the future global change by projecting prospective population size and growth, urbanization, migration, age structure, etc. Most projections are focusing on one specific thematic field and neglecting others because of the frame of the theoretical model and its based assumptions, lack of

information or data, etc., what causes rising uncertainties with increasing projection time intervals. (K.C. et al., 2010; Mamolo & Scherbov, 2009; O'Neill et al., 2001; Scherbov & Mamolo, 2006b)

"…there is very little uncertainty about the fact that the EU is facing massive population ageing." (Scherbov & Mamolo, 2006, p.2)

According to several sources it can be said that the old age dependency ratio will double from 0,26 (EU15) or 0,21 (EU12) in 2008 to more than 0,5 in 2050, what is mainly caused by the gains in the age groups 80 plus. Those age groups are most likely to triple or more in the next forty years. (Goujon, 2003; K.C. et al., 2010; Lutz, Cuaresma, & Sanderson, 2008; O'Neill et al., 2001) Although education is a constantly recurring topic in the political discussions for over decades, the effects of ageing are only recently entering this debate and medial courtesy, because of its impacts on several political and social fields, like the welfare and pension systems. The question that arises here is who will pay for the salvage of social, welfare and pension systems in the future?

Beside the public and vocational precaution in pension systems, the third pillar, private precaution, will gain importance in the future. But all these "pillars" have something in common. – **Someone has to pay in!** These are the tax payers, workers and employees, private persons. In brief, the working population! To guarantee this, it is necessary to bring as much people into the labour market as possible, by ensuring the "right" labour market qualifications of the mentioned Human Capital. The European Human Capital has become a major examination object in demographic research, because of its inherent importance for the future social, economic, political and demographic development of our society. (Lutz, 2008) The European Union and several nation states recently started to recognize the importance of the Human Capital improvement as framed in the Lisbon and Europe 2020 Strategy (see chapter 3.2.1.3), which aims to enhance the competitiveness of the European Economic Area (EEA) in the global economic competition with USA, China, Japan, India and other economic global players.

Education is widely considered as source of heterogeneity within and among societies, which is associated with far reaching benefits like more economic wealth and flexibility, better health, and a greater (female) autonomy. (Goujon, 2003; Lutz, 2011; Lutz & Goujon, 2001) Therefore education can be understood as driving force in economic, institutional, social and technological development. But it is not just a key element in the economic wealth and prosperity of a country or region, it is a human right to achieve education (United Nations, 1948:Art.26):

(1) *Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.*

(2) *Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.*

(3) *Parents have a prior right to choose the kind of education that shall be given to their children.*

(Goujon, 2003; United Nations, 1948)

The Human Right declaration had put education and its importance beyond all questions, so that nowadays a compulsory schooling, which was already claimed by economist like Adam Smith and David Ricardo, and further levels of schooling and studying can be taken for granted in all European countries. The rising awareness for the importance of education in the

20th century has persuaded researchers to investigate the impact and interconnection of education with other indicators and factors. In the field of demography various attempts have been made to connect its relation to vital rates and other social characteristics, like religion, marriage patterns, etc.

Finally it wasn't enough anymore to analyse the interactions of the individual education with other characteristics, but it became from scientific interest to estimate or forecast the future educational stock in the potential workforce were dared, mainly with the illiteracy rates and enrolment ratios as base data. (Raymer, 2005) Institutions like the Worldbank or the United Nations took several attempts to do this, but with lacks in methodological approaches, feasibility of data, and scientific replicability and uncertainties of their analysis.

Other institutions like the IIASA, VID, NIDI or INED have gone other ways and tried to diminish the weak points of former analysis by seizing on different methodological approaches, like multi-state population projections or probabilistic projections. (see chapter 4.2) Both methodological approaches were developed in IIASA and VID, which both are based in Austria and corporate till decades.

"It is empirical that the level of (these) skills varies greatly among individuals within a given society, varies among different societies at a given point in time, and changes during the evolution of societies over time." (Lutz & Goujon, 2004:121)

1.4 Spatial Units & Period of Investigation

Europe is not a homogeneous spatial construct like an isotropic area which disposes the same social, economic, political and demographic attributes on all points of its area, it is a quite heterogeneous union of nation states which are themselves not homogeneous at all. This demographic and political divergences can be considered as detrimental to the other economic areas and additionally this circumstance makes an analysis of the European Union as a whole difficult, what caused me to implement a spatial segmentation of the European Union in two analysis units:

- **The European Union 15 (EU15) or "old" Europe (acceded before 2004):**
  Austria (AT), Belgium (BE), Denmark (DK), Finland (FI), France (FR), Germany (DE), Greece (EL), Ireland (IE), Italy (IT), Luxembourg (LU), Netherlands (NL), Portugal (PT), Spain (ES), Sweden (SE), and United Kingdom (UK);

- **The European Union 12 (EU12) or "new" Europe (acceded after 2004):**
  Bulgaria (BG), Cyprus (CY), Czech Republic (CZ), Estonia (EE), Hungary (HU), Latvia (LV), Lithuania (LT), Malta (MT), Poland (PL), Romania (RO), Slovenia (SI), and Slovakia (SK);

The political actions of the European Union within the continent of Europe are not limited to their member states, but affect all other European countries, especially those that applied for an EU membership, like Croatia (HR), Iceland (IS), Montenegro (ME), Macedonia (MK), Serbia (RS) and Turkey (TR), and that are therefore implementing EU regulations and political goals into their national policy. In the hereinafter analysis of the European Union and the enumerated **Candidate and Acceding Countries (CC5)**[2] just Croatia, Montenegro, Macedonia and Turkey will be investigated. (see Figure 5) The reason for this is the lack of accurate educational data in both countries, Iceland and Serbia, together with the factor that both applied for the EU membership in 2009 and haven't adjudged the status of a candidate country before 2010 respectively 2011.

[2] The abbreviation "CC5" refers to the former 5 official candidate countries Croatia, Iceland, Montenegro, Macedonia and Turkey. Although in this thesis just four of them will get investigated, I will keep the term up, because it has become established in several publications.

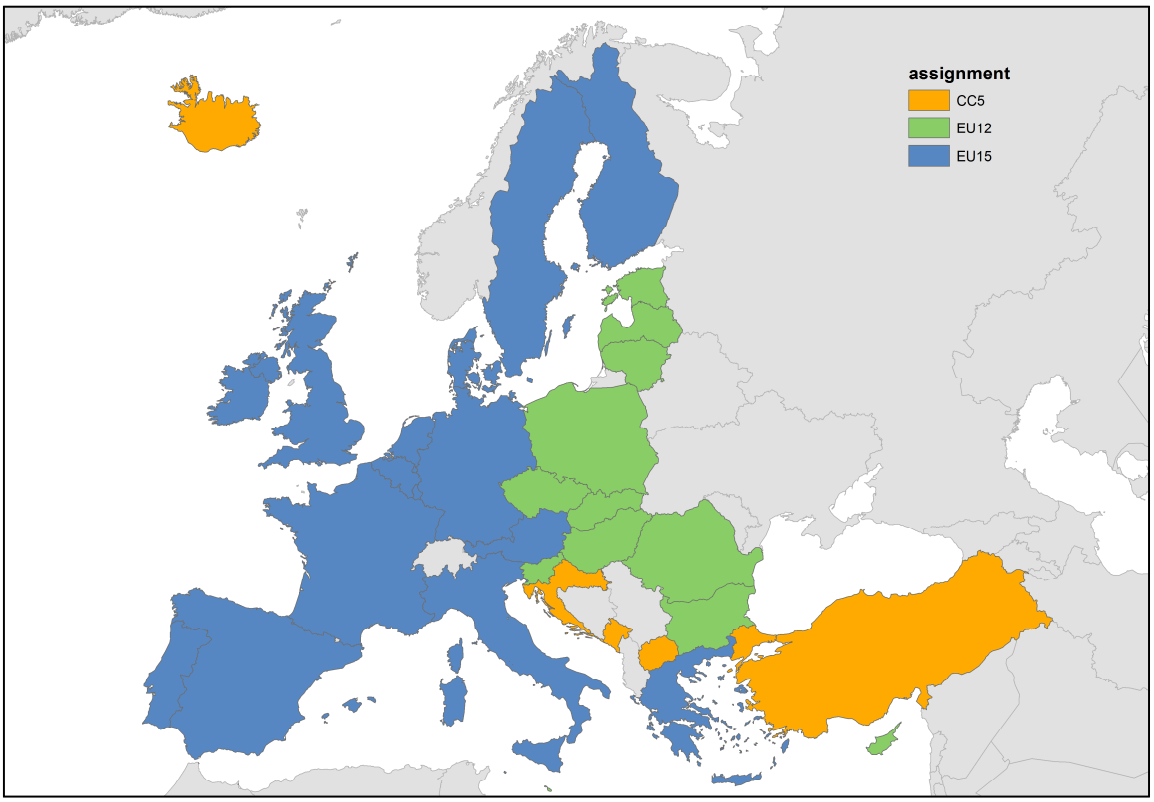
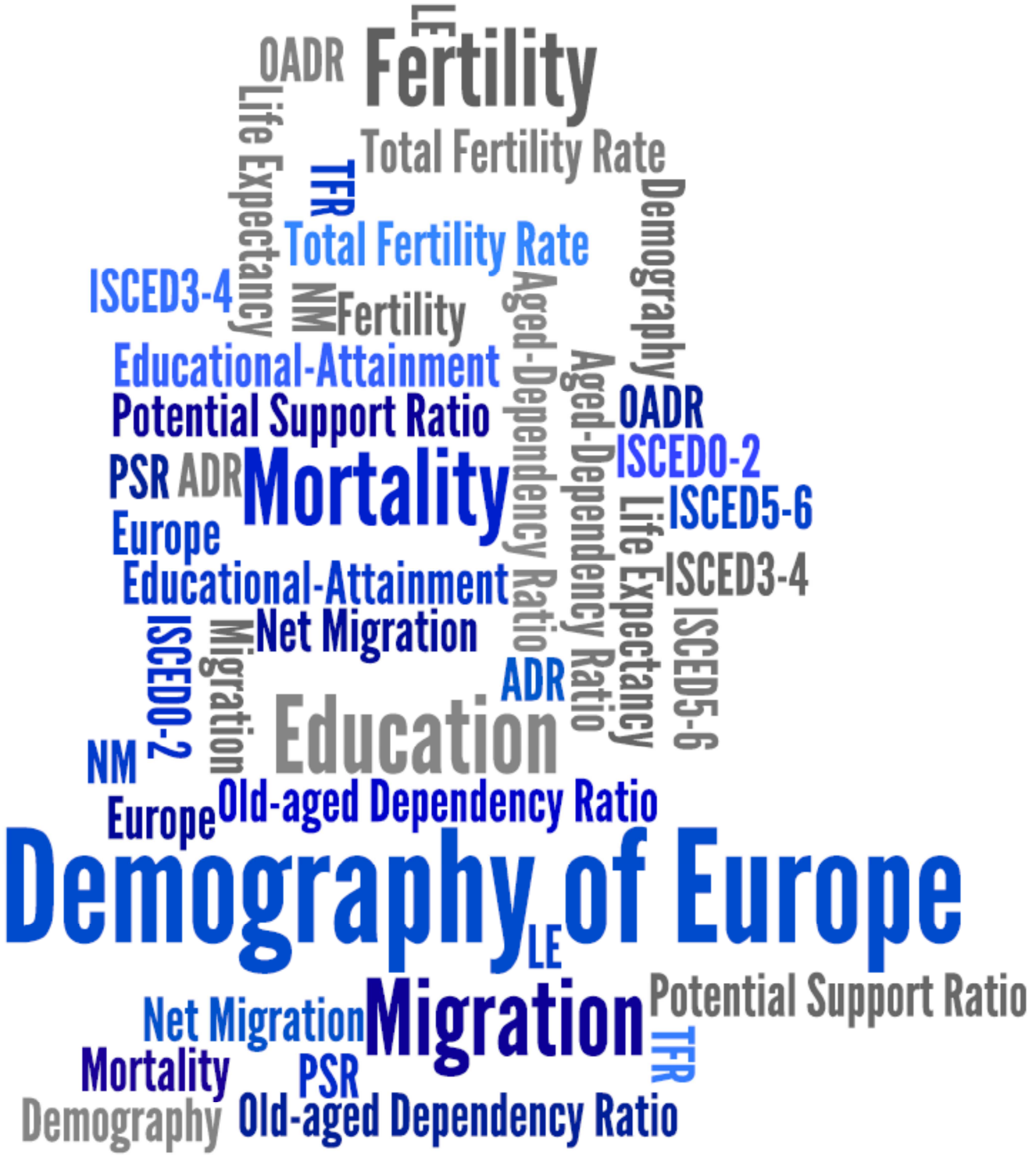


Figure 5 – The assignment of nation states to EU15, EU12 and CC5

So they don't fit into the determined projection period from 2008 to 2048, which was chosen because of the more profound data situation in the investigated spatial units, the chronological allocation before the Global Economic Crisis and the fact that the first 5 year projection interval ends next year in 2013, what allows us to control the short-term projection outputs with the real situation in the next year. It will be fascinating to see how the current economic crisis, which got unleashed in Europe in 2008, has affected the socio-demographic situation in the EU and Candidate Countries in the context of Brain-Gain and Brain-drain, especially in Portugal (migration of professionals to Angola), Spain (to USA), or Greece (starting tout for professionals in Central Europe). And additionally the effects of the crisis on the vital rates like fertility and mortality. Especially fertility as volatile factor has shown in history that it tends to react on social and economic circumstances like economic crisis (like the oil crisis in the 1970s), political revolutions (like the fall of the Iron Curtain in 1989) or military actions and wars (like the Yugoslav Wars in the 1990s).


Demography of Europe
Education
Mortality
Fertility
Migration
Total Fertility Rate
Total Fertility Rate
Net Migration
Old-aged Dependency Ratio
Old-aged Dependency Ratio
Educational-Attainment
Educational-Attainment
Potential Support Ratio
Potential Support Ratio
Aged-Dependency Ratio
Aged-Dependency Ratio
Life Expectancy
Life Expectancy
Demography
Demography
Europe
Europe
OADR
OADR
ISCED0-2
ISCED0-2
ISCED3-4
ISCED3-4
ISCED5-6
ISCED5-6
Migration
NM
NM
LE
LE
TFR
TFR
PSR
PSR
ADR
ADR
Mortality

2 Demography of Europe

The demographic transition, mentioned before, lead in major parts of Europe to a mitigation or stagnation of the national population sizes and a shifting of birth cohorts to older age groups, causing a reweighting of the relative share of age groups in the benefit of the age groups 65 years plus. This can be described as the so called Ageing effect and heralds the start of a prospective stagnation or shrinkage of population size in the most parts of Europe, promoted by low fertility rates. The enhanced share of elderly age groups and the increasing life expectancy led to a weakening of the shrinkage process in the last 40 years, except for Turkey that will profit from its past fertility level. (see Figure 6)

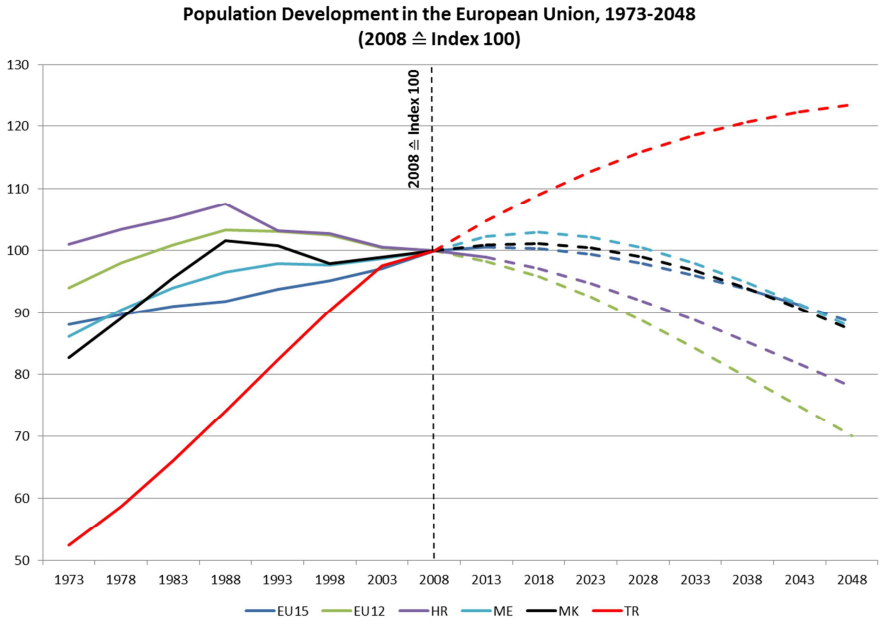


Figure 6 – Population Development in EU and Candidate Countries, 1973-2048 (2008 ≙ Index 100)

In this context we speak from the so called population momentum. It describes the phenomenon that despite declining fertility rates beneath replacement level the population is still growing, because of the high concentration of population in reproductive age groups (15 to 49 years). The population momentum is virtually a feedback mechanism that occurs at the end of stage 3 in the Demographic Transition. Admittedly the Turkish TFR is still above the replacement level of 2,1 but the trend is towards sub-replacement level. In the other investigation units this effect has already passed by, so that within the next 10 years their population sizes will start to decline with the withdraw of the 1060s baby-boom generations of the fertile age groups. This population decline will be heated up by the low fertility rates of the recent reproductive age groups. (Bauer & Fassmann, 2011; European Commission, 2010a; Goujon, 2003; K.C. et al., 2010; O'Neill et al., 2001)

2.1 Fertility

Fertility is the driving force of the development of the European population, which stands at a turning point in the Demographic Transition process. Europe has been a forerunner in the downward trend of fertility to sub-replacement (TFR < 2,1) and lowest-low fertility (TFR < 1,3). The first countries in Europe with lowest-low fertilty were Italy and Spain, who attained this level in the early 1990s. The number of countries with a TFR below 1,3 peaked in 2002 with 12 nations within the EU, EFTA, and four EU Candidate Countries, Croatia, Macedonia, Montenegro and Turkey, while other authors like Kohler, Billari and Ortega (2006) are counting even 17 countries in 2002 in Europe with lowest low fertility. (Kohler et al., 2006)

In the most recent data from 2010, Eurostat named just to 2 countries, with Latvia 1,17 and Hungary 1,25, with lowest-low fertility but simultaneously 11 more countries which are in danger, with a TFR below 1,5. The TFR in EU 27 is just about 1,6 in 2010. The fertility patterns and trends in Europe are not homogeneous, but quite diverse, with patterns reaching from countries with fertility slightly above lowest-low fertility up to countries with modertate fertility levels about the replacement level. For instance, countries like Denmark (1,87), France (2,03), Netherlands (1,79) and United Kingdom (1,94) that experienced as some of the first countries in the world a below-replacement fertility are currently beneath the high-leveled countries, like Iceland (2,20), Ireland (2,07), Norway (1,9), Sweden (1,98) and Turkey (2,04), who had in the last 20-30years always a quite high fertility level. Meanwhile some Meditterran countries, like Greece, Italy, Spain and Portugal showed a massive fertility decline from a TFR over 2,4 in 1970 to low-fertility regimes between 1,3 to 1,5 in 2010.

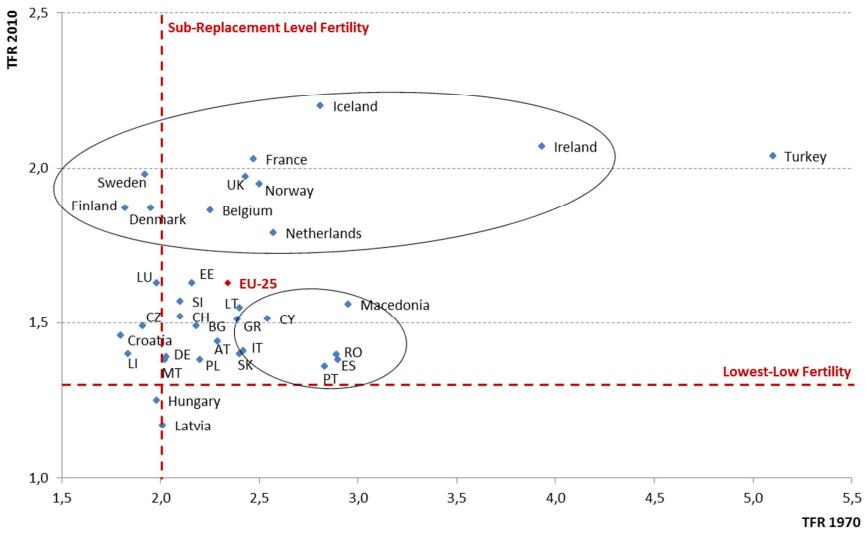


Figure 7 – Total Fertility Rate in the European Union 27 and CC5, 1970 to 2010 (Eurostat, 2012)

Summing this up, Europe has had quite heterogeneous fertility regimes and trends in the last 40years. Thereby it is apparent that the countries in North-West Europe with a high range of fertility rate in 1970 are currently converging around the Replacement Level. The Mediterranean countries instead experienced a distinct relapse of the high fertility rates of the 1970s to slightly above the Lowest-Low Fertility Level nowadays.

"The implications of population ageing, and the societal changes associated with this trend, are going to be most pronounced in countries with very low fertility." (Kohler et al., 2006:p.4)

The fertility can be considered as driving force of the demographic development of a society, displayed prior in the agestructure and later in the effects on the labour market, social and welfare system. The above outlined heterogeneous fertility trends have had and will have deviant effects on their agestructure and necessary political acitivities. While Europe as a whole is considered to decline in the next decades, some of the countries will still have positive population growth rates, what causes different paces in the Ageing process.

The countries with the lowest fertility levels in 2008 were located in Central, Eastern and Southern Europe with Slovakia (TFR: 1,32), Hungary (1,35), Romania (1,35), Portugal (1,37) and Germany (1,39) with the lowest values. At the higher end of

the fertility range in Europe 2008 could be found France (TFR: 2,01), Ireland (2,07), Turkey (2,10) and Iceland (2,15). (see Figure 8)

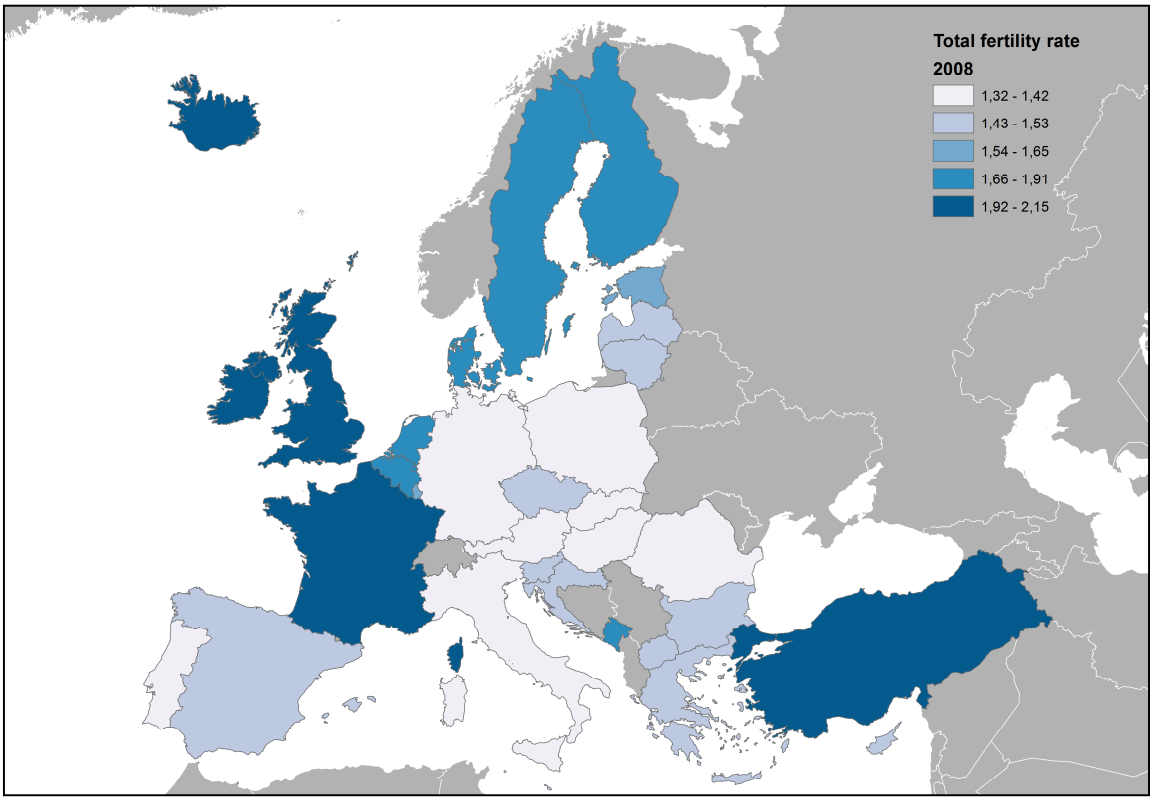


Figure 8 – Total Fertility Rate (TFR) in EU27 and Candidate Countries, 2008

In general the not born kids of today will cause a lack of potential parents and labour force in 20years and latest in 40-50years a financing problem for the retirement system. We will experience a decline in workforce and taxpayers, but also a decline in potential parents, what will exacerbate the ageing process and will constrain the opportunity for political actions to mitigate this process. Lutz (2006) talks in this context from the so called Low Fertility Trap Hypothesis (LFTH), which I will illustrate in chapter 0. In the worst case it could be assumed that Europe will experience an ageing process with a following population decline that could lead us to a stressful generation conflict due economic stagnation and rising economic and socialpressure. Although the ageing process is undeniable, the consequences are still virtually and can be managed, if the political actors act in time.

"A continuation of this trend could substantially exacerbate the future aging of the population, reinforce a future decline in the population size and constrain the effectiveness of policy interventions aimed at increasing the number of births." (Kohler et al., 2006:p.2)

Recent studies have shown that post secondary or university education plus career fulfillment prevail the desire to have children. The number of women who try to establish in the labour market before having kids is increasing steadily over the last two decades and causes significant changes in quantum and timing of giving birth. The Fertility in the European Union dropped below the Replacement Level (TFR <2,1)in the 1970s, below the low-fertility level (TFR <1,5) in the late 1990s and is currently leveling out slightly above 1,5 mark. Simultaneously the mean age of women at childbearing (MACB) has again

started to climb in the EU-27 from below 27years in the late 1970s up to 30years in 2010.

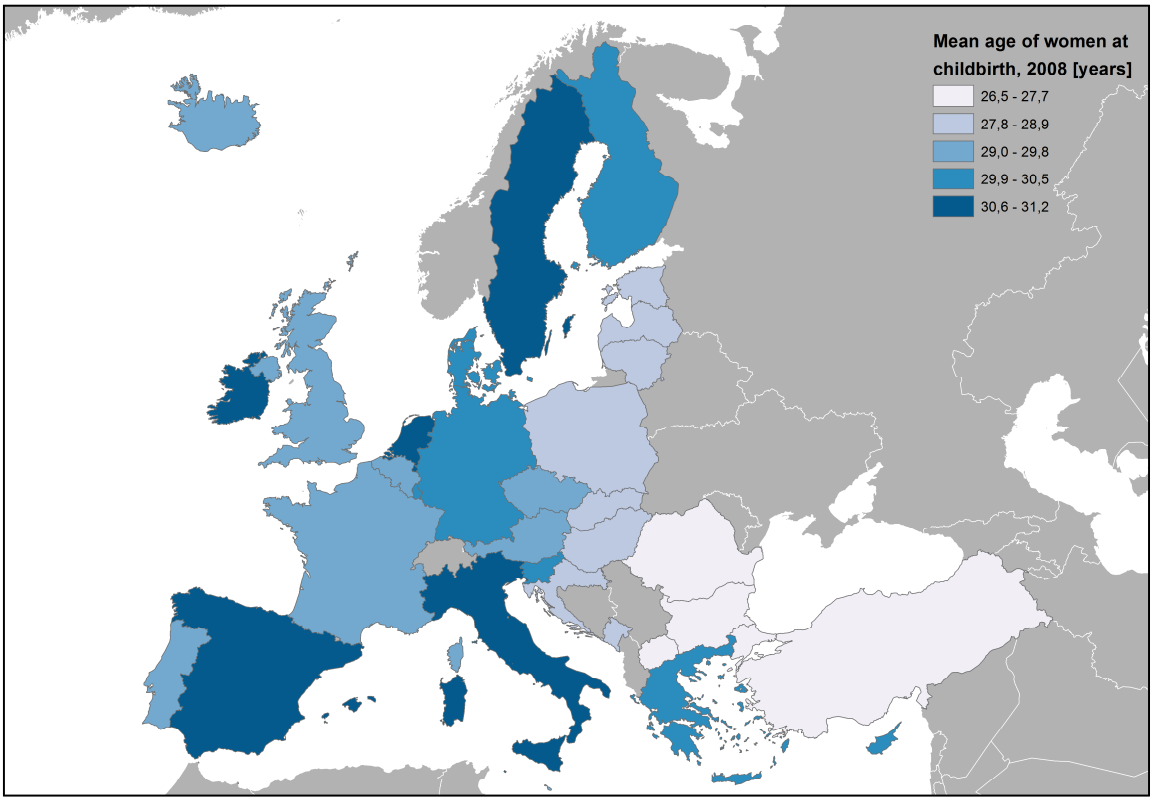


Figure 9 – Mean Age at childbearing in EU27 and Candidate Countries, 2008

The highest MACB in 2008 could be found in the countries in the EU15 (MACB: 29,0 to 31,2 years), what puts them in contrast with the most countries in EU12 or in the Candidate Countries, with exception of Czech Republic (MACB: 29,3years), Iceland (29,8y), Slovenia (29,9y) and Cyprus (30,2y). Beneath the countries with the lowest Mean age at childbearing were in 2008 countries like Turkey (MACB: 27,7years), Macedonia (27,6y), Romania (26,9y) and Bulgaria (26,5years), which are all located in Southeastern Europe. (see Figure 9)

The MACB and the pace of its increase is heterogneously spreaded across Europe. While the most countries within the EU15 (marked blue in Figure 10) experienced a rapid increase of the MACB in the last 40years, the EU12 (green) and Candidate Countries (orange) mostly experienced a slight increase in the MACB. In Italy, Ireland and Spain was the mean age at childbearing within the investigated nations, with over 31years in 2010, the highest. But the pace to this value over the last 40years have been quite different. While Spain and Ireland always have had one of the highest Mean Age at childbearing in Europe with around 30 years in 1970, Italy had to catch up a big residue and showed an increase of 3 years in the MACB since 1970, from 28,3 years to 31,3 years in 2010.

In the EU-12 countries the speed of the increasing MACB was generally on a lower level, with Slovenia (+3,4 years), Hungary (+3,8 years) and Czech Republic (+4,6 years) as exception. Those three countries gained the highest increase in the mean age at childbearing within the EU-12 countries. (see Figure 12)

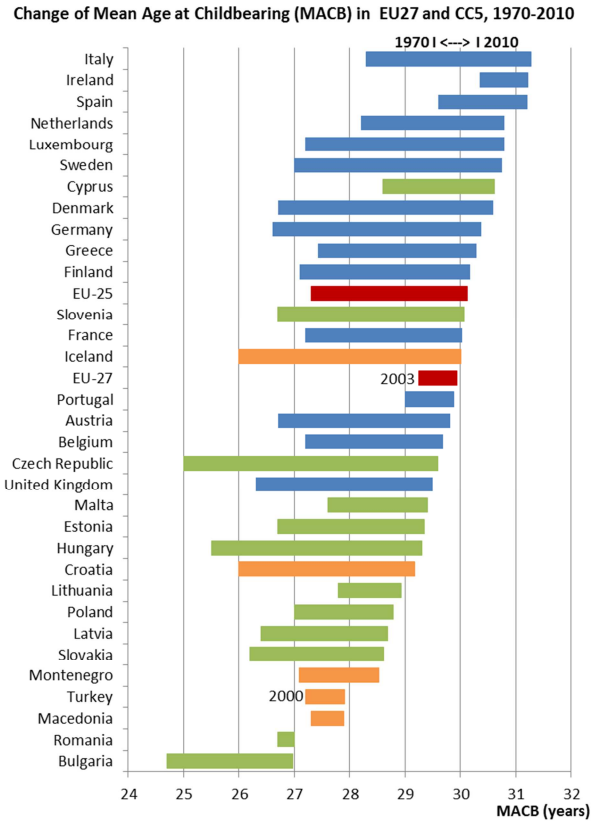


Figure 10 – Change of Mean Age at Childbearing (MACB) in EU27 and CC5, 1970-2010

"This recovery has been associated with a decline in the pace of fertility postponement during the late 1990s (…). A similar reduction occurred in Western and Northern European countries with very advanced ages of childbearing, while Central European and Baltic countries took the lead in the pace of postponement towards the late 1990s—albeit at a younger mean age at first birth than theirWestern, Northern and Southern European counterparts." (Kohler et al., 2006:p.27f)

The catching up of those three gets better visible in , which combines the TFR 2010 (y-axis), MAC 2010 (x-axis), and the annual increase of the MAC from 1970 to 2010 with the size of the bubbles. The highest annual growth of the mean age at childbearing could be documented in Luxembourg (+0,090 years p.a.), Sweden, Germany (both +0,094), Hungary (+0,095), Denmark (+0,097), Iceland (+0,100) and Czech Republic (+0,115). This growth is conterminously with a increase of the mean age at childbearing of about one year per decade.

But it can be assumed that this trend or pace of MACB growth won't continue in the next decades. Recent, but not unquestioned studies argue that this pace will slow down and peak in the next decades, whereby the most probable target MACB can't be definitely determined yet. Authors like Billari, Liefbroer & Philipov (2006) calculated a maximum MACB with 35 years under the premise of the temporal limited reproductive period of women from in general 15 to 49 years, although their can be upper and lower outliers. (Billari, Liefbroer, & Philipov, 2006)

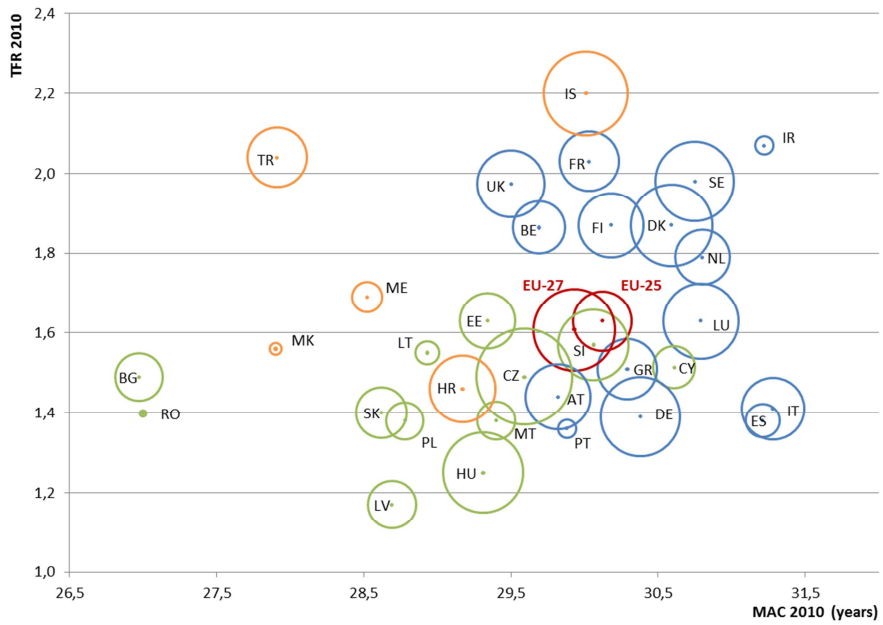


Figure 11 – Total Fertility Rate (y-axis), Mean Age at Childbearing (x-axis) in 2010 and Annual Growth of MACB from 1970-2010 (circle size – smallest circle: + 0,008years [RO] to biggest circle: +0,115 years [CZ] per annum)

It is apparent that the countries with the highest MACB and annual growth belong to the Western Europe dominated EU-15, while the EU-12 countries "lag behind", except for some individual cases like Slovenia or the Czech Republic. It is also striking that 9 of the 15 EU-15 countries show above EU-average fertility rates, with relative "high" TFR's above 1,6, while the EU-12 countries are mainly low (TFR<1,5) and lowest-low (TFR<1,3) fertility countries in 2010.

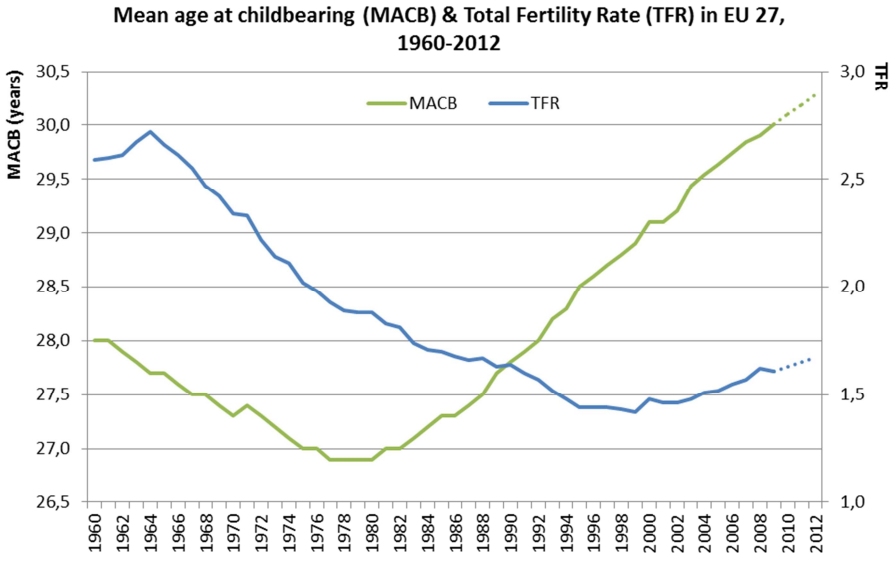


Figure 12 - Mean age at childbearing (MACB) & Total Fertility Rate (TFR), 1960 – 2012 (Eurostat, 2012)

With the decrease of the TFR after the baby boom in the beginning 1960s the Mean age at childbearing started to decline too, because the quantum of births declined what caused an approximation of the MACB to the Mean age at first birth (MAFB) which is per definition always lower than the MACB. Initially with the increase of the MAFB in the late 1970s the

MACB also started to rise again. To put it simply, with the reaching of a sub-replacement fertility around 1982 a trend started to get fewer children in a later stage of life. (see Figure 12)

The reasons for this spatial heterogeneity are manifold, i.e. household and union dynamics, housing, public and private childcare system, (female) labour force participation and socioeconomic incentives, social learning about the optimal timing and quantum of fertility, etc. All of these variables are strongly correlated to the schooling of a population and its conversion to the labour market. Recent numerous surveys have shown that gains in (female) higher education lead to postponement of childbearing and a limitation in number of children, especially in Southern Europe. (Kohler et al., 2006)

"The chronic high unemployment situation in Southern Europe has discouraged young adults from entering the labor market and made higher education more attractive, and it has deteriorated working conditions to sometimes precarious situations with mostly low-paid temporary jobs. In addition, there is a crowding out process in which more educated young people are displacing less educated people from their traditional positions." (Kohler et al., 2006:p.17-18)

Additionally the returns, i.e. wages, labour and social security, etc. to higher educated are ascending faster than to lower educated, what encourages younger cohorts to achieve a higher educational attainment, especially as lower educated have a higher risk to suffer poverty. If you like it could be said that education constitutes a poverty insurance which is supposed to alleviate the risks for unemployment and in the worst case, poverty. In the context of the global economic crisis this yearns for education prospers. (Bloom, Canning, & Sevilla, 2003; Fürnkranz-Prskwetz et al., 2007; Kohler et al., 2006)

"This uncertainty provides an incentive to delay decisions that imply long-term commitments, such as the decision to have children, and it provides an incentive to invest in education and human capital." (Kohler et al., 2006:19)

Therefore the share of people with tertiary educational attainment in the age groups 25 to 34years has been grown in the period 2000 to 2010 from 24,1 to 37,5% for women and 21,7 to 28,9% for men in the EU-27. This increase in tertiary enrolment rates is owed the changing socioeconomic conditions and individual attitudes regarding the acquisition of higher education. (More about the educational structure in Europe see chapter 2.4) This rise in university enrolment is correlating with the postponement in the mean age of childbearing. So countries with the highest increases in tertiary education are identical with those countries with the highest delays in (first) childbirth.

"Increasing returns to education induce young adults—and particularly young women—to study for a longer time in the expectation that this improves their ability to cope with the economic uncertainty and to take advantage of the new opportunities created during the transition period. Exceptions to this general pattern seem to be concentrated among countries where the economic situation is worst, and where the coping strategy of higher education and human capital investments is not accessible for important fractions of the population." (Kohler et al., 2006:19)

2.2 Mortality

The current low fertility patterns plus the increasing life expectancy in Europe constitute the so called Ageing process, which can be measured not just by a rising life expectancy (LE), but also an increasing median age (MA) or the Aged dependency ratio (ADR).

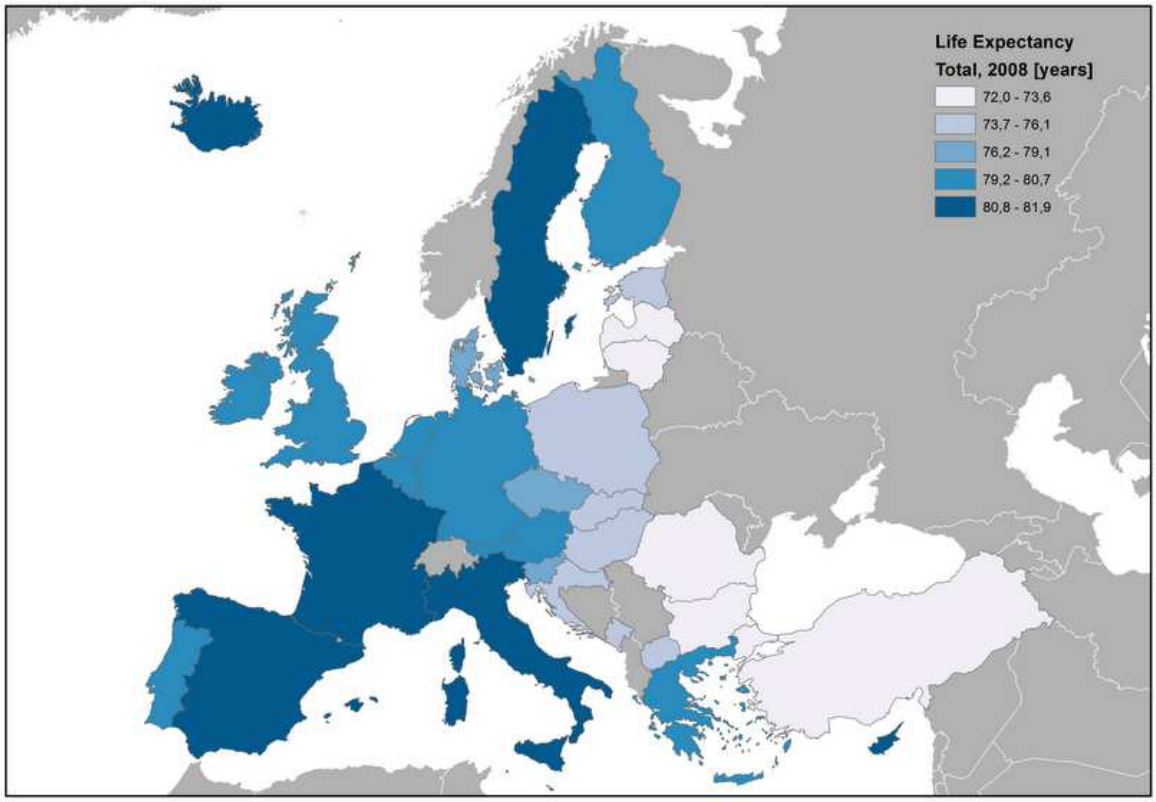


Figure 13 - Total Life Expectancy in EU27 and Candidate Countries, 2008

The Total Life expectancy in the EU27 and Candidate Countries shows a clear West-East distinction between the EU15 and EU12 plus CC5, again with some exceptions with Slovenia (LE: 79,1years), Malta (79,7y), Cyprus (80,8y) and Iceland (81,6y) that break the phalanx of Western European countries in 2008. (see Figure 13) This spatial distribution is consistent with those of men and women (see Figure 60 & Figure 61), but on a different scale, because the male and female life expectancy diverge in EU15 about 5,3 years (m: 77,7y / f: 83,0y) and in EU12 about 8,2 years (m: 69,61y / f: 77,81y) in 2008 in advance of women.

The highest divergence between men and women could be observed in 2008 in the Baltic countries Estonia and Latvia (both 10,8 years) and Lithuania (11,3 years). In general in the Eastern European countries the gap between man and women is significantly higher than in Western Europe. From in total 32 investigated countries the 10 countries with the highest gender gap in life expectancy consist of 9 countries in EU12 plus Croatia (gap: 7,3y). (see Figure 14)

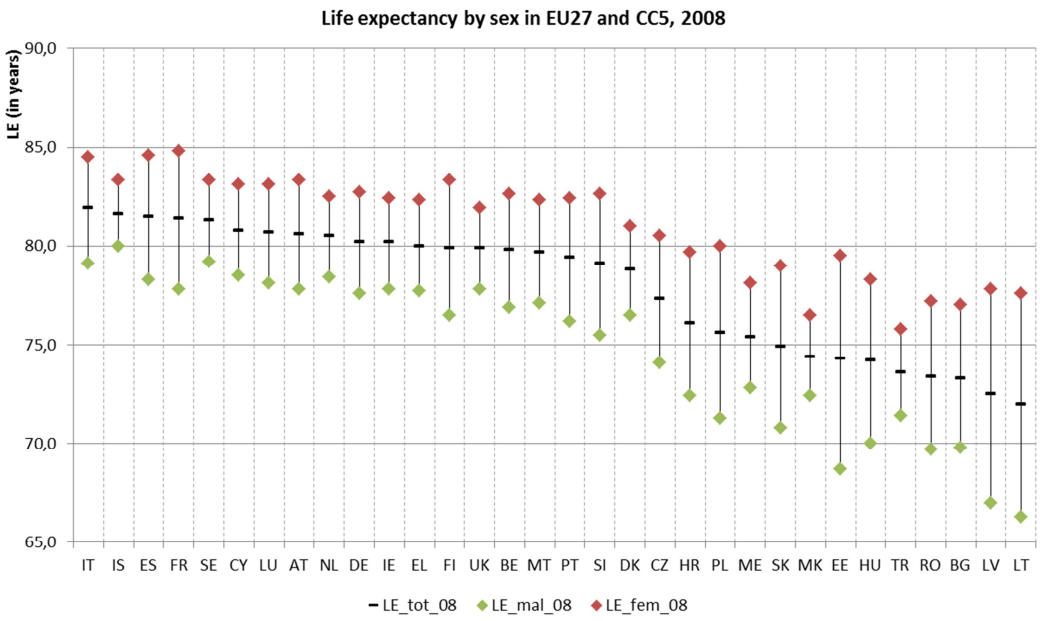


Figure 14 – Life expectancy by sex in EU27 and CC5, 2008

This gender gap in Life expectancy is also valid in the median age of the population, which describes that age at that the half of the population is older and the other half younger than this age. The median age in EU27 has risen from 32,4 years (m: 30,5y / f: 34,3y) in 1970 to about 40,9 years (m: 39,5y / f: 42,3y) in 2010, with an accelerating annual increase in the last 10 years, which allows inferences to the advancing ageing of the European society, with a distinctive shift of populous cohorts into older age groups (65 years plus).

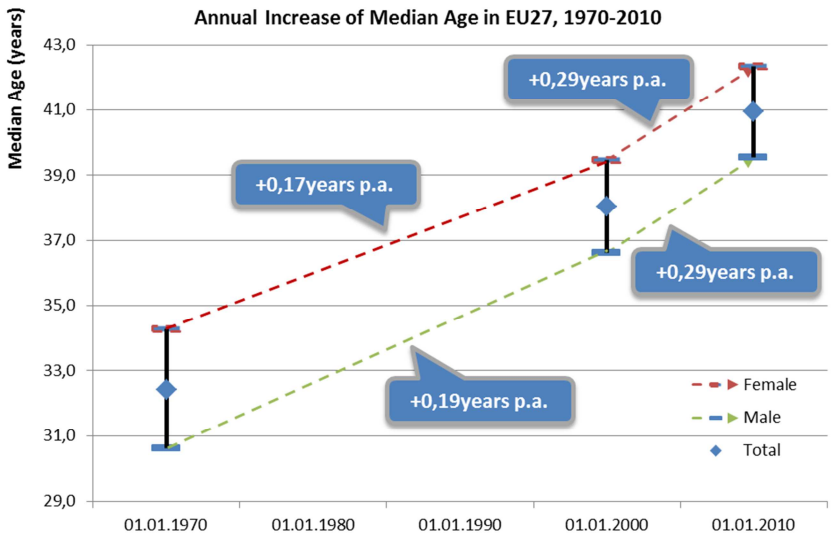


Figure 15 – Annual increase of Median Age in EU27, 1970-2010

In 1970 about 11,5% of the population in the current EU27 member states were above 65 years old and just 0,6% over 85 years, while 40 years later in 2010 the shares had risen to 17,4% (65years plus) and to 2,1% (85years plus). The age groups 85 years plus experienced a striking increase in the last 40 years so that the share of these age groups in 1970 has increased fourfold till 2010 and it is certainly that this pace will continue. Especially the Western European countries have gained rising shares in this age group, like in Germany (2,1%), United Kingdom (2,2%), France (2,3%), Italy (2,4%) and Sweden

(2,6%). Other countries like Montenegro (0,7%), Macedonia (0,5%) and Turkey (0,3%) this redistribution hasn't come up yet, but are very likely to be affected in the future like the rest of Europe. (see Figure 16 / Share 65years plus see Figure 63)

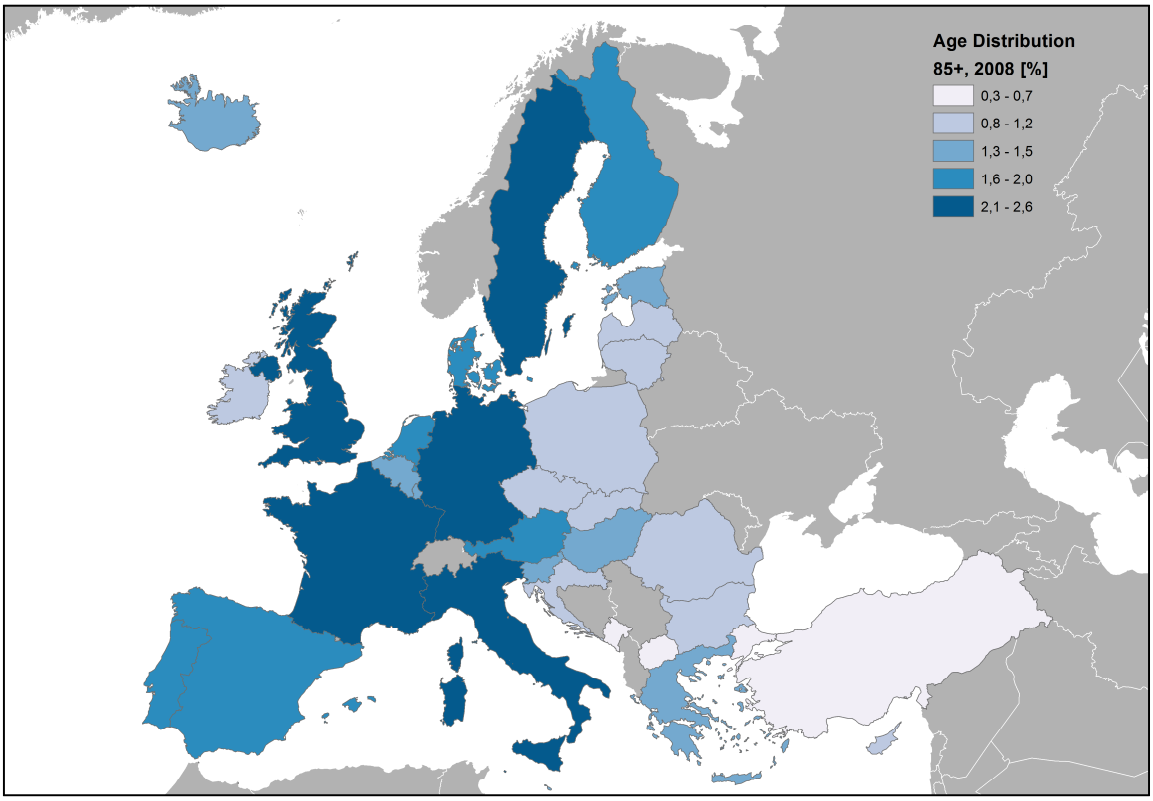


Figure 16 - Share of Population aged 85years plus (in %) in EU27 and CC5, 2008

These shifts in the age structure had also effects on the Dependency Ratios, like the Aged Dependency Ratio (ADR) which marks the share of population 65 years plus to the working age population (15-64 years). In some countries like Portugal (+80%), Bulgaria (+82%), Italy (+85%) and Finland (+88%) the ADR has almost doubled in the last 40 years to ADR's about 25 to 32%, what means that 25 to 32 persons aged 65 years plus come up to 100 persons in working age. (see Figure 17)

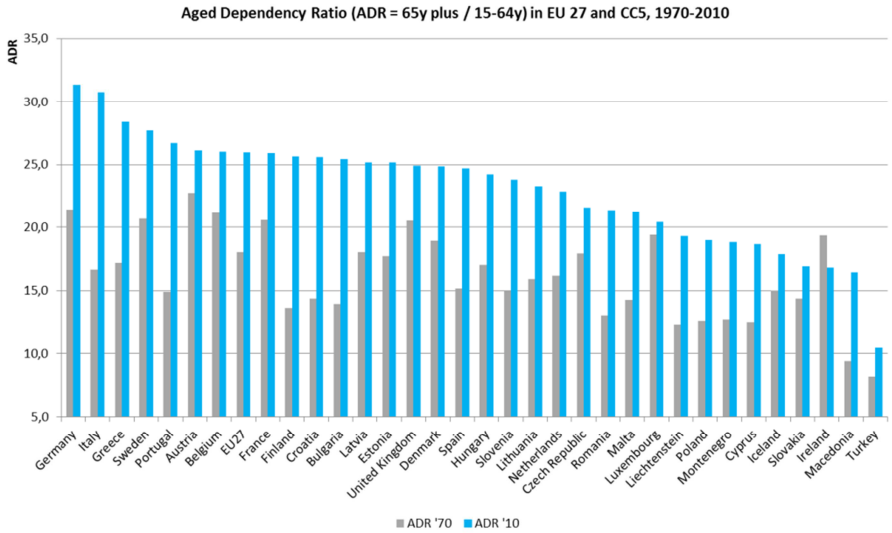


Figure 17 - Aged Dependency Ratio in EU27 and CC5, 1970-2010

The change in the dependency ratios records potential strains and burdens of the ageing process on the social and retirement system due the connection of different age groups in one indicator. A rising ADR would mean an increasing share of retired population, compared to the working age population, with what additional financial burdens for the labour force could be associated. (Lutz, 2008)

2.3 Migration

The migration flows in Europe are volatile due their vulnerability for political, social and economic impacts like changes in national or European migration policies, rising unemployment, etc. what can change the amount of migration but also its direction. Therefore it is possible that a country with positive net migration rates like Ireland in 2008 and before, suddenly experiences a reverse of migration flows due outer circumstances. Due the economic struggles of Ireland and Iceland since the begin of the Economic Crisis in 2008, marked by rising unemployment rates and the increasing number of private and business bankruptcy declarations, the migration flows in both countries reversed to an higher out-migration. Admittedly Ireland has economically recovered recently so that the migration rates returned to normal again, but this examples show the mentioned vulnerability of migration. (Alonso, 2009; Bauer, 2010; Sobotka, 2009)

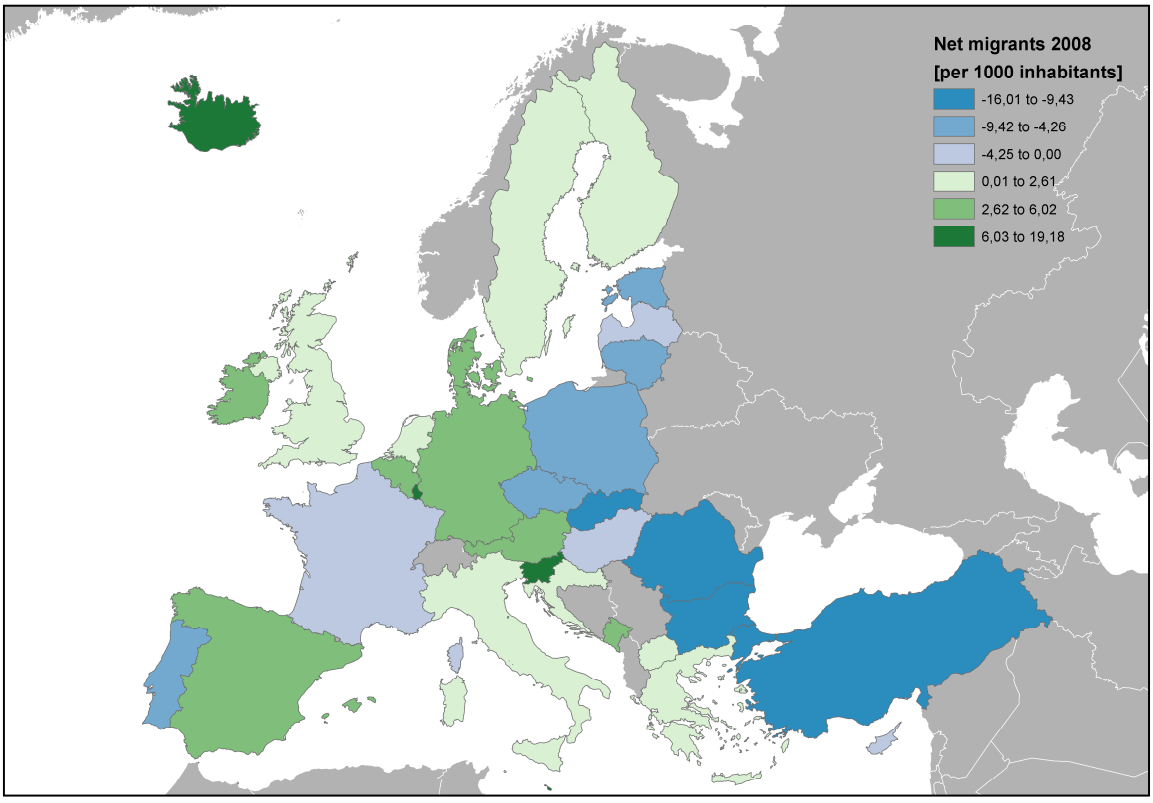


Figure 18 – Number of Net Migrants per 1.000 inhabitants in EU27 and Candidate Countries, 2008

But except for such single example cases the overall migration patterns in Europe are more or less unchanged in their direction. According to this it is possible to identify emigration and immigration countries in Europe with a once again spatial distinction between Western and Eastern Europe. (Bauer, 2010) While the “old” Western EU member states in general gain population, except of France and Portugal which showed relevant out-migration flows in their former colonial territories and overseas departments, like French Guiana, Réunion (both FR) or Angola (PT), the “new” Eastern EU members mainly lose population. The only two exceptions in the EU12 were Malta and Slovenia, which both gained more than 12 immigrants per 1.000 inhabitants in 2008 (see Figure 19), whereby the biggest European immigration groups came to Malta from France, Italy plus United Kingdom, and to Slovenia from Italy, Germany and Austria. (Alonso, 2009; Sobotka, 2009)

The majority of the *"new"* member states, like Poland (-7,8 migrants per 1.000 inhabitants), Bulgaria (-9,4 migrants) or Slovakia (-10,0 migrants), has showed since years out-migration flows up to 16,0 emigrants per 1.000 inhabitants like in Romania. While many Polish citizens moved to United Kingdom and Germany, countries like Bulgaria and Romania have traditional and linguistically induced migration networks with Romanic countries like Italy and Spain. Slovakian citizens stay more regional in bordering countries like Austria, Czech Republic or Germany, although there are some not marginally outflows to United Kingdom as well.

The Candidate Countries show a more heterogeneous picture that covers the whole bandwidth of migration patterns from immigration countries like Iceland (19,2 migrants per 1.000 inhabitants) , Montenegro (4,0 migrants), and Croatia (1,6 migrants) to countries with a marginal amount of net migrants per 1.000 inhabitants like Macedonia (0,2 migrants) up to the out-migration country, Turkey (-11,4 migrants). (see Figure 19)

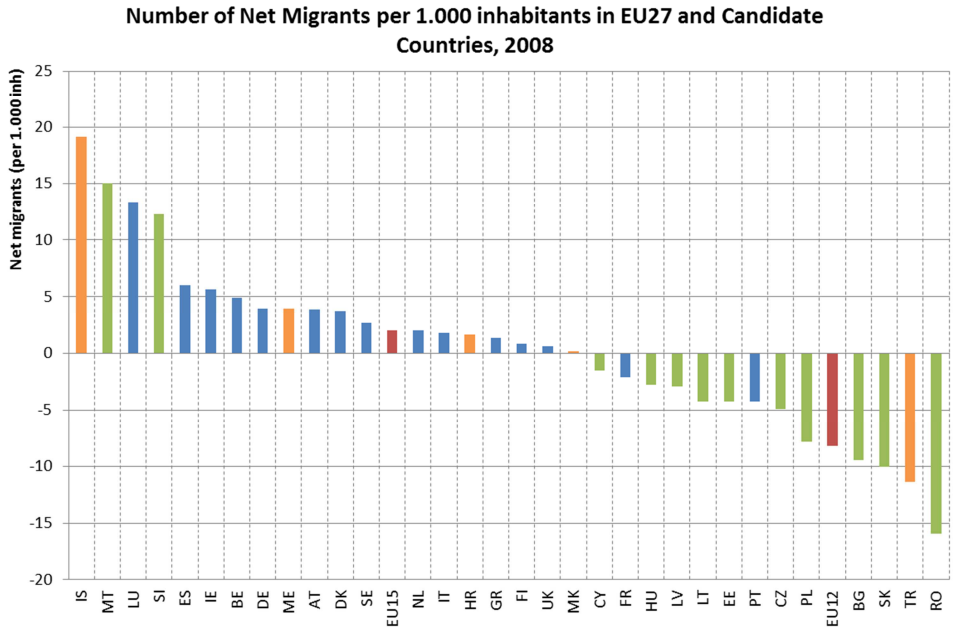


Figure 19 – Number of Net Migrants per 1.000 inhabitants in EU27 and Candidate Countries, 2008

The age groups mainly affected by migratory movements are concentrated in all spatial units in the younger age cohorts from 15 to 39 years, what marks the age groups in education and training plus in the job identification and application phase. Consequently this migration can be named as educational and labour migration, accompanied by slight shares of younger age cohorts (00-14 years), namely the children of the former mentioned group of educational and labour migrants. The higher mobility of the young adults runs like a common thread with inverted signs through all investigated spatial units. (Alonso, 2009; Sobotka, 2009)

In almost every investigation unit the majority of migrants is located in the age groups 15 to 39years, whereby their shares perceive up to 64,9% in EU15. Thereafter follow EU12 (64,6%), Turkey (56,9%), Macedonia (53,9%), Croatia (52,4%) and last Montenegro with just 32,7%. (see Figure 20) The comparable lower share in Montenegro is attributable to the high reverted migration flows in the age groups 55 years plus, when people in retirement age start to return to spend their remaining years in their mother country. However the shares in Montenegro have to be interpreted carefully because of their relatively low total amount of 2.400 net migrants, what opens space for inaccuracies. The same can be said for Macedonia, where the total amount of net migrants in 2008 was with 301 even smaller than in Montenegro. In this way the

negative outlier in net migration in Macedonia in the age groups 00 to 14 years can be explained and don't have to be interpreted as usual migration pattern.

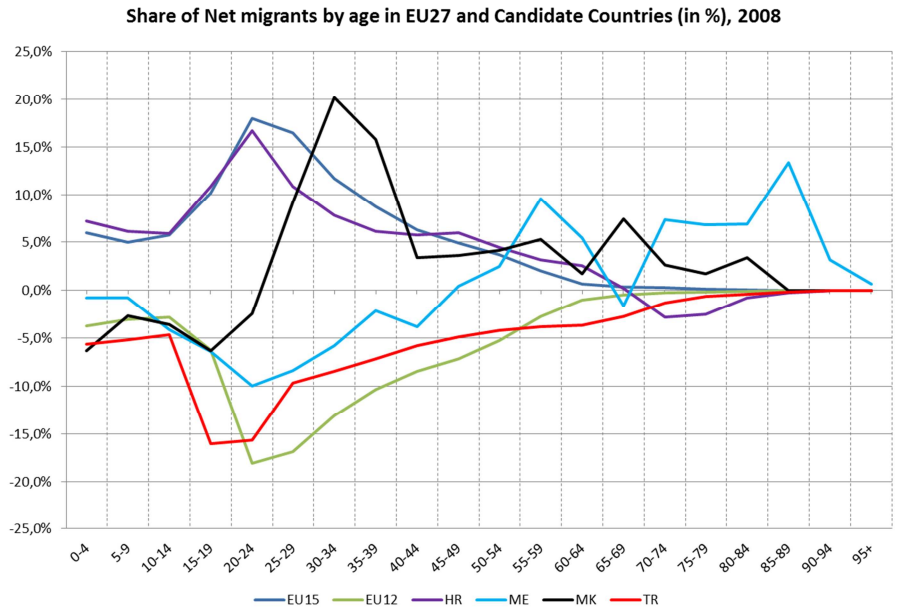


Figure 20 – Share of Net migrants by age in EU27 and Candidate Countries (in %), 2008

This vulnerability for inaccuracies continues in Montenegro and Macedonia with the educational composition of the net migrants. So the migratory data for Montenegro in 2008 marks a disproportional share of higher educated migrants, which can be an outlier or a hint for high qualified out-migrants, what would mean a significant brain drain in this year in Montenegro. (see Figure 21)

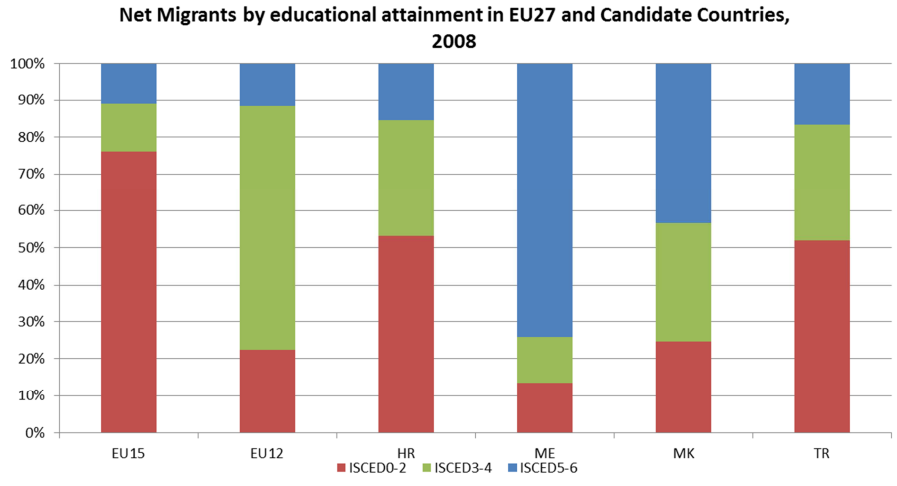


Figure 21 – Net migrants by educational attainment in EU27 and Candidate Countries, 2008

In the other four spatial units, with higher total amounts of net migration (see Table 9; Table 13; Table 17; Table 21; Table 25; and Table 29) the listed qualification of the migrants more validity. So it is visible that the primarily emigrating migrants in EU12 have mainly upper and post-secondary education, while the immigrants to the EU15 are dominated by immigrants with less than lower secondary education. This disproportional share in EU15 can be explained with the factoring out of internal migration between the countries in this spatial aggregation. Therewith migration of higher qualified individuals

between the EU15 member states, like migration between Austria and Germany will be treated as internal migration within the EU15. In this way the migration flows from outside the European Union will be higher weighted.

2.4 Education

The European education systems and structures show considerable differences in their institutional structures, curricula, average length of stay in education and shares of educational groups. The comparability of the educational structures gets complicated by the different educational policies and the acquisition of educational data. This is only possible since the construction of the **International Standard Classification of Education (ISCED)** (see chapter 0) by the UNESCO in the 1970s which enabled a homogeneous educational classification and comparability in European nation states. Currently all European countries have implemented the latest ISCED Revision from 1997 in their statistical institutes for the elicitation of educational data.

Certainly the quality of educational data shows a different level of accuracy, depending on the ISCED subcategories. Consequently it makes sense to aggregate the subcategories to the bigger groups, ISCED0-2, ISCED3-4 and ISCED5-6. This categorisation of educational groups is usual in many statistical institutes, like Eurostat and UN, and will also applied in the following analysis. As the coverage of primary and lower secondary education (ISCED0-2) in Europe is almost comprehensive, the focus of most studies and analysis fall onto the reflection of higher and tertiary education (ISCED5-6) as the most growing educational group. The share of tertiary educated people, especially of the working age population, has been steadily rising in the last decade and reached in 2008 a stake of 9,5% in Turkey, 11,0% in Macedonia, 13,9% in Croatia, 15,5% in EU12 and 23,1% in EU15. (see Figure 22) Conditioned by political efforts and individual educational choices these shares will most probably continue to grow in the upcoming decades.

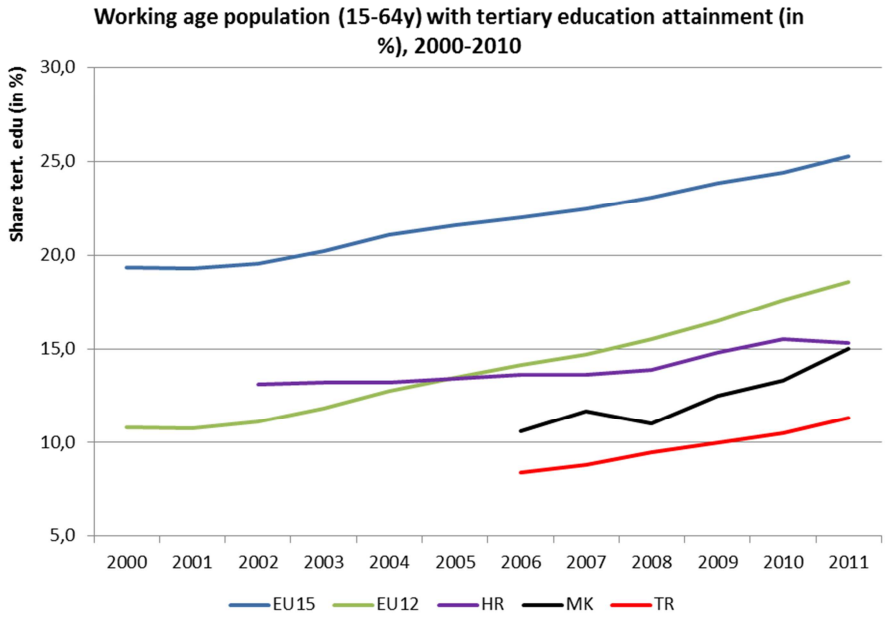


Figure 22 – Working age population (15-64y) with tertiary education attainment (in %), 2000-2010

On national level these shares are quite heterogeneous all over Europe, but show a spatial pattern in favour of North-Western Europe, where about 15 to 25% of the total population have tertiary education. (see Figure 23)

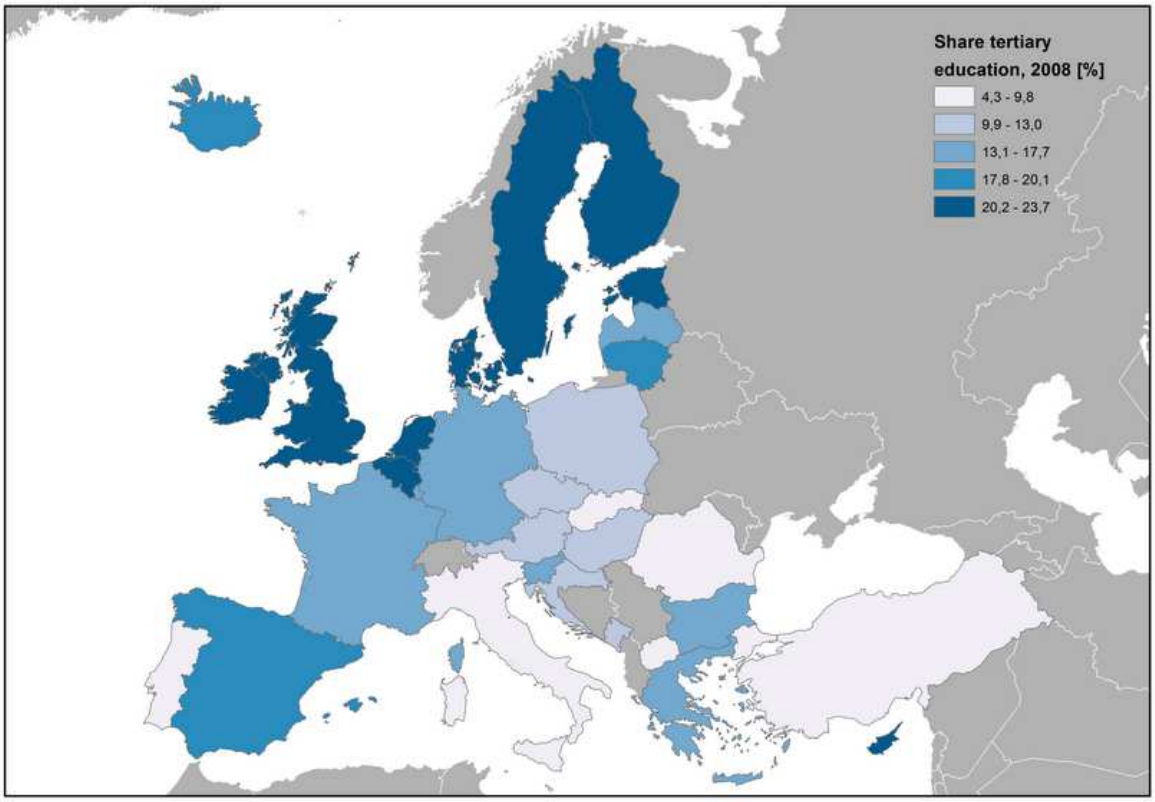
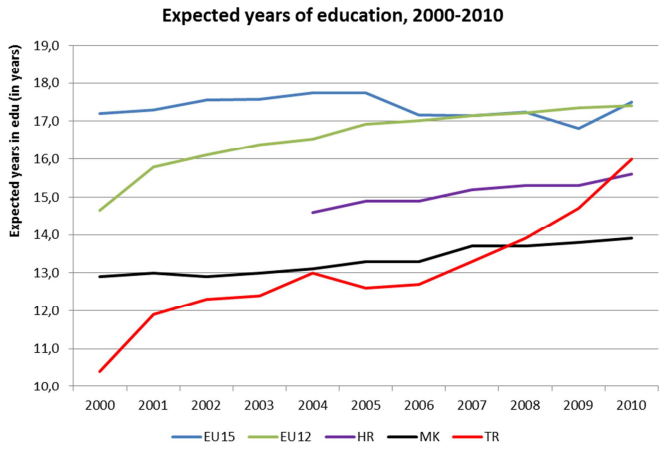


Figure 23 – Share of total population with tertiary education (in %) in Europe 27 and Candidate Countries, 2008

Simultaneously with the rising share of tertiary educated people the time staying in education process is (slightly) rising in the most investigation units, to about 13,7 years in Macedonia, 13,9 years in Turkey, 15,2 years in Turkey and 17,2 years in EU15 and EU12 in 2008. (see Figure 24) Therewith the median age of students in tertiary education is also slightly rising or stagnating at a high level, with 20,6 years in Macedonia, 20,8 years in Croatia and Turkey, 21,9 years in EU12 and 22,3 years in old Europe. (see Figure 25)



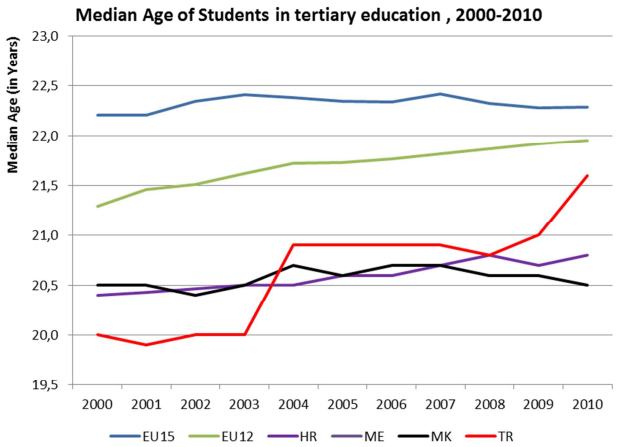


Figure 24 – Expected years of education, 2000-2010
Figure 25 – Median Age of Students in tertiary education, 2000-2010

The extension of the stay in education, especially of women, has visible effects on the quantum and timing of fertility decisions. As described in the Second Demographic Transition (see chapter 1.3) women have proceeded in the last decades to queue up their fertility decisions behind their education and occupation, what rises the Mean age at childbearing (MACB)

and reduces the number of children per women. Countries with a high share of educated women in the age groups 25 to 34 years tend to have a notable higher MACB. But even in the countries lagging behind started a process of a growing tertiary educated share in the aforesaid age group, so that these countries, which are mostly located Europe in the EU12 and Candidate Countries, will probably adjust to the pattern of EU15, with high share of higher educated women, who postpone childbearing to later ages which reduces the time slot for getting children. (see Figure 26)

Figure 26 - Notes: x-axis: Mean age at childbearing 2010; y-axis: the proportion of tertiary educated women, aged 25-34years in 2010; bubble size: the average annual increase of the share of tertiary educated women, aged 25-34years between 2000 and 2010. Base year: Austria (2004); Croatia (2002); Macedonia & Turkey (both 2006); Montenegro (2003);

The reasons for the fertility postponement were discussed earlier in this thesis and are familiar to political actors, who try to enhance the compatibility of job and education with the bearing and rising of children. Admittedly barely any country pursues a explicit pro-natal policy in Europe, but implicitly many political actions are aiming on the improvement of general framework for combining private and professional life, like with compensating parents costs for children, reducing income inequalities, encouraging women to join labour market, generally with the increase of gender equality, etc. (Caldwell, 1982; Gauthier & Philipov, 2008; Kohler et al., 2006; Lutz, 2008; Sobotka, 2008) Even the European Union tries to promote the compatibility of family and career due its employment and education programmes and guidelines. (see chapter 0)

The importance of education (policy) in Europe
Education
Europe 2020 Strategy
European Union 27
Lifelong Learning
Creative Europe
Youth in Action
Macedonia
Croatia
Turkey
Montenegro
Smart Growth
Education Europe
Financial Framework 2007-2013
Financial Framework 2014-2020
Education & Training
Inclusive Growth
Stabilization and Association Process
Instrument for Pre-Accession Assistance
Treaty of Maastricht
Treaty of Lisbon
Sustainable Growth
Poverty / Social Inclusion
Research & Development
Educational Population Projection
Employment
IPA
EU15
EU12
EU27
YIA
TR
ME
HR
LLP
SAP
MK

3 The importance of education (policy) in Europe

3.1 Why Educational Population Projections?

"Education is generally assumed to have far-reaching beneficial consequences. At the individual level more education tends to imply better health, wider economic opportunities, and greater autonomy, especially for women. At the aggregate level the educational composition of the population has long been considered a key factor in economic, institutional, and social development." (Lutz & Goujon, 2001:p.323)

The future population development is a result of three factors, which development is insecure: fertility, mortality and migration. Another factor of influence, which remains mainly unnoticed in projection models, is the educational composition of a population. (Lutz, 2011)

"Especially the educational level of women is crucial for the further development." (Lutz, 2011:p22)

While many countries, mainly developing countries, will face a population explosion, Europe will have to handle population shrinkage and ageing of the society, what will cause a massive increase of the old-age (65+ years) and oldest-old (85+ years) population age groups. But this isn't automatically equitable with neither an increase of care-dependent population groups nor the collapse of the retirement or health and welfare system, because we *"…know that educated people stay longer healthy"* and tend *"…to work longer by choice."* (Lutz, 2011:p22)

The shrinkage of the workforce could be compensated by an increase of productivity in the working population and the uplift of the retirement age to keep people longer in work. But therefore the education of the workforce is essential to compensate the possible negative effects of ageing for the society. Therefore financial expenditures in education are a sustainable investment with a high rate of return. Omissions in this area could cause massive deficits when the generation "baby-boom" will retire in 10-15 years. (Lutz, 2011)

"In youth we learn; in age we understand." (Marie Von Ebner-Eschenbach quotes (Austrian novelist, 1830-1916))

The window for political and societal decisions regarding education, to bring high educated and for the labour market crucial young cohorts on their path to replace the older workforce is closing rapidly. This is because changes in the educational system have a delay of 15-20 years before the first school graduates start to affect actively the prospective workforce.

3.2 Political & Educational Context

3.2.1 The European Union (EU27)

According to article 126 and 127 in the Treaty of Maastricht, aka Treaty on European Union, the organisation and structure of the educational system is an inherently matter of the member states in due consideration of community policies and measures. Education as agenda of the member states was long time no primary task of the European Union, which is just in charge of the implementation of supportive measures, coordination and supplement of national strategies of the member states. For this reason the EU hasn't given any handle in the remittal of any mandatory legal acts, like regulations or guidelines, but it can utter tentative recommendations or conclusions. Quite the contrary is the case, because the European

Union has a strict harmonisation restriction regarding the alignment of national education legal acts, among others articulated in the already mentioned Treaty of Maastricht. (Becker & Primova, 2009; European Commission, 2006)

This lack of European education regulations has caused a European wide heterogeneous mosaic of historically grown and autarkic national education systems, originated in the national economic and social structures and developments. Despite the limited responsibility of the EU in educational policy, education became more and more an up scaled relevance in European policy. This started slowly in the 1960s with action programmes and disembogued in the last decade in an enhancement legislative competences. This expansive nature of the European education policy caused massive criticism from the member states. Those mainly criticize the economically centred European educational policy goals and the centralisation of national education systems. And there are some other obvious problems like the cross-section effects and overlapping with other policy areas, like employment, science and technology, social and cohesion, or youth and sports policy. (Becker & Primova, 2009)

3.2.1.1 Education in the Treaty of Maastricht

The central arguments for the encouraging of an European education policy is the fundamental freedom in the European domestic market and the prohibition of discrimination according to article 12 in the Treaty of Maastricht, in correspondence with the union citizenship. To ensure the freedom of movement for employees, companies and services within the European domestic market it is essential to guarantee political requirements, like the approval of diplomas and professional qualifications (Article 47), or the equal access to educational institutions, services and scholarships which is granted via the ban of discrimination (Article 12) and the union citizenship (Article 17). (Becker & Primova, 2009; European Commission, 2006)

Becker and Primova (2009) differentiate 3 historical development phases in the European educational policy:

1. ***Phase:*** *From the foundation of the* ***European Coal and Steel Community (ECSC) in 1952*** *and till the first significant change of paradigms in the European educational policy with the* ***Treaty of Maastricht in 1993****.*

   The European educational policy is rooted in the ECSC Treaty of 1952 and the Treaty establishing the European Economic Community (TEEC), aka ***Treaty of Rome****, in 1958 with the articulation of the financing of retraining measures (Article 56 in the ECSC), enlargement of competences in educational policy about fundamentals in a common vocational education policy (Article 128 in the TEEC), and the approval of diplomas and professional qualifications (Article 57 in the TEEC) to simplify freedom of establishment and free movement of workers.*

   In the beginning the focus of European policy was on vocational education which got phrased primarily in the as educational policy goals in a Council order in 1963. These got substantiated in 1976 with a common educational policy via a further Council order to intense the educational cooperation within the union as cornerstone for the first action programme, with 6 measures and 22 actions.

   These programmes and orders are the grassroots for the development in the EU education policy till the 1990s, because they didn't understand education policy a prior as measure for economic integration and the formation of a EU domestic market, but also as source of social developments. The European Commission started to progressively demand the Europeanization of education policy and argued with the so called ***"Janne-Report"****, published in 1973, which pointed out the need to vanquish the separation of vocational and general education as community right.*

   These attempts of the European Commission to harmonize the educational policy encountered resistance in the member states that didn't wanted to relinquish competences to the European Union with the argument of a possible loss of their national identity and the intervention in sensitive areas of sovereignty. Without the primarily juridical delimitation of competences the European Commission tried to leverage in this field via funding

programmes and general tentative guidelines. The impact of these attempts remained quite low because of the fragmented character of the community ambitions.

2. ***Phase:*** *From* ***Maastricht*** *to the start of* ***negotiations for the Treaty of Lisbon in 2000****, when the European Commission tried to strengthen the new education policy agendas with funding programmes.*

The multi-level political wrangling about the allocation of competences in education policy caused the member states to anchor their sole competence in this question and to ensure the national subsidiarity principle in Article 126 and 127 of the ***Treaty of Maastricht*** *in 1993. According to that the sole responsibility about curricula and educational organisation remained at the level of the nation states. The European Union just took up supportive functions to ensure a high level of general and vocational education.*

To substantiate their aspirations to influence the national education policies, the European Commission published in 1993 the ***Green Paper*** *on the European Dimension of Education with the aim to set up thematic criteria for the allocation of subsidies and added social values to their education policy agendas. Additionally they summed up their educational programmes in three major programme packages,* ***SOKRATES, LEONARDO DA VINCI****, and* ***COMENIUS****, to dissolve the former fragmented programme structures.* (European Commission, 1993a, 2008a)

This phase was marked by the concentration on action plans and support programmes, with a special focus on the funding of further mobility projects, like ***EUROPASS****. The education policy became a labour market and social policy instrument to enhance the quality of human resources and international competitiveness of the EU, among others established in the* ***White Paper*** *on Growth, Competitiveness, Employment in 1993. In the White Paper education, science, technology and telecommunication entered the limelight as driving force for the industrial competitiveness of the European Union. Finally in 1997 in the Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Towards a Europe of knowledge the European Commission underpinned the relevance of employment and labour force policy plus the promotion of human capital.* (European Commission, 1993b, 1997)

3. ***Phase:*** *Starting in 2000 with the aspirations to make the European Union to the most competitive and dynamic knowledge based economic organisation in the world due the primarily economic goals in the* ***Lisbon Strategy*** *or the succeeding* ***Europe 2020 Strategy****.*

The ***Lisbon Strategy*** *once again emphasizes the importance of general and vocational education to achieve the goal to make the EU to the most competitive and dynamic knowledge-based economic area in the world. Therefore the European Council set up in Barcelona 2002 the work programme Education & Training 2010 with concrete objective targets and a list of indicators to measure the progress of the target implementation.* (European Commission, 2003a) *The methodological implementation worked with the so called* ***Open Method for Coordination*** *(OMC). The OMC is a relatively new political control mechanism to coordinate political matters that underlie national sovereignty but afford European coordination, without legislative restrictions or sanctions for laggards. It mainly uses soft law mechanisms like guidelines, benchmarks, indicators and the share of best practice examples. In the work programme itself three headline goals and concrete measures got determined to intensify and to systematize the cooperation between the EU and its member states. The headline goals were education and training systems should be organised around quality, access, and openness to the world.* (European Commission, 2003a)

The education of the European human capital became a central agenda to gain an economic recovery. Therefore the educational policy was above all seen as source for economic growth and got commissioned to serve the competitiveness and economic success of Europe as business location in the context of the ongoing globalisation process. Simultaneously the EU expanded their educational action programmes, like SOCRATES, LEONARDO DA VINCI, or the newer ERASMUS MUNDUS and TEMPUS programme.

The ***Treaty of Lisbon*** *hasn't brought any significant contextual or institutional alterations. The biggest innovation was the new equitable co decision of the European Parliament aside the European Council regarding legislative measures in the funding process.* (European Commission, 2008a, 2008b) *(details see chapter 3.2.1.2)*

Despite of some joint European efforts the objectives set up in the Lisbon Strategy were achieved only partly what got stressed even more by the current economic crisis. To come out of the crisis strengthened and prepared for the upcoming decade the European Commission launched the ***Europe 2020 strategy****, which names 3 key drivers for growth: smart growth, sustainable growth, and inclusive growth.* (European Commission, 2008b, 2010a)
(details see chapter 3.2.1.3)

(Becker & Primova, 2009; European Commission, 1993b, 1997, 2003a, 2006, 2008a, 2008b, 2010a)

3.2.1.2 Education in the Treaty of Lisbon

Europe is a heterogeneous educational area and it is up to the EU to create comparability among these systems to facilitate the transfer and mobility of pupils, students and workforce. This shall succeed via European initiatives in youth, economy and employment policy like articulated goals in the articles 165 and 166 in the Treaty of Lisbon:

- *Developing the European dimension in education, particularly through the teaching and dissemination of the languages of the Member States*
- *Encouraging mobility of students and teachers, by encouraging inter alia, the academic recognition of diplomas and periods of study*
- *Promoting cooperation between educational establishments*
- *Developing exchanges of information and experience on issues common to the education systems of the Member States*
- *Encouraging the development of youth exchanges and of exchanges of socio-educational instructors, and encouraging the participation of young people in democratic life in Europe*
- *Encouraging the development of distance education*
- *Developing the European dimension in sport, by promoting fairness and openness in sporting competitions and cooperation between bodies responsible for sports, and by protecting the physical and moral integrity of sportsmen and sportswomen, especially the youngest sportsmen and sportswomen.*

(European Commission, 2008a, 2008b)

3.2.1.3 Education in the Europe 2020 Strategy

As succession of the Lisbon strategy, which duration ended in 2010, the European Council adopted the Europe 2020 Strategy in 2010, with the aim to create a smart, sustainable and integrative growth to cope easier with economic fluctuations and crisis plus the recovery of the European economy. (European Commission, 2008a)

"In a changing world, we want the EU to become a smart, sustainable and inclusive economy. These three mutually reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity and social cohesion." (Barroso, 2010)

To achieve this some quantitative target agreements got enacted, inclusively two educational policy goals, this will be controlled and coordinated annually as part of the so called European Semester. For the contextual implementation seven Flagship initiatives got stipulated, with two of them concerning education (here in bold-italic):

Smart growth

* Digital agenda for Europe
* Innovation Union
**** Youth on the move***

Sustainable growth

* Resource efficient Europe

* An industrial policy for the globalisation era

Inclusive growth

**** An agenda for new skills and jobs***

* European platform against poverty

(European Commission, 2010c)

For the development and success of knowledge based European society a high level of general and vocational education is essential. Therefore, education became a central element in the Europe 2020 Strategy. Even in the Lisbon agendas till 2010 education and training was a central field of action in the European Union. To measure the on-going progress of the Europe 2020 goals, five headline targets have been agreed by the members of the European Union, with nation specific shades. The overall targets for the EU can be summed up as followed, whereby one of them is focused on education (here bold/italic) (European Commission, 2010c):

1. Employment
    - 75% of the 20-64 year-olds to be employed
2. R&D
    - 3% of the EU's GDP to be invested in R&D
3. Climate change / energy
    - greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990
    - 20% of energy from renewables
    - 20% increase in energy efficiency

4. Education

- ***Reducing school drop-out rates below 10%***
- ***at least 40% of 30-34–year-olds completing third level education***

5. Poverty / social exclusion
    - at least 20 million fewer people in or at risk of poverty and social exclusion

(European Commission, 2010c)

Overall phases it becomes valid that the European Commission has put education and training over the last decades to a major agenda in their guidelines and goals. Thereby education gets understood as source for social and economic development of the European Union and its members. To strengthen the economic status of the EU in the global competition the European Commission tries to translate common European educational targets via the European Court of Justice (ECJ) into national targets, strategies and legislation.

The implementation of this translation argues the commission with the domestic market and Lisbon Strategy goals as economic explanation. A good example for this is the Bologna process and the Lisbon Strategy, which the European Commission despite of its limited competences, could implement into national legislation. Admittedly the implementation of the Bologna process, which happened via the OMC, is legally tentative, but nevertheless it became an important factor in the harmonization of the European educational structure. The primarily *"weak"* guidance's and agreements became mandatory Union rights. This got achieved among others via the funding programmes, which generated national

dependencies that forced the member states to vanquish the borders of responsibilities between the EU and its members, like with the **Youth in Action Programme**[3] or the **Lifelong Learning Programme**[4].

The increasing participation of member states in community programmes and initiative enforced reform debates and initiated impulses for education policy cooperation between the member states. Here is also fundamental that the European Commission is in this implementation process part of a network of non-governmental, education policy actors like the European trade associations, social partners and unions of tertiary educational institutions, which also influence this process. (Becker & Primova, 2009)

3.2.1.4 Financial Framework 2007-2013

The planning period 2007 to 2013 was dominated by the Lisbon strategy with which the European *Union "…set itself a new strategic goal for the next decade: to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion."* (European Trade Union Confederation, 2006)[5]

In 2008 the European Union member states had an aggregated economic performance of € 12,48 trillion or € 12.476 billion (estimated amount in 2007-13: € 87,72 trillion), what positions the European Economic Area (EEA) in front of global economic powers the United States (€ 9,72 trillion), Japan (€ 3,29 trillion) and China (€ 3,02 trillion). Therefore the European Union is in the case of the GDP the leading Economic global player, but contrary to these three economic zones, the EU isn't free to dispose this money. Quite the contrary is the case, because the EU is dependent on deposits from its member states with whom the European Commission has to negotiate the budget for 7 yearlong budgetary periods. In the current budgetary period from 2007 to 2013, the European Union is in charge of € 975,78 billion or in 2008 of € 132,80 billion, what equates a share of 1,1% of the aggregated GDP of all EU member states in the height of € 12.475,97 billion (2008). This gives the European Commission a limited financial strike capability and concedes the EU just a supportive financial role in its line of duties. The main activities of the European Union got outlined in the Maastricht Treaty in Article 3 with:

a) the elimination, as between Member States, of customs duties and quantitative restrictions on the import and export of goods, and of all other measures having equivalent effect;
b) a common commercial policy;
c) an internal market characterized by the abolition, as between Member States, of obstacles to the free movement of goods, persons, services and capital;
d) measures concerning the entry and movement of persons in the internal market as provided for in Article 100c;
e) a common policy in the sphere of agriculture and fisheries;
f) a common policy in the sphere of transport;
g) a system ensuring that competition in the internal market is not distorted;
h) the approximation of the laws of Member States to the extent required for the functioning of the common market;
i) a policy in the social sphere comprising a European Social Fund;
j) the strengthening of economic and social cohesion;
k) a policy in the sphere of the environment;
l) the strengthening of the competitiveness of Community industry;
m) the promotion of research and technological development;

[3] „The Youth on the Move Programme" was launched in 2010 as part of the EUROPE 2020 Strategy - http://ec.europa.eu/social/main.jsp?catId=950&langId=en

[4] „The Lifelong Learning Programme: education and training opportunities for all" is a programme in the programme period 2007 to 2013 with a budget of about € 7 billion. - http://ec.europa.eu/education/lifelong-learning-programme/doc78_en.htm

[5] http://www.etuc.org/a/652

n) encouragement for the establishment and development of trans-European networks;
o) a contribution to the attainment of a high level of health protection;
p) a contribution to education and training of quality and to the flowering of the cultures of the Member States;
q) a policy in the sphere of development cooperation;
r) the association of the overseas countries and territories in order to increase trade and promote jointly economic and social development;
s) a contribution to the strengthening of consumer protection;
t) measures in the spheres of energy, civil protection and tourism;
(European Commission, 1992)

In Article 3(p) the European Union set up education and training as one of their main activities, that got highlighted in the later following Lisbon and Europe 2020 Strategy. Nevertheless the impact of the EU is in consideration of its comparable *"small"* monetary possibilities that are allocated to several EU policy headings via programmes and projects which get administrated by the departments of the European Commission, aka Directorate-Generals, relatively limited. Each of these departments covers a specific policy area or service within the framework of the budgetary headings:

Commitment appropriations (in billion €)	2007	2008	2009	2010	2011	2012	2013	2007- 2013
1. Sustainable Growth	**53,979**	**57,653**	**61,696**	**63,555**	**63,974**	**67,614**	**70,147**	**438,618**
1a. Competitiveness for Growth and Employment	8,918	10,386	13,269	14,167	12,987	14,853	15,623	90,203
1b. Cohesion for Growth and Employment	45,061	47,267	48,427	49,388	50,987	52,761	54,524	348,415
2. Preservation and Management of Natural Resources	**55,143**	**59,193**	**56,333**	**59,955**	**59,888**	**60,810**	**61,289**	**412,611**
of which: market related expenditure and direct payments	45,759	46,217	46,679	47,146	47,617	48,093	48,574	330,085
3. Citizenship, freedom, security and justice	**1,273**	**1,362**	**1,518**	**1,693**	**1,889**	**2,105**	**2,376**	**12,216**
3a. Freedom, Security and Justice	0,637	0,747	0,867	1,025	1,206	1,406	1,661	7,549
3b. Citizenship	0,636	0,615	0,651	0,668	0,683	0,699	0,715	4,667
4. EU as a global player	**6,578**	**7,002**	**7,440**	**7,893**	**8,430**	**8,997**	**9,595**	**55,935**
5. Administration	**7,039**	**7,380**	**7,525**	**7,882**	**8,091**	**8,523**	**9,095**	**55,535**
6. Compensations	**0,445**	**0,207**	**0,210**	**0,000**	**0,000**	**0,000**	**0,000**	**0,862**
Total commitment appropriations	**124,457**	**132,797**	**134,722**	**140,978**	**142,272**	**148,049**	**152,502**	**975,777**

Table 1 - Multiannual Financial Framework of the European Union, 2007-2013 (European Commission, 2012a)[6]

The from a monetary view biggest EU budgetary heading "Sustainable Growth", which makes up 45% or € 438,62 billion, consists of the two subcategories **"Competitiveness for Growth and Employment"** and **"Cohesion for Growth and Employment"**. The first one – highlighted in dark blue – contains 9% of the overall EU budget to support community programmes pertaining research, innovation, the internal market, the EU networks and education.

[6] http://ec.europa.eu/budget/figures/fin_fwk0713/fwk0713_en.cfm

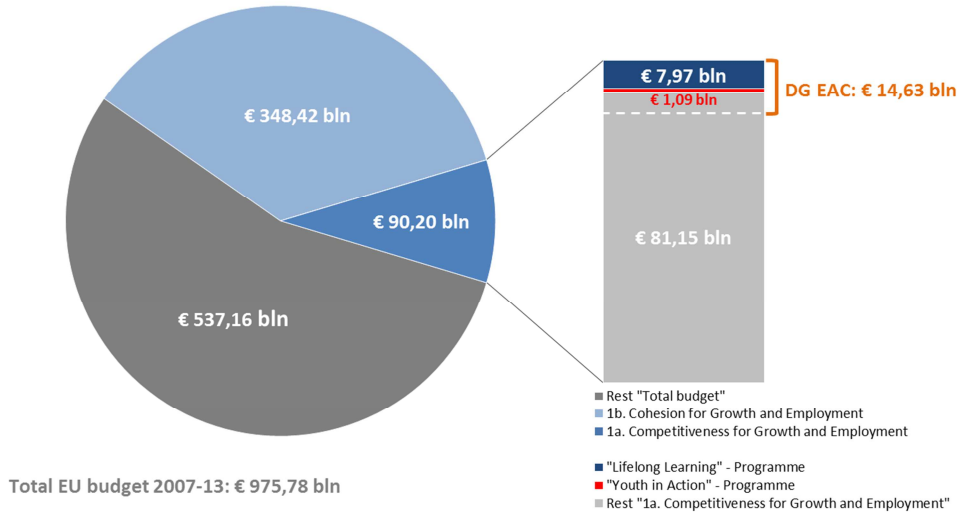


Figure 27 – Share of Financial Funding of Educational Programmes in EU, 2007-2013
(European Commission, 2008c, 2009, 2010d, 2010e, 2010f, 2011a, 2012b, 2012c, 2012d, 2012e)

In this subcategory the educational programmes just represent 10,0% or € 9,06 billion of the EU commitment appropriations what makes a share in the total budget of just 0,9%. Admittedly the DG EAC has a budget in the period 2007 to 2013 from about € 14,63 billion, but just the already noted € 9,06 billion (2007-13) flow into programmes focussed on education, like the two main programmes by the DG EAC which are reliable for educational developments, the **Lifelong Learning Programme** (LLP 07-13: € 7,79 billion) and the **Youth in Action Programme** (YIA 07-13: €1,09 billion) . These expenditures got complemented by significant support for education and training through Structural Funds (ESF, EFRE, etc.) by an amount of about € 72,50 billion. (European Commission, 2011b)

Although the ideological path of the EU is aimed on the establishment of the European as most competitive economic zone in the world via the creation of a knowledge society, the monetary input in education by the specific educational programmes is compared to the single member states is limited. In average every EU member spends 5,0% of its GDP on education, what is more than five times higher than the EU specific funding of education.

In total all member states of the European Union spend € 626,53 billion or 5,0 % of their GDP for education, which means that in average all EU members invest annually € 4.475in each person aged 0 to 24 years, which are the age groups in which individually achieve their educational level. In contrast to this, the EU can't match up to its member states expenditures, neither in absolute nor relative numbers. This becomes obvious by breaking the EU beneficiaries in education down to the sum that hypothetically reaches an average European citizen in the potential target age groups (YIA: 00 to 24 years / LLP: 00 to 64 years). So every citizen in the specific age group gets every year about €0,75 via the Youth in Action Programme and € 1,95 by the Lifelong Learning Programme. This amount is hardly enough to buy a pencil and a notepad for every potential member of the target group. Compared to the amount every nation state spends on education, this amount is negligible.

By reversing this coherency, when every affected EU citizen would pay € 3,0 on average per year to the Commission, the budget for educational programmes could be doubled up easily. Another approach could be that when all annual taxes for tobacco products in the European Union (2008: € 77,75 billion) would be dedicated to the purpose of supporting educational programmes, it would be possible to finance the complete European educational programmes 85 times or about 12,4 % of the total national expenditures on education in 2008. I hope this comparison illustrates the monetary weighting of the European Union.

3.2.1.5 *Financial Framework 2014-2020*

Just recently the European Union has published its proposal for the multi-annual budget for 2014 to 2020 under the guiding principle **"Investing today for growth tomorrow"** which focuses on priority funding at a European level for Europe's youth. Its purpose is to break up the fragmented structure of funding and instruments of the European Commission to establish an integrated programme for education, training and youth (**"Education Europe"**), which focuses on the development of the youth's skills and mobility. This will be complemented by the inclusion of a new programme for cultural and creative development (**"Creative Europe"**). (European Commission, 2012f)

The new Education Europe programme will include three key priorities proclaimed by the European Commission 2011:

1. *It will support trans-national learning mobility. Strict quality conditions for mobility, concentration on key policy objectives where critical mass can be achieved and complemented with other EU programmes will be instrumental in ensuring very high European added value.*
2. *It will foster co-operation between education institutions and the world of work in order to promote the modernisation of education, innovation and entrepreneurship*
3. *It will provide policy support to gather evidence on the effectiveness of education investments and help Member States to implement effective policies.*

   (European Commission, 2012f)[7]

The total budget for this programme (€ 15,21 billion) shall be complemented by financial supports through Structural Funds in a similar amount as in the last budgetary period (2007-13: € 72,50 billion). The highest financial contribution from the EU budget to invest in the education of the society or the human capital comes from the European Social Fund (ESF) as part of the overall **Multiannual Financial Framework (MFF)** in 2014 to 2020:

Commitment appropriations (in billion €)	2014	2015	2016	2017	2018	2019	2020	2014-2020
1. Smart and Inclusive Growth	**64,697**	**66,581**	**68,134**	**69,957**	**71,596**	**73,769**	**76,179**	**490,913**
CSF research and innovation	10,079	10,529	10,979	11,429	11,879	12,329	12,776	**80,000**
New Competitiveness/SME	0,235	0,270	0,305	0,340	0,375	0,410	0,445	**2,380**
Single Education, Training, Youth and Sport	1,423	1,673	1,923	2,173	2,423	2,673	2,923	**15,211**
2. Sustainable Growth: natural resources	**57,386**	**56,528**	**55,702**	**54,852**	**53,838**	**52,829**	**51,785**	**382,920**
3. Security and citizenship	**2,532**	**2,570**	**2,609**	**2,648**	**2,687**	**2,726**	**2,765**	**18,537**
Creative Europe Programme	0,182	0,197	0,212	0,227	0,242	0,257	0,273	**1,590**
4 Global Europe	**9,402**	**9,647**	**9,847**	**9,961**	**10,151**	**10,381**	**10,622**	**70,011**
Instrument for Pre Accession (IPA)	1,789	1,789	1,789	1,789	1,789	1,789	1,789	**12,523**
European Neighbourhood Instrument (ENI)	2,1	2,213	2,226	2,265	2,34	2,439	2,514	**16,097**
5 Administration	**8,542**	**8,679**	**8,796**	**8,943**	**9,074**	**9,225**	**9,372**	**62,631**
Total commitment appropriations	**142,559**	**144,005**	**145,088**	**146,361**	**147,346**	**148,930**	**150,723**	**1025,012**

Table 2 - Multiannual Financial Framework of the European Union, 2014-2020 (shortened) (European Commission, 2011b)

In the core of the education policy are the two in dark blue highlighted subheadings **"Single Education, Training, Youth and Sport"** (2014-20: € 15,21 billion) and the **"Creative Europe Programme"** (2014-20: € 1,59 billion) with a total monetary weight of € 16,80 billion, which means an increase in funding of the central educational programmes of + 85% from € 9,06 billion in 2007-13 to € 16,80 billion in 2014-20. Therefore, the Commission aims on the reduction of early school leavers to 10 % and an increase of tertiary educated 30 to 34 year old people of 40% in 2020, but with partly substantial differences between the member states:

[7] http://ec.europa.eu/youth/news/eu-budget-2014-2020_en.htm

	Early school leaving in age group 18 to 24 years (in %)	Tertiary education in age group 30 to 34 years (in %)
EU27	10,0%	40,0%
EU15*	10,0%	40,0%
EU12*	10,0%	40,0%
AT	9,5%	38,0%
BE	9,5%	47,0%
BG	11,0%	36,0%
CY	10,0%	46,0%
CZ	5,5%	32,0%
DE	< 10,0%	42,0%
DK	< 10,0%	> 40,0%
EE	9,5%	40,0%
EL	9,7%	32,0%
ES	15,0%	44,0%
FI	8,0%	42,0%
FR	9,5%	50,0%
HR*	10,0%	40,0%
HU	10,0%	30,3%
IE	8,0%	60,0%
IS*	10,0%	40,0%
IT	15,0-16,0%	26,0-27,0%
LT	< 9,0%	40,0%
LU	< 10,0%	40,0%
LV	13,4%	34,0-36,0%
ME*	10,0%	40,0%
MK*	10,0%	40,0%
MT	29,0%	33,0%
NL	< 8,0%	45,0%
PL	4,5%	45,0%
PT	10,0%	40,0%
RO	11,3%	36,7%
SE	< 10,0%	40,0-45,0%
SI	5,0%	40,0%
SK	6,0%	40,0%
TR*	10,0%	40,0%
UK*	10,0%	40,0%

Table 3 – National Europe 2020 Targets (* for projection estimated values) (European Commission, 2011c)

"The Europe 2020 headline targets on increasing tertiary education and reducing early-school leaving will not be reached without a stronger investment in human capital." (European Commission, 2011:p.17)

The increasing financial funding for this priority shall help to reach these goals and to affect all layers of formal education and training, including school, higher, vocational and adult education, as well as informal and non-formal education and training activities. One of the greater successes in the current **Lifelong Learning Programme (LLP)**, Erasmus Mundus and Youth Programmes is the increasing transnational learning mobility. Another programme boosted to the next budgetary period is the Leonardo Da Vinci programme, which aims on the raise of skills and the abatement of the increased youth unemployment in many member states due offering the option to benefit from education and training programmes in other EU member states, to transfer innovative education policies from one member to another. Additionally, the financial support of transnational Master Programmes and students shall get enhanced by the invention of an innovative programme to provide scholarships and guarantees to mobile master students. With help of the **European Investment Bank (EIB)** the financial contribution to such programmes shall be strengthened.

In combination with cultural and architecture programmes the currently fragmented structure of the European educational funding structure shall get rationalized and the structures shall get simplified by setting up a single, integrated programme

on education, training and youth, with a focus on the strengthening of the development of skills and mobility of human capital. The concrete implementation, monitoring and evaluation of these projects will be simplified in related EU agencies, while the concrete management shall remain by the national agencies.

3.2.2 The Candidate & Acceding Countries (CC5)

The process of introducing countries, especially the Western Balkan countries, has been governed since 1999 by the so called **Stabilisation and Association Process (SAP**) to promote peace, stability, freedom and economic prosperity in this region, and to classify them as potential candidate countries. The pace of the countries varies dependent from the national social, political and economic conditions in each country plus the willingness to bow to European legislation and administration. The improvements in these negotiations get recorded in the national Progress Reports and its negotiation chapters. The pace of progress of accession negotiations is different and reaches from several decades like in the case of Turkey to just some years like in Croatia, dependent on the willingness to integrate European regulations in national legislation.

Since 2007, both, candidate countries and potential candidates countries receive financial support through the **Instrument for Pre-Accession Assistance (IPA)** amounting to 11,5 billion Euro in the period 2007 to 2013. The IPA replaced several former pre-accession instruments like Phare, ISPA, SAPARD, the specific pre-accession instrument for Turkey, and CARDS programme. The IPA consists of 5 financial branches which fund Transition Assistance and Institution Building, Cross-Border Cooperation, Regional Development, Human Resources Development, and Rural Development.

The component Human Resources Development prepares candidate countries for the later access to the European Social Fund (ESF) in the context of the European Employment Strategy which is focused on the inclusion of workforce into the labour market via education and training programmes. The European Employment Strategy is in the task of education in the same line with the EUROPE 2020 Strategy when it tries to create more and better jobs throughout the EU.

In total the IPA has a budget of 11,53 billion Euro in 2007-2013 from which 58,3% or 6,72 billion Euro where dedicated to the CC5 countries Croatia, Iceland, Macedonia, Montenegro, and Turkey. The rest is dedicated to other potential candidates like Serbia or Kosovo. From the 6,72 billion Euro about 9,95% or 635,5 million Euro flow into the IPA component Human Resources Development which can be associated with educational programmes. Additionally, these countries have the chance to get access to European funds via specific projects. The variance between the countries in money allocation to Human Resources Development is different and ranges from 0 % in Iceland, 2,4% in Montenegro, 8,9% in Macedonia, 9,5% in Croatia, to 9,9% in Turkey. Turkey in general has the highest financial contribution in the IPA, with 41,9% or 4,83 billion Euro from 2007 to 2013.

3.2.2.1 Croatia (HR)

In Croatia this was a quite fast process that lasted in general just 10 years, from 2003 to 2013. The Republic of Croatia became part of the SAP in 2000 which led to the signing of the Stabilisation and Association Agreement (SAA) in 2001, before it applied for EU membership in 2003 and started its negotiations in 2005, which got finalized with the completion of negotiation, a positive referendum and the ratification by all EU member states in 2011. Until the accession to the EU at 1st July 2013, Croatia has an Acceding Country Status with active observer rights in European institutions. (European Commission, 2012g, 2012h)

Croatia has fulfilled the acquis communautaire in all of its facets and has transferred even Chapter 26: Education and culture in its legislation, legal acts and court decisions. In the field of education, Croatia has adopted amendments to the Act on Primary and Secondary Education into their national legislation, as well as reforms of higher and vocational education, like the continuation of the onward process of self-assessment in vocational education schools. Croatia has adopted the European benchmarks of the Europe 2020 Strategy regarding education and training in its national agendas as well. Especially, in the field of adult lifelong learning Croatia has a backlog demand and has to initiate further improvements. (European Commission, 2012g, 2012h)

3.2.2.2 Montenegro (ME)

Just six years ago, in 2006, Montenegro's parliament declared its independence from the State union Serbia and Montenegro (2003-2006) that was constituted itself three years before as successor state of the dissolved Federal Republic of Yugoslavia (1992-2003). Just two years after the declaration of independence, Montenegro applied for the EU membership. In a Communication paper the Commission declared seven key priorities which had to be fulfilled before the negotiations could start for real. These key priorities ranged from the improvement of the legislation framework via essential reforms in public administration to the enhancement of the media freedom. Despite these imposed conditions, Montenegro could sign the Stabilisation and Association Agreement (SAA) and got officially awarded with the status of a Candidate Country in 2010. (European Commission, 2010g, 2012h, 2012i)

The negotiations started in June 2012, whereby there is till now no appraised date for the accession to the European Union. In the field of education and culture, Montenegro achieved notable progress in the adoption of strategies and action plans in the areas elementary education, lifelong learning and vocational education, which were some of the points of criticism in the Commission's opinion on Montenegro's application in 2010. Additionally, inclusive educational programmes got initiated to involve minorities like Roma, Ashkali and Egyptian children in the schooling system. A further improvement is the initiated establishment of the legal framework for the Bologna process plus a reform of the institutional structure of higher education, with focus on connecting universities with the economy. (European Commission, 2010g, 2012h, 2012i)

Nevertheless, there is still a need for further reforms and modernisations in higher education plus in the vocational education and training system. These will be the key priorities in the chapter education and culture in the remaining negotiations to achieve the acquis communitaire, like Croatia did recently. (European Commission, 2010g, 2012h, 2012i)

3.2.2.3 The Former Yugoslav Republic of Macedonia (MK)

At the Thessaloniki European Council summit in 2003, the Former Yugoslav Republic of Macedonia was identified as a potential EU candidate country and actually one year later the Macedonian government pursued this appraisal with its official application submission. In 2005 the Commission pronounced its support and positive evaluation of this application and awarded Macedonia with the status of a Candidate Country. (European Commission, 2012h, 2012j)

Just four years later, in 2009, the negotiations officially started and are currently moving rapidly. In the field of education the Macedonian Parliament enacted amendments to its legislation on primary and secondary education. In tertiary education a third-cycle (doctoral) studies got initiated as part of the on-going implementation of the Bologna process in higher education. Additionally, there were significant improvements in the upper-secondary attainment and in areas where EU-level benchmarks for the Europe 2020 Strategy, regarding the reduction of early-school leavers and the increase of tertiary education, even although there were no national target set for educational attainment according to the education and training 2020 framework. (European Commission, 2012h, 2012j)

In general Macedonia remains below the EU average in early-childhood education, because of a lack of primary education and the early school-leaving rate especially of minorities, like Roma, in rural areas. Additionally the teachers training and efforts in vocational and adult education have to be improved. The higher education has deficits in its institutional framework and doesn't reflect the needs of the national labour market. (European Commission, 2012h, 2012j)

However, Macedonia made good progress in implementing the conditions set by the EU to get access to the Lifelong Learning and Youth in Action programmes due vanishing institutional obstacles. So Macedonia became part in the commission actions of the Lifelong Learning programme. But there have to be multiple improvements in every educational level to conclude the chapter 26 education and training for a successful achievement of the acquis communitaire. (European Commission, 2012h, 2012j)

3.2.2.4 Turkey (TR)

Turkey's ambition for a European integration is vivid since 1959 with the application for an associate membership in the European Economic Community (EEC) and the establishment of Turkey into a customs union with the EEC via the Ankara Association Agreement (1963). Since these times Turkey is relentless in promoting its efforts to be part of the European Union, what brought them into the status of a candidate country in 2005. Since then the negotiations again and again come to a standstill and menace to fail regarding the political conflict with Cyprus. In seven years of negotiation only one of 35 negotiation chapters could be closed, twelve are currently in progress, while eight chapters had to be suspended in 2006 because of the persistent conflict with Cyprus and civil rights violations (European Commission, 2012h, 2012k):

- Chapter 1 Free movement of goods
- Chapter 3 Right of establishment and freedom to provide services
- Chapter 9 Financial services
- Chapter 11 Agriculture and rural development
- Chapter 13 Fisheries
- Chapter 14 Transport policy
- Chapter 29 Customs union
- Chapter 30 External relations
  (European Commission, 2012h, 2012k)

The sticking progress in the negotiations plus the medial and political feedback in Europe have caused a dramatic decrease of the public support for the membership in Turkey. While in 2005 about 90% of the Turkish people supported the EU membership application, this proportion dropped to less than 50% in 2012. Currently voices in Turkey get aloud who scrutinize the sense of this application in the context of the European struggles in the economic crisis, while Turkey has a flourishing economy. Turkish representatives multiple stressed in media that the feel stalled by the European Union so that they think about a reorientation to other political unions, like the mutual-security organisation Shanghai Cooperation Organisation, earlier known as *„Shanghai 5"*.

It is hard to fend the impression that the European Union needs Turkey more than the other way around, although the inclusion would cause massive costs because of the possible financial claims of Turkey in several European funds. In the last 60 years Turkey evolved from a poor plain Jane to a rising star not only in Europe but worldwide, who claims the recognition of its status as regional power at the edge of Europe and Asia. This status got achieved by massive political, social, economic and educational reforms in the last decades. Within the field education and training Turkey made some progress in promoting the Lifelong Learning and Youth in Action programmes to the public. In total in 2012 and 2013 about 55.000 beneficiaries will become allocated to applicants, wherefore the national budget for these programmes has to be

bulked up by 60%. The lifelong learning is in general in the initial phase of its implementation and needs higher efforts in coordination, especially in the rural and disadvantaged regions. (European Commission, 2012h, 2012k)

In 2012 an amendment to the Turkish Education Law extended compulsory education from 8 to 12 years plus flexibility in schooling systems, i.e. the free choice between general and vocational schools. In higher education the implementation of the Bologna process is at an advanced stage and will be soon implemented at all 168 universities. However, there is a notable deviance in the qualification of the teaching staff between regions and types of institutions, which will be a major priority in the national schooling system for the next years. To improve the harmonization of the regional education authorities and regulatory frameworks the newly initiated National Qualification Framework has been adopted in 2012. (European Commission, 2012h, 2012k)

Despite the progress in the field of education and training there is inherent backlog demand in concluding this negotiation chapter. But it is doubtful that the negotiations will come to a soon conclusion due issues in the above noted negotiation chapters.


Methodological Approach
Multi-State Population Projection
Multi-State Population Projection
Cohort Component Method
Cohort Component Method
Education Transition
Education Transition
Andrei Rogers
Andrei Rogers
Scenarios
Scenarios
Vital Rates
Vital Rates
Education
Education
Projection
Projection
Migration
Migration
Interpolation
Interpolation
Time Series
Time Series
CCM
CCM
Eurostat
Eurostat
MSP
MSP
Mortality
Mortality
International Institute for Applied System Analysis
International Institute for Applied System Analysis
Frank Notestein
Frank Notestein
internal validity
internal validity
Fertility
Fertility
ISCED
ISCED
IIASA
IIASA
Age-Group
Age-Group
ForecastEC
ForecastEC
EC
EC
Data Feasibility
Data Feasibility
Forecast
Forecast
Vienna Institute of Demography
Vienna Institute of Demography
European Commission
European Commission
VID
VID
external validity
external validity
Extrapolation
Extrapolation
Birth Cohort
Birth Cohort

4 Methodological Approach

"Population projections are calculations which show the future development of a population when certain assumptions are made about the future course of fertility, mortality, and migration. They are in general purely formal calculations, developing the implications of the assumptions that are made. A population forecast is a projection in which the assumptions are considered to yield a realistic picture of the probable future development of a population." (United Nations, 1958, p.45)

Population projections are a demographic technique which is highly requested by governments and enterprises to anticipate public and market relevant future demographic developments, like the need for schools, medical services, public and private pension system, etc. Additionally, population projections are tools to analyse the impacts of certain demographic developments on population size, growth and structure due changing assumptions about fertility, mortality and migration. These can be extended by assumptions about demographic variables or characteristics, like marriage patterns, religion or educational attainment. (O'Neill et al., 2001; Preston, Heuveline, & Guillot, 2001)

The output of projections strongly varies dependent on the spatial and temporal coverage of projections. The smaller the spatial units are, the shorter the projection period has to be, because a smaller base population is easier affected by variations in vital rates. Usually local area projections don't give an outlook for a time interval longer than 10 years, while continental or global population projections can extend the projection period to decades or more than one century, although the latest is unusual because of the increasing uncertainty and declining number of reliable output variables. In general the number of output variables increases with the shrinkage of the spatial units and timeframe. (O'Neill et al., 2001)

Although long-term projections for over a century are mathematically possible, they are not usual because of the rising inaccuracy in longer projection intervals. The most large-scaled projections don't have a time horizon that lasts longer than 30-40 years, because then the projection would make points about a prospective population of whom the most of aren't born yet. It is usual to forecast only one generation, meaning the time interval when the children born in the base year start to get their own children. In Europe this is mostly everywhere the case in the age 30 years plus. Projection periods beyond that show a rising uncertainty, but nevertheless there is an increasing demand by politicians, entrepreneurs, researchers and educators for longer time horizons. (O'Neill et al., 2001)

Most projections are formed by researchers on demand by certain clients or end-users. The two biggest client groups are **governments** and **commercial organizations**, which demand central or most probable population scenarios. While commercial organizations often use short-term projections for marketing research, governments may be concerned about changes in population structure and its potential effects on social and economic issues, like the salvage of the social and welfare system. (O'Neill et al., 2001)

However, the too often opaque models and methodology behind the projection processes provide projections in general the reputation of a "Black" or "Grey boxes" in which the relevant mechanisms and therefore the results are not clearly interpretable, what makes the end-users sceptical about the accuracy of these models. For this reason institutions like the International Institute for Applied System Analysis (IIASA) and others try to make the whole model construction more transparent, especially about the choice of indicators and key assumptions. (O'Neill et al., 2001)

The most common scientific approach on population projections got primarily published by the British economist Edwin Cannan's article *"The probability of a cessation of the growth of population in England and Wales during the next century"*

in 1895. (Cannan, 1895; Frejka, 1994) In the next years his theory got comprehended and refined by several scientists. Pascal K. Whelpton for instance reintroduced the theory in 1936, before Patrick H. Leslie mathematically substantiated it and Frank W. Notestein employed it on a global population projection (both in 1945). (Frejka, 1994; Leslie, 1945; Notestein, 1945; O'Neill et al., 2001; Raymer, 2005; Whelpton, 1936)

4.1 Why do we need Population Projections?

The set of users for demographic population projections is manifold and not limited to demographers, which extends the diversity of projection types by the requirements of the end-users. Those *"end-users"* range from commercial organizations, which use them i.e. for market analysis, to political institutions, which want to estimate potential impacts of their policies or the potential requirements of future social developments, regarding size, growth, and potential structure of the population. (O'Neill et al., 2001; Preston et al., 2001)

Dependent of the public or private interest the spatial and temporary coverage of the projections the data availability and the statistical output underlie a certain degree of accuracy. As a rough guide it can be said, that the smaller the investigated spatial unit, the shorter the potential projection period. Especially projections over a time period further than a parental generation (30-40years), when the majority of living people isn't born yet, show a substantial growth in uncertainty. (O'Neill et al., 2001)

4.2 What types of Populations Projections exist?

The diverse projection models encounter this uncertainty with various approaches. In general it is possible to distinguish projections and forecasts. Demographers often differentiate within the hypernym *"projection"* the terms projections and forecasts, which differ just in the implied probability of their outcome. (O'Neill et al., 2001) On the one hand population forecasts are projections that aim to convey a realistic image of the most probable population development in the near future. Although the projection period is variable, the forecasts are most usually short-term, because of the growing uncertainty, which increases significantly with the enlargement of the forecast's period. Projections on the other hand don't need to take account of analogies to real population stacks, because they mostly treat hypothetical scenarios, so called *"What if?"* scenarios. Such projections don't claim to be likely or even realistic, but contrary they show what a certain combination of characteristics could trigger. (O'Neill et al., 2001; Preston et al., 2001; United Nations, 1958)

"Because the future is inevitably uncertain, population projections using several alternative scenarios are frequently prepared." (Preston et al., 2001, p.118)

Those scenarios often contain a constant, high and low, and most likely scenario, which is normally used as forecast. The *"extreme"* high and low scenarios cover eventual uncertainties located along the medium forecast. The accuracy of a population projection or forecast can only be verified ex post, the quality of a projection gets determined by its internal validity, this means the consistence of the demographic model among the variables.

"Projections illustrate the implications of certain demographic characteristics (the model's user-selected inputs) on population parameters over time (the model's outputs)." (Preston et al., 2001, p.117)

4.2.1 The Cohort-Component Method

"Initial populations for countries or region are grouped into cohorts defined by age and sex, and the projection proceeds by updating the population each age- and sex-specific group according to assumptions about three components of population change: fertility, mortality, and migration." (O'Neill et al., 2001:p.210)

The most commonly used long-term projection method is the Cohort-Component Method in which the base year population in spatial units gets grouped into age cohorts by sex. These cohorts get updated each projection interval, mostly 1 or 5 years, regarding assumptions about the fertility, mortality and migration. While births get attributed to the youngest age cohort by applying the assumed age-specific fertility rates from the female population in reproductive age groups (15 to 49 years) and an assumed sex ratio at birth to split up the number of births, the mortality affects all age groups. Each cohort records loss of humans between each projection interval according to the age-specific mortality rates. This probability of surviving from one age group to another between two projection intervals gets applied to all age groups and sexes. When the projection model attempts an open population with migration streams, migration has to be considered as age-specific net migration that will be also accounted to all age groups and sexes. The assumptions about these characteristics require specific knowledge about each of these components to project their trend, what makes an expert-based opinion inevitable. (Goujon, 2003; O'Neill et al., 2001; Preston et al., 2001)

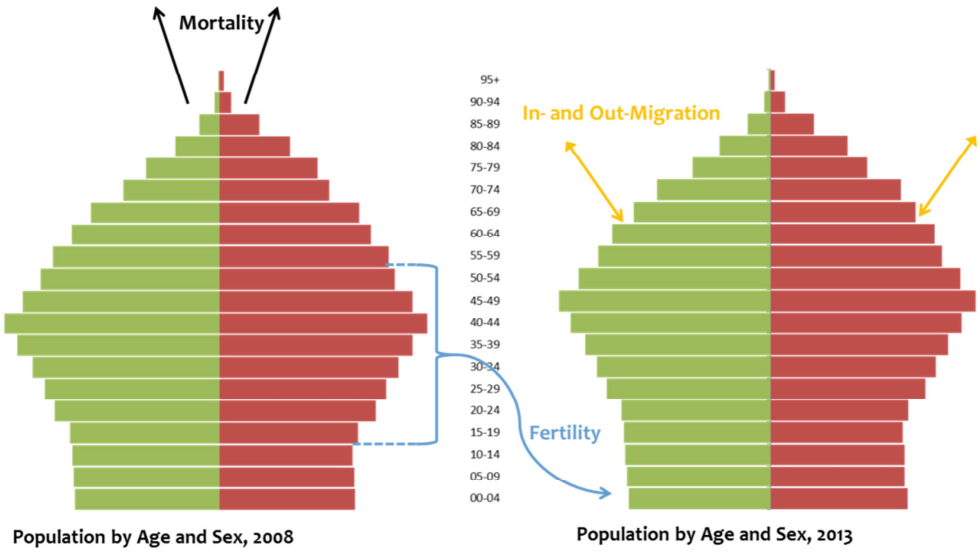


Figure 28 - Cohort-Component Age pyramid (self-illustrated)

"A fundamental feature of the method is that the projected size and age structure of the population at any point in the future depends entirely on the size and age structure at the beginning of the period and the age-specific fertility, mortality, and migration rates over the projection period." (O'Neill et al., 2001:p.210f)

4.2.1.1 The mathematical implementation of the Cohort-Component Method

The Cohort-Component Model is mathematically based on discrete-time models, in which population characteristics are calculated at certain points in time separated by lengthy projection intervals. These intervals usually have the same length as the age intervals, normally 1 or 5 year time intervals, dependent on the data availability and aim of the analysis. For each projection interval the calculation basically proceeds in 3 Steps (Goujon, 2003; O'Neill et al., 2001; Preston et al., 2001):

(1) *"Project forward the population in each subgroup at the beginning of the time interval in order to estimate the number still alive at the beginning of the next interval"*

(2) *"Compute the number of births for each subgroup over the time interval, add them across groups, and compute the number of those births who survive to the beginning of the next interval"*

(3) *"Add immigrants and subtract emigrants in each subgroup during the interval; compute the number of births to these migrants during the interval; and project forward the number of migrants and the number of their births that will survive to the beginning of the next interval"*

(Preston et al., 2001:p.120)

The **first step** is technically the calculation of survival probabilities by sex from one age group x at the time t to age group x+5 in the next projection interval t+5 by the use of single decrement life tables. With the differentiation of the population by social characteristics like education in so called multi-state population projections increment-decrement life tables are used. (Preston et al., 2001)

As births are produced by two individuals, the **second step** is more complicated. For mathematical simplification it is usual to pretend that births are produced only by women. In these so called "female-dominant" models the fertility rates are dedicated just to women. A further difficulty is the allocation of births to a subgroup. In general it gets assumed that the new born children refer to the same subgroup as the mother. This is for instance a usual approach by the analysis of religious characteristics. The situation is different with education, as education has to get achieved during schooling and is not obtained at birth. Although the education of parents has impact on the prospective qualification of their children, at birth every child has no formal school enrolment. (Preston et al., 2001)

The **third step** consists of some practical difficulties as for the implementation of migration into a projection the numbers of migrants in each projection interval, the timing of migration, births and deaths have to be known. As the mathematical procedure of these 3 steps is for women and men the same I will explain below the calculation of a female-dominant Cohort-Component Projection with Migration. (Preston et al., 2001)

Emigration is an easy task to adapt into this methodology because it can be handled as decrement of the population by deriving a two-decrement life table that combines the risks of death and emigration. The risk of immigration contains more difficulties because immigration flows to population by age and sex are affected by migration policies. The second difficulty is the integration of in-migration regarding the risks of dying and giving births within the immigration groups. A problem here is that immigration doesn't take place just in the beginning or end of the projection interval so that it is not necessarily given that all immigrants survive until the end of the interval or may give birth to a child that will survive as well. (Preston et al., 2001)

"One convenient approach to modelling the continuous migration process is to divide the number of migrants during the interval into two discrete quantities, ant to assume that half of the migrants moved exactly at the beginning of the projection interval and the other half moved exactly at the end of the interval." (Preston et al., 2001:p.125)

The net flow of immigrants during the projection interval t to t+5 in the age interval x to x+5 can be negative in the age groups and has to take into account the survivors at the end of the projection interval for each age group:

- *"half of the increments between the age x and x+5 are added directly at the end of the interval"*

- *"half of the increments between the age x-5 and x are added at the beginning of the interval and survived to age x to x+5"*

  (Preston et al., 2001:p.126)

According to this the first step of the projection calculation of a female-dominant model is:

$$ {}_5N_x^F(t+5) = \left({}_5N_{x-5}^F(t) + \frac{{}_5I_{x-5}^F[t,t+5]}{2} \right) * \frac{{}_5L_x^F}{{}_5L_{x-5}^F} + \frac{{}_5I_x^F[t,t+5]}{2} $$

Equation 1 – Cohort-component female-dominant projection with migration (Preston et al., 2001:p.128)

with…

${}_5N_x^F(t+5)$ … Female (f) population in 5year age group x in the projection at the point of time t+5

${}_5N_{x-5}^F(t)$ … Female (f) population in 5year age group x-5 in the projection at the point of time t

$\frac{{}_5L_x^F}{{}_5L_{x-5}^F}$ … Survivorship Ratio of female population between age group x-5 to age group x in the projection interval

In the projection of the open age group, usually 85 years plus ${}_\infty N_{85}^F(t+5)$, from time t to t+5 has to consider the ascent of the age group 80 to 84years ${}_5N_{80}^F(t)$ and the number of people remaining in age group 85 years plus ${}_\infty N_{85}^F(t)$ from time t to t+5 plus additionally the net immigration flows to this age groups $({}_5I_{80}^F[t,t+5] + {}_\infty I_{85}^F[t,t+5])$ multiplied by the survivorship ratio $(\frac{T_{85}^F}{T_{80}^F})$. To these female population moving up to age group 85 years plus or remaining there has to be added the second half of the net-immigration $\frac{{}_\infty I_{85}^F[t,t+5]}{2}$.

$$ {}_\infty N_{85}^F(t+5) = \left({}_5N_{80}^F(t) + {}_\infty N_{85}^F(t) + \frac{{}_5I_{80}^F[t,t+5] + {}_\infty I_{85}^F[t,t+5]}{2} \right) * \frac{T_{85}^F}{T_{80}^F} + \frac{{}_\infty I_{85}^F[t,t+5]}{2} $$

Equation 2 - Cohort-component female-dominant projection with migration for open age group (Preston et al., 2001:p.128)

In the youngest age group 0 to 4 years the additional number of births due to migration has to be taken into account as well. The number of Births in the projection interval t to t+5 $({}_5B_x[t,t+5])$ by the age of mother can be calculated by the multiplication of the Age-Specific Fertility Rate $({}_5F_x)$ in the 5 year interval with the female population (including immigration: ${}_5I_x^F[t,t+5]/2)$ at the beginning ${}_5N_x^F(t)$ and end of the projection interval ${}_5N_x^F(t+5)$ divided by 2 in respect of the probability to survive.

$$ {}_5B_x[t,t+5] = 5 * {}_5F_x * \frac{{}_5N_x^F(t) + {}_5I_x^F[t,t+5]/2 + {}_5N_x^F(t+5)}{2} $$

Equation 3 – The calculation of births B in the projection interval t+5 in the cohort-component female-dominant projection with migration (Preston et al., 2001:p.128)

This number of births has to be divided by the sex ratio at birth, extended by the Survivorship Ratio $(\frac{{}_5L_0^F}{5*l_0})$ and corrected with the net migration flow in the projection interval $(\frac{{}_5I_0^F[t,t+5]}{2})$ to get the (female) population in the age group 0 to 4 years:

$$ {}_5N_0^F(t+5) = B^F[t,t+5] * \frac{{}_5L_0^F}{5*l_0} + \frac{{}_5I_0^F[t,t+5]}{2} $$

Equation 4 - Cohort-component female-dominant projection with migration for youngest age group (Preston et al., 2001:p.128)

4.2.1.2 Leslie-Matrix

These equations can be summed up in a matrix notation that has been established by Bernardelli (1941), Lewis (1942) and especially Leslie (1945) who's name coined this term, Leslie-Matrix. The Leslie-Matrix allows the calculation of relations in population dynamics. (Goujon, 2003; Leslie, 1945; Preston et al., 2001) A detailed description of this approach can be found in several publications like Leslie 1945, Preston et.al 2001, Goujon 2003 and others. Here in this thesis I just want to explain the essentials in brief. In the illustrated (see Equation 5) matrix notation the population will be divided into 5year age groups for a closed female-dominant population (labelled with W) at time t forecasted for a projection interval of 5 years (t+5). Additionally, I assume that fertility (F) is limited to the reproductive age groups 10 to 49 years, see in first row of the matrix notation. On the diagonal is invoked the Survivorship Ratio ($\frac{L_5}{L_0}$) for all age groups, including for the open age group ($\frac{T_{n+5}}{T_n}$). (Goujon, 2003; Preston et al., 2001)

$$\begin{pmatrix} W_0(t+5) \\ W_5(t+5) \\ W_{10}(t+5) \\ W_{15}(t+5) \\ \vdots \\ W_{50}(t+5) \\ \vdots \\ W_n(t+5) \end{pmatrix} = \begin{pmatrix} 0 & 0 & k * F_{15} * \frac{L_{15}}{L_{10}} & k * [F_{15} + F_{20} * \frac{L_{20}}{L_{15}}] & \cdots & k * F_{50} & \cdots & 0 \\ \frac{L_5}{L_0} & 0 & 0 & 0 & \cdots & 0 & \cdots & 0 \\ 0 & \frac{L_{10}}{L_5} & 0 & 0 & \cdots & 0 & \cdots & 0 \\ 0 & 0 & \frac{L_{15}}{L_{10}} & 0 & \cdots & 0 & \cdots & 0 \\ \vdots & \vdots & \vdots & \vdots & \ddots & \vdots & \cdots & \vdots \\ 0 & 0 & 0 & 0 & 0 & \frac{L_{50}}{L_{45}} & \cdots & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & 0 & \cdots & 0 & \cdots & \frac{T_{n+5}}{T_n} \end{pmatrix} * \begin{pmatrix} W_0(t) \\ W_5(t) \\ W_{10}(t) \\ W_{15}(t) \\ \vdots \\ W_{50}(t) \\ \vdots \\ W_n(t) \end{pmatrix}$$

Equation 5 – Leslie Matrix – Cohort-Component Method (Preston et al., 2001:p.130) (self-illustrated)

with

k … Sex-Ratio at Birth (including probability to survive)

$\frac{L_5}{L_0}$ … Survivorship Ratio from age group 0-4 years to 5-9 years

For the extension of this matrix notation to a multi-state projection matrix, the fertility scalars get replaced by Birth (B_n) matrices and the survivorship scalars get replaced by Transition (T_n) matrices. The female population vector (W) used in the single state population, has to get replaced by an extended multi-state population vector ($\boldsymbol{\omega}$), which extends each single state scalar with the number of states (n). The detailed calculation of these matrices can be referred for instance to the PhD Thesis of Anne Goujon. (Goujon, 2003)

$$\begin{pmatrix} \omega_0(t+5) \\ \omega_5(t+5) \\ \omega_{10}(t+5) \\ \vdots \\ \omega_n(t+5) \end{pmatrix} = \begin{pmatrix} 0 & 0 & B_{10} & B_{15} & \cdots & 0 \\ T_5 & 0 & 0 & 0 & \cdots & 0 \\ 0 & T_{10} & 0 & 0 & \cdots & 0 \\ \vdots & \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & 0 & T_n & 0 \end{pmatrix} * \begin{pmatrix} \omega_0(t) \\ \omega_5(t) \\ \omega_{10}(t) \\ \vdots \\ \omega_n(t) \end{pmatrix}$$

Equation 6 - Extended Leslie Matrix – Multi-State Projection Method (Goujon, 2003:p.45) (self-illustrated)

The implementation of those calculation steps can be realised

4.2.1.3 Alternative methods

"The assumption amounts to saying that, in the short term, the main "component" of future population size is the size of the population already alive at a previous date." (Preston et al., 2001:p.119)

Alternative methods to the cohort-component method are time series, microsimulations or structural models, which are not commonly used by the majority of demographers. The time series method for instance is based on the extrapolation, the simplest projection method, of past population size changes by logistic (S-shaped) curves. This approach is mainly insufficient for long-term projections because of the fixed limit of the variable that is modelled, whereby these limits can be altered by technological innovations (i.e. invention of the pill and other health cares) or social factors (i.e. change of family size norms). On short-term instead extrapolations (see **Fehler! Ungültiger Eigenverweis auf Textmarke.**) can be more accurate than the cohort-component method.

$$\mathbf{N(T) = N(0)e^{\int_0^T r(t)dt} = N(0)e^{\bar{r}[0,T]*T}}$$

Equation 7 - Linear extrapolation (Preston et al., 2001)

However, the main disadvantages are the rapidly enlarging confidence intervals per projection interval plus the neglecting of age structural effects, which are apart of the classical population explosion or population shrinkage discussion, the main output of recent projections. In the other two approaches are attached with high inaccuracy because of the size of their investigation units, the individual persons. (K.C. et al., 2010; O'Neill et al., 2001; Preston et al., 2001)

Recently, researchers tend to extend the primal cohort-component method with further characteristics, like religion, marriage patterns, educational attainment, etc. to enhance the validity of their models and the accuracy of their forecasts. While the primal cohort component method focuses on the two population characteristics age and sex as major source of heterogeneity, newer publications show a growing interest in the addition of further social characteristics to enhance the validity and reliability of their projections. With this extension the cohort-component method emerges to the Multi-State Population Projection Method, which is the mainly used method in this thesis. (O'Neill et al., 2001)

4.2.2 Multi-state Population Projection Method

"Some formal models of fertility, mortality, and migration that include socioeconomic variables (e.g. literacy and female labor-force participation rates) have been shown to produce more accurate forecast than models that do not explicitly take them into account…" (O'Neill et al., 2001)

Therefore, it made sense to extend the existing cohort-component method beside age and sex with those socioeconomic characteristics, like education, urban-rural residence, marriage patterns or family unions, as additional source of heterogeneity. The Multi-state approach was developed by Andrei Rogers (IIASA) in the 1970s and was based on a multidimensional expansion of the increment-decrement life table and the cohort-component projection method. Originally this method investigated movements and migration streams of a population by age and sex between different spatial units or so called *"states"*. These states can also be interpreted as specific population subgroups, i.e. different religious or ethnic affiliations, relationship status, citizenship or level of educational attainment, whereby by education the movements become educational transition rates. (O'Neill et al., 2001; Raymer, 2005; Rogers & Ledent, 1975)

"Initial population for countries or regions are grouped into cohorts defined by age and sex, and the projection proceeds by updating the population of each age- and sex-specific group according to assumptions about three components of population change: fertility, mortality, and migration." (O'Neill et al., 2001:210)

According to the age-specific mortality rates and net migration, each birth cohort moves per time interval one age group upwards in the age structure. This shift from one age group to the next is the reason why the age groups and projected

time intervals have the same temporal range, mostly 5 or 1years. While the ageing birth cohorts are moving up the age structure each time step, the youngest cohort (0-4years) got *"refilled"* by the age-specific fertility of the female cohorts in reproductive age (15-49years) according to an assumed sex ratio at birth, which splits the total births up into boys and girls.

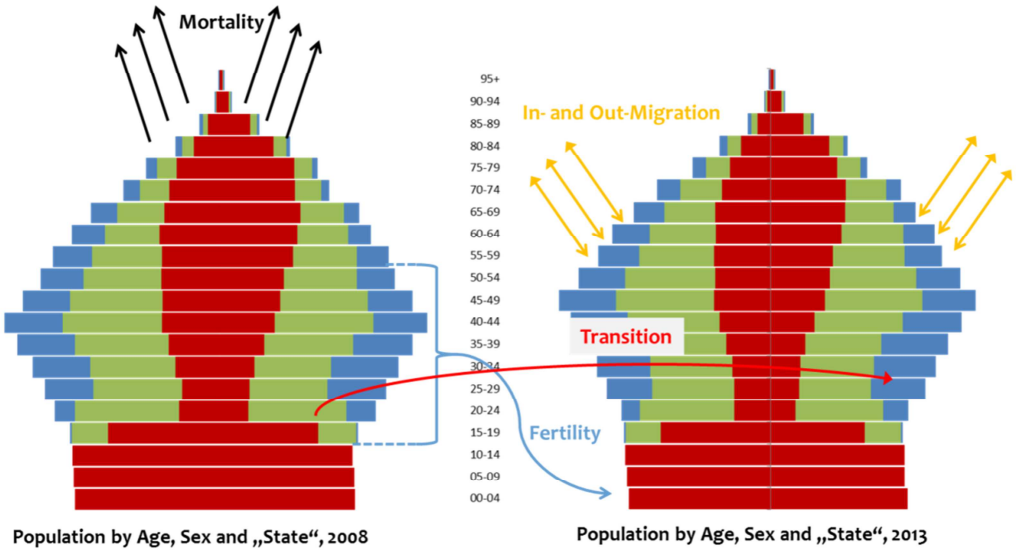


Figure 29 – Multi-State Age pyramid (self-illustrated)

Since its innovation by Notestein in 1945 the cohort-component method remained unchanged, except of innovations in determining uncertainties and its extension with a multi-state approach by Rogers (1975). The underlying factor of success for this method is that the size, growth and structure of any projected prospective population depends on the size, age structure and vital rates in the base year and the potential development of the age-specific fertility, mortality rates and the migration streams over the projected time period.

The multi-state population projection model emerged from Roger's multiregional mathematical demography as extension of the mathematical demography, which *"…is concerned with the mathematical description of human populations, particularly their structure with regard to age and sex, and the components of change, such as births and deaths, which occur over time to alter that structure."* (Rogers, 1975:1) Demographers speak in this context about population *stocks* (population groups at different points of time and space) and *events* (vital events). Roger's model extends this duality with a third dimension, the population *flows*, which describe a priori migratory processes between constituent spatial units in a multiregional population system. (O'Neill et al., 2001; Rogers, 1975)

It rapidly fell into place that this new approach would become a central concept in the mathematical analysis of multiregional population systems. Nowadays, his model became THE central concept in the calculation of population projections, even when the term "*states*" nowadays is not describing the analysis of spatial units any more, but the social characteristics of a population. The application of this method for the analysis and projection of multiple population subgroups by social characteristics wasn't the original objective of this model, but now nowadays the main implementation.

The basis for multi-state population projections are the survivorship ratios and outmigration proportions of the analysed subpopulations via multiregional / multi-state life tables. Dependent on the appreciation of the model inherent causal factors for the additional characteristics the accuracy of the model can be enhanced. (O'Neill et al., 2001)

"Uncertainty in projection outcomes arises not from uncertainty in the formal projection model itself, but from uncertainty in the baseline population data and the assumptions of future trends in vital rates." (O'Neill et al., 2001:212)

While the basic cohort-component method is a single-state just focuses on age and sex of a population, these are more like minimum dimensions in demographic analysis, because they are the main source of heterogeneity in vital rates. Sometimes these two dimensions are worth to extend by additional characteristics or so called *"states"*, like religion, ethnicity, marriage patterns, urban-rural-residence, or education.

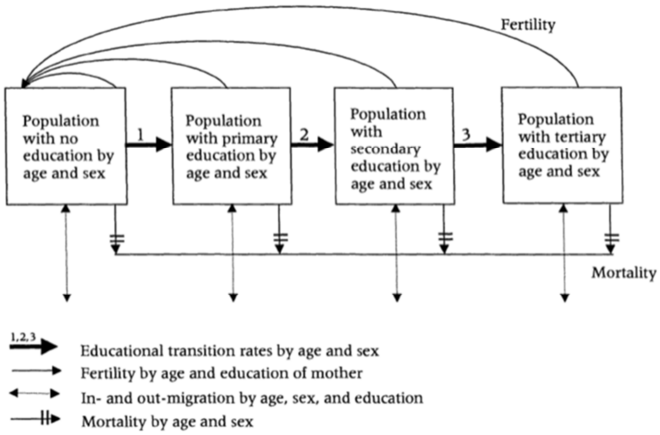


Figure 30 – Schematic illustration of the educational transition process (Goujon, 2003)

In the case of education as social characteristic recent studies have mostly worked with approximate educational stocks based on enrolment ratios of illiteracy rates, but some institutions like the IIASA or VID tend to use the population by highest reached educational attainment. (Raymer, 2005) Education is a popular application in multidimensional cohort-component models, because of its documented heterogeneous effect on vital rates and its one-way hierarchical characteristic, does mean a once achieved educational level can't get lost anymore. Additionally, education gets generally acquired before the age of 30 years and moves along the cohort lines to higher ages, where these more educated younger cohorts replace the disappearing older and less-educated birth cohorts, what changes the structure and vital rates of the prospective general population. (K.C. et al., 2010; K.C. & Lentzner, 2010; O'Neill et al., 2001; Theodoropoulou, 2010)

4.2.3 Uncertainty

„Demographers can no more be held responsible for inaccuracy in forecasting 20years ahead than geologists, meteorologists, or economists when they fail to announce earthquakes, cold winters, or depressions 20years ahead. What we can be held responsible for is warning one another and our public what the error of our estimates is likely to be." (Keyfitz, 1981:p.579)

The mathematical accuracy and validity of a projection depends on its external and internal validity. The external validity covers the input accuracy of the used input variables, while the internal validity frames the accuracy of the model causalities and set up interconnections. But nonetheless it makes sense to frame a range of accuracy via scenarios or confidence intervals. (Goujon, 2003; Preston et al., 2001) Most institutions provide their major results as so called *"most likely"* projection, which mark the projection with the highest probability to occur, mostly stating neither the level of probability nor the uncertainty level. There are two types to characterize the level of uncertainty of a population projection: **Scenarios** and **Probabilistic Projections**

4.2.3.1 Scenarios

The development of alternating projection scenarios is the most common approach in this field, with higher and lowers vital rates than the medium scenario. These scenarios picture a potential future under specific fertility, mortality and migration conditions. O'Neill (2001) writes here about a consistent "story" behind the scenarios, which offer alternatives to a single central or most likely scenario.

"Thus the scenario approach does not accurately reflect uncertainties in different demographic dimensions." (O'Neill et al., 2001:219)

The noted strength of scenarios is the possibility to construct alternative scenarios with weightings on deviant components, instead of a confidence interval around a medium scenario. The weaknesses are that without the stating of an uncertainty level by the authors the users cannot interpret the presented ranges between the scenarios. Additionally, the choice of certain values for assumptions indicates a minor usability of other assumptions. This indeed simplifies the interpretation of those results, but doesn't ensure the replicability of the choice for these scenarios.

The IIASA for instance tries to cope with this problem with providing scenarios in which the vital rate varied individually and jointly. Aware of this problem the further analysis (see chapter 0) will base on scenarios with different thematic weightings.

4.2.3.2 Probabilistic Population Projections

Another path, that won't be applied in this thesis but should be mentioned, is the probabilistic approach, developed in IIASA by Scherbov and Lutz. This approach states the uncertainty in the projected trends of fertility, mortality and migration via three approaches: expert opinion, statistical analysis, and the analysis of past projections uncertainties. More about this approach can be found here. (Lutz, Scherbov, Yin Cao, Ren, & Zheng, 2007; O'Neill et al., 2001; Raymer, 2005)

However, the choice of the way to handle inaccuracies, either the scenario or probabilistic approach, depends on the requirements set up by the end-users and the thematic context of the projection. In this thesis I want to show the path of different hypothetical population paths according to political activities in education on European Community level according to the set up Europe 2020 goals. Therefore, it makes sense to choose the Scenario or "What if" approach to picture the hypothetical impact of the Europe 2020 goals on the prospective European population, instead of the probabilistic approach. Both approaches base on the Cohort-Component Method and its determinants.

4.3 Determinants of Population Development

4.3.1 Scenarios

In this thesis the multi-state population projection model will be applied by the determination of three distinct scenarios regarding the prospective age and educational population composition. In general the vital rates, fertility, mortality and migration, condition the future path of population development, but here I want to extend this with the educational structure of the investigated spatial units. As mentioned earlier in this thesis, the educational structure of a population has beside its demographic attributes a significant impact on the future economic and social conditions. (Lutz, 2008)

"Demographic Factors are important components of both the causes of and the responses to future economic, environmental, and social change." (O'Neill et al., 2001:204)

To investigate the impact of the current educational structure and education policy objectives (Europe 2020 Strategy) on the future population size and structure I describe the following three scenarios with and without migration:

(1) **Constant (CPS) Scenario –** the constant scenario is a reference scenario in which fertility, mortality, migration and education transitions of the base year are set constant
(2) **Europe 2020 (ESS) Scenario –** is also a constant scenario, with constant fertility, mortality and migration. The only difference to the CPS Scenario is, that the transition rates change between 2008 and 2020 according to the Europe 2020 Strategy (10% early school leavers and 40% tertiary educated in age group 30-34 years)
(3) **Target-Trend Europe 2020 (TTS) Scenario –** beside the implementation of the Europe 2020 educational goals into the transition rates, the other vital rates fertility, mortality and migration follow a reliable prospective path

What all three scenarios have in common is the focus on the impact of different factors on the future educational structure in Europe. The educational attainment refers to the International Standardized Classification of Educational Development (ISCED):

4.3.1.1 Education on ISCED-level

In 1997 UNESCO evolved the International Standardized Classification of Educational Development, aka ISCED, with the goal to invent an international comparable definition for education. The ISCED classification knows in general seven educational groups with 13 subgroups, from "pre-primary education" to "second stage of tertiary education":

ISCED 0 – Pre-primary education
ISCED 1 – Primary education or first stage of basic education
ISCED 2 – Lower secondary or second stage of basic education
ISCED 2A Programmes (Programmes giving access to level 3A or 3B programmes)
ISCED 2B Programmes (Programmes giving access to level 3C programmes)
ISCED 2C Programmes (preparing only for direct entry into the labour market)
ISCED 3 – (Upper) secondary education
ISCED 3A Programmes (Programmes giving access to level 5A programmes)
ISCED 3B Programmes (Programmes giving access to level 5B programmes)
ISCED 3C Programmes (Programmes not giving access to level 5 programmes, but to labour market, level 4 programmes or other level 3 programmes)
ISCED 4 – Post-secondary non tertiary education
ISCED 4A Programmes (Programmes giving access to level 5 programmes)
ISCED 4B Programmes (Programmes not giving access to level 5 programmes)
ISCED 5 – First stage of tertiary education (not leading directly to an advanced research qualification)
ISCED 5A Programmes
ISCED 5B Programmes
ISCED 6 – Second stage of tertiary education (leading to an advanced research qualification)
(UNESCO, 2006)

This classification raises the comparability of different national schooling systems to simplify educational migration of pupils and students, workforce migration and statistical analysis. The data accuracy of the allocation of national educational classifications to ISCED can vary between nation states and national enquiry periods, so that in one spatial unit the

allocation to an ISCED group can change from one year to another, i.e. in Croatia in 2001 and 2008 when the educational subgroup ISCED 3A in 2001, suddenly belongs to ISCED 3B in 2008. Other countries don't offer data for specific subgroups like Austria or Germany, where no data for the ISCED 4 group is available.

While some countries show high efforts by compiling the relevant datasets and databases, others aren't that accurate, what exacerbates the data comparability. The higher the educational resolution becomes the data accuracy and availability decreases. For this reason it makes sense to aggregate the educational groups into bundles. According to other analysis on European level it became most reliable to use three educational groups, that will in the following be named as ISCED 0-2, ISCED 3-4 and ISCED 5-6, which can be seen as equivalent to the "classical" classification primary, secondary and tertiary education:

ISCED 0-2 – No education and basic/primary education **[RED]**
ISCED 3-4 – Upper secondary and post-secondary education **[GREEN]**
ISCED 5-6 – Higher or tertiary education **[BLUE]**
(In the rest of the text I will keep these labels and colours in the charts)

4.3.2 Assumptions on Vital Rates

"The real challenge in projecting population lies in accurately determining the characteristics of the initial population (size, age structure, and vital rates) and in projecting future trends in vital rates…" (O'Neill et al., 2001:p.223)

The vital rates (fertility, mortality and migration) are the essential foundation of the Cohort-Component Method, because this method works by the forecasting of the base year population under an assumed development of vital rates. Different assumptions of the vital rates create different projection scenarios, which can tell a hypothetical *"story"* of the prospective path of the analysed population.

4.3.2.1 Age-specific Fertility Rate by education

Fertility has, as the central driving force of the demographic development the greatest effect on the population growth due to the so called multiplier effect. The children born today will have children by their own in the future. The impact of fertility will be implemented in the population projection by the prospective path of the Total Fertility Rate (TFR) or the Age-specific Fertility Rates (ASFR) and the assumptions about its probable development. The pace of fertility decline and the possible fertility level at which it could get constant are crucial to determine the prospective population size and age structure. The lower the fertility level is, the higher is the impact of fertility decline on the population size. The circumstances which determine these developments get described by the so called Demographic Transition Theory. (see chapter 1.3) (Grant et al., 2004; Kohler et al., 2006; O'Neill et al., 2001)

Regarding fertility in Europe, four questions are crucial. First, is the lowest-low fertility a permanent or transient phenomenon that will disappear sometime? Second, are the lowest-low fertility regimes at its lowest level or will they drop further? Third, will the lowest-low fertility regimes be delimited on Southern, Central and Eastern Europe or will they spread all over Europe? Fourth, will the pace of postponement of childbearing to higher ages continue, lowering down or even reversed? (Breierova & Duflo, 2002; Grant et al., 2004; Kohler et al., 2006; de la Croix & Doepke, 2002)

"Once the pace of fertility postponement in these countries increases, it is likely to depress fertility levels further, perhaps even to TFR levels below 1.0. At the same time, the periods with the most rapid pace of postponement may have already

passed in Southern European lowest-low fertility countries. Annual increases of the mean age at first birth may thus start to decline in the next years, resulting in a possible reversal of fertility trends in Italy and Spain." (Kohler et al., 2006:27)

Institutions and statistical offices like the United Nations, the Worldbank and even Eurostat tend to overestimate the prospective height of the TFR, what distorts the projection output to a certain extent. The United Nations usually assumes a convergence of the global Total Fertility Rates (TFR) to a hypothetical value of 1,85 that almost every country in the world reaches within the next 50 to 100 years before it stagnates on its value. The determination of this value follows no statistical foundation and is widely criticised for this. (Goujon, 2003; O'Neill et al., 2001)

The fertility data and basic assumptions used in this thesis are based on age-specific fertility rates or number of births by age of mother in the base year 2008 ascertained from the Eurostat database plus National Statistical Organisations (NSO) like the Croatian Bureau of Statistics (DZS), the Statistical Office of Montenegro (MONSTAT), the Statistical Office Republic of Macedonia (MkStat) or the Turkish Statistical Institute (TurkStat), whereby the Age-specific Fertility for EU15 and EU12 had to be calculated separately by the number of births by age of mother.

With this data basis it was possible to continue with the extension of total age-specific fertility rates with educational differentials in fertility behaviour, surveyed and calculated by Skirbekk (2008). In his paper he demonstrates how to extend fertility rates with social characteristics based on surveys like the Family and Fertility Survey (FFS) or the Demographic and Health Survey (DHS). The author additionally provided me with his fertility differentials calculation with which it was possible for me to calculate my own age-specific fertility rate by educational attainment for the base year. (Skirbekk, 2008) With the help of a uniform distribution curve I could superimpose Skirbekk's calculated total fertility (in illustrated example: TFR ≙ 2,1 – see Figure 31) on my total fertility rate (TFR ≙ 1,7). As I know Skirbekk's ASMR for total female population plus by educational groups I can calculate the percental deviation of them from the overall TFR (here 2,1). The deviation of education group 1 (Skirbekk's edu1) is in this illustration +19% (TFR ≙ 2,5) and of education group 2 (Skirbekk's edu2) it is -14,3% (TFR ≙ 1,8). (Eurostat, 2012; Skirbekk, 2008)

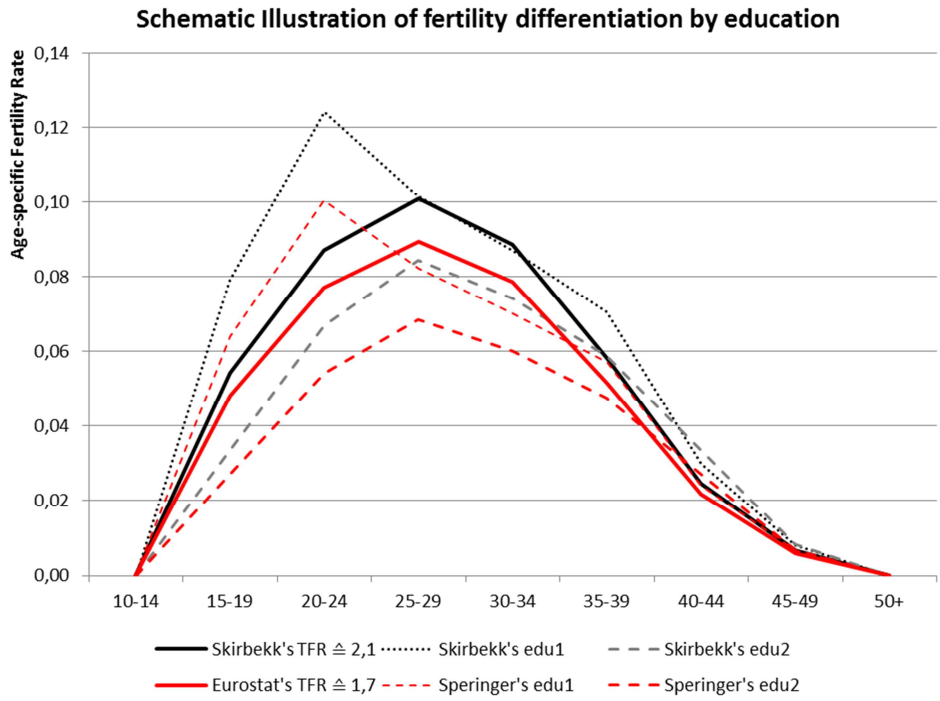


Figure 31 – Schematic Illustration of fertility differentiation by education (self-illustrated)

Based on this percental deviation in Skirbekk's educational fertilities, I can calculate the TFR for my education groups, which would be for edu1 a TFR of 2,0 and for edu2 a TFR of 1,46. These TFR's in turn I can transpose on the equivalent educational ASMR curves from Skirbekk. This procedure has to be repeated for every spatial investigation units which made in this case 31 units at all, instead of the finally analysed 6 spatial units. As Eurostat and Skirbekk don't provide any data for the spatial agglomerations EU15 and EU12, it was necessary to calculate the educational ASMR's for each member state to get the number of births by age of mother and educational attainment. Then it was possible to aggregate the births by age of mother and educational group for both spatial units and to calculate their educational ASMR.

As two of three scenarios are based on constant vital rates during the whole projection period, it was just necessary to articulate fertility assumptions on the pace of fertility for the Target-Trend Europe 2020 Scenario. To picture a realistic prospective pace of fertility I draw on the findings of a recent IIASA working paper by Sobotka, Zeman, Lesthaghe & Frejka (2012). Those applied birth order-specific data and extended them by a basic benchmark model by Tomas Frejka and a relational model proposed by Ron Lesthaeghe. (Sobotka, Zeman, Lesthaeghe, & Frejka, 2012) I implemented their results in my projection and extended their fertility rates by the earlier calculated deviation of educational fertility rates, which means that I assume a constant percental deviation in educational fertility in the whole projection period. This seems to be the most reasonable approach, because currently there is controversial discussion going ahead where and when educational fertility differentials could converge or diverge in the future. (Skirbekk, 2008; Skirbekk, Prommer, KC, Terama, & Wilson, 2007)

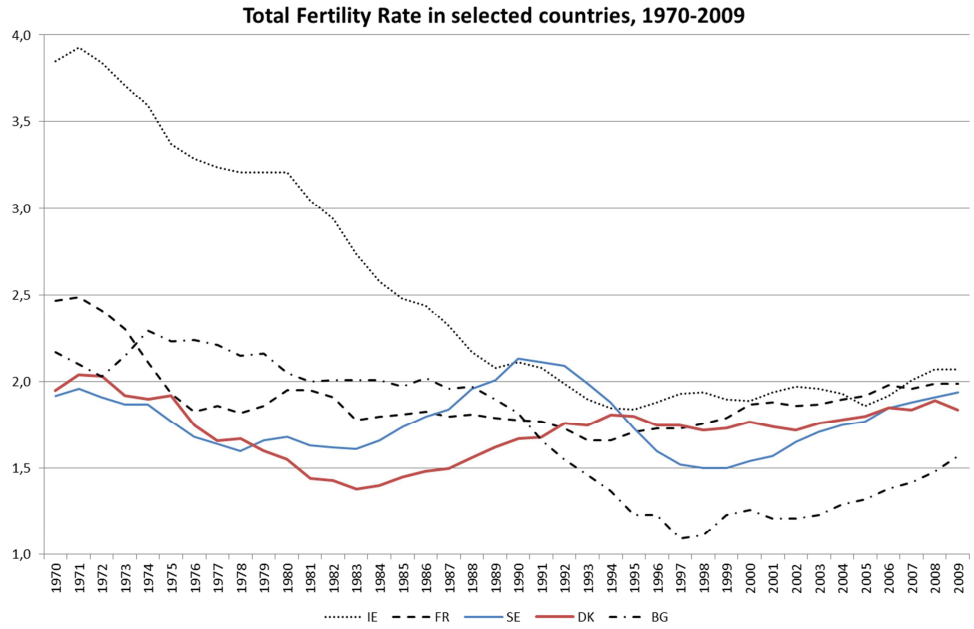


Figure 32 – Total Fertility Rate in selected countries, 1970-2009

In general the most fertility projections from UN, NIDI or IIASA as well as the calculations by Sobotka will result in increasing fertility rates in the next four decades. These are reliable results when one considers that there are several countries with ascending TFRs, like Sweden, Denmark, France or Bulgaria. In Sweden for instance the TFR has peaked around 1990 due economic growth, the increasing affordability of children or the beneficiary restructuring of the public family-insurance system to support the timing of births. In the 1990s the economy turned down and family incomes fell. As reaction to this economic situation the government induced public retraining programmes, many people got back in education and got as consequence less children. Not until the economic recovery in the late 1990s the TFR started to increase again. (Hoem, 2005)

4.3.2.2 Age-specific Mortality Rate by education

The life expectancy is a period measure that doesn't reflect the actual mortality behaviour of a particular individual. It is defined as average life span of a child born today if current age-specific mortality rates would remain constant in the future. In the more developed countries like in Europe the mortality is concentrated in the older ages, what makes the future life expectancy dependent from the prospective death rates among elderly people. Referring again to Sweden the life expectancy between 1989 and 2009 has grown in average annually for 0,187 years from 77,8 years to 81,5years. These growth rates correspond to the most European countries in more or less similar pace. (Eurostat, 2012)

In some countries, like Bulgaria, the life expectancy is still at a comparable low level and slightly increasing the last 10 years. The gap to the Western European countries can be explained through still high child and old-age mortality rates. But the country is improving in the child medical care, hygiene, sewage and provisions for old aged. It can be assumed that due further medical improvements the European life expectancies will grow further. The uncertainties about future life expectancy in the low mortality countries of Europe result from the not known biological upper limit of the human life span, if something like a limit of life expectancy does exist or not and if it will be reached soon. (Groenewold, Van Ginneken, & Masseria, 2008; K.C. & Lentzner, 2010; O'Neill et al., 2001)

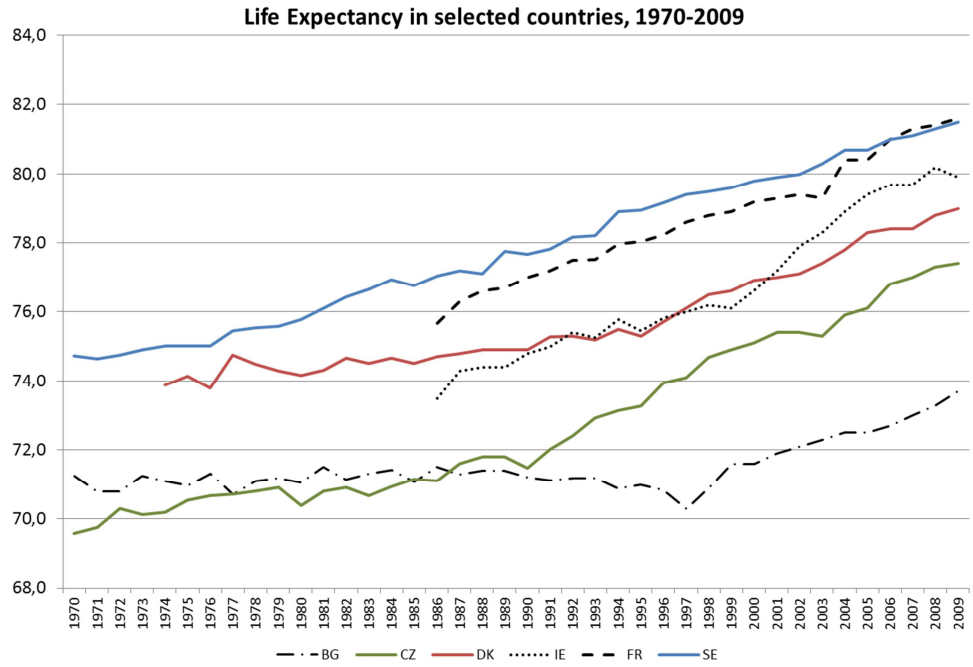


Figure 33 – Life Expectancy in selected countries, 1970-2009

Some researchers consider a life expectancy of 85 years as an intrinsic age limit to the human life span. According to these improvements in mortality enhance the chance to survive to the upper life span limit, but won't extend the limit itself. Others argue that this theoretical upper limit can be modified in the case of relevant medical and health improvements, but with the restriction that the limit can't exceed a maximum upper life span of 90 years, because of mathematical reasons. To achieve higher life expectancies a drastic reduction in mortality rates among elderly people would be necessary, what is quite unlikely to occur. A third group of scientists assumes that there is no determined maximum age limit, what makes the increase of life expectancy hard to predict. The handling of the assumptions about life expectancy is a central part of every population projection conducted by the different research institutions. (Goujon, 2003; O'Neill et al., 2001)

In my thesis I will use the in EUROPOP 2010 Projection calculated Life expectancies for the European member states plus the expectations of NSO's about the prospective life expectancies in 2048. This is a reliable approach, because the results in these projections correspond with the majority of expert opinions who assume a kind of digressive growth of life expectancy against a "target"-life expectancy shades over 90 years. With an appropriate basic data about educational life-expectancy or mortality differentials in the base year plus a growth rate of the recent increase in life expectancy it would be possible to calculate the pace of the educational life expectancy by the mentioned digressive growth model. (see Figure 34)

According to the Digressive Growth Model it would extend the projection period by far till the different life expectancies by educational differentiation would reach the same level. Despite a certain approximation of the different educational life expectancies in the projection period 2008 to 2048 the educational differentials are still valid.

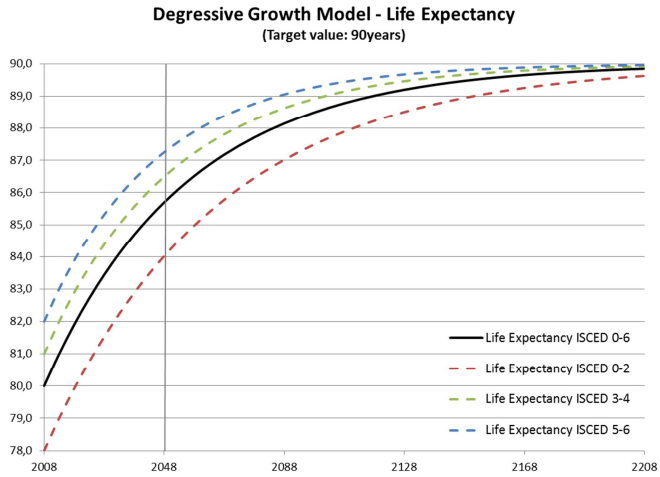


Figure 34 – Digressive Growth Model (Target value: 90years) (self-illustrated)

Respective to some scattered national surveys it can be assumed that in Western European countries the range of educational life expectancy from the lowest to the highest educational group is about 5 to 6 years. Nevertheless, there is no comprehensive database or survey to argue this empirically. To implement these numbers into the projections would have no basis in fact, which is why I limit the projection of age-specific mortality rates and life expectancies to the default EUROPOP 2010 projection outputs.

4.3.2.3 Age-specific Net Migration by education

The projection of the prospective amount of international migration is even more difficult to forecast than fertility and mortality, because migration is volatile to outer influences like short-term changes in political regulations (Dublin II regulation (European Commission, 2003b)), economic (like the economic & debt crisis), or social circumstances (like acts of war). The causes and impacts of migration cannot be named by a single universal theory that explains the whole migration framework. Basically, migration can be projected based on its past trends and current policies, whereby both are hardly to implement into projection models. (Kohler et al., 2006; O'Neill et al., 2001)

Nevertheless, migration, although its impacts are less than from fertility, can have major impacts on forecasts, like the United Nations study about **"Replacement Fertility"** has shown. This study calculates the required migration amounts to maintain the current population size, share of working age population and of the support ratios in the context of recent fertility decline in low fertility countries. The UN has shown that the recent migration levels could hardly make up the

population losses due fertility and mortality decline, and would require a massive increase especially in the scenario regarding the support ratios. (United Nations, 2000)

The conceptual approach and projection of migration in Europe is based on current and historical migration trends, means that traditional receiving countries most probably remain in this status. The forces behind this are quite complex and can change due to several reasons, like the current economic crisis. This crisis for instance reversed the positive migration balance from Ireland or Greece before 2008 to a negative one during the crisis. The forecast of such migration paradigms is almost impossible, because migration is too volatile to outer inputs. The question is how we weight such recent trends in a long-term population projection.

Although several theories exists, like the neoclassical model, the new economics models, the network migration model, etc., there is no answer to this question so that we can just assume its potential path that possible deviate from the real prospective pace of migration. (O'Neill et al., 2001; Sobotka, 2009) Nevertheless there is no way to neglect migration so that we have to determine a reasonable assumption about its future development, with the risk to be wrong.

Usually the data availability on international migration is even in Europe incomplete and not available for all member states and candidate or acceding countries in Eurostat. So it has to be filled with data from NSO's and other statistical migration sources like from NIDI's MIMOSA project, which offers a migration matrix for all EU member states by age, sex, country of origin and destination for 2002 to 2007. (De Beer, Raymer, Van der Erf, & van Wissen, 2010; De Beer, Van der Erf, & Raymer, 2009; Eurostat, 2012; Raymer, De Beer, & Van der Erf, 2011) The age and sex distribution of this study can be transposed to the migration data from Eurostat for Europe 2008. Missing data, especially from candidate countries can be received and calculated by data from NSO's.

For the educational attainment of migrants from European countries I assume that immigrants have the same educational structure as the population in their country of origin, where the data is available from Eurostat. The educational attainment of the remaining net migrants got transposed from a dataset by Frédéric Doquier. (Docquier, Lowell, & Marfouk, 2007; Docquier & Marfouk, 2005) By using EU15 and EU12 as spatial investigation units, migration within these regions, like from France to Belgium within EU15, will be treated as internal migration and therefore not considered in the international migration.

As migration is a highly volatile determinant that is dependent on a bunch of factors like economic, political and social conditions in the country of origin and destination, long-term forecasts on migration can't be made. In this thesis I treat migration in my scenarios in two ways: **(1)** the net migration of the base year remains constant over the entire projection period; **(2)** the migration gets set on zero to show the effects of absent migration flows.

4.3.2.4 Transition Rates by education

The last determinant for the pace of the prospective population development is the transition from one state to another. Transition rates describe - as mentioned before (see chapter 4.2.2) – the probability of surviving in a state between the upgrading from one age group to the next between two projection intervals. For the calculation not more data about the population by age, sex and educational attainment is necessary. From this base year the population structure is possible to derive the transition probabilities. (see Figure 35) For instance the transition rate to change from primary education (ICSED0-2) to secondary education (ISCED3-4) from age group 15-19 to 20-24 years is in the illustrated figure 66,0%.

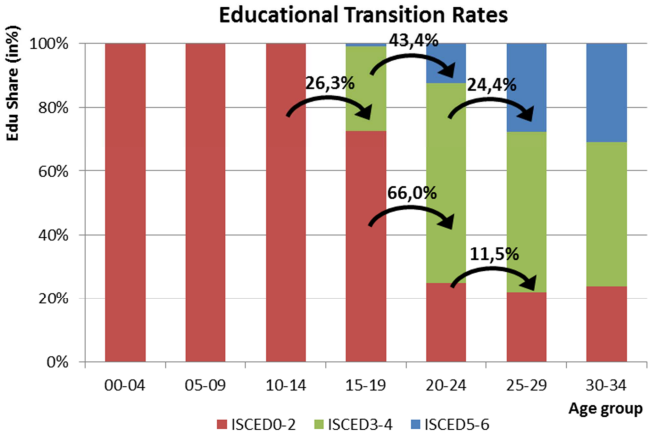


Figure 35 – Schematic Illustration of the Educational Transition Rates (self-illustrated)

In one of the three scenarios investigated in this thesis, the vital and transition rates remain constant, while in the Europe 2020 (ESS) Scenario and in the Target-Trend Europe 2020 (TTS) Scenario the transition rates adapt to the educational goals in the Europe 2020 Strategy:

- Reducing the early-school leavers (ISCED0-2) rate in the age group 18 to 24 years to 10% in 2020
- Enhancing the share of the tertiary educated population aged 30 to 34 years to 40% in 2020 (European Commission, 2010c)

In both scenarios that handle this approach, the goals are achieved by 2020 and from then on the transition rates are set on a constant level.

4.3.3 Data Feasibility

4.3.3.1 Age Structure

The base year age structure in 5 year age groups from the category 0-4 up to the open age group 95 years plus got mainly compiled by the Eurostat database, except of some countries like Turkey or Montenegro. There a contacting of the National Statistical Organisations was necessary to fill the missing data. Other countries like Macedonia, Belgium, Latvia, etc. haven't provided consistent data for the age groups I analysed, especially for the age groups 75 years plus. Here I referred to national surveys and literature, or I assumed an age distribution for this age groups like in a comparable nation. This happened for instance for Macedonia, where I transposed the age distribution for the higher age groups from Montenegro, because similarities in life expectancy and dependency ratios.

4.3.3.2 Fertility

Also data on age-specific fertility or births by age of mother got compiled mainly by Eurostat and filled with national statistics, this happened for Germany, Scotland, Latvia, Belgium, Turkey etc. In some countries, like Belgium, it was necessary to transpose the distribution of births from 2009 to the number of total births in 2008, what was an adequate solution to estimate the age-specific fertility rates.

The educational composition of the fertility rates are based on the results from Skirbekk, explained in chapter 4.3.2.1. (Skirbekk, 2008)

4.3.3.3 Mortality

Mortality data, especially for the age groups 75 / 85 years plus was a greater issue as Eurostat couldn't provide this data for all member states, candidate countries or acceding countries. Again it became necessary to contact national statistic institutes, like for Scotland, Latvia, Turkey, Macedonia and Montenegro. In the case of Montenegro the age-specific mortality rates had to be deduced from additional literature and were finally transposed from the age-specific mortality rate of Macedonia. For Turkey this data has to be bought.

Because of reasons, explained in chapter 4.3.2.2, there were no educational mortality differentials undertaken in this analysis.

4.3.3.4 Migration

The migration flows for the spatial unit's base on the total amounts of immigrants and emigrants from Eurostat, whereby the countries of origin and destination for EU member states got deduced in the shape of a migration matrix from NIDI. (De Beer et al., 2009) For the candidate and acceding countries it became essential to consult the National Statistical Offices and take use of their databases. For Turkey and Montenegro this data was not available and had to be deduced from the Balancing Equation of Population Change (see Equation 8). With the data on the population stocks, births and deaths the number of net migration could be calculated. The countries of origin and destination could be ascertained by the consultation of publications of the National Ministries and Statistical Offices.

$$\mathbf{N(T) = N(0) + B[0,T] - D[0,T] + I[0,T] - O[0,T]}$$

Equation 8 - Balancing Equation of Population Change (Preston et al., 2001)

with…

N(T) Number of persons alive in the population at time T

N(0) Number of persons alive in the population at time 0

B[0,T] Number of births in the population between time 0 and time T

D[0,T] Number of deaths in the population between time 0 and time T

I[0,T) Number of in-migrations between time 0 and time T

O[0,T] Number of out-migrations from the population between time 0 and time T

The educational composition of the immigrants from the spatial analysis units could be deduced from the known education structure of these countries (see chapter 4.3.3.5). The immigration from other countries was based on the analysis and published data from selected sources. (Beine, Docquier, & Rapoport, 2007; Docquier et al., 2007; Docquier & Marfouk, 2005)

4.3.3.5 Education

The compilation of education data was the most complicated as this data was comprehensively available or not for free in all countries. For the EU member states Eurostat provides data on his homepage compiled via the Labour Force Survey (LFS), but for all Candidate and Acceding Countries the educational data has to be bought to get the correct education and age categories for both sexes. But still it wasn't possible to get data for all age groups, especially in the old age groups 85 years plus for all countries. Here I had to make a constraint and assume that the educational distribution of the concerning 5 year age groups is equal to the education distribution of the latest, mostly 75 to 79 or 80 to 84 years, available age group. This restriction is not a problem as these age groups aren't part of the education process anymore and will most likely decrement the age structure within a few projection intervals.


Educational-Structure
Working Age Population
Effect of Education Policy
PSR Target-Trend Europe 2020 Scenario
TTS Age Structure
Migration
Europe 2020 Scenario
PSR
Research Question
Constant Scenario
Elderly Population
Age Structure
CPS
Mortality
Fertility Fertility
Educational-Structure
Effect of Education Policy
Potential Support Ratio
Europe 2020 Scenario
Elderly Population
Constant Scenario
Population Projection by Educational Attainment
Working Age Population
Population Development
Research Question
Migration
CPS
ESS
Working Age Population
Europe 2020 Scenario
Target-Trend Europe 2020 Scenario
Constant Scenario
Potential Support Ratio
Migration
Mortality
Fertility
Research Question
TTS
Educational-Structure
Elderly Population
Effect of Education Policy
PSR
Target-Trend Europe 2020 Scenario
Age Structure
Population Development
Potential Support Ratio
Mortality

5 Population Projection by Educational Attainment

5.1 Effects on Population Size

The following description and analysis of the projection outcomes will mainly focus on the Europe 2020 (ESS) and the Target-Trend Europe 2020 (TTS) Scenario including migration for the total population. Detailed results for all three scenarios (with and without migration) can be found in chapter 7.3 Demographic & Educational Data and chapter 7.4 Annex IV – Maps & Figures.

According to the set assumptions, described in chapter 4.3.2 Assumptions on Vital Rates, the six spatial regions under investigation follow a distinctive path based on the current population structure, the past pace of the demographic development and the assumptions about the future development of the vital rates. As all three scenarios mark low level fertility and constant or rising life expectancy by constant or no migration, we could expect a redistribution of the age structure in favour of the elderly population in all regions plus most probably a population shrinkage.

These expectations were correct except of the case of Turkey which profits from relatively high fertility in the broad reproductive age groups (15-49 years), so that the total population size of Turkey in each scenario will increase in all migration scenarios by at least 13 million people or 17,7 (ESS) to 23,4% (TTS) from 2008 to 2048 before this trend would probably start to flatten (see Figure 36).

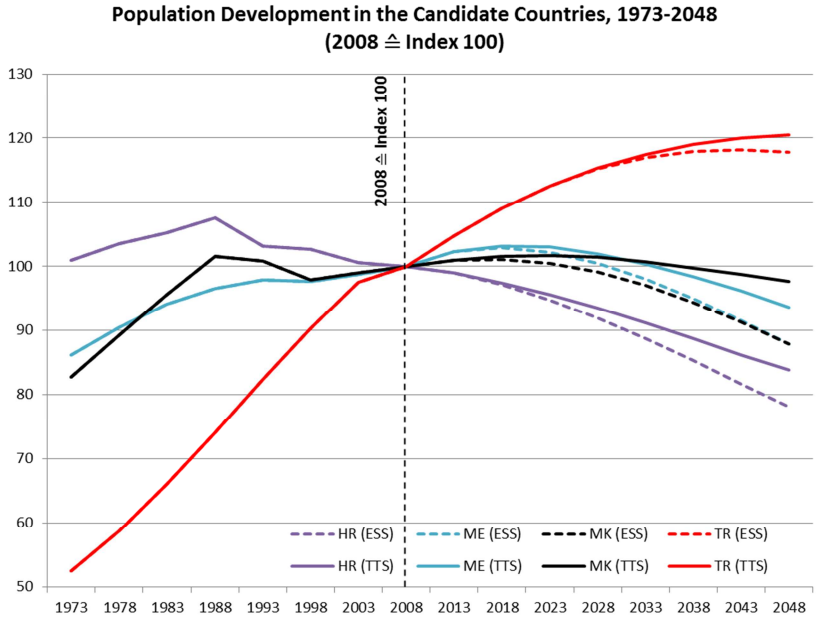


Figure 36 – Population Development in the Candidate Countries, 1973-2048 (2008 ≙ Index 100)

The other candidate countries were slightly increasing (ME & MK) or stagnating (HR) in the 45 years before the base year 2008, before their population amount in Montenegro and Macedonia would peak before 2023 and decline from then on. Croatia's population by contrast is shrinking since the late 1980's and will probably decrease according to the Europe 2020 and Target-Trend Scenario till 2048 to a population size of just about 78,1 (ESS) to 83,8% (TTS) of the base years population size.

Therewith Croatia would follow a similar pace of the population development like the European Union, especially the *"new"* member states of the EU 12, which will correspond to the calculated scenarios decline to 67,2 in the Europe 2020 Scenario

with constant vital rates or 80,4% in the Target-Trend Europe 2020 Scenario with adapted vital rates. (see Figure 37) This can be explained by the current massive negative net migration of about 830.000 emigrants per year in the eastern member states plus the low fertility and high mortality rates.

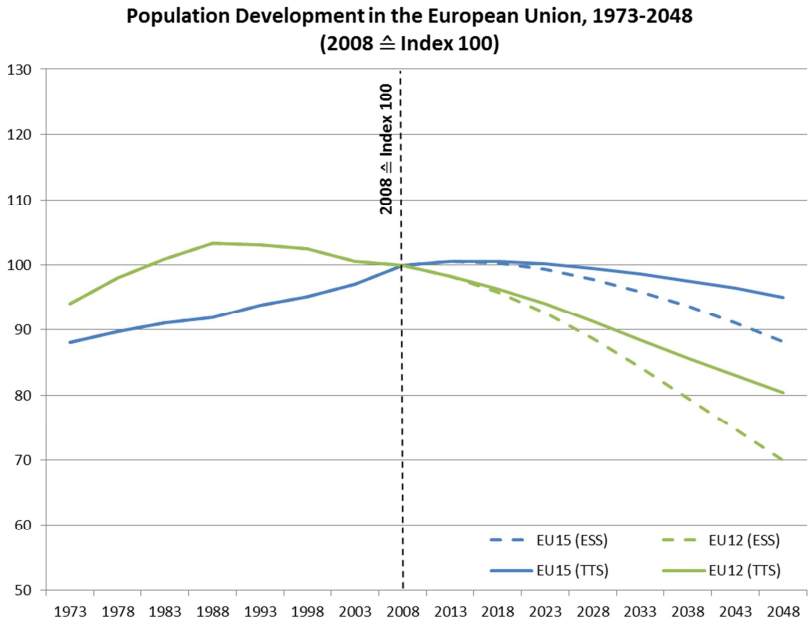


Figure 37 - Population Development in the European Union (EU15 & Eu12), 1973-2048 (2008 ≙ Index 100)

The Western European countries (EU15) profited from this situation and showed in 2008 a total in-migration of about 750.000 plus a higher TFR and Life Expectancy than the Eastern member states. In total in all three scenarios the population size in Eastern Europe would have about 7 million less inhabitants when including the net migration that would especially affecting the age groups 20 to 39 years (parents' generation) and partially 0 to 10 years (children generation). (see Figure 38 & Figure 76 to Figure 81)

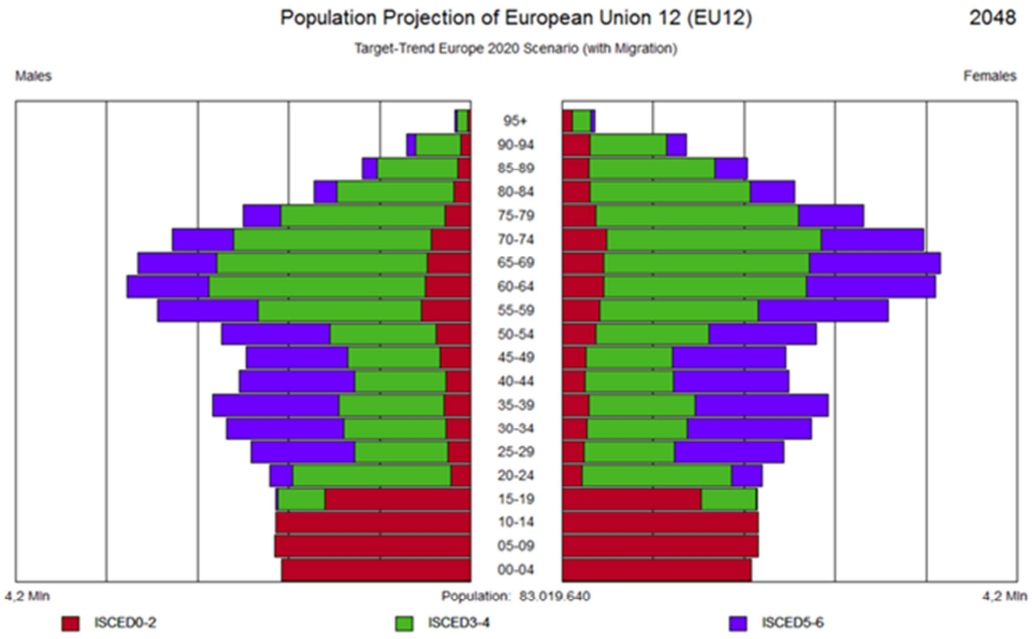
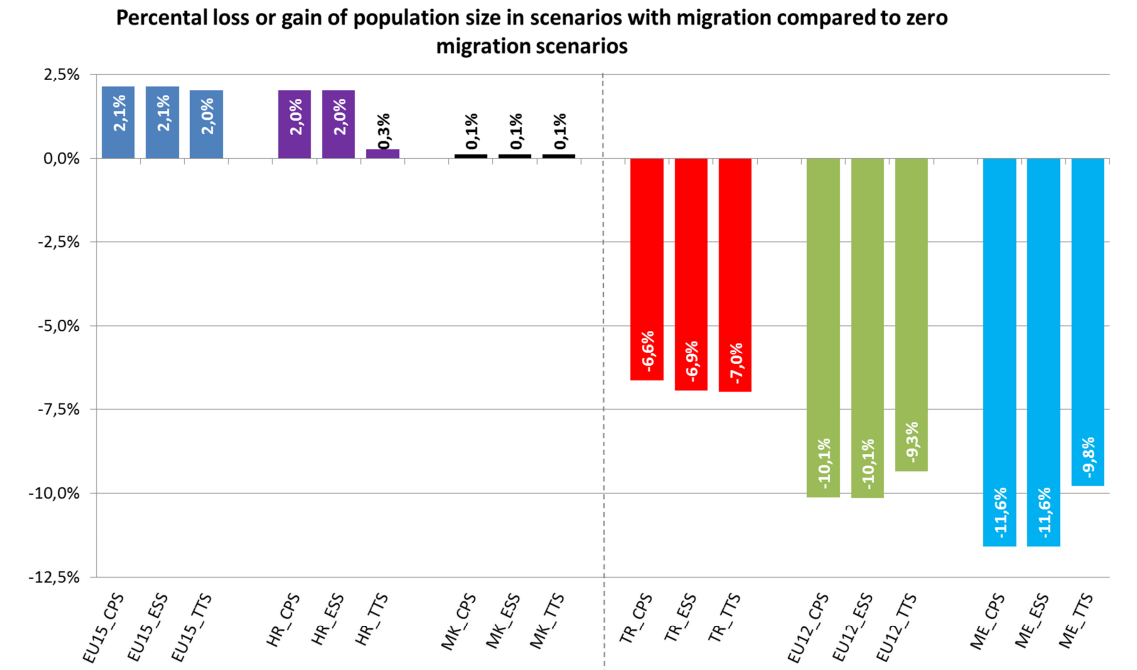


Figure 38 - Population by educational attainment in EU12, 2048 (Target-Trend EU2020 Scenario – with Migration)



Total	EU15	HR	MK	TR	EU12	ME
CPS	7.327.257	68.989	1.975	-5.853.216	-7.326.056	-63.832
ESS	7.320.013	68.995	1.972	-5.836.919	-7.326.093	-63.970
TTS	7.496.474	9.676	2.184	-6.019.318	-7.759.224	-57.508

Figure 39 – Percental loss or gain of population size in scenarios with migration compared to zero migration scenarios

Comparing the relative difference of population sizes of scenarios with and without migration patterns from 2008 it becomes valid that the EU15 (2,0 to 2,1%), Croatia (0,3 to 2,0%) and Macedonia (0,3%) would gain population in the next 40 years due to migration. The three other spatial units Turkey (-6,6 to -7,0%), EU12 (-9,3 to -10,1%) and Montenegro (-9,8 to -11,6%) would lose population size with migration because of their negative net migration. This decline would be strengthened due the fact that especially young adults in the beginning of their reproductive ages would leave these regions, what would mean a loss of potential parents. Lutz (2006) speaks in this context of the Low Fertility Trap Hypothesis (LFTH), explained in Chapter 0. Remarkably in this context is that in the TTS Scenarios the relative loss of population size in EU12 and Montenegro is 0,8 (EU12) to 1,8 percentage points less than in the other two scenarios (CPS & ESS) what can be accounted to the rising TFR and Life expectancy in the TTS Scenario. In Turkey this effect doesn't become manifest because despite of the increasing Life expectancy the scenario assumes a decreasing TFR clearly beneath the fertility replacement level of 2,1.

5.2 Effects on Population Age Structure

In the TTS Scenario the TFR slightly increases from 1,41 (2008) to about 1,55 (2048) accompanied with a rising life expectancy from 73,85 years in 2008 (m: 69,61y / f: 77,81y) to 83,40 years in 2048 (m: 80,42y / f: 86,08y), as defined in the scenario assumptions. The rising TFR compensates partially the reduction at the base of the age pyramid, while the age groups 65 and 85 years plus enlarge remarkably. While the increase in the older age groups in the CPS and ESS Scenarios with constant mortality rates results mostly from structural effects, when baby boomer generations shift up the age pyramid, in the TTS Scenarios this effect gets enhanced due to an increasing life expectancy, what especially results in the enlargement of the age group 85 years plus. Therefore in the TTS Scenario the age group 85 years plus would become twice as big as in the CPS or ESS Scenarios.

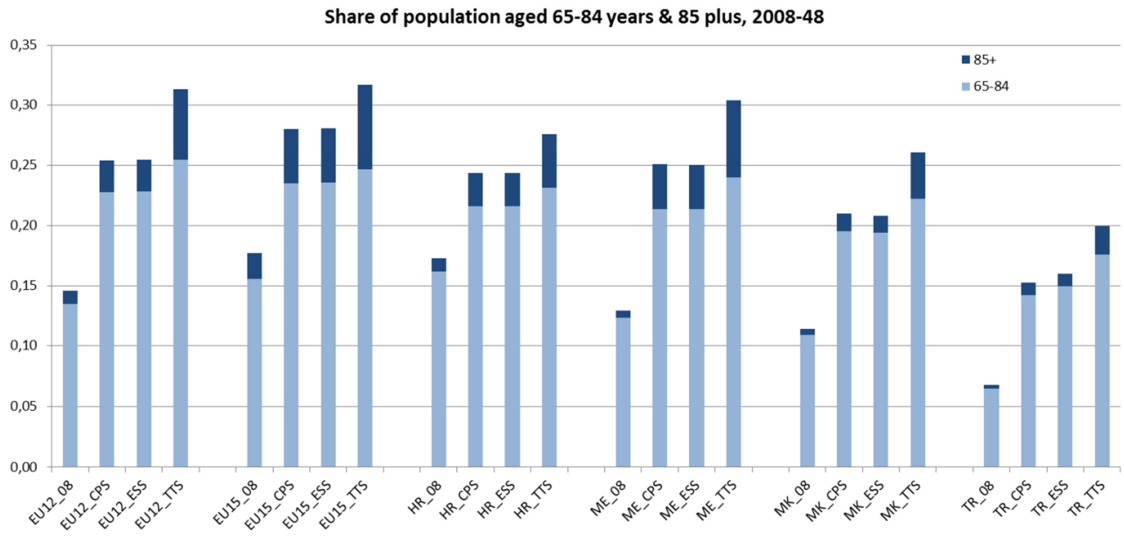


Figure 40 – Share of population aged 65-84 years & 85 years plus, 2008-2048

The enhancing shares of the old (65years plus) and oldest-old age groups (85years plus) can be mainly denoted to the female population in all scenarios. (see Figure 106 & Figure 107) Breaking the share of the age group 65years plus up in the two age groups 65 to 84years and 85years plus, the difference between the percental increments in the latter group differs from 1,1 to 3,0 percentage points over all regions in the TTS Scenario is in favour of women, which show more distinctive growths in these total age groups. (see Figure 41)

In recent demographic history in Europe women always had a higher life expectancy and share in older age groups than men what leads to shares of female population aged 65years plus in the TTS Scenario up to 33,1% in Montenegro, 33,7% in EU15 or 34,1% in EU12, while the shares in this age groups of their male opponents remained clearly under 29%. The lowest female (21,3%) and male (18,4%) shares of elderly population are visible in Turkey, where the population is dominated by the working age population.

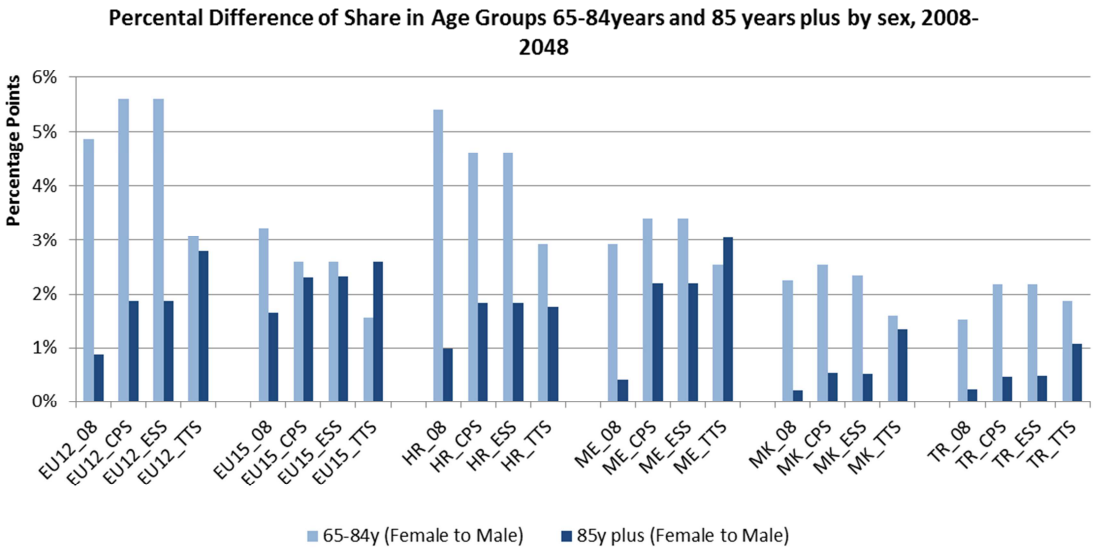


Figure 41 - Percental Difference of Share in Age Groups 65-84years and 85 years plus by sex, 2008-2048

The increasing share of the elderly population (65 years plus) would happen in all scenarios to the expense of the share of the working age population what reaches from a decrease of -2,2 percentage points in the ESS Scenario in Turkey to -14,6 percentage points in the EU15 TTS Scenario. The decreasing share of the working population in all spatial units is not necessarily connected with a decrease of the absolute number of the population aged 15 to 64 years. This would be the case in Turkey, where the only population losses would happen in the young age groups (0 to 14 years) due the decrease of number of births.

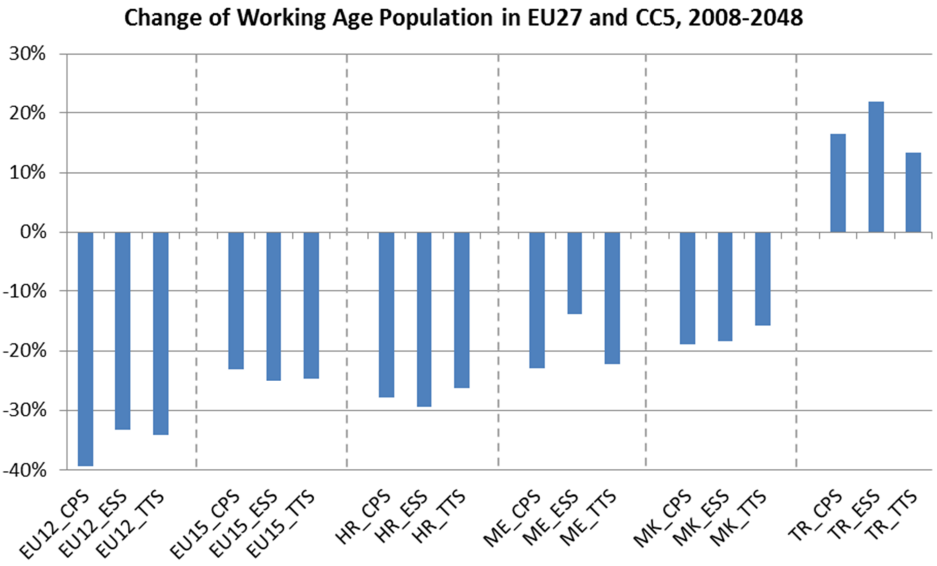


Figure 42 – Relative change of the working age population in EU15, EU12 and Candidate Countries, 2008-2048

The absolute number of the working age scenario in Turkey instead would increase in all scenarios from 22 to 25% respectively this means an increase from 47,8 million to about 54,2 to 55,7 million working age population. Nevertheless, this would predominate the absolute and relative increase in all scenarios over all spatial units. In Turkey for instance the share of retired persons would increase from 6,8% in 2008 to 15,3% (CPS) or 20,0% (TTS) respectively from 4,9 million to 13,5 million (CPS) or 17,2 million persons (TTS).

This absolute and relative shift to older age groups would have massive effects on dependency ratios like the Potential Support Ratios (PSR), which halves or shrinks to a third of the PSR of 2008. Especially Turkey would protrude in this context with a fall from 9,7 to about 4,1 (CPS), 4,0 (ESS) or 3,2 (TTS). (see Figure 43)

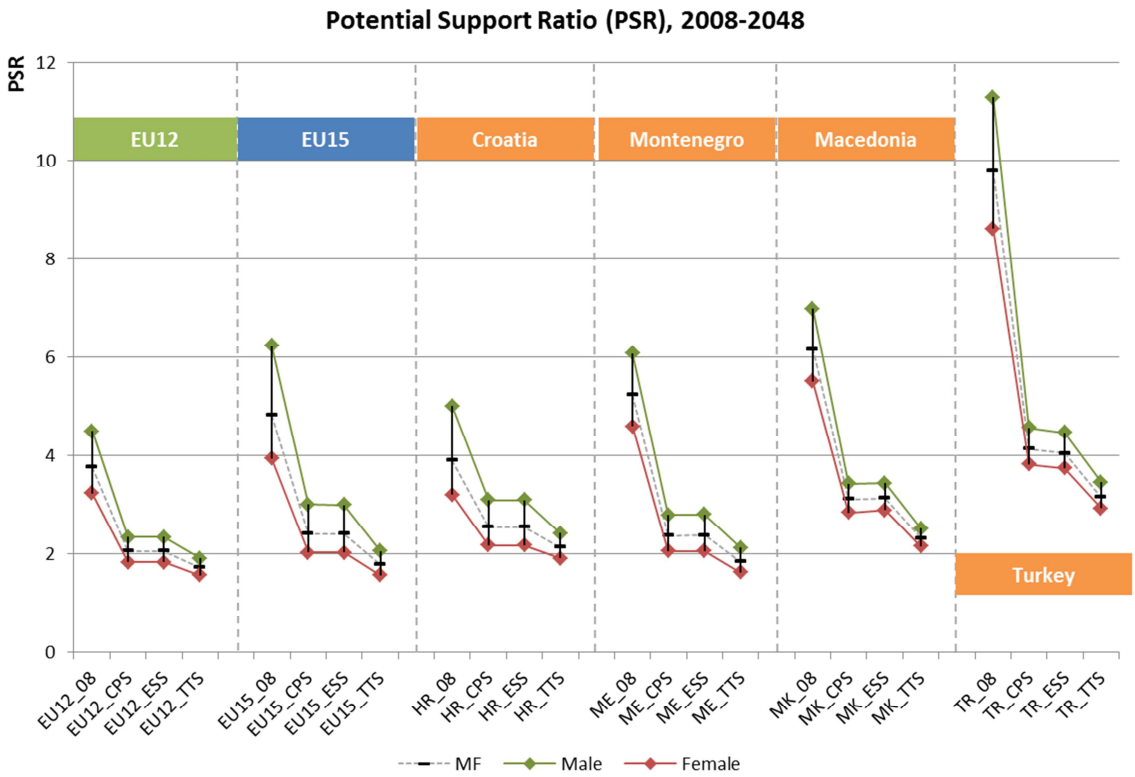


Figure 43 – Potential Support Ratio (PSR) in EU15, EU12 and Candidate Countries, 2008-2048

In the other regions the drop in PSR would be comparably small, because of the relative to Turkey lower starting values, what would for instance lead to a decrease of the PSR in EU15 from 3,8 in 2008 to about 2,1 (both CPS and ESS) or 1,7 (TTS) in 2048. What all regions, except of Turkey, have in common is the fact that the PSR would drop in the TTS Scenario to about 2 or less. That would mean that in these regions in 2048 one person in working age would have to come up financially for two persons in retirement age, what could be considered as a massive financial and social burden. The working age population or especially the labour force represents the majority of taxpayers in each nation, especially when factoring out the tax incomes via VAT, which every citizen has to pay when he or she consumes goods or services. Therewith the labour force as tax payers and consumers equals a preserver of the financial framework of each national economy, what delegates the responsibility to the government to preserve a functional labour market with enough tax depositors to obtain the social, economic and political equilibrium and security.

5.3 Effects on Education Structure

The circumstance that the share and size of the potential workforce will probably decline in the next decades complicates this intention and makes a more profound education and training of the prospective working age population indispensable for the guarantee of governmental accomplishments. The political decision makers on all administrative levels should be aware of this connectivity and initiate pursuant actions to encourage a capable prospective workforce with the suitable qualifications for the future labour market, to ensure a competitive economic climate in the European Union.

Apart from national policies, the European Union has tried with several political actions like the Lisbon Strategy or the recent Europe 2020 Strategy to drive forth the proposition of a competitive and economically growing EU, with a focus on smart, sustainable and inclusive growth, as described earlier in this thesis. In the case of the European Union 15 the Target-

Trend Europe 2020 (TTS) Scenario would lead, according to the educational goals in the Europe 2020 strategy, to a reduction of the population with or with less than lower secondary education (ISCED0-2).

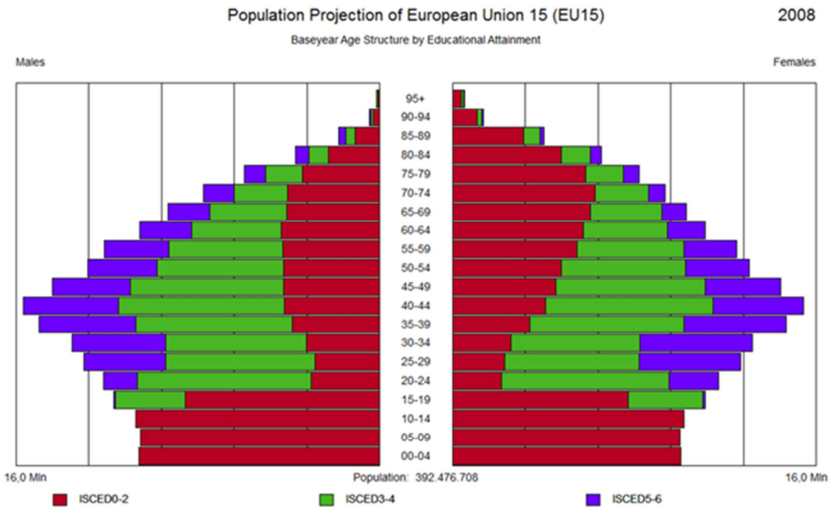


Figure 44 - Age Structure by educational attainment in EU15, 2008

The original 48,5% (32,7% in working age) of the total population of EU15 would shrink in the TTS Scenario to about 32,5% (19,5% in working age) in 2048, while the share of people with higher or tertiary education (ISCED5-6) would increase from 17,3% (22,8% in working age) to 26,9% (32,4% in working age). This increase in higher education can be seen in the TTS Scenario in all labour market relevant age groups, starting with the age cohort 20-24 years. (see Figure 45)

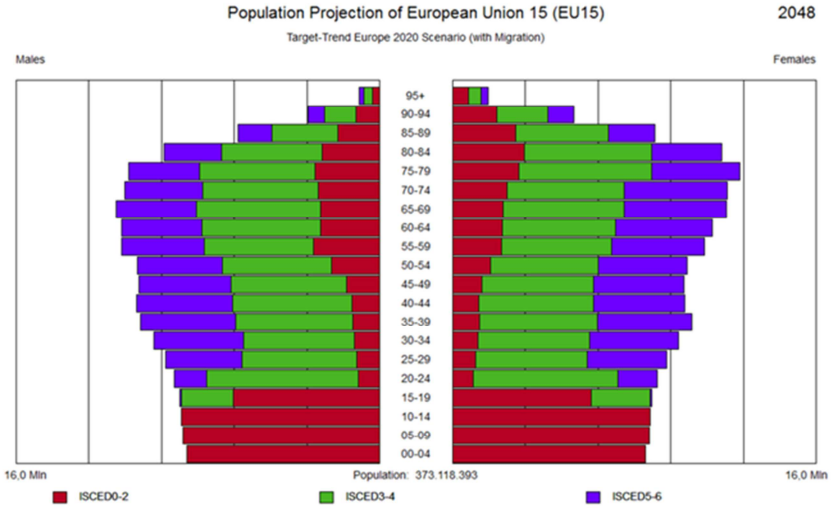


Figure 45 - Population by educational attainment in EU15, 2048 (Target-Trend EU2020 Scenario – with Migration)

This European political action, visualised with the ESS and TTS Scenario, would have major and quite similar impacts on the educational structure of the EU15, like also on other regions, but additionally the higher TFR and Life expectancy would slightly reshape the prospective age pyramid, especially at the older age groups, compared to both scenarios with constant vital rates (CPS & ESS). (see Figure 40)

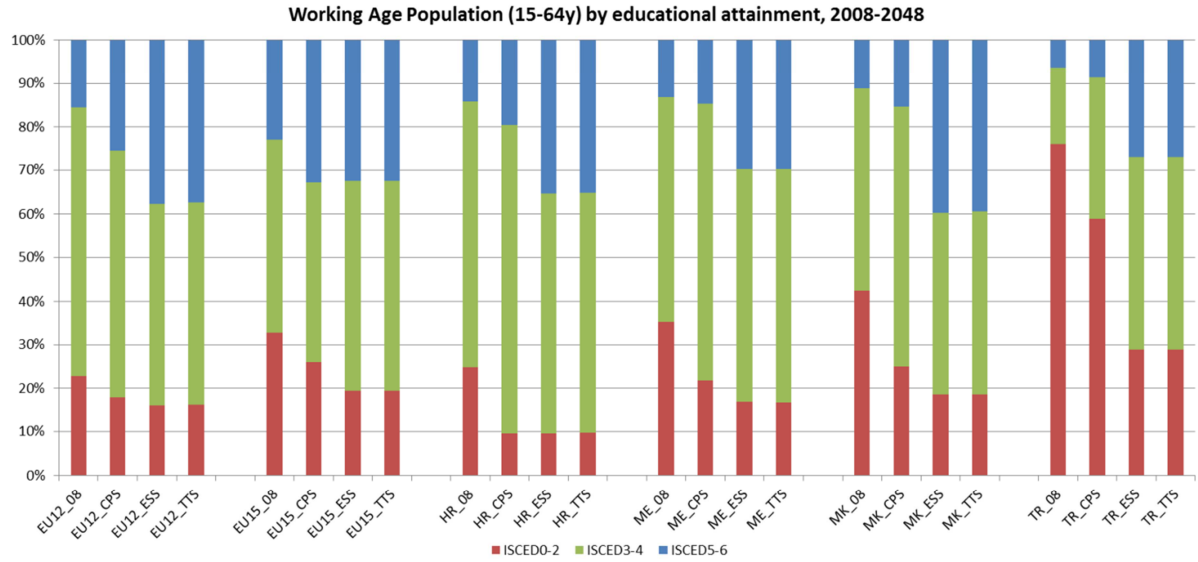


Figure 46 – Working age population (15-64years) by educational attainment, 2008-2048

Admittedly, the share of higher educated persons aged 15 to 64years will increase in all scenarios that considering the European educational goals, formulated in the Europe 2020 Strategy, but are the gains quite deviate between the spatial investigation units, as illustrated in Figure 46. Here it becomes visible that the set educational goals in EU15 would mainly affect the lowest educational category ISCED0-2, while the working age population with higher education would increase their shares at least compared to the other spatial units, from 22,8% in 2008 to 32,4% (TTS) in 2048. The reason for this lies in the already high share of almost 40% of higher educated people aged 30 to 34 years in 2008. So was the share of higher educated men and women aged 30 to 34 years in EU15 in 2008 by about 30,6 for men and 37,4% for women, what makes just a slight increase of higher educated people necessary to reach this Europe 2020 target.

This is also a point that can be questioned in the Europe 2020 strategy. The set goals are meaningful but probably too easy to reach for the *"old"* European member states. The other spatial units, the "new" member states would have to put much more effort into reaching these educational goals. In EU12 just 19,9% of the male and 27,8% of the female population aged 30 to 34 years have already reached higher or tertiary education. Therefore, these countries have to stretch for reaching the educational goals much more. The same would be the case for the Candidate Countries Croatia (m: 25,6% / f: 29,2%), Montenegro (m: 14,6% / f: 20,6%), Macedonia (m: 12,8% / 12,1%) and Turkey (m: 11,3% / f: 11,3%), for which it would be a much harder struggle to achieve these goals. How meaningful or less meaningful these goals would be in each distinctive case, has to be answered by the responsible political actors.

5.4 Reply of Research Questions

In consideration of the above described developments, how can the Research Questions get be answered?

- ***"How could the European Educational Policy affect National Policy and Population Development?"***
- ***"What effects has the educational composition and policy on its prospective population size and structure?"***
- ***"How would the Newbies develop, if they would implement the European Education Policy Goals from the Europe 2020 Strategy?"***

5.4.1 "How could the European Educational Policy affect National Policy and Population Development?"

The allocation of responsibilities for education policies between the European Union and its member states is explicitly distributed through Article 126 and 127 in the Treaty of Maastricht to the member states with a strictly formulated harmonization restriction of national education legislation. It determines that the organisation and structure of the national education systems is an exclusively inherent matter of the member states and can be just affected by the EU due supportive measures, coordination and supplement of national strategies. It rests on the responsibility of the nation states to implement EU education goals like in the Europe 2020 Strategy in their legalisation frameworks.

The European Union has here no legal manubrium and can just hope for voluntarism in the member states to achieve the set education goals, which are embedded in an economic overall planning to lead the European Union and its partner countries out of the Economic Crisis in an economically stable and prosperous future. The final aim is to make the European Union to the most economic competitive area in the world. Education enacts as part of the Political Headline "*Smart Growth"*, which aims on developing a European economy based on knowledge and innovation as driving forces of future economic growth. As these two attributes, knowledge and innovation, are highly linked to higher or tertiary education it is a reasonable target to enhance the share of tertiary educated population in the age group 30 to 34 years from about one third to at least 40% (see Figure 47) to reach a higher competitiveness compared to global players like Japan (~50%) or the USA (~40%). (European Commission, 2010c)

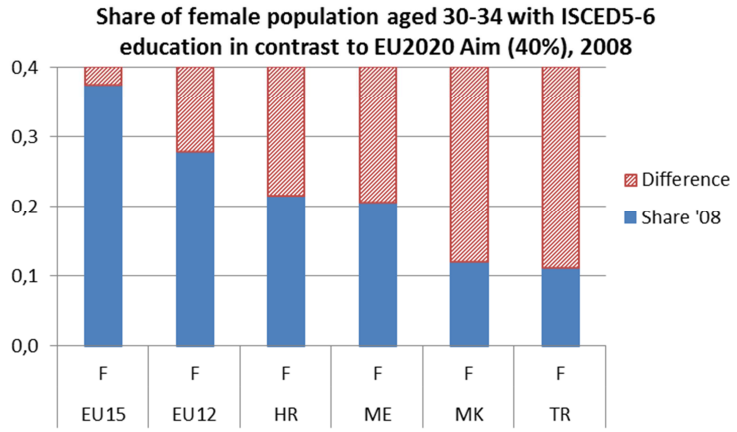


Figure 47 - Share of female population aged 30-34 years with ISCED5-6 education in contrast to Europe 2020 Aim (40%), 2008

"This requires improving the quality of our education, strengthening our research performance, promoting innovation and knowledge transfer throughout the Union, making full use of information and communication technologies and ensuring that innovative ideas can be turned into new products and services that create growth, quality jobs and help address European and global societal challenges." (European Commission, 2010c:p.9f)

In the core of this ambition stays the attempt to combine schooling and apprenticeship with entrepreneurship, finance, user needs and market opportunities. Admittedly, around 50% of young people reach a medium qualification level, named ISCED3-4, but this often fails to match the requirement specifications on the labour market. About a quarter of all pupils in the EU have deficits in their reading competences and about one in seven young people leave school too early. This share is in some of the Candidate and Acceding Countries even higher (except of Croatia and Montenegro – see Figure 48), and makes the Early-School Leavers target in the Europe 2020 Strategy reasonable as well. (European Commission, 2010c)

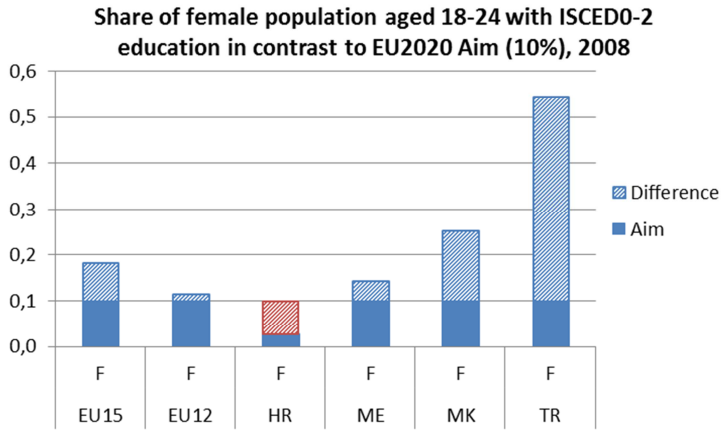


Figure 48 – Share of female population aged 18-24 years with ISCED0-2 education in contrast to Europe 2020 Aim (10%), 2008

In fact all member states have contributed to the Europe 2020 Strategy to transpose the overall EU objectives into national targets and their National Reform Programmes (NRP). This happens in case of education on a voluntary base and will just happen, because of self-interest. But in fact the set goals are realistic to reach for all member states and mostly already enshrined in the national education acts. The adaptation of the aims into legislation happens through the National Education Councils and Ministries, and the actual implementation into the institutional education structures mostly on regional or local level. Except of Austria and Germany the legal educational statutes in the EU member states are relinquished to the National Ministries responsible for education. But in Austria and Germany for instance the provincial governments have the right to enact regional (education) laws as well, which weakens the position of the national governments in the implementation of educational reforms. Further influences by the EU can be just exerted via education programmes, like the Lifelong Learning Programme (LLP) or the Youth in Action Programme (YIA). (EURYDICE, 2010; European Commission, 2010c, 2012k)

These specific programmes can be also found in the EU membership negotiation requirements for the Candidate Countries. Within this process comprehensive education reforms get encouraged with a focus on reforms in the institutional structure, teacher training, the alignment of curricula, etc. One in this reform process inherent feature is the automatic accession to the Europe 2020 Strategy, since the structural reforms are aimed at the reduction of early-school leavers and the increase of young academics. Especially, in Macedonia and Turkey exists a backlog demand in the share of female early-school leavers of 25,2% in Macedonia and 54,5% in Turkey in 2008. In Turkey politicians and media speak about a Vocational Qualification Problem, which describes a gap between the shares of people with ISCED3-4 or higher education to the labour market needs (European Commission, 2012k), which lead to a shortage of skilled workers. (Bayram Akbas, chairman of the Vocational Qualifications Authority (MYK), 2009)[8]

"The demands and needs of markets and the business world really matter in the resolution of the unemployment problem. If there are no jobs and the economy fails to create further employment, a person may become jobless even with spectacular qualifications. The current problem of unemployment caused by a lack of the necessary qualifications will ultimately be resolved." (Bayram Akbas, chairman of the Vocational Qualifications Authority (MYK), 2009)[9]

[8] Source:
http://www.todayszaman.com/newsDetail_getNewsById.action;jsessionid=A641FA3F71E6A5505B3F1CC439855776?newsId=192964

[9] Source:
http://www.todayszaman.com/newsDetail_getNewsById.action;jsessionid=A641FA3F71E6A5505B3F1CC439855776?newsId=192964

According to Article 42 of the Turkish Constitution enacted in 1982 every citizen has the right on education, the state is liable of providing it, and nobody can be deprived of their right on education. Education in Turkey is under the supervision and audit of the national government, namely the Republic of Turkey Ministry of National Education (T.C. Millî Eğitim Bakanlığı – MEB), which provides the educational structures and shall ensure the right of equal education opportunities. It looks alike in the other analysed candidate and acceding countries, Croatia, Montenegro and Macedonia, where also the government is in charge solely for education.

As mentioned earlier in this thesis compulsory schooling in Turkey was before 2012 limited to 8 years and till this year adjusted to the European standard of 12 years. This will enforce the convergence of Turkey to the Europe 2020 education goals, especially in the field of early-school leavers, where is an urgent need for action. Simultaneously there are attempts to enlarge and reform the current vocational and higher education infrastructure and teachers training which shows a West-East gradient in Turkey. Therefore, the efforts to improve the educational infrastructure and staff in the eastern provinces have to be intensified. (EURYDICE, 2010; European Commission, 2012k)

5.4.2 "What effects has the educational composition and policy on its prospective population size and structure?"

Education is a proven source of heterogeneity in the peculiarity of vital rates, whereby especially the determination of these differentials can be problematic and hard to argue by literature or data sources. For this reason I abandoned mortality differentials by education in this thesis, because I couldn't argue a reasonable mortality distribution beyond educational groups for all investigation units. Mortality differentials are compared to fertility differentials negligible, because fertility as driving force of population development has a greater impact on the prospective population size and structure.

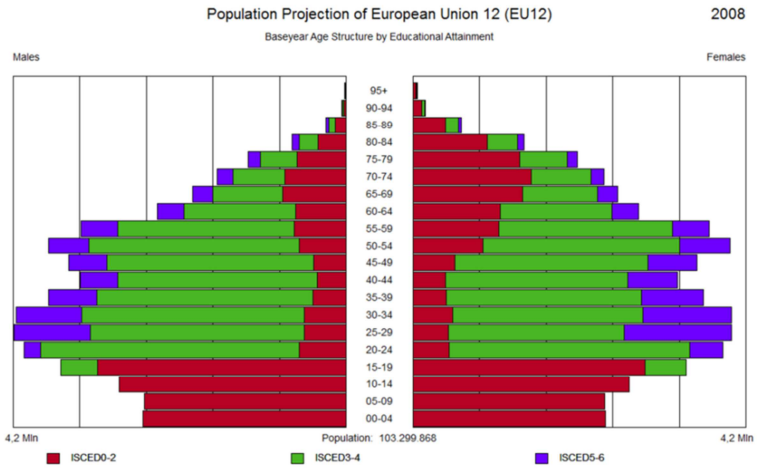


Figure 49 - Age Structure by educational attainment in EU12, 2008

In the European Union 12 for instance the overall TFR of 1,41 differentiates beyond the educational categories ISCED0-2 (TFR = 1,58), ISCED3-4 (1,33) and ISCED5-6 (1,22) in 2008. The higher the educational levels of the subgroups are the lower is the fertility level in this region. In general the highest fertility in all analysed regions is allocated in the lowest education category, ISCED0-2. Nevertheless the share of higher educated groups in EU12 will increase even in the Constant scenario because of the recent transition rates in 2008. This is also going to happen when the transition rates are set constant over the total projection period till 2048. For instance the share of higher educated population in the working age would rise in the constant scenario in EU12 from 15,4% in 2008 to about 25,4% in 2048. This structural effect gets enhanced with

applying the Europe 2020 strategy goals, when this share would increase in the ESS Scenario to 37,3% in 2048. (see Figure 52) The main growth would be allocated in the age groups 20 to 55 years. (see Figure 50 & Figure 51)

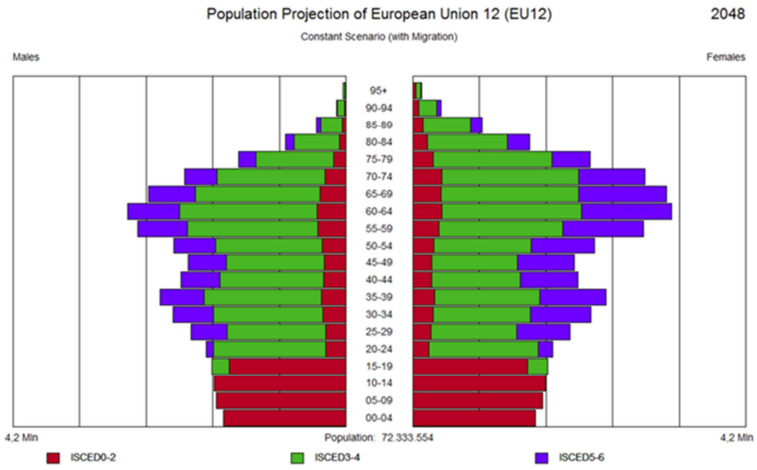


Figure 50 - Population by educational attainment in EU12, 2048 (Constant Scenario – with Migration)

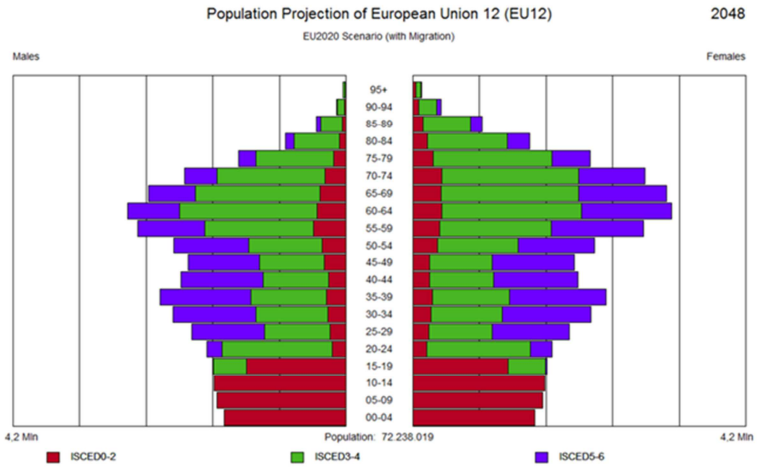


Figure 51 - Population by educational attainment in EU12, 2048 (EU2020 Scenario – with Migration)

Simultaneously, a shift in age groups would be visible from 70,3% in working age 15 to 64 years) and 14,6% in retired age (65 years plus) in 2008 to 61,2% or 25,4% in the CPS and ESS Scenario in 2048. This redistribution of shares in age distribution is visible in all investigated regions, mainly accompanied by a decrease in the population size, except of Turkey which is most likely to increase its population size. (see chapter 5.1)

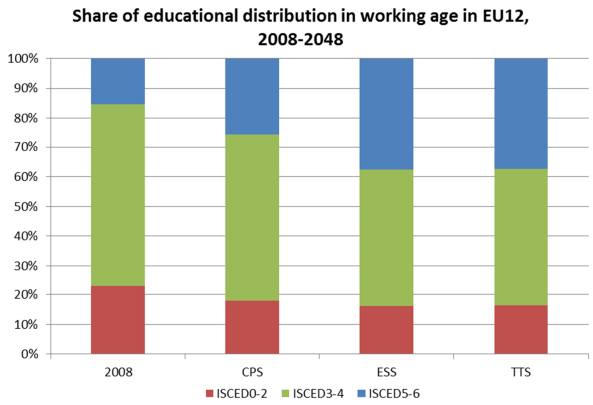


Figure 52 - Share of educational distribution in working age in EU12, 2008-2048

In the Target-Trend Europe 2020 Scenario the effect on the educational structure would be similar to the ESS Scenario, but age composition would shift further to older age groups (65 years plus: 31,3%) enhanced by the increasing life expectancy.

5.4.3 "How would the "Newbies" develop, if they would implement the European Education Policy Goals from the Europe 2020 Strategy?"

Despite the lacks in the institutional structure of the analysed candidate and acceding countries there will be most likely significant improvements in the societal qualification level due to the national efforts for educational reforms and restructuring in the institutional and legal framework, as for instance through the incipient Bologna process in all these regions. Admittedly it can be accepted as certain that countries like Croatia, Macedonia, Montenegro and Turkey will struggle with catching up to the Europe 2020 education goals till 2020, but there will be an effect due to the membership ambitions of those countries. On the supposition that those countries could expedite the claimed pervasive reforms and restructure their legal and institutional education systems to achieve the Europe 2020 goals there would be a massive improvement in the composition of the national human capitals, especially in Turkey.

Turkey for instance could benefit through a higher qualification level of its workforce from the before noted Demographic Dividend at it is the only investigated spatial unit that will gain population in the projection, whereby the increase in the size of the working age population would reach from plus 13,3 in the TTS to 21,8% in the ESS Scenario. (see Figure 53) This differences emerge between these two scenarios from the different fertility levels in both scenarios from a TFR of 2,14 in 2008 to 1,68 in the ESS and 1,60 in the TTS Scenario in 2048, or 2,45 (ESS) to 1,82 (TTS) in the lowest education category. (see Annex chapter 7.3.2.6 The Republic of Turkey (Türkiye - TR)) But this lower total amount of working age population in the TTS Scenario of 54,2 million people in Turkey would be consequently better educated. The question how adequately they are educated for the labour market needs will be addressed in chapter 5.5.1.

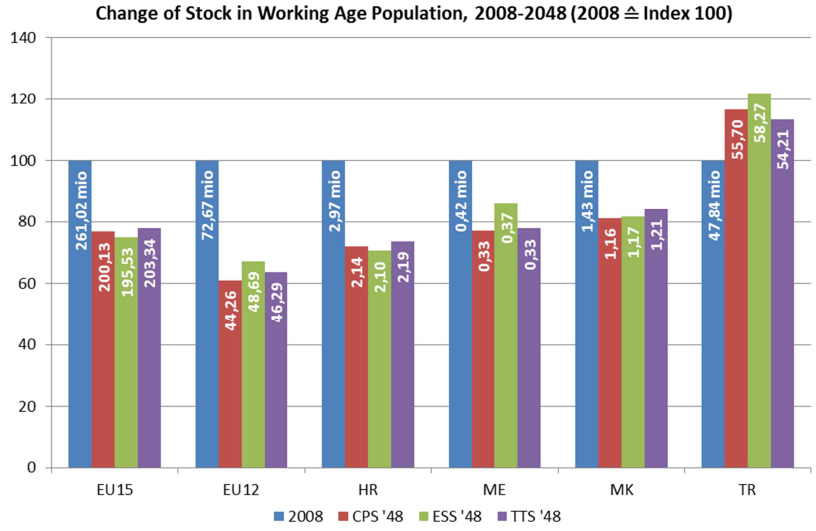


Figure 53 – Change of Stock in Working Age Population, 2008-2048 (2008 ≙ Index 100)

The other *„newbies"* would experience a loss of population in these age groups up to 29,4% in ESS Scenario of Croatia, which is a result of the reduced size of the moving up birth cohorts over the next decades and a progressing ageing process. This shrinkage of the working age population in size and share plus the associated total productivity reduction of the workforce has to be equalled with an increase of the quality of workers, which is one of the main priorities of the Europe 2020 Strategy.

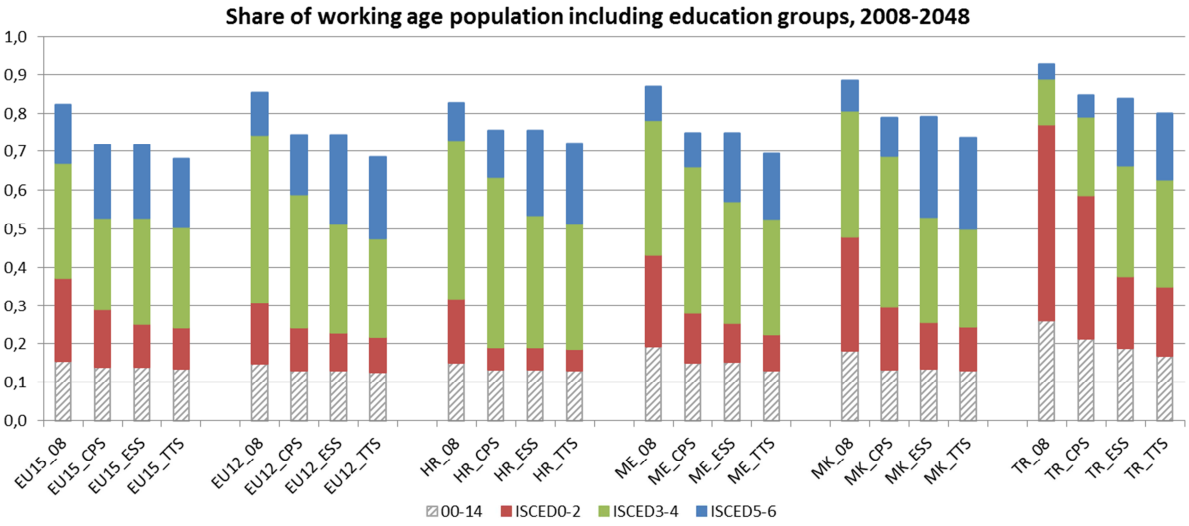


Figure 54 - Share of working age population including education groups, 2008-2048

The Figure 54 combines the change of share of the working age population with its educational attainment. It illustrates the decline in the share of these age groups in the spatial analysis units (except of Turkey) and the shift to higher education groups in all scenarios. Additionally, the decline in the age groups 0 to 14 years becomes visible in all regions. These hypothetical developments in the size and structure of the working age population bring up the question for the potential economic and political consequences of these specific scenarios for the spatial units.

5.5 Potential Effects on Economy and Policy

"Europe faces a moment of transformation. The crisis has wiped out years of economic and social progress and exposed structural weaknesses in Europe's economy. In the meantime, the world is moving fast and long-term challenges – globalisation, pressure on resources, ageing – intensify. The EU must now take charge of its future." (European Commission, 2010c:p.3)

The Europe 2020 Strategy priorities are focusing on a smart, sustainable and inclusive economic growth to raise level of employment, productivity and social cohesion as vision for a Europe's social market economy that can counteract the repercussions of the Economic Crisis. This shall work due to a range of national, international and EU actions, whereby latter will put forward seven flagship initiatives under each of the priorities:

- Innovation Union
- **Youth on the move**
- A digital agenda for Europe
- Resource efficient Europe
- An industrial policy for the globalisation era
- **An agenda for new skills and jobs**
- European platform against poverty
  (European Commission, 2010c)

The two highlighted initiatives *"Youth on the move"* and *"An agenda for new skills and jobs"* are explicitly aiming on the qualification and education of European citizens to enhance the efficiency and performance of the national education systems and to bring young people into the labour market to increase their labour force participation and guarantee a better match to the labour market. In the stronger economic governance approach of the EU, the European Council will be responsible for the new strategy, the European Commission will monitor and evaluate the progress of implementation and

support policy exchange, and the Member States will be in charge of the programme and strategy implementation on country-level. The EU sets up guidelines and country-specific recommendations to assure a fast and successful progress of this process.

The aim is to mitigate the effects of the Economic Crisis and start a **"Sustainable Recovery"** due to the set up priorities and goals. Otherwise Europe is in danger to experience a *"Sluggish Recovery"* or even worse a *"Lost Decade"* in which the economic and social achievements of the last decade would diminish. (see Figure 55)

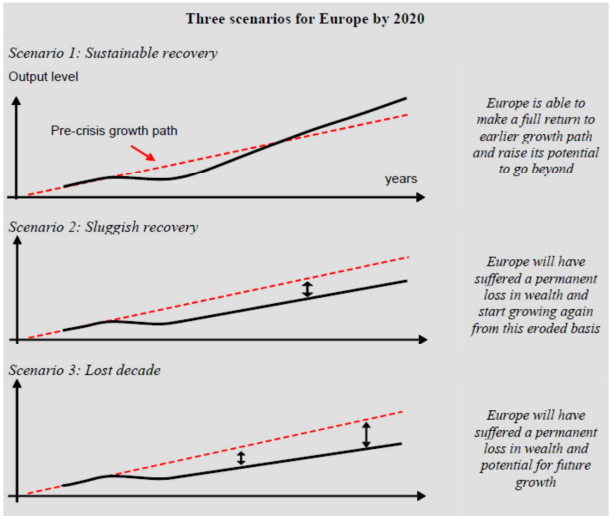


Figure 55 – Three (economic) scenarios for Europe by 2020 (European Commission, 2010c:p.7)

The qualification of the workforce represents a cornerstone of this strategy as the economic growth of national economies is directly linked to the growth and quality of the working age population or human capital (see definition in Glossary). Recent studies (Bloom, Canning, Fink, & Finlay, 2007; Fürnkranz-Prskwetz et al., 2007; Goujon, 2003; Lutz, 2004, 2008; Lutz & Goujon, 2001; Lutz, Sanderson, Scherbov, & K.C., 2008) point out the importance of the demographic age structure and qualification as essential element of the prospective economic growth. Thereby the growth or decline is not a significant factor, but they assign a major impact to the development of share of working age population and the Youth Dependency Ratio. Fürnkranz-Prskwetz et al. (2007) for instance rate the impact of this two demographic factors on the economic development in Europe in the last five decades with 30 to 40%.

They all highlight *"…the important role of the growth rate of the working age population and the youth dependency ratio is robust. Many authors have noted the importance of the policy and social environment aspect and its interaction with demographic changes as an important determinant of long-run economic growth."* (Fürnkranz-Prskwetz et al., 2007:p.7)

If we accord credibility to their hypothesis and calculations solely the age structure is a highly determining criteria for economic growth, without considering the qualification and education of these population groups. Even the often cited technological changes, innovations or political and institutional explanations are less decisive than demographic factors. A further important factor in the economic growth is the distinction of the demographic effects into its productivity component (output per worker) ant the translational component (difference between the growth rate of working age population and total population). The working component gains importance in societies, like in Europe, where the size and share of working age population has peaked recently or will start to decline in the near future. Here it gets important to train and educate the workforce adequately to match the labour market needs. (Fürnkranz-Prskwetz et al., 2007; Lutz, 2008)

As mentioned before the working age population will shrink in almost all calculated scenarios (except of Turkey) in the projection period compared to the base year, what suggests economic struggles. Admittedly, the working age population will decrease slower than the total population, but nevertheless even the transitional component spells troubles, as especially EU15 and EU12 are facing the *"end"* of the demographic transition. Therefore, it is too late to benefit from the first Demographic Dividend because the more populous age groups are leaving the working age population based on the ageing and fertility decline in Europe. For political actors it is necessary to avoid the negative economic consequences of this process with putting increasing efforts in the qualification of the workforce to enhance its productivity. Additionally it will most probably become necessary to decide further political actions like the increase of retirement age, to prune the financial outputs of the social, welfare and retirement system, and to increase individual fees. (Fürnkranz-Prskwetz et al., 2007; Kohler et al., 2006; Lutz, 2008)

The second noted demographic component, the *Youth Dependency Ratio*, which shall have positive impacts on the economic growth when it declines, is in the investigated spatial units elusive. Thus in 4 of 6 regions or countries the YDR is declining, but only in Turkey this will happen in favour of the working age population. (see Figure 56) In Croatia, Macedonia and Turkey the YDR declines, but so does the working age population, with which a positive impact on economic growth can't be expected. In EU15 and EU12 the Youth Dependency Ratio is even rising, because of the shift of highly populated age groups into the age groups 65 years plus and a massive decline in the working age population. (see Figure 42)

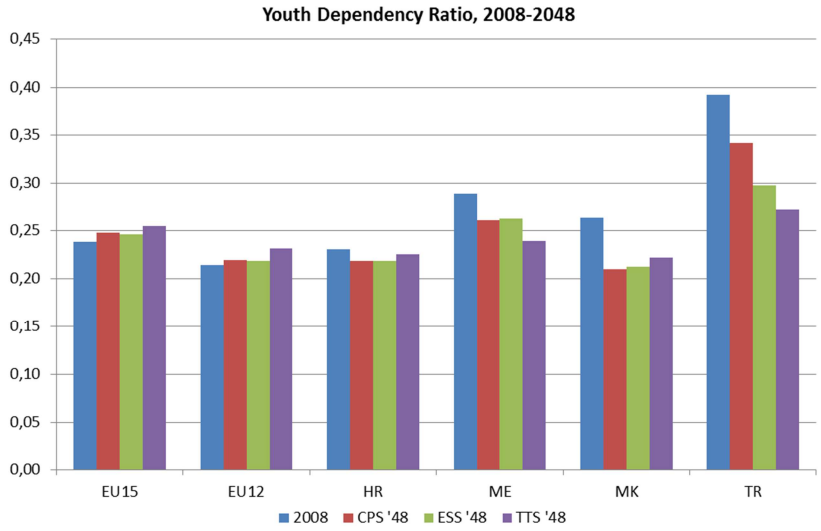


Figure 56 – Youth Dependency Ratio (YDR), 2008-2048

This development would limit the policy discretion considering the demographic structure and workforce qualification, as these actions would mainly have a moderating character to face the potential demographic burden. Beside the educational programmes one approach to mitigate this process would be to enhance the fertility levels and raise the compatibility of family and career in Europe to strengthen the prospective workforce. In Turkey the situation is quite different to the other analysis units. Here the TFR is still high, the economy is growing, but the educational structure is still very low. We have heard before that economic growth is highly connected with the qualification of a nation, but why is Turkey economically growing?

5.5.1 Example "Turkey"

The IMF names Turkey as a largely developed emerging economy and as one of the new industrialized countries in the world. As we have seen earlier in this thesis, more than the half of Turkey's workforce is very low qualified (ISCED0-2) and reliant on jobs in agriculture, industry and lower paid services. These three big branches make up the major employers in

the Turkish labour market and in its share in GDP. With 64,7% the share of the overall service sector at the GDP is dominant as in all European countries, but the Agriculture (9,4% from GDP) and Industry (25,9% from GDP) sector are disproportional pronounced compared to the European Union (2009: AG: 2,1%; IN: 27,3%; SV: 70,5%). The economic weight of the primary and secondary economic sector becomes more visible with the shares of employment by economic sector, when in 2009 from 21,28 million employees about 24,7% (5,25 million persons) are employed in the agricultural sector and 25,3% (5,38 million persons) in the industrial sector. The other 50,0% are employed in the service sector. (see Figure 57)Just 20 years ago nothing of the sort was the case, because in 1989 the share of agricultural employment was up to 47,2% or 8,60 million employees from in total 18,22 million employees, while the service sector was just at its beginnings. (Eurostat, 2012; TÜIK, 2010, 2011a, 2011b, 2012)

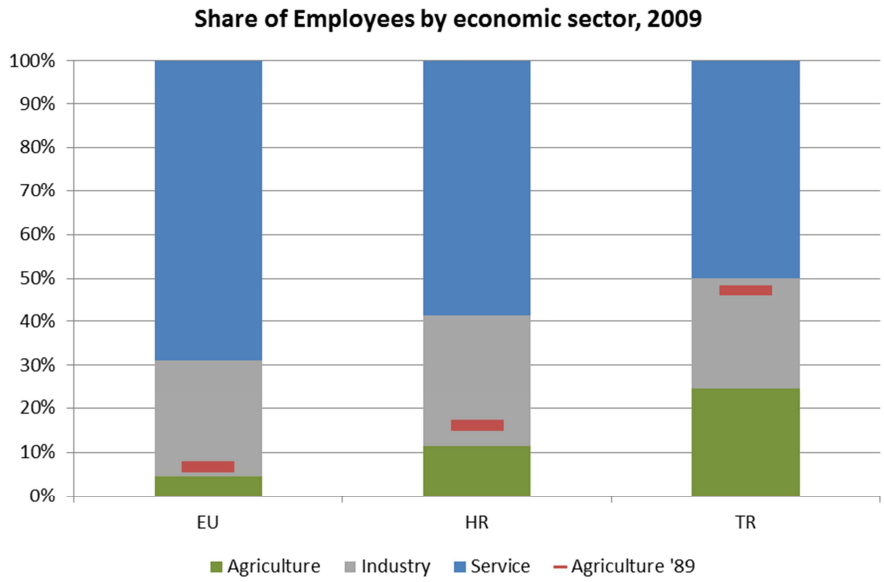


Figure 57 - Share of Employees by economic sector, 2009

The current Turkish agricultural and industrial orientation is far off the EU average with just 4,7% or 9,98 million employees in agricultural sector and 26,2% or 55,88 million employees in industrial sector in 2009, and even not on the level of EU 20 years ago. The change of economic orientation in Europe started almost 150 to 200 years ago with the initiation of the industrial revolution, while in Turkey this process just started in the second half of the 20th century and accordingly lacks behind in the adaptation of population qualification and economic development. It developed in this period to an extended work bench of the European Union due the outsourcing of agricultural and industrial production in low-wage countries like China, India, Taiwan or Turkey, plus the reduction of workforce due higher per head productivity in industry and agriculture in the EU. (Eurostat, 2012; International Monetary Fund, 2011; OECD, 2012; TÜIK, 2011b)

"Turkey has had a remarkable period of growth over the last ten years, more than doubling per capita income and reducing poverty (…) However, vulnerabilities are arising as a result of the large current account deficit financed by short-term capital flows." (Christine M. Lagarde, Managing Director of the International Monetary Fund (IMF))[10]

About 59% of all Turkish exports go to the European Union, in textiles and several agricultural goods it makes up to 76%. Turkey is the biggest producer of hazelnuts, cherries, figs, apricots, quince and pomegranate. And in many others it is in a world's leading position (position see in brackets): watermelon, cucumber and chickpea (2nd), tomatoes, eggplants, green

[10] Source: http://www.imf.org/external/pubs/ft/survey/so/2012/new051112a.htm

pepper or lentils (3rd), onion (4th), tobacco, tea, apples (6th), cotton and barley (7th), or wheat (9th); (FAO, 2012; OECD, 2011, 2012)

Turkey has since the 1980s a self-sufficient food production and can afford to export the greater part, what creates jobs and economic growth. Thereby the Turkish economy got dependent from the food and goods demand of the European Union member states. During the Economic Crisis this demand decreased and the production had to be reduced. To compensate the financial losses of agricultural and industrial enterprises the Turkish government granted tax deductions for the affected enterprises, not to jeopardize the economic growth. Beside this certain dependence on the European market demand the high share of agricultural and industrial production and employment involves the danger of breaking off economic sectors and prospective high unemployment in these sectors. (International Monetary Fund, 2011; OECD, 2012)

"We don't think the export boom can continue at its current pace – not least due to falling demand from the Eurozone." (William Jackson, Economic Expert for Emerging Markets at Capital Economics)[11]

Risk factors for this could be on the one hand the dependence on exports and on the other hand the pile of former agricultural and industrial workers into the service sector. For instance the intergenerational farm takeover declines progressively due the little financial benefits, hard working conditions, and small agrarian areas (about 85% of all agricultural properties are less than 10 hectare and mostly dispersed in several plots). This could lead to an increase of farm closures or mergers to bigger agriculture enterprises as could have been observed in all European countries in the last decades. (Cakmak, 2004; Gürsel & Imamoglu, 2012; TÜIK, 2011b)

Unfortunately the labour market in the tertiary sector doesn't offer enough jobs for unqualified employers with educational level ISCED0-2 and even for a massive growth of better educated employees in the next years there wouldn't be enough enterprises and jobs, what would most probably create a high share of unemployed higher skilled young adults with no job opportunities in their home countries. This could lead to massive social stresses like currently visible in Spain, Portugal or Greece, which can finally end in riots and street fights. The currently already high youth unemployment of more than 22% (see Figure 1) could get increased if the educational transition foregoes the economic transition from an agricultural to a service and knowledge society. (International Monetary Fund, 2011; OECD, 2012)

Therefore the achieving of the Europe 2020 strategy goals for education contains an inherent danger of civil commotions, when the social transition process wouldn't get mitigated by the economic restructuring. When the economic transition from primary to tertiary (quaternary and quinary) sector overspeeds the societal and educational development and vice versa, economic and social struggles are preprogramed. In 2008 more than 54% of the working age population has lower education (ISCED0-2) and the workforce is currently short of for the labour market adequately skilled personal with ISCED3-4 education. (International Monetary Fund, 2011; OECD, 2012; TÜIK, 2010, 2011a, 2011b, 2012) Admittedly the Europe 2020 strategy aims at enhancing this share through the reduction of *"early school leavers"* to 10% in the age group 18 to 24 years, but who would work then at the field or assembly line in the factory under this working conditions and payments?

The only way to bring these better educated youth to work in agriculture and industry would be due the simultaneously increase of their wages and financial output. Therewith these enterprises would have to pay higher wages to compensate the lack of employees what would cause an increase of total production costs. This process has already started with slight

[11] Source: http://www.ft.com/intl/cms/s/0/9b49abc0-fb61-11e1-b5d0-00144feabdc0.html#axzz2AyKMxluF

increases in wages and simultaneously the increase of employees in agriculture, which rises since 2007 again. (Gürsel & Imamoglu, 2012)

This development could harm the competitiveness with other low-wage countries and could cause international enterprises to reallocate their production centres to Asia or Africa. Therewith these economic branches could be depressed and cause an even higher unemployment rate. This could again cause the outmigration of highly skilled unemployed professionals to other countries, most probably in Europe or Arabian Peninsula. (International Monetary Fund, 2011; OECD, 2012)

To avoid this it is advisably to adapt the social and educational development to the economic conditions and labour market needs in the current Turkish economy pillars, agriculture and industry. One aim of the pre-accession negotiations is to lead Turkey in economic, social and political tasks closer to the European Union and to smooth the above noted stress factors.

5.5.2 Example "Croatia"

The situation in Croatia behaves different to those of Turkey as its economy is similarly structured as those of the most European Countries, with just 11,5% or 177.400 persons of all employees in 2009 in the agricultural economic sector, 29,8% in the industrial (461.500), and 58,4% (904.700) in the service sector of in total 1,55 million employees. Even the GDP is not reliable on the agriculture economic sector with about 6,7% of the total GDP in 2009. The dominant sectors are the industry (27,1%) and service sector (66,1%) (see Figure 57), whereby this economic orientation corresponds to the European Economic structure, what has facilitated the membership negotiations. (DZS, 2008, 2010; Eurostat, 2012)

Another point that differentiates Croatia from Turkey and connects it with the European Union are the economic struggles due the Economic Crisis, which make a fiscal consolidation, expenditure reforms towards growth oriented and sustainable patterns necessary. Thereby Croatia wants to aim at the economic realignment on innovative and sustainable economies including renewable energies to generate despite the existing industry new branches and to decrease the currently high unemployment rates. (see Figure 1) (NCC, 2005)

"Therefore, special attention should be given to transforming vocational schools, which should offer varied educational and training possibilities, so that they are in accordance with the needs of employers and the real labor market." (MZOS, 2005:p.3)

This problem unites all spatial analysis units, the so called employability of their working age population in the labour market. The share of population with beneath lower secondary education (ISCED0-2) underquotes the Europe 2020 Strategy goal with 10%. (see Figure 48) The gap between the second educational goal, to increase the share of the tertiary educated population in the age group 30 to 34 years to 40% in 2020, seems more distant as this share is for men in 2008 about 15,4% and for women by 21,5%. (DZS, 2008, 2010; Eurostat, 2012) So there is a quite huge step between the envisaged goal and the current education level, although it is smaller than in Macedonia, Montenegro or Turkey it is still 18,5 to 24,5 percentage points away from the goal (see Figure 47), but the attempts to gain higher shares of tertiary educated population in the future due different measures:

- *Measures to promote equal educational opportunities for all during enrolment in tertiary education will be developed.*
- *Together with economic and other partners, scholarship modules for enrolled students with insufficient financial means will be developed.*
- *Introduction of the national Matura examination will facilitate the access of candidate students to tertiary education.*

(MZOS, 2005:p.15)

"A well-educated population is a necessary, but not a sufficient condition of competitiveness. The mobilization and utilization of knowledge provides an important contribution to increased competitiveness." (NCC, 2005:p.21)

It is believed that due the enhancement of tertiary education and the simultaneously vocational qualification of the workforce *"…strongly attracts both domestic and foreign investment in highly productive industries."* (NCC, 2005:p.21) Accordingly the educational projection in the TTS Scenario for 2048 seems to be reliable due the envisaged investments in higher and tertiary education. (MZOS, 2005; NCC, 2005)

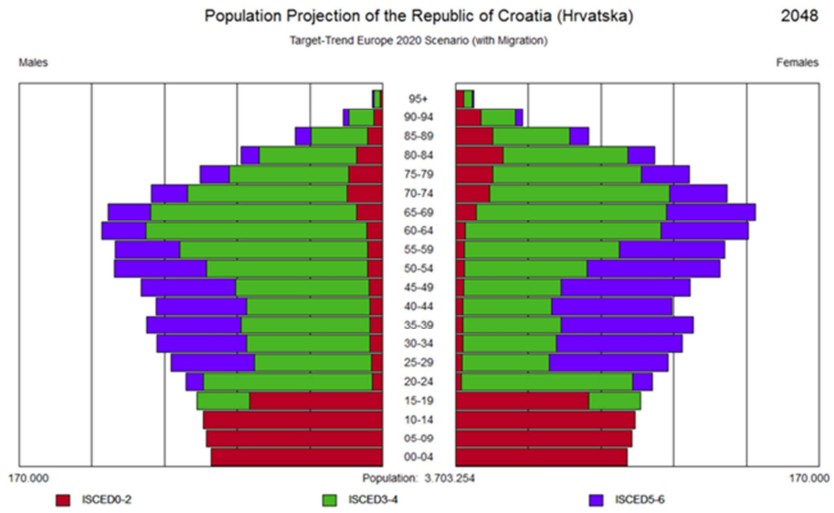


Figure 58 - Population by educational attainment in Croatia, 2048 (Target-Trend EU2020 Scenario – with Migration)

Thereby the Ministry of Science, Education and Sport (MZOS) and the National Competitiveness Council (NCC) are aware of the risk that the enforcement of higher education without economic restructuring and creation of adequate jobs due the attraction of domestic and international enterprises could lead to a brain-drain of higher educated Croatian's after the accession to the European Union in 2013. (European Commission, 2012g, 2012l; MZOS, 2005; NCC, 2005)

"The European Union policy of labor force mobility may result in young people leaving the country, especially those with higher education (brain drain). In order to avoid these risks, concerted action by the entire social and political community is necessary." (MZOS, 2005:p.5)

Croatia is like Turkey in an relationship of dependence with the European Economic Area, because of its trade correlations to the member states of the European Union in export and import of goods and services, whereby the financial volumes of imports exceeds obviously the exports. This unequal distribution of import to export shall be counteracted by the enhancement of the Croatian market for international and domestic investors due the increase of highly skilled workforce. Croatia has the advantage that it already shows a high share of employment in the tertiary economic sector and a decreasing stock of employees in agriculture enterprises plus a low share of financial output in GDP. Therefore it can be assumed that further enhancements in tertiary education could be easier faced on the labour market in Croatia. It is more likely in Croatia that a slow increase of tertiary educated young adults could be averted by the labour market more easily than in Turkey. Nevertheless there will be probably some *"losers"* in this process of educational and economic orientation on higher skilled employment, namely the farmers and parts of the industry.

"The farmers will certainly lose in the transition and shipyard workers; in these two sectors there will be many layoffs. However, a positive impact will be in the industry producing electric components, automobile parts and materials, and others." (Zeljko Lovrincevic, Professor at the Zagreb Economy Faculty)[12]

In the two remaining candidate countries, Macedonia and Montenegro, we find similar economic conditions like in Turkey and Croatia. In **Macedonia** the labour market in 2009 is still highly dependent on the agricultural (18,6%) and industrial sector (29,5%) and a huge share of low educated (ISCED0-2) people in working age (42,5%), with comparable consequences as in Turkey. In contrary **Montenegro** correlates more with Croatia or the EU15 with low shares in employment in agriculture (2,0%), but a still dominant industry sector (30%). It is conducive that more than 51,4% of the working age population have secondary education (ISCED3-4), whereby even here are lacks in the labour market compatibility.

[12] Source: http://setimes.com/cocoon/setimes/xhtml/en_GB/features/setimes/features/2012/02/08/feature-01


Conclusions
Education
Fertility
Mortality
Migration
Demography
Demography
Old-aged Dependency Ratio
Educational-Attainment
Total Fertility Rate
Mortality
Educational-Attainment
Total Fertility Rate
Potential Support Ratio
Net Migration
Net Migration
ISCED5-6
NM
Old-aged Dependency Ratio
Educational-Attainment
ISCED3-4
ISCED0-2
LE
Aged-Dependency Ratio
Potential Support Ratio
LE
OADR
Life Expectancy
Fertility
TFR
ADR
OADR
Europe
PSR
Aged-Dependency Ratio
Migration
ISCED5-6
ISCED3-4
Life Expectancy
NM
ADR
Europe
PSR
TFR
ISCED0-2
Total Fertility Rate

6 Conclusions

If the in chapter 0 illustrated processes would really occur this way what would this mean referring to the economic theories behind the title of this thesis ***"Survival of the Fittest!?"***

The majority of the investigated spatial units will experience a more or less pronounced population and workforce decline, which can be considered with an economic decrease in strength. We have to question ourselves how we want to *"survive"* this shrinkage process and how we could prepare for it. Without the implementation of educational goals, like articulated in the Europe 2020 strategy, the European Union, candidate countries and acceding countries, wants to face the predetermined way to counteract a possible economic recession, which would danger the European economic competitiveness. In this often named post growth economy or society we have to face the consequences of the demographic and economic developments. The by politicians broadly represented objective to ***"go for [economic] growth"*** as David Cameron[13] stated it recently, will be most likely obsolete in the near future. For this reason it has to be initiated a reorientation in economic and political perceptions regarding economic growth, for instance due increasing of the workforce productivity and the investment in innovative and sustainable technologies as in the Green Energy Revolution. (Paech, 2012; Seidl, 2010)

Still in many European countries the demographic transition produces anxieties of an ageing and shrinking society, which is widely associated with a loss of economic and political power. In Europe dominates a traditional mindset that is indoctrinated in our mind that connects population shrinkage with a decline of social wealth and prosperity plus an economic misery. Therefore many socialist countries developed implicit prenatal incentive systems that rewarded early childbearing, i.e. via easier access to housing and paid maternity leave. This triggered a reduction of the mean age of childbearing, especially in the 1980s. With the decay of the Eastern bloc these beneficiary systems were modified or diminished, what contributed to the postponement of motherhood in the last two decades. (Gauthier & Philipov, 2008; Kohler et al., 2006; Lutz, 2008)

"Usually in the West, governments refer mostly to adaptation policies whereas in the East, mitigation and in particular attempts to directly influence the birth rates figure prominently." (Lutz, 2008:p,18)

The Demographic Transition is reality in Europe and in the rest of the developed countries and is hardly reversible, because the fertility decline in the last decades is not only socially but also demographically determined. The fertility decline causes not only a declining number of births but also shrinkage of the number of potential parents which are not willing to have many children on their own. Lutz (2006) writes in this context about the *Low Fertility Trap Hypothesis (LFTH)* which describes a self-reinforcing process that low fertility leads to a change of paradigms in family formation to small ideal family sizes, what then leads to an even lower fertility. The new socialised children probably will get fewer children themselves, what makes the timing of policies crucial. The gap between real and desired fertility is a relative small one so that the space of political actions is limited. The urgency of such measures is inherent to this effect, which gets irreversible when the desired fertility has dropped too far. Then it won't be possible anymore to enhance the fertility rates, because it is not possible to force women to get more children. So politicians can in fact just be supportive and propagate a different family picture that may change the societal attitude about childbearing so that they perhaps can enhance the desired fertility. (Lutz, 2008; O'Neill et al., 2001)

[13] Source: http://www.guardian.co.uk/commentisfree/2011/nov/30/end-of-growth

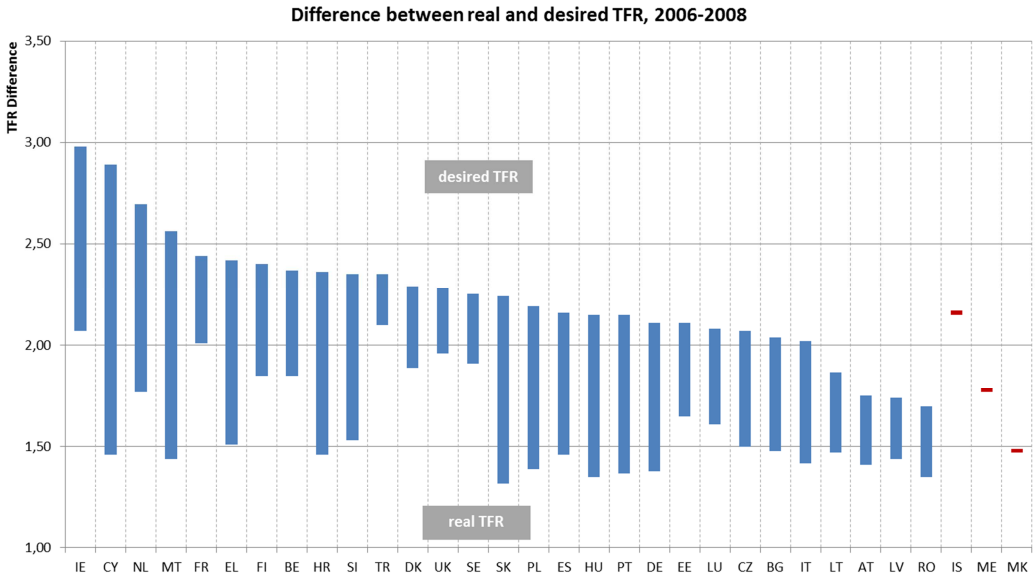


Figure 59 - Difference between real and desired TFR, 2006-2008

Simultaneously the youth moving up to working age has to get prepared optimal for the labour market conditions due to a suitable education and training. These attempts should be accompanied by pro-natal policies to enable the potential parents to fulfil their desire to have children. Admittedly the desired fertility as well as the measured have been declining over the last decades, but however the desired TFR of women in all European exceeds the real TFR for at least 0,3 in Latvia up to 1,43 in Cyprus. On average the desired TFR is about 0,64 points higher than the real one, what gives the political actors a certain scope of action, but even this scope is shrinking. (Gauthier, 2008; Lutz, 2008; Lutz, Skirbekk, & Testa, 2006; O'Neill et al., 2001)

"The importance of higher education for economics mainly stems from its ability to create and/or accumulate human capital and increase the aggregate productivity level of the economy. Thus, as productivity level increases, the economy can produce more and more efficiently." (Erdem & Tugcu, 2012:p.299)

Without a drastic change in the fertility behaviour the absolute and relative size of the working age population (15-64 years) will start to shrink in nearly all European countries within the next 10 years in charge of elderly people (65 years plus). This process of population decline is demographically determined by the past trends and can't get compensated by the promotion of immigration. First of all the total amount of immigrants to equate the population decline would blow all dimensions, additionally it would cause social disturbances and finally just immigration from well educated professionals would make sense to recover the social systems. (Coleman, 2006; Kohler et al., 2006; Lutz, 2008) Therefore, a change of thinking should be encouraged away from the Population stabilization model to a **Balanced Human Capital Development**. The human capital defines itself not about its size, but the quality of the workforce and therefore its productivity. Even in a society with a shrinking working age population the negative effects can be mitigated by the education and training of the remained population stock to counteract the fallen productivity. (Gauthier & Philipov, 2008; Kohler et al., 2006; Lutz, 2004, 2008; Lutz et al., 2006)

Admittedly, the share of retired people will increase rapidly in the next decades and painful measures inevitable, like the increase of the mean age of retirement, decreasing pension benefits, increasing individual contributions into the pension system, etc. Otherwise we will face a massive financial deficit in the national pension funds. This would stress on the one

hand the social- and welfare system and on the other the labour market situation when it will become harder to recruit appropriate professionals. Facing this development it is necessary to educate and train the prospective workforce adequately to make them *"fit"* for the future labour market to fulfil its potential needs and assure the national and European economic competitiveness in the next decades. (Goujon, 2003; Grant et al., 2004; K.C. et al., 2010; Kohler et al., 2006)

"People are the wealth of nations. But it is not only the number of people that counts, it is also the skills, abilities and health status of the people that matter. All these aspects viewed together can be called the human resources base, or human capital in more economic language This broadening view of population also implies that political goals should not be defined in terms of population size but rather in terms of human resources available for producing the best possible quality of life for all citizens." (Lutz et al., 2006:p.20)

The extent of the population ageing and shrinkage is to a certain degree vague, as every projection is based on expert-based opinions about the path of the population development determinants. Therefore, I have illustrated in this thesis three theoretical paths of EU15, EU12, Croatia, Macedonia, Montenegro, and Turkey, that would occur under certain circumstances and shows potential end-users certain *"what-if"* scenarios. Those most probably won't suit the demands of political actors who mainly call for "realistic most likely" scenarios and sometimes for its probability of occurrence to gauge their political and financial actions. Small differences in percentage points in the share of elderly or young people mean on national or European scale considerable differences in the needed financial contributions. The aspiration of demographers has to be on the one hand to increase their projection accuracies due the consideration of as much as possible components and on the other hand when the claim to produce a realistic projection to clarify the end-users about the certainty level and the potential scope of action. (Lutz, Vaupel, & Ahlburg, 1998)

7 Annex

7.1 Annex I – Glossary (by demographic determinant)

7.1.1 Fertility

Age-Specific Fertility Rate (ASFR) – *"The age-specific fertility rate or the fertility rate by age of mother is the number of births to mothers of age x proportional to the average female population of age x."* (Eurostat, 2012)[14]

$$ASFR_k = \frac{B_k}{P_k^f}$$

B_k... Number of Births in a calendar year born by women in age group k

P_k^f ... Number of female population in age group k in the time period (mostly midyear)

Total Fertility Rate (TFR) – *"The total fertility rate is defined as the mean number of children who would be born to a woman during her lifetime, if she were to spend her childbearing years conforming to the age-specific fertility rates, that have been measured in a given year."* (Eurostat, 2012)[15]

$$TFR = \sum_{k=1}^{N} \frac{B_k}{P_k^f} \ (* 1.000)$$

k ... Age group

N ... Number of Age groups

Mean Age of Women at Childbearing (MACB) – *"The mean age of women when their children are born. For a given calendar year, the mean age of women at childbearing can be calculated using the fertility rates by age (in general, the reproductive period is between 15 and 49 years of age). Thus calculated from the fertility rates by age, the mean age is not weighted, meaning that the different numbers of mothers at each age are not taken into account."* (Eurostat, 2012)[16]

7.1.2 Mortality

Age-Specific Mortality Rate (ASMR) – The ASMR is the number of deaths by sex in age x proportional to the average population by sex in age x (Preston et al., 2001)

$$ASMR_k = \frac{D_k}{P_k} * 1.000$$

D_k... Number of Deaths in a calendar year in age group k

P_k... Number of population in age group k in the time period (mostly midyear)

Life Expectancy at Birth (LE) - *"The mean number of years that a newborn child can expect to live if subjected throughout his life to the current mortality conditions (age specific probabilities of dying)."* (Eurostat, 2012)[17] -> the calculation works with help of life tables (see Preston et al., 2001)

[14] Source: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Fertility_rate

[15] Source: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Fertility_rate

[16] Source: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/demo_pop_esms_an2.htm

[17] Source: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/demo_pop_esms_an2.htm

7.1.3 Migration

Net Migration (NM)– This describes the numerical difference of immigrants and emigrants of a spatial unit at a distinct period of time, usually divided by 1.000 inhabitants (Preston et al., 2001)

$$NM = I[0,T] - O[0,T]$$

I[0,T] … Number of in-migrations between time 0 and time T

O[0,T] … Number of out-migrations from the population between time 0 and time T

7.1.4 Age Structure

Dependency Ratio's (DR's)

- *Youth Dependency Ratio (YDR)* - The ratio of persons in the generally economically inactive age groups 0 to 14 years to the number of working age population (15 to 64 years) (Eurostat, 2012)[18]

$$YDR = \frac{P_{0-14}}{P_{15-64}}$$

- *Aged-Dependency Ratio (ADR)* **–** The ratio of persons in the generally economically inactive age groups 65 years plus to the number of working age population (15 to 64 years) (Eurostat, 2012)[19]

$$ADR = \frac{P_{65+}}{P_{15-64}}$$

- *Old-aged Dependency Ratio (OADR)* - The ratio of persons in the generally economically inactive age groups 85 years plus to the number of working age population (15 to 64 years) (Eurostat, 2012)[20]

$$OADR = \frac{P_{85+}}{P_{15-64}}$$

- *Total Dependency Ratio (TDR)* - The ratio gets obtained by the summing up of the YDR and ADR (Eurostat, 2012)[21]

$$TDR = \frac{P_{0-14} + P_{65+}}{P_{15-64}}$$

- *Potential Support Ratio (PSR)* **–** The ratio of persons in working age (15 to 64 years) to the number of persons in the generally economically inactive age group 65 years plus (Husa & Wohlschlägl, 2003)

$$PSR = \frac{P_{15-64}}{P_{65+}}$$

Median age – The median age is that age that divides a population into two numerically equal groups, what means that one half of the people are younger and the other half is older than this age. (Preston et al., 2001)

7.1.5 Human Capital

"Just as accumulation of personal human capital produces individual (income) growth, so do the corresponding social or national aggregates (…) growth of human capital is both a condition and consequence of economic growth (…) human capital activities involve (…) the production of new knowledge which is the source of innovation and of technical change which propels all factors of production." (Mincer, 1981:p.2)

[18] Source: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/demo_pop_esms.htm

[19] Source: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/demo_pop_esms.htm

[20] Source: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/demo_pop_esms.htm

[21] Source: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/demo_pop_esms.htm

7.2 Annex II – Lists

7.2.1 List of Maps & Figures

7.2.2 List of Tables

7.2.3 List of Abbreviations

7.2.3.1 Abbrevations

EC	European Commission
EU	European Union
IIASA	International Institute for Applied Systems Analysis
INED	Institut National Etudes Démographiques
LFS	Labour Force Survey
MACB	Mean age at childbirth
MAFB	Median age at first birth
NIDI	Netherlands Interdisciplinary Demographic Institute
OECD	Organisation for Economic Co-operation and Development
TFR	Total Fertility Rate
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
VID	Vienna Institute of Demography

7.2.3.2 Country Codes

AT	Austria

BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
EU12	European Union 12
EU15	European Union 15
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
ME	Montenegro
MK	Macedonia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
TR	Turkey
UK	United Kingdom

7.3 Annex III – Tables

7.3.1 Financial Data

Table 4 - Multiannual Financial Framework of the European Union, 2007-2013

Commitment appropriations (in billion €)	2007	2008	2009	2010	2011	2012	2013	2007- 2013
1. Sustainable Growth	**53,979**	**57,653**	**61,696**	**63,555**	**63,974**	**67,614**	**70,147**	**438,618**
1a. Competitiveness for Growth and Employment	8,918	10,386	13,269	14,167	12,987	14,853	15,623	90,203
1b. Cohesion for Growth and Employment	45,061	47,267	48,427	49,388	50,987	52,761	54,524	348,415
2. Preservation and Management of Natural Resources	**55,143**	**59,193**	**56,333**	**59,955**	**59,888**	**60,810**	**61,289**	**412,611**
of which: market related expenditure and direct payments	45,759	46,217	46,679	47,146	47,617	48,093	48,574	330,085
3. Citizenship, freedom, security and justice	**1,273**	**1,362**	**1,518**	**1,693**	**1,889**	**2,105**	**2,376**	**12,216**
3a. Freedom, Security and Justice	0,637	0,747	0,867	1,025	1,206	1,406	1,661	7,549
3b. Citizenship	0,636	0,615	0,651	0,668	0,683	0,699	0,715	4,667
4. EU as a global player	**6,578**	**7,002**	**7,440**	**7,893**	**8,430**	**8,997**	**9,595**	**55,935**
5. Administration	**7,039**	**7,380**	**7,525**	**7,882**	**8,091**	**8,523**	**9,095**	**55,535**
6. Compensations	**0,445**	**0,207**	**0,210**	**0,000**	**0,000**	**0,000**	**0,000**	**0,862**
Total commitment appropriations	**124,457**	**132,797**	**134,722**	**140,978**	**142,272**	**148,049**	**152,502**	**975,777**

(European Commission, 2012a)[22]

Table 5 - Budget Lifelong Learning & Youth in Action Programme, 2007-2013

Budget (in million €)	2007	2008	2009	2010	2011	2012	2013	2007-13
LLP	**912,530**	**988,537**	**1.053,910**	**1.096,736**	**1.193,068**	**1.362,138**	**1.363,869**	**7.970,788**
- in EU27	**821,277**	**873,204**	**940,363**	**982,314**	**1.027,655**	**1.110,476**	**1.100,476**	**6.855,765**
- Share (in EU27)	**90,0%**	**88,3%**	**89,2%**	**89,6%**	**86,1%**	**81,5%**	**80,7%**	**86,0%**
Comenius	147,000	152,324	181,305	191,161	206,333	232,707	225,055	**1.335,886**
Erasmus	407,000	456,305	459,294	475,607	515,582	585,724	591,176	**3.490,688**
Leonardo Da Vinci	236,000	256,740	274,438	285,660	315,300	358,900	376,368	**2.103,406**
Grundtvig	44,700	45,658	60,750	62,054	68,611	84,648	74,413	**440,834**
Transversal Program	50,900	54,325	53,104	55,896	55,927	62,581	61,373	**394,106**
Jean Monnet Progra	23,500	21,886	24,120	25,851	29,940	33,084	33,484	**191,865**
Others + Reserve	3,430	1,300	0,900	0,506	1,375	4,493	1,999	**14,004**
Budget (in million €)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2007-13**
YIA	**132,243**	**137,754**	**141,399**	**141,800**	**150,568**	**170,000**	**211,000**	**1084,763**
- in EU27	**116,144**	**120,983**	**121,106**	**124,106**	**126,108**	**134,608**	**140,450**	**883,505**
- Share (in EU27)	**87,8%**	**87,8%**	**85,6%**	**87,5%**	**83,8%**	**79,2%**	**66,6%**	**81,4%**

CONTINUE

[22] http://ec.europa.eu/budget/figures/fin_fwk0713/fwk0713_en.cfm

Table 6 - National Lifelong Learning Programme Beneficiaries, 2007-2013

Beneficiaries LLP (in million €)	2007	2008	2009	2010	2011	2012	2013	2007-13
DG EAC budget	1.450,000	1.555,000	1.654,000	1.783,000	2.725,000	2.695,700	2.763,800	14.626,500
- Part Beneficiaries	960,752	1.014,814	1.166,114	1.200,221	1.307,816	1.293,754	1.326,438	8.269,910
LLP budget	912,530	988,537	1.053,910	1.096,736	1.193,068	1.362,138	1.363,869	7.970,788
- Part Beneficiaries	793,664	841,835	968,332	974,264	1.060,322	1.210,580	1.212,119	7.061,115
- Share (in EU27)	92,3%	96,1%	89,2%	92,2%	90,5%	90,5%	90,5%	91,5%
National Lifelong Learning Programme - Beneficiaries								
BE	28,761	26,131	30,129	30,714	34,131	38,967	39,017	227,849
BG	11,617	12,675	14,609	15,250	15,847	18,092	18,115	106,205
CZ	15,871	19,133	19,733	20,839	22,647	25,856	25,889	149,968
DK	11,491	12,175	13,067	14,019	15,135	17,280	17,302	100,469
DE	92,136	103,474	107,115	110,508	118,285	135,047	135,219	801,785
EE	5,431	5,836	6,579	7,072	7,450	8,506	8,517	49,389
IE	11,997	10,722	13,195	11,539	12,158	13,881	13,899	87,390
EL	19,857	21,624	24,889	25,941	27,063	30,898	30,938	181,210
ES	72,553	85,086	82,819	86,712	92,633	105,759	105,894	631,456
FR	81,594	91,428	94,900	97,956	105,052	119,939	120,092	710,962
IT	80,428	87,383	92,474	95,709	100,733	115,008	115,154	686,889
CY	3,680	3,940	4,396	4,406	4,575	5,223	5,230	31,450
LV	7,258	7,781	8,766	9,222	9,919	11,325	11,339	65,609
LT	10,106	11,074	13,258	13,336	14,053	16,044	16,065	93,937
LU	1,910	2,110	3,888	2,964	4,036	4,608	4,614	24,130
HU	16,469	18,871	20,068	22,555	22,504	25,693	25,726	151,886
MT	2,238	2,458	2,638	2,624	1,704	1,945	1,948	15,555
NL	26,820	27,914	30,792	31,110	34,333	39,199	39,248	229,417
AT	15,347	16,474	17,550	18,548	19,183	21,901	21,929	130,932
PL	60,727	67,182	72,958	76,299	84,849	96,873	96,996	555,883
PT	20,244	21,689	23,402	24,005	25,136	28,698	28,734	171,907
RO	19,243	22,901	28,732	30,414	33,900	38,704	38,753	212,648
SI	6,876	7,493	7,915	8,343	8,837	10,090	10,103	59,657
SK	9,732	10,637	11,794	12,587	13,805	15,761	15,782	90,099
FI	15,195	16,764	16,945	19,384	18,254	20,840	20,867	128,249
SE	16,685	17,925	20,273	20,497	21,077	24,064	24,094	144,615
UK	68,315	78,280	80,812	85,628	92,815	105,968	106,103	617,921
in EU15	563,333	619,179	652,248	675,234	720,024	822,059	823,104	4.875,180
in EU12	169,248	189,981	211,446	222,947	240,090	274,113	274,461	1.582,286
in EU27	732,580	809,160	863,694	898,181	960,114	1.096,172	1.097,565	6.457,467
HR	0,000	0,000	0,000	0,000	5,338	6,094	6,102	17,533
IS	2,870	3,033	3,661	3,448	3,625	4,139	4,144	24,921
ME	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
MK	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
TR	46,920	18,000	88,092	59,465	65,320	74,576	74,671	427,045
in CC5	49,791	21,033	91,753	62,913	74,282	84,809	84,917	469,498
EU27 + CC5	782,371	830,194	955,447	961,094	1.034,397	1.180,981	1.182,482	6.926,965

(European Commission, 2008c, 2009, 2010d, 2010e, 2010f, 2011a, 2012b, 2012c, 2012d, 2012e, 2012m; Eurostat, 2012)

Table 7 - National Youth in Action Programme Beneficiaries, 2007-2013

BENEFICIARIES YIA (in million €)	2007	2008	2009	2010	2011	2012	2013	2007-13
DG EAC budget	1.450,000	1.555,000	1.654,000	1.783,000	2.725,000	2.695,700	2.763,800	14.626,500
- Beneficiaries	960,752	1.014,814	1.166,114	1.200,221	1.307,816	1.293,754	1.326,438	8.269,910
YIA budget	132	138	141	142	151	170	211	1.085
- Beneficiaries	110	111	124	124	134	152	188	943
- Share (in EU27)	90,2%	94,4%	87,0%	90,7%	88,7%	88,7%	88,7%	89,6%
National Youth in Action - Beneficiaries								
BE	5,228	5,414	5,960	6,272	6,385	7,209	8,947	45,415
BG	1,635	2,163	2,654	2,680	2,727	3,079	3,821	18,757
CZ	2,627	2,751	3,035	2,864	2,978	3,362	4,173	21,788
DK	1,982	2,050	2,112	2,650	1,992	2,249	2,791	15,826
DE	10,868	11,784	11,132	11,904	12,293	13,880	17,227	89,088
EE	1,662	1,684	1,729	1,856	1,943	2,194	2,723	13,790
IE	2,079	2,152	2,215	1,989	2,302	2,599	3,226	16,561
EL	2,946	2,993	3,077	3,135	3,177	3,587	4,452	23,367
ES	6,995	7,315	7,339	8,148	8,236	9,298	11,541	58,871
FR	9,651	10,170	10,154	11,104	11,479	12,960	16,086	81,603
IT	7,126	7,393	7,505	7,578	8,555	9,660	11,989	59,807
CY	1,459	1,568	0,269	0,994	1,727	1,950	2,420	10,386
LV	1,715	1,795	1,859	1,881	1,940	2,191	2,719	14,099
LT	1,892	1,981	2,052	2,204	2,321	2,620	3,252	16,321
LU	1,170	1,207	1,382	1,324	1,426	1,610	1,998	10,116
HU	2,673	2,793	2,863	3,355	3,190	3,602	4,471	22,947
MT	1,101	1,152	1,212	0,157	1,027	1,159	1,439	7,247
NL	3,244	3,431	3,451	3,720	4,014	4,532	5,625	28,018
AT	2,361	2,444	2,526	2,551	2,846	3,214	3,989	19,932
PL	7,360	7,705	7,800	8,389	8,896	10,044	12,467	62,661
PT	3,263	3,076	3,093	3,131	3,436	3,879	4,815	24,691
RO	3,168	4,159	5,015	5,065	5,481	6,188	7,681	36,757
SI	1,824	2,163	1,948	1,974	2,067	2,333	2,896	15,206
SK	2,131	2,231	2,328	2,447	2,436	2,750	3,413	17,735
FI	2,092	2,164	2,224	2,378	2,763	3,120	3,873	18,613
SE	2,587	2,693	3,060	3,008	3,264	3,685	4,574	22,872
UK	8,095	8,471	9,552	9,668	10,232	11,553	14,339	71,912
in EU15	69,687	72,757	74,781	78,561	82,400	93,034	115,472	586,692
in EU12	29,245	32,145	32,763	33,865	36,732	41,472	51,474	257,695
in EU27	98,931	104,903	107,543	112,426	119,131	134,506	166,946	844,387
HR	0,000	0,000	0,000	0,000	1,411	1,593	1,978	4,982
IS	1,134	1,188	1,223	1,238	1,287	1,454	1,804	9,328
ME	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
MK	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
TR	7,454	2,737	12,379	7,816	8,579	9,686	12,022	60,673
in CC5	8,588	3,925	13,602	9,054	11,278	12,733	15,804	74,983
EU27 + CC5	107,519	108,827	121,145	121,480	130,409	147,239	182,750	919,370

(European Commission, 2008c, 2009, 2010d, 2010e, 2010f, 2011a, 2012b, 2012c, 2012d, 2012e, 2012m; Eurostat, 2012)

Table 8 - Multiannual Financial Framework of the European Union, 2014-2020

Commitment appropriations (in billion €)	2014	2015	2016	2017	2018	2019	2020	2014-2020
1. Smart and Inclusive Growth	**64,697**	**66,581**	**68,134**	**69,957**	**71,596**	**73,769**	**76,179**	**490,913**
Galileo	1,100	1,100	0,900	0,900	0,700	0,900	1,400	**7,000**
Nuclear safety + decommissioning	0,134	0,134	0,134	0,134	0,055	0,055	0,055	**0,701**
CSF research and innovation	10,079	10,529	10,979	11,429	11,879	12,329	12,776	**80,000**
New Competitiveness/SME	0,235	0,270	0,305	0,340	0,375	0,410	0,445	**2,380**
Single Education, Training, Youth and Sport	1,423	1,673	1,923	2,173	2,423	2,673	2,923	**15,211**
Social development agenda	0,121	0,121	0,121	0,121	0,121	0,121	0,124	**0,850**
Customs-Fiscalis-Anti Fraud	0,120	0,120	0,120	0,120	0,120	0,120	0,120	**0,840**
Agencies	0,237	0,291	0,290	0,291	0,265	0,326	0,331	**2,031**
Other	0,267	0,267	0,267	0,267	0,267	0,267	0,267	**1,869**
Margin	0,513	0,533	0,553	0,573	0,593	0,613	0,633	**4,011**
Connecting Europe Facility	3,914	4,514	5,114	5,714	6,314	6,914	7,516	**40,000**
Cohesion policy	46,554	47,029	47,428	47,895	48,484	49,041	49,589	**336,020**
2. Sustainable Growth: natural resources	**57,386**	**56,528**	**55,702**	**54,852**	**53,838**	**52,829**	**51,785**	**382,920**
Subceiling CAP (direct payments + market expenditures)	42,244	41,623	41,029	40,420	39,618	38,831	38,060	**281,825**
Rural Development	13,618	13,351	13,089	12,823	12,581	12,334	12,092	**89,888**
EMFF (incl. market measures) + FPA's + RFMO's	0,945	0,950	0,955	0,955	0,960	0,960	0,960	**6,685**
Environment and climate action (Life+)	0,390	0,415	0,440	0,465	0,490	0,515	0,485	**3,200**
Agencies	0,049	0,049	0,049	0,049	0,049	0,049	0,049	**0,343**
Margin	0,140	0,140	0,140	0,140	0,140	0,140	0,139	**0,979**
3. Security and citizenship	**2,532**	**2,570**	**2,609**	**2,648**	**2,687**	**2,726**	**2,765**	**18,537**
Migration Management Fund	0,490	0,490	0,490	0,490	0,490	0,490	0,493	**3,433**
Internal Security	0,528	0,548	0,568	0,588	0,608	0,628	0,648	**4,116**
IT systems	0,104	0,104	0,104	0,104	0,104	0,104	0,105	**0,729**
Justice	0,044	0,050	0,055	0,060	0,065	0,070	0,072	**0,416**
Rights and Citizenship	0,041	0,045	0,050	0,055	0,060	0,065	0,071	**0,387**
Civil Protection	0,035	0,035	0,035	0,035	0,035	0,035	0,035	**0,245**
Europe for Citizens	0,029	0,029	0,029	0,029	0,029	0,029	0,029	**0,203**
Food safety	0,330	0,323	0,317	0,311	0,305	0,299	0,293	**2,178**
Public Health	0,057	0,057	0,057	0,057	0,057	0,057	0,054	**0,396**
Consumer protection	0,025	0,025	0,025	0,025	0,025	0,025	0,025	**0,175**
Creative Europe Programme	0,182	0,197	0,212	0,227	0,242	0,257	0,273	**1,590**
Agencies	0,431	0,431	0,431	0,431	0,431	0,431	0,431	**3,017**
Other	0,106	0,106	0,106	0,106	0,106	0,106	0,106	**0,742**
Margin	0,13	0,13	0,13	0,13	0,13	0,13	0,13	**0,910**
4 Global Europe	**9,402**	**9,647**	**9,847**	**9,961**	**10,151**	**10,381**	**10,622**	**70,011**
Instrument for Pre Accession (IPA)	1,789	1,789	1,789	1,789	1,789	1,789	1,789	**12,523**
European Neighbourhood Instrument (ENI)	2,1	2,213	2,226	2,265	2,34	2,439	2,514	**16,097**
EIDHR	0,2	0,2	0,2	0,2	0,2	0,2	0,2	**1,400**
Stability (IfS)	0,359	0,359	0,359	0,359	0,359	0,359	0,359	**2,513**
Security (CFSP)	0,359	0,359	0,359	0,359	0,359	0,359	0,359	**2,513**
Partnership Instrument (PI)	0,126	0,13	0,135	0,141	0,148	0,156	0,164	**1,000**
Development Cooperation Instrument (DCI)	2,56	2,682	2,808	2,938	3,069	3,202	3,338	**20,597**
Humanitarian Aid	0,93	0,925	0,92	0,915	0,91	0,905	0,9	**6,405**
Civil Protection (CPFI) + ERC	0,03	0,03	0,03	0,03	0,03	0,03	0,03	**0,210**
EVHAC	0,02	0,022	0,025	0,029	0,033	0,038	0,043	**0,210**
Instrument for Nuclear Safety Cooperation (INSC)	0,08	0,08	0,08	0,08	0,08	0,08	0,08	**0,560**
Macro-financial assistance	0,085	0,085	0,085	0,085	0,084	0,084	0,085	**0,593**
Guarantee fund for External actions	0,236	0,231	0,226	0,195	0,157	0,128	0,084	**1,257**
Agencies	0,02	0,02	0,02	0,02	0,02	0,02	0,02	**0,140**
Other	0,134	0,134	0,189	0,134	0,134	0,134	0,134	**0,993**
Margin	0,374	0,388	0,396	0,422	0,439	0,458	0,523	**3,000**
5 Administration	**8,542**	**8,679**	**8,796**	**8,943**	**9,074**	**9,225**	**9,372**	**62,631**
Pension expenditures and European Schools	1,575	1,640	1,687	1,752	1,785	1,839	1,886	**12,164**
Administrative expenditure of the institutions	6,812	6,869	6,924	6,991	7,074	7,156	7,239	**49,065**
Margin	0,155	0,170	0,185	0,200	0,215	0,230	0,247	**1,402**
Total commitment appropriations	**142,559**	**144,005**	**145,088**	**146,361**	**147,346**	**148,930**	**150,723**	**1025,012**

(European Commission, 2011b)[23]

[23] http://ec.europa.eu/budget/library/biblio/documents/fin_fwk1420/MFF_COM-2011-500_Part_I_en.pdf

7.3.2 Demographic & Educational Data

7.3.2.1 The European Union 15 (EU15)

Table 9 – Population Structure by age, sex and educational attainment in EU15, 2008-2048

EU15		Baseyear Population			Constant Scenario			EU 2020 Scenario			Target-Trend Scenario		
		MF 2008	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women
POPULATION	**Population**												
	Total	**392.476.709**	192.052.686	200.424.023	**347.032.555**	168.162.534	178.870.021	**338.949.037**	164.060.507	174.888.530	**373.118.400**	181.960.714	191.157.686
	ISCED0-2	**190.201.327**	89.752.689	100.448.638	**125.642.965**	64.341.315	61.301.650	**107.481.218**	53.599.860	53.881.358	**121.321.442**	60.703.007	60.618.435
	ISCED3-4	**134.355.706**	67.861.255	66.494.451	**126.440.326**	62.404.789	64.035.537	**138.629.934**	67.192.294	71.437.640	**151.366.502**	73.962.221	77.404.281
	ISCED5-6	**67.919.676**	34.438.742	33.480.934	**94.949.264**	41.416.430	53.532.834	**92.837.885**	43.268.353	49.569.532	**100.430.456**	47.295.486	53.134.970
	Age Distribution												
	00-14	**0,158**	0,166	0,151	**0,143**	0,147	0,139	**0,142**	0,147	0,138	**0,139**	0,142	0,135
	15-64	**0,665**	0,682	0,648	**0,577**	0,597	0,557	**0,577**	0,598	0,557	**0,545**	0,563	0,528
	65+	**0,177**	0,152	0,201	**0,280**	0,255	0,304	**0,281**	0,256	0,305	**0,316**	0,295	0,337
	85+	**0,021**	0,012	0,029	**0,046**	0,034	0,057	**0,046**	0,034	0,057	**0,070**	0,057	0,083
DEPENDENCY RATIO's	**Dependency Ratio's (DR)**												
	TDR	**0,504**	0,465	0,542	**0,734**	0,674	0,795	**0,733**	0,673	0,794	**0,835**	0,777	0,894
	YDR	**0,238**	0,243	0,233	**0,248**	0,247	0,249	**0,246**	0,245	0,247	**0,254**	0,253	0,256
	ADR	**0,266**	0,222	0,310	**0,486**	0,427	0,546	**0,487**	0,428	0,547	**0,581**	0,524	0,638
	OADR	**0,032**	0,018	0,045	**0,079**	0,056	0,102	**0,079**	0,056	0,102	**0,128**	0,101	0,156
	PSR	**3,8**	4,5	3,2	**2,1**	2,3	1,8	**2,1**	2,3	1,8	**1,7**	1,9	1,6
EDUCATION	**Educational Attainment - Total Population**												
	ISCED0-2	**0,485**	0,467	0,501	**0,362**	0,383	0,343	**0,323**	0,333	0,314	**0,325**	0,334	0,317
	ISCED3-4	**0,342**	0,353	0,332	**0,364**	0,371	0,358	**0,405**	0,405	0,405	**0,406**	0,406	0,405
	ISCED5-6	**0,173**	0,179	0,167	**0,274**	0,246	0,299	**0,272**	0,261	0,281	**0,269**	0,260	0,278
	Educational Attainment - Working Age Population (15-64y)												
	ISCED0-2	**0,327**	0,326	0,329	**0,260**	0,286	0,235	**0,194**	0,204	0,184	**0,195**	0,205	0,185
	ISCED3-4	**0,445**	0,451	0,439	**0,412**	0,425	0,399	**0,481**	0,481	0,481	**0,481**	0,481	0,481
	ISCED5-6	**0,228**	0,224	0,233	**0,327**	0,289	0,366	**0,325**	0,315	0,334	**0,324**	0,314	0,334
VITAL RATES	**Life Expectancy (LE)**												
	Total	**80,41**	77,68	83,03	**80,44**	77,68	83,03	**80,44**	77,68	83,03	**86,17**	83,89	88,34
	Total Fertility Rate (TFR)												
	Total	**1,65**	-	-	**1,65**	-	-	**1,64**	-	-	**1,72**	-	-
	ISCED0-2	**1,62**	-	-	**1,62**	-	-	**1,62**	-	-	**1,63**	-	-
	ISCED3-4	**1,55**	-	-	**1,55**	-	-	**1,55**	-	-	**1,70**	-	-
	ISCED5-6	**1,68**	-	-	**1,68**	-	-	**1,68**	-	-	**1,77**	-	-
	Net Migration (NM)												
	Total	**746.350**	381.872	364.478	**746.350**	381.872	364.478	**746.350**	381.872	364.478	**746.350**	381.872	364.478
	ISCED0-2	**567.363**	305.467	261.896	**567.363**	305.467	261.896	**567.363**	305.467	261.896	**567.363**	305.467	261.896
	ISCED3-4	**96.527**	42.856	53.671	**96.527**	42.856	53.671	**96.527**	42.856	53.671	**96.527**	42.856	53.671
	ISCED5-6	**82.460**	33.549	48.911	**82.460**	33.549	48.911	**82.460**	33.549	48.911	**82.460**	33.549	48.911

Table 10 - Population by age, sex and educational attainment in EU15, 2008-2048 (Constant Scenario)

CONSTANT SCENARIO - WITH MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.584.323	10.584.323	0	0	8.072.314	8.072.314	0	0	-23,7%	-23,7%	-	-
05-09	10.531.447	10.531.447	0	0	8.302.110	8.302.110	0	0	-21,2%	-21,2%	-	-
10-14	10.745.769	10.745.769	0	0	8.426.603	8.426.603	0	0	-21,6%	-21,6%	-	-
15-19	11.720.460	8.540.227	3.082.173	98.060	8.571.275	6.052.934	2.440.887	77.454	-26,9%	-29,1%	-20,8%	-21,0%
20-24	12.159.826	3.009.268	7.659.466	1.491.092	8.866.582	2.209.404	5.455.335	1.201.843	-27,1%	-26,6%	-28,8%	-19,4%
25-29	13.018.186	2.849.846	6.571.730	3.596.610	9.304.317	2.249.619	4.231.308	2.823.390	-28,5%	-21,1%	-35,6%	-21,5%
30-34	13.544.221	3.228.420	6.174.679	4.141.122	9.861.317	2.412.102	4.088.382	3.360.833	-27,2%	-25,3%	-33,8%	-18,8%
35-39	15.000.225	3.830.722	6.919.232	4.250.271	10.459.043	2.569.353	4.325.961	3.563.729	-30,3%	-32,9%	-37,5%	-16,2%
40-44	15.693.039	4.206.501	7.297.468	4.189.070	10.624.214	2.615.618	4.389.630	3.618.966	-32,3%	-37,8%	-39,8%	-13,6%
45-49	14.423.479	4.225.430	6.768.399	3.429.650	10.466.547	2.579.855	4.321.803	3.564.889	-27,4%	-38,9%	-36,1%	3,9%
50-54	12.840.622	4.212.225	5.598.398	3.029.999	10.454.854	2.575.971	4.317.480	3.561.403	-18,6%	-38,8%	-22,9%	17,5%
55-59	12.114.743	4.251.700	5.037.918	2.825.125	11.009.267	2.785.793	4.574.934	3.648.540	-9,1%	-34,5%	-9,2%	29,1%
60-64	10.547.976	4.319.840	3.941.234	2.286.902	10.854.640	2.646.652	4.596.031	3.611.957	2,9%	-38,7%	16,6%	57,9%
65-69	9.302.576	4.087.774	3.386.316	1.828.486	10.811.758	2.419.041	4.956.991	3.435.726	16,2%	-40,8%	46,4%	87,9%
70-74	7.757.740	4.042.226	2.353.200	1.362.314	10.056.504	2.417.929	4.562.251	3.076.324	29,6%	-40,2%	93,9%	125,8%
75-79	5.951.116	3.400.641	1.636.463	914.012	9.271.077	2.373.533	4.266.737	2.630.807	55,8%	-30,2%	160,7%	187,8%
80-84	3.721.473	2.259.625	862.567	599.281	7.090.225	1.900.989	3.293.009	1.896.227	90,5%	-15,9%	281,8%	216,4%
85-89	1.791.739	1.066.424	420.883	304.432	3.833.485	1.122.522	1.797.335	913.628	114,0%	5,3%	327,0%	200,1%
90-94	453.204	282.249	100.420	70.535	1.379.253	452.146	600.884	326.223	204,3%	60,2%	498,4%	362,5%
95+	150.522	78.032	50.709	21.781	447.149	156.827	185.831	104.491	197,1%	101,0%	266,5%	379,7%
Sum	192.052.686	89.752.689	67.861.255	34.438.742	168.162.534	64.341.315	62.404.789	41.416.430	-12,4%	-28,3%	-8,0%	20,3%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.038.352	10.038.352	0	0	8.068.732	8.068.732	0	0	-19,6%	-19,6%	-	-
05-09	10.000.327	10.000.327	0	0	8.296.371	8.296.371	0	0	-17,0%	-17,0%	-	-
10-14	10.197.186	10.197.186	0	0	8.414.480	8.414.480	0	0	-17,5%	-17,5%	-	-
15-19	11.113.824	7.714.444	3.308.354	91.026	8.551.366	5.721.361	2.754.362	75.643	-23,1%	-25,8%	-16,7%	-16,9%
20-24	11.708.998	2.135.997	7.401.786	2.171.215	8.856.660	1.648.450	5.359.205	1.849.005	-24,4%	-22,8%	-27,6%	-14,8%
25-29	12.675.724	2.281.850	5.924.168	4.469.706	9.321.941	1.781.773	3.852.162	3.688.006	-26,5%	-21,9%	-35,0%	-17,5%
30-34	13.186.544	2.576.833	5.673.013	4.936.698	9.887.064	1.915.128	3.747.222	4.224.714	-25,0%	-25,7%	-33,9%	-14,4%
35-39	14.682.719	3.389.890	6.792.930	4.499.899	10.510.450	2.045.540	3.976.206	4.488.704	-28,4%	-39,7%	-41,5%	-0,2%
40-44	15.452.757	4.091.983	7.372.550	3.988.224	10.181.281	1.992.136	3.845.698	4.343.447	-34,1%	-51,3%	-47,8%	8,9%
45-49	14.441.925	4.522.637	6.606.584	3.312.704	10.107.646	1.982.065	3.816.048	4.309.533	-30,0%	-56,2%	-42,2%	30,1%
50-54	13.070.854	4.780.806	5.467.484	2.822.564	10.196.687	2.000.594	3.848.888	4.347.205	-22,0%	-58,2%	-29,6%	54,0%
55-59	12.507.488	5.466.572	4.718.038	2.322.878	10.898.198	2.205.009	4.179.381	4.513.808	-12,9%	-59,7%	-11,4%	94,3%
60-64	11.115.426	5.734.570	3.732.456	1.648.400	11.149.308	2.136.264	4.405.564	4.607.480	0,3%	-62,7%	18,0%	179,5%
65-69	10.292.658	6.046.063	3.149.486	1.097.109	11.597.359	2.142.898	4.950.780	4.503.681	12,7%	-64,6%	57,2%	310,5%
70-74	9.338.578	6.258.599	2.361.837	718.142	11.366.956	2.245.842	4.866.733	4.254.381	21,7%	-64,1%	106,1%	492,4%
75-79	8.217.037	5.850.047	1.661.445	705.545	11.408.211	2.641.099	5.263.115	3.503.997	38,8%	-54,9%	216,8%	396,6%
80-84	6.531.635	4.791.669	1.273.644	466.322	9.884.402	2.617.289	4.707.449	2.559.664	51,3%	-45,4%	269,6%	448,9%
85-89	4.010.364	3.118.428	728.311	163.625	6.382.405	1.996.266	2.916.201	1.469.938	59,1%	-36,0%	300,4%	798,4%
90-94	1.337.197	1.057.514	225.867	53.816	2.863.204	1.045.611	1.196.840	620.753	114,1%	-1,1%	429,9%	1053,5%
95+	504.430	394.871	96.498	13.061	927.300	404.742	349.683	172.875	83,8%	2,5%	262,4%	1223,6%
Sum	200.424.023	100.448.638	66.494.451	33.480.934	178.870.021	61.301.650	64.035.537	53.532.834	-10,8%	-39,0%	-3,7%	59,9%

CONSTANT SCENARIO - WITHOUT MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.584.323	10.584.323	0	0	7.855.459	7.855.459	0	0	-25,8%	-25,8%	-	-
05-09	10.531.447	10.531.447	0	0	8.087.807	8.087.807	0	0	-23,2%	-23,2%	-	-
10-14	10.745.769	10.745.769	0	0	8.206.610	8.206.610	0	0	-23,6%	-23,6%	-	-
15-19	11.720.460	8.540.227	3.082.173	98.060	8.324.032	5.860.517	2.387.555	75.960	-29,0%	-31,4%	-22,5%	-22,5%
20-24	12.159.826	3.009.268	7.659.466	1.491.092	8.569.801	2.126.005	5.254.644	1.189.152	-29,5%	-29,4%	-31,4%	-20,2%
25-29	13.018.186	2.849.846	6.571.730	3.596.610	8.993.083	2.112.821	4.116.576	2.763.686	-30,9%	-25,9%	-37,4%	-23,2%
30-34	13.544.221	3.228.420	6.174.679	4.141.122	9.533.871	2.239.873	4.002.524	3.291.474	-29,6%	-30,6%	-35,2%	-20,5%
35-39	15.000.225	3.830.722	6.919.232	4.250.271	10.133.058	2.380.645	4.254.076	3.498.337	-32,4%	-37,9%	-38,5%	-17,7%
40-44	15.693.039	4.206.501	7.297.468	4.189.070	10.303.107	2.420.596	4.325.466	3.557.045	-34,3%	-42,5%	-40,7%	-15,1%
45-49	14.423.479	4.225.430	6.768.399	3.429.650	10.157.186	2.386.314	4.264.205	3.506.667	-29,6%	-43,5%	-37,0%	2,2%
50-54	12.840.622	4.212.225	5.598.398	3.029.999	10.166.637	2.388.534	4.268.173	3.509.930	-20,8%	-43,3%	-23,8%	15,8%
55-59	12.114.743	4.251.700	5.037.918	2.825.125	10.767.612	2.618.159	4.545.544	3.603.909	-11,1%	-38,4%	-9,8%	27,6%
60-64	10.547.976	4.319.840	3.941.234	2.286.902	10.687.535	2.504.791	4.605.531	3.577.213	1,3%	-42,0%	16,9%	56,4%
65-69	9.302.576	4.087.774	3.386.316	1.828.486	10.693.738	2.340.995	4.951.035	3.401.708	15,0%	-42,7%	46,2%	86,0%
70-74	7.757.740	4.042.226	2.353.200	1.362.314	9.990.020	2.381.236	4.554.353	3.054.431	28,8%	-41,1%	93,5%	124,2%
75-79	5.951.116	3.400.641	1.636.463	914.012	9.237.973	2.359.172	4.261.248	2.617.553	55,2%	-30,6%	160,4%	186,4%
80-84	3.721.473	2.259.625	862.567	599.281	7.076.217	1.896.772	3.290.533	1.888.912	90,1%	-16,1%	281,5%	215,2%
85-89	1.791.739	1.066.424	420.883	304.432	3.828.896	1.121.694	1.796.758	910.444	113,7%	5,2%	326,9%	199,1%
90-94	453.204	282.249	100.420	70.535	1.378.482	452.196	601.006	325.280	204,2%	60,2%	498,5%	361,2%
95+	150.522	78.032	50.709	21.781	447.065	156.899	185.912	104.254	197,0%	101,1%	266,6%	378,6%
Sum	192.052.686	89.752.689	67.861.255	34.438.742	164.438.189	61.897.095	61.665.139	40.875.955	-14,4%	-31,0%	-9,1%	18,7%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.038.352	10.038.352	0	0	7.857.330	7.857.330	0	0	-21,7%	-21,7%	-	-
05-09	10.000.327	10.000.327	0	0	8.093.593	8.093.593	0	0	-19,1%	-19,1%	-	-
10-14	10.197.186	10.197.186	0	0	8.213.557	8.213.557	0	0	-19,5%	-19,5%	-	-
15-19	11.113.824	7.714.444	3.308.354	91.026	8.336.668	5.557.518	2.704.732	74.418	-25,0%	-28,0%	-18,2%	-18,2%
20-24	11.708.998	2.135.997	7.401.786	2.171.215	8.597.347	1.586.897	5.179.878	1.830.572	-26,6%	-25,7%	-30,0%	-15,7%
25-29	12.675.724	2.281.850	5.924.168	4.469.706	9.042.051	1.668.981	3.756.091	3.616.979	-28,7%	-26,9%	-36,6%	-19,1%
30-34	13.186.544	2.576.833	5.673.013	4.936.698	9.607.703	1.773.389	3.676.456	4.157.858	-27,1%	-31,2%	-35,2%	-15,8%
35-39	14.682.719	3.389.890	6.792.930	4.499.899	10.237.363	1.889.611	3.917.400	4.430.352	-30,3%	-44,3%	-42,3%	-1,5%
40-44	15.452.757	4.091.983	7.372.550	3.988.224	9.903.305	1.827.951	3.789.570	4.285.784	-35,9%	-55,3%	-48,6%	7,5%
45-49	14.441.925	4.522.637	6.606.584	3.312.704	9.822.993	1.813.127	3.758.838	4.251.028	-32,0%	-59,9%	-43,1%	28,3%
50-54	13.070.854	4.780.806	5.467.484	2.822.564	9.914.095	1.829.942	3.793.699	4.290.454	-24,2%	-61,7%	-30,6%	52,0%
55-59	12.507.488	5.466.572	4.718.038	2.322.878	10.640.417	2.045.011	4.138.862	4.456.544	-14,9%	-62,6%	-12,3%	91,9%
60-64	11.115.426	5.734.570	3.732.456	1.648.400	10.955.619	1.998.563	4.398.539	4.558.517	-1,4%	-65,1%	17,8%	176,5%
65-69	10.292.658	6.046.063	3.149.486	1.097.109	11.454.355	2.061.983	4.931.350	4.461.022	11,3%	-65,9%	56,6%	306,6%
70-74	9.338.578	6.258.599	2.361.837	718.142	11.261.951	2.200.741	4.845.030	4.216.180	20,6%	-64,8%	105,1%	487,1%
75-79	8.217.037	5.850.047	1.661.445	705.545	11.336.935	2.617.428	5.245.010	3.474.497	38,0%	-55,3%	215,7%	392,5%
80-84	6.531.635	4.791.669	1.273.644	466.322	9.842.303	2.606.301	4.695.788	2.540.214	50,7%	-45,6%	268,7%	444,7%
85-89	4.010.364	3.118.428	728.311	163.625	6.364.405	1.993.079	2.911.452	1.459.874	58,7%	-36,1%	299,8%	792,2%
90-94	1.337.197	1.057.514	225.867	53.816	2.858.555	1.045.547	1.195.722	617.286	113,8%	-1,1%	429,4%	1047,0%
95+	504.430	394.871	96.498	13.061	926.564	404.968	349.516	172.080	83,7%	2,6%	262,2%	1217,5%
Sum	200.424.023	100.448.638	66.494.451	33.480.934	175.267.109	59.085.517	63.287.933	52.893.659	-12,6%	-41,2%	-4,8%	58,0%

Table 11 - Population by age, sex and educational attainment in EU15, 2008-2048 (EU2020 Scenario)

EUROPE 2020 SCENARIO - WITH MIGRATION (EU15)

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.584.323	10.584.323	0	0	7.992.137	7.992.137	0	0	-24,5%	-24,5%	-	-
05-09	10.531.447	10.531.447	0	0	8.238.843	8.238.843	0	0	-21,8%	-21,8%	-	-
10-14	10.745.769	10.745.769	0	0	8.377.472	8.377.472	0	0	-22,0%	-22,0%	-	-
15-19	11.720.460	8.540.227	3.082.173	98.060	8.523.352	6.227.830	2.224.938	70.584	-27,3%	-27,1%	-27,8%	-28,0%
20-24	12.159.826	3.009.268	7.659.466	1.491.092	8.811.789	897.587	6.532.171	1.382.031	-27,5%	-70,2%	-14,7%	-7,3%
25-29	13.018.186	2.849.846	6.571.730	3.596.610	9.251.728	1.002.159	4.948.139	3.301.430	-28,9%	-64,8%	-24,7%	-8,2%
30-34	13.544.221	3.228.420	6.174.679	4.141.122	9.827.895	1.098.630	4.833.581	3.895.684	-27,4%	-66,0%	-21,7%	-5,9%
35-39	15.000.225	3.830.722	6.919.232	4.250.271	10.459.042	1.183.389	5.131.826	4.143.827	-30,3%	-69,1%	-25,8%	-2,5%
40-44	15.693.039	4.206.501	7.297.468	4.189.070	10.624.214	1.210.247	5.206.753	4.207.214	-32,3%	-71,2%	-28,6%	0,4%
45-49	14.423.479	4.225.430	6.768.399	3.429.650	10.466.547	1.449.205	4.999.129	4.018.213	-27,4%	-65,7%	-26,1%	17,2%
50-54	12.840.622	4.212.225	5.598.398	3.029.999	10.454.855	2.076.004	4.703.931	3.674.920	-18,6%	-50,7%	-16,0%	21,3%
55-59	12.114.743	4.251.700	5.037.918	2.825.125	11.009.268	2.833.401	4.671.119	3.504.748	-9,1%	-33,4%	-7,3%	24,1%
60-64	10.547.976	4.319.840	3.941.234	2.286.902	10.854.639	2.481.497	4.978.456	3.394.686	2,9%	-42,6%	26,3%	48,4%
65-69	9.302.576	4.087.774	3.386.316	1.828.486	10.811.757	2.419.041	5.089.107	3.303.609	16,2%	-40,8%	50,3%	80,7%
70-74	7.757.740	4.042.226	2.353.200	1.362.314	10.056.504	2.417.929	4.562.251	3.076.324	29,6%	-40,2%	93,9%	125,8%
75-79	5.951.116	3.400.641	1.636.463	914.012	9.271.077	2.373.533	4.266.737	2.630.807	55,8%	-30,2%	160,7%	187,8%
80-84	3.721.473	2.259.625	862.567	599.281	7.090.225	1.900.989	3.293.009	1.896.227	90,5%	-15,9%	281,8%	216,4%
85-89	1.791.739	1.066.424	420.883	304.432	3.833.485	1.122.522	1.797.335	913.628	114,0%	5,3%	327,0%	200,1%
90-94	453.204	282.249	100.420	70.535	1.379.253	452.146	600.884	326.223	204,3%	60,2%	498,4%	362,5%
95+	150.522	78.032	50.709	21.781	447.149	156.827	185.831	104.491	197,1%	101,0%	266,5%	379,7%
Sum	192.052.686	89.752.689	67.861.255	34.438.742	167.781.231	55.911.388	68.025.197	43.844.646	-12,6%	-37,7%	0,2%	27,3%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.038.352	10.038.352	0	0	7.988.537	7.988.537	0	0	-20,4%	-20,4%	-	-
05-09	10.000.327	10.000.327	0	0	8.233.059	8.233.059	0	0	-17,7%	-17,7%	-	-
10-14	10.197.186	10.197.186	0	0	8.365.307	8.365.307	0	0	-18,0%	-18,0%	-	-
15-19	11.113.824	7.714.444	3.308.354	91.026	8.503.369	5.922.267	2.512.124	68.978	-23,5%	-23,2%	-24,1%	-24,2%
20-24	11.708.998	2.135.997	7.401.786	2.171.215	8.801.690	896.658	6.196.596	1.708.436	-24,8%	-58,0%	-16,3%	-21,3%
25-29	12.675.724	2.281.850	5.924.168	4.469.706	9.269.065	995.180	4.822.414	3.451.471	-26,9%	-56,4%	-18,6%	-22,8%
30-34	13.186.544	2.576.833	5.673.013	4.936.698	9.853.382	1.085.754	4.872.401	3.895.227	-25,3%	-57,9%	-14,1%	-21,1%
35-39	14.682.719	3.389.890	6.792.930	4.499.899	10.510.450	1.169.415	5.187.362	4.153.673	-28,4%	-65,5%	-23,6%	-7,7%
40-44	15.452.757	4.091.983	7.372.550	3.988.224	10.181.282	1.146.009	5.015.450	4.019.823	-34,1%	-72,0%	-32,0%	0,8%
45-49	14.441.925	4.522.637	6.606.584	3.312.704	10.107.646	1.280.153	4.892.467	3.935.026	-30,0%	-71,7%	-25,9%	18,8%
50-54	13.070.854	4.780.806	5.467.484	2.822.564	10.196.687	1.636.107	4.716.941	3.843.639	-22,0%	-65,8%	-13,7%	36,2%
55-59	12.507.488	5.466.572	4.718.038	2.322.878	10.898.199	2.101.061	4.781.964	4.015.174	-12,9%	-61,6%	1,4%	72,9%
60-64	11.115.426	5.734.570	3.732.456	1.648.400	11.149.309	2.109.903	4.875.022	4.164.384	0,3%	-63,2%	30,6%	152,6%
65-69	10.292.658	6.046.063	3.149.486	1.097.109	11.597.359	2.142.898	5.123.591	4.330.870	12,7%	-64,6%	62,7%	294,8%
70-74	9.338.578	6.258.599	2.361.837	718.142	11.366.956	2.245.842	4.866.733	4.254.381	21,7%	-64,1%	106,1%	492,4%
75-79	8.217.037	5.850.047	1.661.445	705.545	11.408.211	2.641.099	5.263.115	3.503.997	38,8%	-54,9%	216,8%	396,6%
80-84	6.531.635	4.791.669	1.273.644	466.322	9.884.402	2.617.289	4.707.449	2.559.664	51,3%	-45,4%	269,6%	448,9%
85-89	4.010.364	3.118.428	728.311	163.625	6.382.405	1.996.266	2.916.201	1.469.938	59,1%	-36,0%	300,4%	798,4%
90-94	1.337.197	1.057.514	225.867	53.816	2.863.204	1.045.611	1.196.840	620.753	114,1%	-1,1%	429,9%	1053,5%
95+	504.430	394.871	96.498	13.061	927.300	404.742	349.683	172.875	83,8%	2,5%	262,4%	1223,6%
Sum	200.424.023	100.448.638	66.494.451	33.480.934	178.487.819	56.023.157	72.296.353	50.168.309	-10,9%	-44,2%	8,7%	49,8%

EUROPE 2020 SCENARIO - WITHOUT MIGRATION (EU15)

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.584.323	10.584.323	0	0	7.776.305	7.776.305	0	0	-26,5%	-26,5%	-	-
05-09	10.531.447	10.531.447	0	0	8.025.327	8.025.327	0	0	-23,8%	-23,8%	-	-
10-14	10.745.769	10.745.769	0	0	8.158.104	8.158.104	0	0	-24,1%	-24,1%	-	-
15-19	11.720.460	8.540.227	3.082.173	98.060	8.276.657	6.030.866	2.176.544	69.247	-29,4%	-29,4%	-29,4%	-29,4%
20-24	12.159.826	3.009.268	7.659.466	1.491.092	8.515.451	851.545	6.297.812	1.366.094	-30,0%	-71,7%	-17,8%	-8,4%
25-29	13.018.186	2.849.846	6.571.730	3.596.610	8.940.686	894.069	4.815.076	3.231.541	-31,3%	-68,6%	-26,7%	-10,2%
30-34	13.544.221	3.228.420	6.174.679	4.141.122	9.500.448	950.045	4.732.706	3.817.697	-29,9%	-70,6%	-23,4%	-7,8%
35-39	15.000.225	3.830.722	6.919.232	4.250.271	10.133.059	1.013.306	5.047.845	4.071.908	-32,4%	-73,5%	-27,0%	-4,2%
40-44	15.693.039	4.206.501	7.297.468	4.189.070	10.303.108	1.030.311	5.132.556	4.140.241	-34,3%	-75,5%	-29,7%	-1,2%
45-49	14.423.479	4.225.430	6.768.399	3.429.650	10.157.186	1.265.376	4.934.805	3.957.005	-29,6%	-70,1%	-27,1%	15,4%
50-54	12.840.622	4.212.225	5.598.398	3.029.999	10.166.636	1.891.277	4.652.231	3.623.128	-20,8%	-55,1%	-16,9%	19,6%
55-59	12.114.743	4.251.700	5.037.918	2.825.125	10.767.613	2.664.728	4.641.665	3.461.220	-11,1%	-37,3%	-7,9%	22,5%
60-64	10.547.976	4.319.840	3.941.234	2.286.902	10.687.536	2.339.637	4.988.093	3.359.806	1,3%	-45,8%	26,6%	46,9%
65-69	9.302.576	4.087.774	3.386.316	1.828.486	10.693.738	2.340.995	5.083.151	3.269.592	15,0%	-42,7%	50,1%	78,8%
70-74	7.757.740	4.042.226	2.353.200	1.362.314	9.990.020	2.381.236	4.554.353	3.054.431	28,8%	-41,1%	93,5%	124,2%
75-79	5.951.116	3.400.641	1.636.463	914.012	9.237.973	2.359.172	4.261.248	2.617.553	55,2%	-30,6%	160,4%	186,4%
80-84	3.721.473	2.259.625	862.567	599.281	7.076.217	1.896.772	3.290.533	1.888.912	90,1%	-16,1%	281,5%	215,2%
85-89	1.791.739	1.066.424	420.883	304.432	3.828.896	1.121.694	1.796.758	910.444	113,7%	5,2%	326,9%	199,1%
90-94	453.204	282.249	100.420	70.535	1.378.482	452.196	601.006	325.280	204,2%	60,2%	498,5%	361,2%
95+	150.522	78.032	50.709	21.781	447.065	156.899	185.912	104.254	197,0%	101,1%	266,6%	378,6%
Sum	192.052.686	89.752.689	67.861.255	34.438.742	164.060.507	53.599.860	67.192.294	43.268.353	-14,6%	-40,3%	-1,0%	25,6%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.038.352	10.038.352	0	0	7.778.157	7.778.157	0	0	-22,5%	-22,5%	-	-
05-09	10.000.327	10.000.327	0	0	8.031.068	8.031.068	0	0	-19,7%	-19,7%	-	-
10-14	10.197.186	10.197.186	0	0	8.165.009	8.165.009	0	0	-19,9%	-19,9%	-	-
15-19	11.113.824	7.714.444	3.308.354	91.026	8.289.222	5.753.801	2.467.529	67.892	-25,4%	-25,4%	-25,4%	-25,4%
20-24	11.708.998	2.135.997	7.401.786	2.171.215	8.542.823	854.282	5.996.001	1.692.540	-27,0%	-60,0%	-19,0%	-22,0%
25-29	12.675.724	2.281.850	5.924.168	4.469.706	8.989.368	898.937	4.703.629	3.386.802	-29,1%	-60,6%	-20,6%	-24,2%
30-34	13.186.544	2.576.833	5.673.013	4.936.698	9.574.022	957.402	4.781.011	3.835.609	-27,4%	-62,8%	-15,7%	-22,3%
35-39	14.682.719	3.389.890	6.792.930	4.499.899	10.237.363	1.023.736	5.112.266	4.101.361	-30,3%	-69,8%	-24,7%	-8,9%
40-44	15.452.757	4.091.983	7.372.550	3.988.224	9.903.305	990.331	4.945.446	3.967.528	-35,9%	-75,8%	-32,9%	-0,5%
45-49	14.441.925	4.522.637	6.606.584	3.312.704	9.822.993	1.117.240	4.824.117	3.881.636	-32,0%	-75,3%	-27,0%	17,2%
50-54	13.070.854	4.780.806	5.467.484	2.822.564	9.914.095	1.468.083	4.654.395	3.791.617	-24,2%	-69,3%	-14,9%	34,3%
55-59	12.507.488	5.466.572	4.718.038	2.322.878	10.640.418	1.941.063	4.738.161	3.961.194	-14,9%	-64,5%	0,4%	70,5%
60-64	11.115.426	5.734.570	3.732.456	1.648.400	10.955.619	1.972.202	4.868.406	4.115.011	-1,4%	-65,6%	30,4%	149,6%
65-69	10.292.658	6.046.063	3.149.486	1.097.109	11.454.355	2.061.983	5.104.161	4.288.211	11,3%	-65,9%	62,1%	290,9%
70-74	9.338.578	6.258.599	2.361.837	718.142	11.261.951	2.200.741	4.845.030	4.216.180	20,6%	-64,8%	105,1%	487,1%
75-79	8.217.037	5.850.047	1.661.445	705.545	11.336.935	2.617.428	5.245.010	3.474.497	38,0%	-55,3%	215,7%	392,5%
80-84	6.531.635	4.791.669	1.273.644	466.322	9.842.303	2.606.301	4.695.788	2.540.214	50,7%	-45,6%	268,7%	444,7%
85-89	4.010.364	3.118.428	728.311	163.625	6.364.405	1.993.079	2.911.452	1.459.874	58,7%	-36,1%	299,8%	792,2%
90-94	1.337.197	1.057.514	225.867	53.816	2.858.555	1.045.547	1.195.722	617.286	113,8%	-1,1%	429,4%	1047,0%
95+	504.430	394.871	96.498	13.061	926.564	404.968	349.516	172.080	83,7%	2,6%	262,2%	1217,5%
Sum	200.424.023	100.448.638	66.494.451	33.480.934	174.888.530	53.881.358	71.437.640	49.569.532	-12,7%	-46,4%	7,4%	48,1%

Table 12 - Population by age, sex and educational attainment in EU15, 2008-2048 (Target-Trend EU2020 Scenario)

TARGET-TREND EUROPE 2020 SCENARIO - WITH MIGRATION (EU15)

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.584.323	10.584.323	0	0	8.489.313	8.489.313	0	0	-19,8%	-19,8%	-	-
05-09	10.531.447	10.531.447	0	0	8.656.455	8.656.455	0	0	-17,8%	-17,8%	-	-
10-14	10.745.769	10.745.769	0	0	8.715.470	8.715.470	0	0	-18,9%	-18,9%	-	-
15-19	11.720.460	8.540.227	3.082.173	98.060	8.795.972	6.426.477	2.296.630	72.865	-25,0%	-24,8%	-25,5%	-25,7%
20-24	12.159.826	3.009.268	7.659.466	1.491.092	9.032.229	919.634	6.695.213	1.417.382	-25,7%	-69,4%	-12,6%	-4,9%
25-29	13.018.186	2.849.846	6.571.730	3.596.610	9.423.549	1.019.371	5.040.698	3.363.480	-27,6%	-64,2%	-23,3%	-6,5%
30-34	13.544.221	3.228.420	6.174.679	4.141.122	9.947.901	1.110.795	4.893.324	3.943.782	-26,6%	-65,6%	-20,8%	-4,8%
35-39	15.000.225	3.830.722	6.919.232	4.250.271	10.524.252	1.190.316	5.164.134	4.169.802	-29,8%	-68,9%	-25,4%	-1,9%
40-44	15.693.039	4.206.501	7.297.468	4.189.070	10.712.960	1.219.931	5.250.545	4.242.484	-31,7%	-71,0%	-28,0%	1,3%
45-49	14.423.479	4.225.430	6.768.399	3.429.650	10.596.257	1.466.813	5.061.340	4.068.104	-26,5%	-65,3%	-25,2%	18,6%
50-54	12.840.622	4.212.225	5.598.398	3.029.999	10.657.431	2.115.986	4.795.263	3.746.182	-17,0%	-49,8%	-14,3%	23,6%
55-59	12.114.743	4.251.700	5.037.918	2.825.125	11.344.387	2.919.518	4.813.439	3.611.430	-6,4%	-31,3%	-4,5%	27,8%
60-64	10.547.976	4.319.840	3.941.234	2.286.902	11.371.167	2.599.519	5.215.505	3.556.143	7,8%	-39,8%	32,3%	55,5%
65-69	9.302.576	4.087.774	3.386.316	1.828.486	11.610.863	2.597.843	5.465.410	3.547.610	24,8%	-36,4%	61,4%	94,0%
70-74	7.757.740	4.042.226	2.353.200	1.362.314	11.230.133	2.700.181	5.094.840	3.435.112	44,8%	-33,2%	116,5%	152,2%
75-79	5.951.116	3.400.641	1.636.463	914.012	11.058.602	2.831.280	5.089.532	3.137.790	85,8%	-16,7%	211,0%	243,3%
80-84	3.721.473	2.259.625	862.567	599.281	9.489.281	2.544.333	4.407.344	2.537.604	155,0%	12,6%	411,0%	323,4%
85-89	1.791.739	1.066.424	420.883	304.432	6.250.438	1.830.373	2.930.602	1.489.463	248,8%	71,6%	596,3%	389,3%
90-94	453.204	282.249	100.420	70.535	3.166.269	1.038.018	1.379.441	748.810	598,6%	267,8%	1273,7%	961,6%
95+	150.522	78.032	50.709	21.781	887.785	311.381	368.961	207.443	489,8%	299,0%	627,6%	852,4%
Sum	192.052.686	89.752.689	67.861.255	34.438.742	181.960.714	60.703.007	73.962.221	47.295.486	-5,3%	-32,4%	9,0%	37,3%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.038.352	10.038.352	0	0	8.485.195	8.485.195	0	0	-15,5%	-15,5%	-	-
05-09	10.000.327	10.000.327	0	0	8.649.108	8.649.108	0	0	-13,5%	-13,5%	-	-
10-14	10.197.186	10.197.186	0	0	8.701.587	8.701.587	0	0	-14,7%	-14,7%	-	-
15-19	11.113.824	7.714.444	3.308.354	91.026	8.772.174	6.108.852	2.592.142	71.180	-21,1%	-20,8%	-21,6%	-21,8%
20-24	11.708.998	2.135.997	7.401.786	2.171.215	9.012.405	917.731	6.344.497	1.750.177	-23,0%	-57,0%	-14,3%	-19,4%
25-29	12.675.724	2.281.850	5.924.168	4.469.706	9.423.276	1.010.613	4.903.115	3.509.548	-25,7%	-55,7%	-17,2%	-21,5%
30-34	13.186.544	2.576.833	5.673.013	4.936.698	9.947.908	1.095.271	4.919.593	3.933.044	-24,6%	-57,5%	-13,3%	-20,3%
35-39	14.682.719	3.389.890	6.792.930	4.499.899	10.541.645	1.172.709	5.202.872	4.166.064	-28,2%	-65,4%	-23,4%	-7,4%
40-44	15.452.757	4.091.983	7.372.550	3.988.224	10.224.447	1.150.704	5.036.828	4.036.915	-33,8%	-71,9%	-31,7%	1,2%
45-49	14.441.925	4.522.637	6.606.584	3.312.704	10.175.846	1.288.635	4.925.591	3.961.620	-29,5%	-71,5%	-25,4%	19,6%
50-54	13.070.854	4.780.806	5.467.484	2.822.564	10.307.596	1.653.761	4.768.358	3.885.477	-21,1%	-65,4%	-12,8%	37,7%
55-59	12.507.488	5.466.572	4.718.038	2.322.878	11.084.008	2.136.777	4.863.598	4.083.633	-11,4%	-60,9%	3,1%	75,8%
60-64	11.115.426	5.734.570	3.732.456	1.648.400	11.441.744	2.165.181	5.002.997	4.273.566	2,9%	-62,2%	34,0%	159,3%
65-69	10.292.658	6.046.063	3.149.486	1.097.109	12.061.753	2.228.704	5.328.865	4.504.184	17,2%	-63,1%	69,2%	310,6%
70-74	9.338.578	6.258.599	2.361.837	718.142	12.083.350	2.387.451	5.173.543	4.522.356	29,4%	-61,9%	119,0%	529,7%
75-79	8.217.037	5.850.047	1.661.445	705.545	12.625.494	2.923.051	5.824.770	3.877.673	53,7%	-50,0%	250,6%	449,6%
80-84	6.531.635	4.791.669	1.273.644	466.322	11.836.888	3.134.493	5.637.351	3.065.044	81,2%	-34,6%	342,6%	557,3%
85-89	4.010.364	3.118.428	728.311	163.625	8.899.357	2.783.822	4.066.183	2.049.352	121,9%	-10,7%	458,3%	1152,5%
90-94	1.337.197	1.057.514	225.867	53.816	5.331.496	1.947.168	2.228.575	1.155.753	298,7%	84,1%	886,7%	2047,6%
95+	504.430	394.871	96.498	13.061	1.552.409	677.622	585.403	289.384	207,8%	71,6%	506,6%	2115,6%
Sum	200.424.023	100.448.638	66.494.451	33.480.934	191.157.686	60.618.435	77.404.281	53.134.970	-4,6%	-39,7%	16,4%	58,7%

TARGET-TREND EUROPE 2020 SCENARIO - WITHOUT MIGRATION (EU15)

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.584.323	10.584.323	0	0	8.262.778	8.262.778	0	0	-21,9%	-21,9%	-	-
05-09	10.531.447	10.531.447	0	0	8.434.947	8.434.947	0	0	-19,9%	-19,9%	-	-
10-14	10.745.769	10.745.769	0	0	8.490.314	8.490.314	0	0	-21,0%	-21,0%	-	-
15-19	11.720.460	8.540.227	3.082.173	98.060	8.545.143	6.226.501	2.247.148	71.494	-27,1%	-27,1%	-27,1%	-27,1%
20-24	12.159.826	3.009.268	7.659.466	1.491.092	8.733.033	873.303	6.458.730	1.401.000	-28,2%	-71,0%	-15,7%	-6,0%
25-29	13.018.186	2.849.846	6.571.730	3.596.610	9.110.619	911.062	4.906.595	3.292.962	-30,0%	-68,0%	-25,3%	-8,4%
30-34	13.544.221	3.228.420	6.174.679	4.141.122	9.619.149	961.915	4.791.838	3.865.396	-29,0%	-70,2%	-22,4%	-6,7%
35-39	15.000.225	3.830.722	6.919.232	4.250.271	10.196.896	1.019.690	5.079.646	4.097.560	-32,0%	-73,4%	-26,6%	-3,6%
40-44	15.693.039	4.206.501	7.297.468	4.189.070	10.389.826	1.038.983	5.175.755	4.175.088	-33,8%	-75,3%	-29,1%	-0,3%
45-49	14.423.479	4.225.430	6.768.399	3.429.650	10.283.709	1.281.138	4.996.276	4.006.295	-28,7%	-69,7%	-26,2%	16,8%
50-54	12.840.622	4.212.225	5.598.398	3.029.999	10.364.266	1.928.041	4.742.666	3.693.559	-19,3%	-54,2%	-15,3%	21,9%
55-59	12.114.743	4.251.700	5.037.918	2.825.125	11.095.951	2.745.984	4.783.204	3.566.763	-8,4%	-35,4%	-5,1%	26,3%
60-64	10.547.976	4.319.840	3.941.234	2.286.902	11.196.511	2.451.058	5.225.642	3.519.811	6,1%	-43,3%	32,6%	53,9%
65-69	9.302.576	4.087.774	3.386.316	1.828.486	11.484.377	2.514.076	5.458.973	3.511.328	23,5%	-38,5%	61,2%	92,0%
70-74	7.757.740	4.042.226	2.353.200	1.362.314	11.156.125	2.659.190	5.085.969	3.410.966	43,8%	-34,2%	116,1%	150,4%
75-79	5.951.116	3.400.641	1.636.463	914.012	11.019.316	2.814.087	5.082.937	3.122.292	85,2%	-17,2%	210,6%	241,6%
80-84	3.721.473	2.259.625	862.567	599.281	9.470.706	2.538.612	4.404.002	2.528.092	154,5%	12,3%	410,6%	321,9%
85-89	1.791.739	1.066.424	420.883	304.432	6.243.085	1.828.943	2.929.646	1.484.496	248,4%	71,5%	596,1%	387,6%
90-94	453.204	282.249	100.420	70.535	3.164.553	1.038.097	1.379.717	746.739	598,3%	267,8%	1273,9%	958,7%
95+	150.522	78.032	50.709	21.781	887.630	311.516	369.121	206.993	489,7%	299,2%	627,9%	850,3%
Sum	192.052.686	89.752.689	67.861.255	34.438.742	178.148.934	58.330.235	73.117.865	46.700.834	-7,2%	-35,0%	7,7%	35,6%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	10.038.352	10.038.352	0	0	8.264.126	8.264.126	0	0	-17,7%	-17,7%	-	-
05-09	10.000.327	10.000.327	0	0	8.439.167	8.439.167	0	0	-15,6%	-15,6%	-	-
10-14	10.197.186	10.197.186	0	0	8.495.544	8.495.544	0	0	-16,7%	-16,7%	-	-
15-19	11.113.824	7.714.444	3.308.354	91.026	8.553.987	5.937.582	2.546.344	70.061	-23,0%	-23,0%	-23,0%	-23,0%
20-24	11.708.998	2.135.997	7.401.786	2.171.215	8.750.935	875.093	6.142.070	1.733.772	-25,3%	-59,0%	-17,0%	-20,1%
25-29	12.675.724	2.281.850	5.924.168	4.469.706	9.142.167	914.216	4.783.580	3.444.371	-27,9%	-59,9%	-19,3%	-22,9%
30-34	13.186.544	2.576.833	5.673.013	4.936.698	9.667.886	966.788	4.827.884	3.873.214	-26,7%	-62,5%	-14,9%	-21,5%
35-39	14.682.719	3.389.890	6.792.930	4.499.899	10.268.022	1.026.802	5.127.576	4.113.644	-30,1%	-69,7%	-24,5%	-8,6%
40-44	15.452.757	4.091.983	7.372.550	3.988.224	9.945.577	994.557	4.966.556	3.984.464	-35,6%	-75,7%	-32,6%	-0,1%
45-49	14.441.925	4.522.637	6.606.584	3.312.704	9.889.643	1.124.821	4.856.849	3.907.973	-31,5%	-75,1%	-26,5%	18,0%
50-54	13.070.854	4.780.806	5.467.484	2.822.564	10.022.408	1.484.122	4.705.245	3.833.041	-23,3%	-69,0%	-13,9%	35,8%
55-59	12.507.488	5.466.572	4.718.038	2.322.878	10.822.372	1.974.256	4.819.185	4.028.931	-13,5%	-63,9%	2,1%	73,4%
60-64	11.115.426	5.734.570	3.732.456	1.648.400	11.243.501	2.024.025	4.996.334	4.223.142	1,2%	-64,7%	33,9%	156,2%
65-69	10.292.658	6.046.063	3.149.486	1.097.109	11.913.509	2.144.638	5.308.764	4.460.107	15,7%	-64,5%	68,6%	306,5%
70-74	9.338.578	6.258.599	2.361.837	718.142	11.972.155	2.339.525	5.150.568	4.482.062	28,2%	-62,6%	118,1%	524,1%
75-79	8.217.037	5.850.047	1.661.445	705.545	12.546.956	2.896.793	5.804.823	3.845.340	52,7%	-50,5%	249,4%	445,0%
80-84	6.531.635	4.791.669	1.273.644	466.322	11.786.706	3.121.191	5.623.468	3.042.047	80,5%	-34,9%	341,5%	552,3%
85-89	4.010.364	3.118.428	728.311	163.625	8.874.309	2.779.081	4.059.630	2.035.598	121,3%	-10,9%	457,4%	1144,1%
90-94	1.337.197	1.057.514	225.867	53.816	5.322.849	1.946.889	2.226.526	1.149.434	298,1%	84,1%	885,8%	2035,9%
95+	504.430	394.871	96.498	13.061	1.551.173	677.962	585.129	288.082	207,5%	71,7%	506,4%	2105,7%
Sum	200.424.023	100.448.638	66.494.451	33.480.934	187.472.992	58.427.178	76.530.531	52.515.283	-6,5%	-41,8%	15,1%	56,9%

7.3.2.2 The European Union 12 (EU12)

Table 13 – Population Structure by age, sex and educational attainment in EU12, 2008-2048

	EU12	Baseyear Population			Constant Scenario			EU 2020 Scenario			Target-Trend Scenario		
		MF 2008	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women
POPULATION	**Population**												
	Total	**103.299.868**	49.889.158	53.410.710	**72.333.549**	33.590.527	38.743.022	**79.564.112**	37.305.205	42.258.907	**83.019.638**	39.349.867	43.669.771
	ISCED0-2	**40.572.156**	18.548.253	22.023.903	**19.953.780**	9.892.858	10.060.922	**20.886.140**	10.243.857	10.642.283	**21.592.413**	10.653.924	10.938.489
	ISCED3-4	**50.092.060**	25.734.167	24.357.893	**36.800.993**	17.888.958	18.912.035	**36.240.622**	17.297.691	18.942.931	**38.383.996**	18.508.504	19.875.492
	ISCED5-6	**12.635.652**	5.606.738	7.028.914	**15.578.776**	5.808.711	9.770.065	**22.437.350**	9.763.657	12.673.693	**23.043.229**	10.187.439	12.855.790
	Age Distribution												
	00-14	**0,151**	0,160	0,142	**0,134**	0,144	0,125	**0,134**	0,144	0,125	**0,129**	0,136	0,123
	15-64	**0,703**	0,724	0,684	**0,612**	0,642	0,586	**0,612**	0,642	0,586	**0,558**	0,582	0,536
	65+	**0,146**	0,116	0,174	**0,254**	0,214	0,289	**0,254**	0,214	0,289	**0,313**	0,282	0,341
	85+	**0,011**	0,006	0,015	**0,026**	0,016	0,035	**0,026**	0,016	0,035	**0,059**	0,044	0,072
DEPENDENCY RATIO's	**Dependency Ratio's (DR)**												
	TDR	**0,422**	0,381	0,461	**0,634**	0,558	0,707	**0,634**	0,558	0,706	**0,793**	0,720	0,866
	YDR	**0,214**	0,221	0,207	**0,219**	0,225	0,214	**0,219**	0,224	0,213	**0,232**	0,234	0,229
	ADR	**0,208**	0,161	0,254	**0,415**	0,333	0,492	**0,415**	0,333	0,493	**0,562**	0,486	0,636
	OADR	**0,016**	0,009	0,022	**0,042**	0,025	0,059	**0,042**	0,025	0,059	**0,105**	0,076	0,134
	PSR	**4,8**	6,2	3,9	**2,4**	3,0	2,0	**2,4**	3,0	2,0	**1,8**	2,1	1,6
EDUCATION	**Educational Attainment - Total Population**												
	ISCED0-2	**0,393**	0,372	0,412	**0,276**	0,295	0,260	**0,264**	0,280	0,251	**0,260**	0,271	0,250
	ISCED3-4	**0,485**	0,516	0,456	**0,509**	0,533	0,488	**0,445**	0,448	0,443	**0,462**	0,470	0,455
	ISCED5-6	**0,122**	0,112	0,132	**0,215**	0,173	0,252	**0,291**	0,272	0,307	**0,278**	0,259	0,294
	Educational Attainment - Working Age Population (15-64y)												
	ISCED0-2	**0,228**	0,217	0,239	**0,180**	0,192	0,168	**0,161**	0,170	0,153	**0,163**	0,171	0,155
	ISCED3-4	**0,617**	0,647	0,587	**0,566**	0,604	0,530	**0,462**	0,472	0,452	**0,464**	0,475	0,453
	ISCED5-6	**0,154**	0,135	0,174	**0,254**	0,204	0,301	**0,377**	0,358	0,395	**0,373**	0,354	0,392
VITAL RATES	**Life Expectancy (LE)**												
	Total	**73,85**	69,61	77,81	**74,00**	69,61	77,81	**73,97**	69,61	77,81	**83,40**	80,42	86,08
	Total Fertility Rate (TFR)												
	Total	**1,41**	-	-	**1,41**	-	-	**1,41**	-	-	**1,55**	-	-
	ISCED0-2	**1,58**	-	-	**1,58**	-	-	**1,58**	-	-	**1,75**	-	-
	ISCED3-4	**1,33**	-	-	**1,33**	-	-	**1,33**	-	-	**1,47**	-	-
	ISCED5-6	**1,22**	-	-	**1,22**	-	-	**1,22**	-	-	**1,35**	-	-
	Net Migration (NM)												
	Total	**-831.499**	-446.824	-384.675	**-831.499**	-446.824	-384.675	**-831.499**	-446.824	-384.675	**-831.499**	-446.824	-384.675
	ISCED0-2	**-186.798**	-87.190	-99.608	**-186.798**	-87.190	-99.608	**-186.798**	-87.190	-99.608	**-186.798**	-87.190	-99.608
	ISCED3-4	**-549.385**	-317.978	-231.407	**-549.385**	-317.978	-231.407	**-549.385**	-317.978	-231.407	**-549.385**	-317.978	-231.407
	ISCED5-6	**-95.316**	-41.656	-53.660	**-95.316**	-41.656	-53.660	**-95.316**	-41.656	-53.660	**-95.316**	-41.656	-53.660

Table 14 - Population by age, sex and educational attainment in EU12, 2008-2048 (Constant Scenario)

CONSTANT SCENARIO - WITH MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.568.080	2.568.080	0	0	1.545.599	1.545.599	0	0	-39,8%	-39,8%	-	-
05-09	2.544.544	2.544.544	0	0	1.635.555	1.635.555	0	0	-35,7%	-35,7%	-	-
10-14	2.865.733	2.865.733	0	0	1.667.487	1.667.487	0	0	-41,8%	-41,8%	-	-
15-19	3.602.639	3.132.830	469.687	122	1.691.999	1.471.030	220.893	76	-53,0%	-53,0%	-53,0%	-37,7%
20-24	4.066.259	592.853	3.259.026	214.380	1.763.391	258.490	1.410.198	94.703	-56,6%	-56,4%	-56,7%	-55,8%
25-29	4.186.850	524.663	2.702.396	959.791	1.952.394	252.458	1.249.740	450.196	-53,4%	-51,9%	-53,8%	-53,1%
30-34	4.167.490	530.116	2.807.553	829.821	2.185.769	286.442	1.389.929	509.398	-47,6%	-46,0%	-50,5%	-38,6%
35-39	3.751.277	417.090	2.725.741	608.446	2.341.188	311.172	1.478.703	551.313	-37,6%	-25,4%	-45,8%	-9,4%
40-44	3.357.072	366.058	2.516.761	474.253	2.085.365	283.080	1.303.887	498.398	-37,9%	-22,7%	-48,2%	5,1%
45-49	3.499.194	413.105	2.604.586	481.503	1.993.115	274.000	1.237.520	481.595	-43,0%	-33,7%	-52,5%	0,0%
50-54	3.756.526	589.256	2.656.107	511.163	2.168.884	295.876	1.348.791	524.217	-42,3%	-49,8%	-49,2%	2,6%
55-59	3.346.519	652.993	2.226.610	466.916	2.628.008	351.825	1.646.985	629.198	-21,5%	-46,1%	-26,0%	34,8%
60-64	2.378.555	632.408	1.414.111	332.036	2.750.745	363.819	1.732.295	654.631	15,6%	-42,5%	22,5%	97,2%
65-69	1.937.647	798.573	885.464	253.610	2.492.323	323.950	1.576.982	591.391	28,6%	-59,4%	78,1%	133,2%
70-74	1.623.514	769.778	660.541	193.195	2.039.594	266.153	1.356.660	416.781	25,6%	-65,4%	105,4%	115,7%
75-79	1.235.675	617.624	460.131	157.920	1.357.433	152.769	980.253	224.411	9,9%	-75,3%	113,0%	42,1%
80-84	677.447	355.132	236.554	85.761	759.291	82.907	567.670	108.714	12,1%	-76,7%	140,0%	26,8%
85-89	250.008	136.613	83.922	29.473	371.819	43.654	276.561	51.604	48,7%	-68,0%	229,5%	75,1%
90-94	56.548	30.407	19.262	6.879	121.516	18.995	85.904	16.617	114,9%	-37,5%	346,0%	141,6%
95+	17.581	10.397	5.715	1.469	39.052	7.597	25.987	5.468	122,1%	-26,9%	354,7%	272,2%
Sum	49.889.158	18.548.253	25.734.167	5.606.738	33.590.527	9.892.858	17.888.958	5.808.711	-32,7%	-46,7%	-30,5%	3,6%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.430.514	2.430.514	0	0	1.547.200	1.547.200	0	0	-36,3%	-36,3%	-	-
05-09	2.413.798	2.413.798	0	0	1.639.789	1.639.789	0	0	-32,1%	-32,1%	-	-
10-14	2.730.326	2.730.326	0	0	1.672.930	1.672.930	0	0	-38,7%	-38,7%	-	-
15-19	3.445.340	2.928.382	516.707	251	1.699.202	1.443.923	255.140	139	-50,7%	-50,7%	-50,6%	-44,6%
20-24	3.906.208	450.118	3.044.190	411.900	1.765.580	202.899	1.375.484	187.197	-54,8%	-54,9%	-54,8%	-54,6%
25-29	4.022.268	448.223	2.214.655	1.359.390	1.978.985	222.836	1.085.321	670.828	-50,8%	-50,3%	-51,0%	-50,7%
30-34	4.021.648	501.322	2.400.896	1.119.430	2.248.659	254.123	1.227.607	766.929	-44,1%	-49,3%	-48,9%	-31,5%
35-39	3.659.185	419.088	2.461.875	778.222	2.440.269	277.120	1.324.951	838.198	-33,3%	-33,9%	-46,2%	7,7%
40-44	3.333.215	410.269	2.294.919	628.027	2.078.019	237.625	1.118.747	721.647	-37,7%	-42,1%	-51,3%	14,9%
45-49	3.580.957	523.179	2.443.533	614.245	2.034.886	232.636	1.089.842	712.408	-43,2%	-55,5%	-55,4%	16,0%
50-54	3.997.497	879.934	2.486.855	630.708	2.292.232	259.310	1.229.577	803.345	-42,7%	-70,5%	-50,6%	27,4%
55-59	3.740.294	1.082.280	2.187.230	470.784	2.905.529	325.599	1.567.316	1.012.614	-22,3%	-69,9%	-28,3%	115,1%
60-64	2.847.637	1.098.088	1.413.998	335.551	3.259.678	364.141	1.763.887	1.131.650	14,5%	-66,8%	24,7%	237,3%
65-69	2.578.290	1.384.463	942.531	251.296	3.204.383	354.431	1.739.088	1.110.864	24,3%	-74,4%	84,5%	342,1%
70-74	2.408.107	1.494.646	748.658	164.803	2.923.436	361.671	1.732.112	829.653	21,4%	-75,8%	131,4%	403,4%
75-79	2.075.940	1.344.107	599.570	132.263	2.235.882	251.351	1.502.394	482.137	7,7%	-81,3%	150,6%	264,5%
80-84	1.403.658	932.566	386.621	84.471	1.474.620	177.625	1.016.089	280.906	5,1%	-81,0%	162,8%	232,5%
85-89	608.566	412.808	161.571	34.187	876.091	125.927	598.774	151.390	44,0%	-69,5%	270,6%	342,8%
90-94	156.070	104.885	41.226	9.959	352.219	77.069	219.315	55.835	125,7%	-26,5%	432,0%	460,6%
95+	51.192	34.907	12.858	3.427	113.433	32.717	66.391	14.325	121,6%	-6,3%	416,3%	318,0%
Sum	53.410.710	22.023.903	24.357.893	7.028.914	38.743.022	10.060.922	18.912.035	9.770.065	-27,5%	-54,3%	-22,4%	39,0%

CONSTANT SCENARIO - WITHOUT MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.568.080	2.568.080	0	0	1.723.727	1.723.727	0	0	-32,9%	-32,9%	-	-
05-09	2.544.544	2.544.544	0	0	1.805.839	1.805.839	0	0	-29,0%	-29,0%	-	-
10-14	2.865.733	2.865.733	0	0	1.831.992	1.831.992	0	0	-36,1%	-36,1%	-	-
15-19	3.602.639	3.132.830	469.687	122	1.867.381	1.623.862	243.456	63	-48,2%	-48,2%	-48,2%	-48,4%
20-24	4.066.259	592.853	3.259.026	214.380	1.992.753	290.539	1.597.153	105.061	-51,0%	-51,0%	-51,0%	-51,0%
25-29	4.186.850	524.663	2.702.396	959.791	2.236.876	280.307	1.443.788	512.781	-46,6%	-46,6%	-46,6%	-46,6%
30-34	4.167.490	530.116	2.807.553	829.821	2.500.151	313.298	1.613.719	573.134	-40,0%	-40,9%	-42,5%	-30,9%
35-39	3.751.277	417.090	2.725.741	608.446	2.664.930	333.947	1.720.075	610.908	-29,0%	-19,9%	-36,9%	0,4%
40-44	3.357.072	366.058	2.516.761	474.253	2.429.116	304.397	1.567.869	556.850	-27,6%	-16,8%	-37,7%	17,4%
45-49	3.499.194	413.105	2.604.586	481.503	2.348.328	294.273	1.515.725	538.330	-32,9%	-28,8%	-41,8%	11,8%
50-54	3.756.526	589.256	2.656.107	511.163	2.520.224	315.814	1.626.674	577.736	-32,9%	-46,4%	-38,8%	13,0%
55-59	3.346.519	652.993	2.226.610	466.916	2.944.458	368.975	1.900.496	674.987	-12,0%	-43,5%	-14,6%	44,6%
60-64	2.378.555	632.408	1.414.111	332.036	2.986.540	374.250	1.927.657	684.633	25,6%	-40,8%	36,3%	106,2%
65-69	1.937.647	798.573	885.464	253.610	2.646.190	331.600	1.707.979	606.611	36,6%	-58,5%	92,9%	139,2%
70-74	1.623.514	769.778	660.541	193.195	2.131.051	271.075	1.435.646	424.330	31,3%	-64,8%	117,3%	119,6%
75-79	1.235.675	617.624	460.131	157.920	1.405.277	156.247	1.021.098	227.932	13,7%	-74,7%	121,9%	44,3%
80-84	677.447	355.132	236.554	85.761	779.226	84.967	584.178	110.081	15,0%	-76,1%	147,0%	28,4%
85-89	250.008	136.613	83.922	29.473	377.292	44.542	280.833	51.917	50,9%	-67,4%	234,6%	76,2%
90-94	56.548	30.407	19.262	6.879	122.317	19.187	86.486	16.644	116,3%	-36,9%	349,0%	142,0%
95+	17.581	10.397	5.715	1.469	39.182	7.645	26.070	5.467	122,9%	-26,5%	356,2%	272,2%
Sum	49.889.158	18.548.253	25.734.167	5.606.738	37.352.850	10.776.483	20.298.902	6.277.465	-25,1%	-41,9%	-21,1%	12,0%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.430.514	2.430.514	0	0	1.724.722	1.724.722	0	0	-29,0%	-29,0%	-	-
05-09	2.413.798	2.413.798	0	0	1.808.974	1.808.974	0	0	-25,1%	-25,1%	-	-
10-14	2.730.326	2.730.326	0	0	1.835.859	1.835.859	0	0	-32,8%	-32,8%	-	-
15-19	3.445.340	2.928.382	516.707	251	1.873.800	1.592.644	281.019	137	-45,6%	-45,6%	-45,6%	-45,4%
20-24	3.906.208	450.118	3.044.190	411.900	2.005.939	231.148	1.563.269	211.522	-48,6%	-48,6%	-48,6%	-48,6%
25-29	4.022.268	448.223	2.214.655	1.359.390	2.261.519	252.014	1.245.189	764.316	-43,8%	-43,8%	-43,8%	-43,8%
30-34	4.021.648	501.322	2.400.896	1.119.430	2.540.715	283.126	1.398.914	858.675	-36,8%	-43,5%	-41,7%	-23,3%
35-39	3.659.185	419.088	2.461.875	778.222	2.727.337	303.922	1.501.668	921.747	-25,5%	-27,5%	-39,0%	18,4%
40-44	3.333.215	410.269	2.294.919	628.027	2.377.622	264.952	1.309.115	803.555	-28,7%	-35,4%	-43,0%	27,9%
45-49	3.580.957	523.179	2.443.533	614.245	2.344.581	261.270	1.290.923	792.388	-34,5%	-50,1%	-47,2%	29,0%
50-54	3.997.497	879.934	2.486.855	630.708	2.605.221	290.314	1.434.431	880.476	-34,8%	-67,0%	-42,3%	39,6%
55-59	3.740.294	1.082.280	2.187.230	470.784	3.196.538	356.208	1.760.010	1.080.320	-14,5%	-67,1%	-19,5%	129,5%
60-64	2.847.637	1.098.088	1.413.998	335.551	3.470.771	386.767	1.911.002	1.173.002	21,9%	-64,8%	35,1%	249,6%
65-69	2.578.290	1.384.463	942.531	251.296	3.350.165	373.327	1.844.596	1.132.242	29,9%	-73,0%	95,7%	350,6%
70-74	2.408.107	1.494.646	748.658	164.803	3.023.358	376.879	1.804.924	841.555	25,5%	-74,8%	141,1%	410,6%
75-79	2.075.940	1.344.107	599.570	132.263	2.297.990	263.190	1.546.072	488.728	10,7%	-80,4%	157,9%	269,5%
80-84	1.403.658	932.566	386.621	84.471	1.506.285	185.401	1.037.078	283.806	7,3%	-80,1%	168,2%	236,0%
85-89	608.566	412.808	161.571	34.187	887.199	129.620	605.397	152.182	45,8%	-68,6%	274,7%	345,1%
90-94	156.070	104.885	41.226	9.959	354.359	78.002	220.448	55.909	127,1%	-25,6%	434,7%	461,4%
95+	51.192	34.907	12.858	3.427	113.801	32.929	66.548	14.324	122,3%	-5,7%	417,6%	318,0%
Sum	53.410.710	22.023.903	24.357.893	7.028.914	42.306.755	11.031.268	20.820.603	10.454.884	-20,8%	-49,9%	-14,5%	48,7%

Table 15 - Population by age, sex and educational attainment in EU12, 2008-2048 (EU2020 Scenario)

EUROPE 2020 SCENARIO - WITH MIGRATION (EU12)

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.568.080	2.568.080	0	0	1.538.473	1.538.473	0	0	-40,1%	-40,1%	-	-
05-09	2.544.544	2.544.544	0	0	1.629.130	1.629.130	0	0	-36,0%	-36,0%	-	-
10-14	2.865.733	2.865.733	0	0	1.659.932	1.659.932	0	0	-42,1%	-42,1%	-	-
15-19	3.602.639	3.132.830	469.687	122	1.682.145	1.256.553	411.883	13.709	-53,3%	-59,9%	-12,3%	11136,9%
20-24	4.066.259	592.853	3.259.026	214.380	1.753.195	173.138	1.387.597	192.460	-56,9%	-70,8%	-57,4%	-10,2%
25-29	4.186.850	524.663	2.702.396	959.791	1.945.888	197.043	828.279	920.566	-53,5%	-62,4%	-69,4%	-4,1%
30-34	4.167.490	530.116	2.807.553	829.821	2.185.769	224.174	910.075	1.051.520	-47,6%	-57,7%	-67,6%	26,7%
35-39	3.751.277	417.090	2.725.741	608.446	2.341.188	243.765	956.746	1.140.677	-37,6%	-41,6%	-64,9%	87,5%
40-44	3.357.072	366.058	2.516.761	474.253	2.085.364	221.258	826.919	1.037.187	-37,9%	-39,6%	-67,1%	118,7%
45-49	3.499.194	413.105	2.604.586	481.503	1.993.115	272.052	816.950	904.113	-43,0%	-34,1%	-68,6%	87,8%
50-54	3.756.526	589.256	2.656.107	511.163	2.168.884	298.304	926.973	943.607	-42,3%	-49,4%	-65,1%	84,6%
55-59	3.346.519	652.993	2.226.610	466.916	2.628.008	411.146	1.370.848	846.014	-21,5%	-37,0%	-38,4%	81,2%
60-64	2.378.555	632.408	1.414.111	332.036	2.750.745	363.819	1.732.295	654.631	15,6%	-42,5%	22,5%	97,2%
65-69	1.937.647	798.573	885.464	253.610	2.492.323	323.950	1.576.982	591.391	28,6%	-59,4%	78,1%	133,2%
70-74	1.623.514	769.778	660.541	193.195	2.039.594	266.153	1.356.660	416.781	25,6%	-65,4%	105,4%	115,7%
75-79	1.235.675	617.624	460.131	157.920	1.357.433	152.769	980.253	224.411	9,9%	-75,3%	113,0%	42,1%
80-84	677.447	355.132	236.554	85.761	759.291	82.907	567.670	108.714	12,1%	-76,7%	140,0%	26,8%
85-89	250.008	136.613	83.922	29.473	371.819	43.654	276.561	51.604	48,7%	-68,0%	229,5%	75,1%
90-94	56.548	30.407	19.262	6.879	121.516	18.995	85.904	16.617	114,9%	-37,5%	346,0%	141,6%
95+	17.581	10.397	5.715	1.469	39.052	7.597	25.987	5.468	122,1%	-26,9%	354,7%	272,2%
Sum	49.889.158	18.548.253	25.734.167	5.606.738	33.542.864	9.384.812	15.038.582	9.119.470	-32,8%	-49,4%	-41,6%	62,7%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.430.514	2.430.514	0	0	1.540.070	1.540.070	0	0	-36,6%	-36,6%	-	-
05-09	2.413.798	2.413.798	0	0	1.633.352	1.633.352	0	0	-32,3%	-32,3%	-	-
10-14	2.730.326	2.730.326	0	0	1.665.359	1.665.359	0	0	-39,0%	-39,0%	-	-
15-19	3.445.340	2.928.382	516.707	251	1.689.313	1.203.636	472.204	13.473	-51,0%	-58,9%	-8,6%	5267,7%
20-24	3.906.208	450.118	3.044.190	411.900	1.755.316	173.255	1.309.465	272.596	-55,1%	-61,5%	-57,0%	-33,8%
25-29	4.022.268	448.223	2.214.655	1.359.390	1.972.406	197.066	802.029	973.311	-51,0%	-56,0%	-63,8%	-28,4%
30-34	4.021.648	501.322	2.400.896	1.119.430	2.248.660	225.437	904.416	1.118.807	-44,1%	-55,0%	-62,3%	-0,1%
35-39	3.659.185	419.088	2.461.875	778.222	2.440.268	245.856	970.969	1.223.443	-33,3%	-41,3%	-60,6%	57,2%
40-44	3.333.215	410.269	2.294.919	628.027	2.078.019	210.189	810.271	1.057.559	-37,7%	-48,8%	-64,7%	68,4%
45-49	3.580.957	523.179	2.443.533	614.245	2.034.887	211.289	790.680	1.032.918	-43,2%	-59,6%	-67,6%	68,2%
50-54	3.997.497	879.934	2.486.855	630.708	2.292.233	305.541	1.022.948	963.744	-42,7%	-65,3%	-58,9%	52,8%
55-59	3.740.294	1.082.280	2.187.230	470.784	2.905.530	337.433	1.408.934	1.159.163	-22,3%	-68,8%	-35,6%	146,2%
60-64	2.847.637	1.098.088	1.413.998	335.551	3.259.678	364.141	1.763.886	1.131.651	14,5%	-66,8%	24,7%	237,3%
65-69	2.578.290	1.384.463	942.531	251.296	3.204.383	354.431	1.739.088	1.110.864	24,3%	-74,4%	84,5%	342,1%
70-74	2.408.107	1.494.646	748.658	164.803	2.923.436	361.671	1.732.112	829.653	21,4%	-75,8%	131,4%	403,4%
75-79	2.075.940	1.344.107	599.570	132.263	2.235.882	251.351	1.502.394	482.137	7,7%	-81,3%	150,6%	264,5%
80-84	1.403.658	932.566	386.621	84.471	1.474.620	177.625	1.016.089	280.906	5,1%	-81,0%	162,8%	232,5%
85-89	608.566	412.808	161.571	34.187	876.091	125.927	598.774	151.390	44,0%	-69,5%	270,6%	342,8%
90-94	156.070	104.885	41.226	9.959	352.219	77.069	219.315	55.835	125,7%	-26,5%	432,0%	460,6%
95+	51.192	34.907	12.858	3.427	113.433	32.717	66.391	14.325	121,6%	-6,3%	416,3%	318,0%
Sum	53.410.710	22.023.903	24.357.893	7.028.914	38.695.155	9.693.415	17.129.965	11.871.775	-27,6%	-56,0%	-29,7%	68,9%

EUROPE 2020 SCENARIO - WITHOUT MIGRATION (EU12)

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.568.080	2.568.080	0	0	1.716.380	1.716.380	0	0	-33,2%	-33,2%	-	-
05-09	2.544.544	2.544.544	0	0	1.799.214	1.799.214	0	0	-29,3%	-29,3%	-	-
10-14	2.865.733	2.865.733	0	0	1.824.448	1.824.448	0	0	-36,3%	-36,3%	-	-
15-19	3.602.639	3.132.830	469.687	122	1.857.731	1.391.476	451.361	14.894	-48,4%	-55,6%	-3,9%	12108,2%
20-24	4.066.259	592.853	3.259.026	214.380	1.982.720	198.272	1.574.457	209.991	-51,2%	-66,6%	-51,7%	-2,0%
25-29	4.186.850	524.663	2.702.396	959.791	2.230.431	223.043	980.252	1.027.136	-46,7%	-57,5%	-63,7%	7,0%
30-34	4.167.490	530.116	2.807.553	829.821	2.500.151	250.015	1.098.791	1.151.345	-40,0%	-52,8%	-60,9%	38,7%
35-39	3.751.277	417.090	2.725.741	608.446	2.664.931	266.493	1.171.210	1.227.228	-29,0%	-36,1%	-57,0%	101,7%
40-44	3.357.072	366.058	2.516.761	474.253	2.429.117	242.912	1.067.572	1.118.633	-27,6%	-33,6%	-57,6%	135,9%
45-49	3.499.194	413.105	2.604.586	481.503	2.348.328	293.445	1.075.145	979.738	-32,9%	-29,0%	-58,7%	103,5%
50-54	3.756.526	589.256	2.656.107	511.163	2.520.222	319.351	1.190.108	1.010.763	-32,9%	-45,8%	-55,2%	97,7%
55-59	3.346.519	652.993	2.226.610	466.916	2.944.457	429.295	1.618.848	896.314	-12,0%	-34,3%	-27,3%	92,0%
60-64	2.378.555	632.408	1.414.111	332.036	2.986.540	374.250	1.927.657	684.633	25,6%	-40,8%	36,3%	106,2%
65-69	1.937.647	798.573	885.464	253.610	2.646.190	331.600	1.707.979	606.611	36,6%	-58,5%	92,9%	139,2%
70-74	1.623.514	769.778	660.541	193.195	2.131.051	271.075	1.435.646	424.330	31,3%	-64,8%	117,3%	119,6%
75-79	1.235.675	617.624	460.131	157.920	1.405.277	156.247	1.021.098	227.932	13,7%	-74,7%	121,9%	44,3%
80-84	677.447	355.132	236.554	85.761	779.226	84.967	584.178	110.081	15,0%	-76,1%	147,0%	28,4%
85-89	250.008	136.613	83.922	29.473	377.292	44.542	280.833	51.917	50,9%	-67,4%	234,6%	76,2%
90-94	56.548	30.407	19.262	6.879	122.317	19.187	86.486	16.644	116,3%	-36,9%	349,0%	142,0%
95+	17.581	10.397	5.715	1.469	39.182	7.645	26.070	5.467	122,9%	-26,5%	356,2%	272,2%
Sum	49.889.158	18.548.253	25.734.167	5.606.738	37.305.205	10.243.857	17.297.691	9.763.657	-25,2%	-44,8%	-32,8%	74,1%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.430.514	2.430.514	0	0	1.717.371	1.717.371	0	0	-29,3%	-29,3%	-	-
05-09	2.413.798	2.413.798	0	0	1.802.337	1.802.337	0	0	-25,3%	-25,3%	-	-
10-14	2.730.326	2.730.326	0	0	1.828.299	1.828.299	0	0	-33,0%	-33,0%	-	-
15-19	3.445.340	2.928.382	516.707	251	1.864.117	1.332.446	517.045	14.626	-45,9%	-54,5%	0,1%	5727,1%
20-24	3.906.208	450.118	3.044.190	411.900	1.995.838	199.584	1.493.821	302.433	-48,9%	-55,7%	-50,9%	-26,6%
25-29	4.022.268	448.223	2.214.655	1.359.390	2.255.004	225.500	934.319	1.095.185	-43,9%	-49,7%	-57,8%	-19,4%
30-34	4.021.648	501.322	2.400.896	1.119.430	2.540.715	254.071	1.052.698	1.233.946	-36,8%	-49,3%	-56,2%	10,2%
35-39	3.659.185	419.088	2.461.875	778.222	2.727.337	272.734	1.130.021	1.324.582	-25,5%	-34,9%	-54,1%	70,2%
40-44	3.333.215	410.269	2.294.919	628.027	2.377.621	237.762	985.123	1.154.736	-28,7%	-42,0%	-57,1%	83,9%
45-49	3.580.957	523.179	2.443.533	614.245	2.344.581	240.410	978.107	1.126.064	-34,5%	-54,0%	-60,0%	83,3%
50-54	3.997.497	879.934	2.486.855	630.708	2.605.221	337.312	1.217.938	1.049.971	-34,8%	-61,7%	-51,0%	66,5%
55-59	3.740.294	1.082.280	2.187.230	470.784	3.196.539	368.342	1.597.795	1.230.402	-14,5%	-66,0%	-26,9%	161,4%
60-64	2.847.637	1.098.088	1.413.998	335.551	3.470.770	386.767	1.911.001	1.173.002	21,9%	-64,8%	35,1%	249,6%
65-69	2.578.290	1.384.463	942.531	251.296	3.350.165	373.327	1.844.596	1.132.242	29,9%	-73,0%	95,7%	350,6%
70-74	2.408.107	1.494.646	748.658	164.803	3.023.358	376.879	1.804.924	841.555	25,5%	-74,8%	141,1%	410,6%
75-79	2.075.940	1.344.107	599.570	132.263	2.297.990	263.190	1.546.072	488.728	10,7%	-80,4%	157,9%	269,5%
80-84	1.403.658	932.566	386.621	84.471	1.506.285	185.401	1.037.078	283.806	7,3%	-80,1%	168,2%	236,0%
85-89	608.566	412.808	161.571	34.187	887.199	129.620	605.397	152.182	45,8%	-68,6%	274,7%	345,1%
90-94	156.070	104.885	41.226	9.959	354.359	78.002	220.448	55.909	127,1%	-25,6%	434,7%	461,4%
95+	51.192	34.907	12.858	3.427	113.801	32.929	66.548	14.324	122,3%	-5,7%	417,6%	318,0%
Sum	53.410.710	22.023.903	24.357.893	7.028.914	42.258.907	10.642.283	18.942.931	12.673.693	-20,9%	-51,7%	-22,2%	80,3%

Table 16 - Population by age, sex and educational attainment in EU12, 2008-2048 (Target-Trend EU2020 Scenario)

TARGET-TREND EUROPE 2020 SCENARIO - WITH MIGRATION (EU12)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.568.080	2.568.080	0	0	1.744.609	1.744.609	0	0	-32,1%	-32,1%	-	-
05-09	2.544.544	2.544.544	0	0	1.807.272	1.807.272	0	0	-29,0%	-29,0%	-	-
10-14	2.865.733	2.865.733	0	0	1.803.373	1.803.373	0	0	-37,1%	-37,1%	-	-
15-19	3.602.639	3.132.830	469.687	122	1.797.802	1.343.182	439.984	14.636	-50,1%	-57,1%	-6,3%	11896,7%
20-24	4.066.259	592.853	3.259.026	214.380	1.851.380	182.955	1.465.562	202.863	-54,5%	-69,1%	-55,0%	-5,4%
25-29	4.186.850	524.663	2.702.396	959.791	2.029.896	205.435	865.189	959.272	-51,5%	-60,8%	-68,0%	-0,1%
30-34	4.167.490	530.116	2.807.553	829.821	2.250.254	230.626	938.287	1.081.341	-46,0%	-56,5%	-66,6%	30,3%
35-39	3.751.277	417.090	2.725.741	608.446	2.380.310	247.716	973.509	1.159.085	-36,5%	-40,6%	-64,3%	90,5%
40-44	3.357.072	366.058	2.516.761	474.253	2.136.103	226.464	848.112	1.061.527	-36,4%	-38,1%	-66,3%	123,8%
45-49	3.499.194	413.105	2.604.586	481.503	2.070.042	282.231	849.868	937.943	-40,8%	-31,7%	-67,4%	94,8%
50-54	3.756.526	589.256	2.656.107	511.163	2.304.241	316.601	986.405	1.001.235	-38,7%	-46,3%	-62,9%	95,9%
55-59	3.346.519	652.993	2.226.610	466.916	2.888.406	451.560	1.507.904	928.942	-13,7%	-30,8%	-32,3%	99,0%
60-64	2.378.555	632.408	1.414.111	332.036	3.175.389	419.841	2.000.401	755.147	33,5%	-33,6%	41,5%	127,4%
65-69	1.937.647	798.573	885.464	253.610	3.075.527	399.800	1.946.433	729.294	58,7%	-49,9%	119,8%	187,6%
70-74	1.623.514	769.778	660.541	193.195	2.757.136	359.961	1.834.099	563.076	69,8%	-53,2%	177,7%	191,5%
75-79	1.235.675	617.624	460.131	157.920	2.097.676	236.342	1.514.743	346.591	69,8%	-61,7%	229,2%	119,5%
80-84	677.447	355.132	236.554	85.761	1.446.937	158.253	1.081.636	207.048	113,6%	-55,4%	357,2%	141,4%
85-89	250.008	136.613	83.922	29.473	1.004.182	118.135	746.767	139.280	301,7%	-13,5%	789,8%	372,6%
90-94	56.548	30.407	19.262	6.879	586.603	91.786	414.636	80.181	937,4%	201,9%	2052,6%	1065,6%
95+	17.581	10.397	5.715	1.469	142.729	27.782	94.969	19.978	711,8%	167,2%	1561,7%	1260,0%
Sum	49.889.158	18.548.253	25.734.167	5.606.738	39.349.867	10.653.924	18.508.504	10.187.439	-21,1%	-42,6%	-28,1%	81,7%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.430.514	2.430.514	0	0	1.745.726	1.745.726	0	0	-28,2%	-28,2%	-	-
05-09	2.413.798	2.413.798	0	0	1.810.026	1.810.026	0	0	-25,0%	-25,0%	-	-
10-14	2.730.326	2.730.326	0	0	1.807.184	1.807.184	0	0	-33,8%	-33,8%	-	-
15-19	3.445.340	2.928.382	516.707	251	1.802.323	1.284.414	503.549	14.360	-47,7%	-56,1%	-2,5%	5621,1%
20-24	3.906.208	450.118	3.044.190	411.900	1.847.842	182.507	1.378.717	286.618	-52,7%	-59,5%	-54,7%	-30,4%
25-29	4.022.268	448.223	2.214.655	1.359.390	2.045.893	204.411	832.474	1.009.008	-49,1%	-54,4%	-62,4%	-25,8%
30-34	4.021.648	501.322	2.400.896	1.119.430	2.296.337	230.202	924.146	1.141.989	-42,9%	-54,1%	-61,5%	2,0%
35-39	3.659.185	419.088	2.461.875	778.222	2.454.293	247.258	976.699	1.230.336	-32,9%	-41,0%	-60,3%	58,1%
40-44	3.333.215	410.269	2.294.919	628.027	2.095.407	211.934	817.253	1.066.220	-37,1%	-48,3%	-64,4%	69,8%
45-49	3.580.957	523.179	2.443.533	614.245	2.062.751	214.175	801.788	1.046.788	-42,4%	-59,1%	-67,2%	70,4%
50-54	3.997.497	879.934	2.486.855	630.708	2.343.913	312.440	1.046.292	985.181	-41,4%	-64,5%	-57,9%	56,2%
55-59	3.740.294	1.082.280	2.187.230	470.784	3.011.345	349.816	1.460.489	1.201.040	-19,5%	-67,7%	-33,2%	155,1%
60-64	2.847.637	1.098.088	1.413.998	335.551	3.447.893	385.320	1.865.868	1.196.705	21,1%	-64,9%	32,0%	256,6%
65-69	2.578.290	1.384.463	942.531	251.296	3.490.880	386.341	1.894.633	1.209.906	35,4%	-72,1%	101,0%	381,5%
70-74	2.408.107	1.494.646	748.658	164.803	3.337.382	413.143	1.977.320	946.919	38,6%	-72,4%	164,1%	474,6%
75-79	2.075.940	1.344.107	599.570	132.263	2.777.357	312.529	1.866.080	598.748	33,8%	-76,7%	211,2%	352,7%
80-84	1.403.658	932.566	386.621	84.471	2.144.868	258.698	1.477.725	408.445	52,8%	-72,3%	282,2%	383,5%
85-89	608.566	412.808	161.571	34.187	1.704.926	245.406	1.165.038	294.482	180,2%	-40,6%	621,1%	761,4%
90-94	156.070	104.885	41.226	9.959	1.142.388	250.107	711.243	181.038	632,0%	138,5%	1625,2%	1717,8%
95+	51.192	34.907	12.858	3.427	301.037	86.852	176.178	38.007	488,1%	148,8%	1270,2%	1009,0%
Sum	53.410.710	22.023.903	24.357.893	7.028.914	43.669.771	10.938.489	19.875.492	12.855.790	-18,2%	-50,3%	-18,4%	82,9%

TARGET-TREND EUROPE 2020 SCENARIO - WITHOUT MIGRATION (EU12)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.568.080	2.568.080	0	0	1.941.190	1.941.190	0	0	-24,4%	-24,4%	-	-
05-09	2.544.544	2.544.544	0	0	1.991.309	1.991.309	0	0	-21,7%	-21,7%	-	-
10-14	2.865.733	2.865.733	0	0	1.977.915	1.977.915	0	0	-31,0%	-31,0%	-	-
15-19	3.602.639	3.132.830	469.687	122	1.980.625	1.483.526	481.220	15.879	-45,0%	-52,6%	2,5%	12915,6%
20-24	4.066.259	592.853	3.259.026	214.380	2.086.073	208.607	1.656.529	220.937	-48,7%	-64,8%	-49,2%	3,1%
25-29	4.186.850	524.663	2.702.396	959.791	2.317.958	231.796	1.018.719	1.067.443	-44,6%	-55,8%	-62,3%	11,2%
30-34	4.167.490	530.116	2.807.553	829.821	2.567.212	256.721	1.128.264	1.182.227	-38,4%	-51,6%	-59,8%	42,5%
35-39	3.751.277	417.090	2.725.741	608.446	2.707.102	270.710	1.189.744	1.246.648	-27,8%	-35,1%	-56,4%	104,9%
40-44	3.357.072	366.058	2.516.761	474.253	2.485.368	248.537	1.092.294	1.144.537	-26,0%	-32,1%	-56,6%	141,3%
45-49	3.499.194	413.105	2.604.586	481.503	2.435.338	304.318	1.114.981	1.016.039	-30,4%	-26,3%	-57,2%	111,0%
50-54	3.756.526	589.256	2.656.107	511.163	2.673.226	338.739	1.262.360	1.072.127	-28,8%	-42,5%	-52,5%	109,7%
55-59	3.346.519	652.993	2.226.610	466.916	3.231.983	471.216	1.776.928	983.839	-3,4%	-27,8%	-20,2%	110,7%
60-64	2.378.555	632.408	1.414.111	332.036	3.444.108	431.589	2.222.993	789.526	44,8%	-31,8%	57,2%	137,8%
65-69	1.937.647	798.573	885.464	253.610	3.262.675	408.853	2.105.888	747.934	68,4%	-48,8%	137,8%	194,9%
70-74	1.623.514	769.778	660.541	193.195	2.878.760	366.186	1.939.362	573.212	77,3%	-52,4%	193,6%	196,7%
75-79	1.235.675	617.624	460.131	157.920	2.170.213	241.298	1.576.913	352.002	75,6%	-60,9%	242,7%	122,9%
80-84	677.447	355.132	236.554	85.761	1.483.995	161.816	1.112.535	209.644	119,1%	-54,4%	370,3%	144,5%
85-89	250.008	136.613	83.922	29.473	1.018.360	120.225	758.005	140.130	307,3%	-12,0%	803,2%	375,5%
90-94	56.548	30.407	19.262	6.879	590.244	92.587	417.341	80.316	943,8%	204,5%	2066,7%	1067,6%
95+	17.581	10.397	5.715	1.469	143.165	27.935	95.255	19.975	714,3%	168,7%	1566,8%	1259,8%
Sum	49.889.158	18.548.253	25.734.167	5.606.738	43.386.819	11.575.073	20.949.331	10.862.415	-13,0%	-37,6%	-18,6%	93,7%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.430.514	2.430.514	0	0	1.941.651	1.941.651	0	0	-20,1%	-20,1%	-	-
05-09	2.413.798	2.413.798	0	0	1.992.825	1.992.825	0	0	-17,4%	-17,4%	-	-
10-14	2.730.326	2.730.326	0	0	1.980.013	1.980.013	0	0	-27,5%	-27,5%	-	-
15-19	3.445.340	2.928.382	516.707	251	1.984.147	1.418.241	550.338	15.568	-42,4%	-51,6%	6,5%	6102,4%
20-24	3.906.208	450.118	3.044.190	411.900	2.093.079	209.308	1.566.603	317.168	-46,4%	-53,5%	-48,5%	-23,0%
25-29	4.022.268	448.223	2.214.655	1.359.390	2.331.168	233.117	965.876	1.132.175	-42,0%	-48,0%	-56,4%	-16,7%
30-34	4.021.648	501.322	2.400.896	1.119.430	2.589.640	258.964	1.072.969	1.257.707	-35,6%	-48,3%	-55,3%	12,4%
35-39	3.659.185	419.088	2.461.875	778.222	2.742.337	274.234	1.136.236	1.331.867	-25,1%	-34,6%	-53,8%	71,1%
40-44	3.333.215	410.269	2.294.919	628.027	2.396.804	239.680	993.071	1.164.053	-28,1%	-41,6%	-56,7%	85,4%
45-49	3.580.957	523.179	2.443.533	614.245	2.375.770	243.608	991.119	1.141.043	-33,7%	-53,4%	-59,4%	85,8%
50-54	3.997.497	879.934	2.486.855	630.708	2.662.796	344.767	1.244.854	1.073.175	-33,4%	-60,8%	-49,9%	70,2%
55-59	3.740.294	1.082.280	2.187.230	470.784	3.311.667	381.608	1.655.342	1.274.717	-11,5%	-64,7%	-24,3%	170,8%
60-64	2.847.637	1.098.088	1.413.998	335.551	3.669.980	408.966	2.020.686	1.240.328	28,9%	-62,8%	42,9%	269,6%
65-69	2.578.290	1.384.463	942.531	251.296	3.648.638	406.587	2.008.935	1.233.116	41,5%	-70,6%	113,1%	390,7%
70-74	2.408.107	1.494.646	748.658	164.803	3.450.563	430.133	2.059.962	960.468	43,3%	-71,2%	175,2%	482,8%
75-79	2.075.940	1.344.107	599.570	132.263	2.853.751	326.841	1.919.985	606.925	37,5%	-75,7%	220,2%	358,9%
80-84	1.403.658	932.566	386.621	84.471	2.190.252	269.587	1.507.989	412.676	56,0%	-71,1%	290,0%	388,5%
85-89	608.566	412.808	161.571	34.187	1.725.944	252.161	1.177.730	296.053	183,6%	-38,9%	628,9%	766,0%
90-94	156.070	104.885	41.226	9.959	1.149.059	252.932	714.833	181.294	636,2%	141,2%	1633,9%	1720,4%
95+	51.192	34.907	12.858	3.427	301.959	87.374	176.578	38.007	489,9%	150,3%	1273,3%	1009,0%
Sum	53.410.710	22.023.903	24.357.893	7.028.914	47.392.043	11.952.597	21.763.106	13.676.340	-11,3%	-45,7%	-10,7%	94,6%

7.3.2.3 The Republic of Croatia (Hrvatska - HR)

Table 17 – Population Structure by age, sex and educational attainment in Croatia, 2008-2048

	Croatia	Baseyear Population			Constant Scenario			EU 2020 Scenario			Target-Trend Scenario		
		MF 2008	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women
POPULATION	**Population**												
	Total	**4.417.194**	2.129.790	2.287.404	**3.448.717**	1.640.016	1.808.701	**3.379.723**	1.603.316	1.776.407	**3.703.253**	1.792.844	1.910.409
	ISCED0-2	**1.912.315**	807.474	1.104.841	**800.561**	397.633	402.928	**772.746**	383.072	389.674	**871.322**	432.875	438.447
	ISCED3-4	**2.014.298**	1.087.629	926.669	**2.068.069**	1.048.515	1.019.554	**1.704.912**	869.622	835.290	**1.878.816**	977.182	901.634
	ISCED5-6	**490.581**	234.687	255.894	**580.087**	193.868	386.219	**902.065**	350.622	551.443	**953.115**	382.787	570.328
	Age Distribution												
	00-14	**0,155**	0,165	0,146	**0,135**	0,142	0,129	**0,135**	0,142	0,129	**0,133**	0,137	0,129
	15-64	**0,673**	0,696	0,651	**0,621**	0,648	0,597	**0,621**	0,648	0,597	**0,591**	0,610	0,572
	65+	**0,172**	0,139	0,203	**0,243**	0,210	0,274	**0,243**	0,210	0,274	**0,276**	0,252	0,299
	85+	**0,011**	0,006	0,016	**0,027**	0,017	0,036	**0,027**	0,017	0,036	**0,045**	0,036	0,053
DEPENDENCY RATIO's	**Dependency Ratio's (DR)**												
	TDR	**0,486**	0,436	0,536	**0,610**	0,543	0,676	**0,610**	0,543	0,676	**0,693**	0,638	0,749
	YDR	**0,230**	0,236	0,224	**0,218**	0,220	0,217	**0,218**	0,220	0,217	**0,225**	0,225	0,226
	ADR	**0,256**	0,200	0,312	**0,392**	0,323	0,460	**0,392**	0,323	0,460	**0,468**	0,413	0,523
	OADR	**0,016**	0,008	0,024	**0,044**	0,027	0,060	**0,044**	0,027	0,060	**0,076**	0,058	0,093
	PSR	**3,9**	5,0	3,2	**2,6**	3,1	2,2	**2,6**	3,1	2,2	**2,1**	2,4	1,9
EDUCATION	**Educational Attainment - Total Population**												
	ISCED0-2	**0,433**	0,379	0,483	**0,232**	0,242	0,223	**0,232**	0,242	0,223	**0,235**	0,241	0,230
	ISCED3-4	**0,456**	0,511	0,405	**0,600**	0,639	0,564	**0,501**	0,539	0,467	**0,507**	0,545	0,472
	ISCED5-6	**0,111**	0,110	0,112	**0,168**	0,118	0,214	**0,267**	0,219	0,310	**0,257**	0,214	0,299
	Educational Attainment - Working Age Population (15-64y)												
	ISCED0-2	**0,248**	0,219	0,277	**0,096**	0,107	0,085	**0,096**	0,107	0,085	**0,097**	0,107	0,086
	ISCED3-4	**0,610**	0,652	0,569	**0,709**	0,760	0,658	**0,550**	0,605	0,497	**0,552**	0,606	0,498
	ISCED5-6	**0,141**	0,129	0,154	**0,195**	0,133	0,257	**0,354**	0,288	0,418	**0,351**	0,287	0,416
VITAL RATES	**Life Expectancy (LE)**												
	Total	**76,02**	72,29	79,49	**76,07**	72,29	79,49	**76,07**	72,29	79,49	**80,97**	78,44	83,34
	Total Fertility Rate (TFR)												
	Total	1,47	-	-	1,44	-	-	1,44	-	-	1,52	-	-
	ISCED0-2	1,84	-	-	1,84	-	-	1,84	-	-	1,94	-	-
	ISCED3-4	1,41	-	-	1,41	-	-	1,41	-	-	1,49	-	-
	ISCED5-6	1,36	-	-	1,36	-	-	1,36	-	-	1,44	-	-
	Net Migration (NM)												
	Total	**7.053**	3.996	3.057	**7.053**	3.996	3.057	**7.053**	3.996	3.057	**7.053**	3.996	3.057
	ISCED0-2	**3.751**	2.097	1.654	**3.751**	2.097	1.654	**3.751**	2.097	1.654	**3.751**	2.097	1.654
	ISCED3-4	**2.217**	1.272	945	**2.217**	1.272	945	**2.217**	1.272	945	**2.217**	1.272	945
	ISCED5-6	**1.085**	627	458	**1.085**	627	458	**1.085**	627	458	**1.085**	627	458

Table 18 - Population by age, sex and educational attainment in Croatia, 2008-2048 (Constant Scenario)

CONSTANT SCENARIO - WITH MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	105.959	105.959	0	0	75.166	75.166	0	0	-29,1%	-29,1%	-	-
05-09	114.310	114.310	0	0	78.071	78.071	0	0	-31,7%	-31,7%	-	-
10-14	130.354	130.354	0	0	80.213	80.213	0	0	-38,5%	-38,5%	-	-
15-19	135.099	96.786	38.313	0	83.812	60.104	23.707	1	-38,0%	-37,9%	-38,1%	-
20-24	150.577	7.615	137.814	5.148	89.575	4.653	81.861	3.061	-40,5%	-38,9%	-40,6%	-40,5%
25-29	159.750	14.802	120.679	24.269	96.838	5.157	76.954	14.727	-39,4%	-65,2%	-36,2%	-39,3%
30-34	152.309	22.953	105.947	23.409	104.092	5.631	82.374	16.087	-31,7%	-75,5%	-22,2%	-31,3%
35-39	147.163	26.978	97.119	23.066	109.402	5.990	86.455	16.957	-25,7%	-77,8%	-11,0%	-26,5%
40-44	157.571	28.690	108.662	20.219	104.739	5.832	82.620	16.287	-33,5%	-79,7%	-24,0%	-19,4%
45-49	162.702	28.402	105.391	28.909	110.968	6.233	87.441	17.294	-31,8%	-78,1%	-17,0%	-40,2%
50-54	165.555	36.364	108.064	21.127	121.866	6.821	96.053	18.992	-26,4%	-81,2%	-11,1%	-10,1%
55-59	147.391	37.760	83.363	26.268	119.338	6.701	94.016	18.621	-19,0%	-82,3%	12,8%	-29,1%
60-64	104.518	24.774	61.327	18.417	122.224	6.735	96.416	19.073	16,9%	-72,8%	57,2%	3,6%
65-69	103.172	34.834	48.218	20.120	114.984	11.011	86.070	17.903	11,4%	-68,4%	78,5%	-11,0%
70-74	90.215	39.989	38.229	11.997	91.119	13.902	63.073	14.144	1,0%	-65,2%	65,0%	17,9%
75-79	62.262	32.568	23.431	6.263	65.346	12.041	43.001	10.304	5,0%	-63,0%	83,5%	64,5%
80-84	28.903	16.917	7.671	4.315	43.593	7.955	30.020	5.618	50,8%	-53,0%	291,3%	30,2%
85-89	9.412	5.829	2.672	911	20.912	3.648	13.547	3.717	122,2%	-37,4%	407,0%	308,0%
90-94	1.712	1.060	486	166	5.908	1.296	3.859	753	245,1%	22,3%	694,0%	353,6%
95+	856	530	243	83	1.850	473	1.048	329	116,1%	-10,8%	331,3%	296,4%
Sum	2.129.790	807.474	1.087.629	234.687	1.640.016	397.633	1.048.515	193.868	-23,0%	-50,8%	-3,6%	-17,4%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	99.988	99.988	0	0	75.189	75.189	0	0	-24,8%	-24,8%	-	-
05-09	108.944	108.944	0	0	78.206	78.206	0	0	-28,2%	-28,2%	-	-
10-14	124.484	124.484	0	0	80.406	80.406	0	0	-35,4%	-35,4%	-	-
15-19	129.067	92.875	36.192	0	83.843	60.365	23.478	0	-35,0%	-35,0%	-35,1%	-
20-24	144.394	3.966	132.497	7.931	89.798	2.559	82.302	4.937	-37,8%	-35,5%	-37,9%	-37,8%
25-29	154.274	10.138	97.707	46.429	97.495	2.942	65.242	29.311	-36,8%	-71,0%	-33,2%	-36,9%
30-34	149.315	18.290	98.860	32.165	105.172	3.248	70.293	31.631	-29,6%	-82,2%	-28,9%	-1,7%
35-39	145.824	22.543	92.167	31.114	110.977	3.478	74.117	33.382	-23,9%	-84,6%	-19,6%	7,3%
40-44	157.972	37.157	97.999	22.816	101.011	3.277	67.348	30.386	-36,1%	-91,2%	-31,3%	33,2%
45-49	165.093	44.815	93.485	26.793	109.203	3.567	72.779	32.857	-33,9%	-92,0%	-22,1%	22,6%
50-54	168.545	61.205	83.764	23.576	122.824	4.002	81.865	36.957	-27,1%	-93,5%	-2,3%	56,8%
55-59	153.924	65.548	67.821	20.555	124.467	4.070	82.942	37.455	-19,1%	-93,8%	22,3%	82,2%
60-64	120.603	56.530	46.105	17.968	134.109	4.259	89.479	40.371	11,2%	-92,5%	94,1%	124,7%
65-69	129.965	83.689	32.299	13.977	135.669	9.256	85.566	40.847	4,4%	-88,9%	164,9%	192,2%
70-74	128.028	100.362	21.707	5.959	120.018	14.856	79.249	25.913	-6,3%	-85,2%	265,1%	334,9%
75-79	105.066	87.429	13.341	4.296	98.713	15.310	62.317	21.086	-6,0%	-82,5%	367,1%	390,8%
80-84	66.217	55.801	8.101	2.315	76.634	18.022	47.538	11.074	15,7%	-67,7%	486,8%	378,4%
85-89	27.940	24.321	3.619	0	43.435	11.780	24.614	7.041	55,5%	-51,6%	580,1%	-
90-94	6.209	5.405	804	0	16.427	5.962	8.173	2.292	164,6%	10,3%	916,5%	-
95+	1.552	1.351	201	0	5.105	2.174	2.252	679	228,9%	60,9%	1020,4%	-
Sum	2.287.404	1.104.841	926.669	255.894	1.808.701	402.928	1.019.554	386.219	-20,9%	-63,5%	10,0%	50,9%

CONSTANT SCENARIO - WITHOUT MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	105.959	105.959	0	0	73.086	73.086	0	0	-31,0%	-31,0%	-	-
05-09	114.310	114.310	0	0	75.974	75.974	0	0	-33,5%	-33,5%	-	-
10-14	130.354	130.354	0	0	78.111	78.111	0	0	-40,1%	-40,1%	-	-
15-19	135.099	96.786	38.313	0	81.345	58.276	23.069	0	-39,8%	-39,8%	-39,8%	-
20-24	150.577	7.615	137.814	5.148	86.604	4.380	79.263	2.961	-42,5%	-42,5%	-42,5%	-42,5%
25-29	159.750	14.802	120.679	24.269	93.708	4.739	74.733	14.236	-41,3%	-68,0%	-38,1%	-41,3%
30-34	152.309	22.953	105.947	23.409	100.949	5.105	80.319	15.525	-33,7%	-77,8%	-24,2%	-33,7%
35-39	147.163	26.978	97.119	23.066	106.313	5.376	84.587	16.350	-27,8%	-80,1%	-12,9%	-29,1%
40-44	157.571	28.690	108.662	20.219	101.721	5.144	80.933	15.644	-35,4%	-82,1%	-25,5%	-22,6%
45-49	162.702	28.402	105.391	28.909	107.952	5.459	85.891	16.602	-33,7%	-80,8%	-18,5%	-42,6%
50-54	165.555	36.364	108.064	21.127	118.980	6.017	94.665	18.298	-28,1%	-83,5%	-12,4%	-13,4%
55-59	147.391	37.760	83.363	26.268	116.946	5.914	93.047	17.985	-20,7%	-84,3%	11,6%	-31,5%
60-64	104.518	24.774	61.327	18.417	120.481	6.093	95.859	18.529	15,3%	-75,4%	56,3%	0,6%
65-69	103.172	34.834	48.218	20.120	113.694	10.534	85.686	17.474	10,2%	-69,8%	77,7%	-13,2%
70-74	90.215	39.989	38.229	11.997	90.332	13.613	62.836	13.883	0,1%	-66,0%	64,4%	15,7%
75-79	62.262	32.568	23.431	6.263	64.988	11.913	42.889	10.186	4,4%	-63,4%	83,0%	62,6%
80-84	28.903	16.917	7.671	4.315	43.469	7.915	29.976	5.578	50,4%	-53,2%	290,8%	29,3%
85-89	9.412	5.829	2.672	911	20.903	3.649	13.540	3.714	122,1%	-37,4%	406,7%	307,7%
90-94	1.712	1.060	486	166	5.912	1.299	3.859	754	245,3%	22,5%	694,0%	354,2%
95+	856	530	243	83	1.853	475	1.048	330	116,5%	-10,4%	331,3%	297,6%
Sum	2.129.790	807.474	1.087.629	234.687	1.603.321	383.072	1.032.200	188.049	-24,7%	-52,6%	-5,1%	-19,9%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	99.988	99.988	0	0	73.135	73.135	0	0	-26,9%	-26,9%	-	-
05-09	108.944	108.944	0	0	76.127	76.127	0	0	-30,1%	-30,1%	-	-
10-14	124.484	124.484	0	0	78.287	78.287	0	0	-37,1%	-37,1%	-	-
15-19	129.067	92.875	36.192	0	81.627	58.738	22.889	0	-36,8%	-36,8%	-36,8%	-
20-24	144.394	3.966	132.497	7.931	87.184	2.394	80.001	4.789	-39,6%	-39,6%	-39,6%	-39,6%
25-29	154.274	10.138	97.707	46.429	94.710	2.601	63.606	28.503	-38,6%	-74,3%	-34,9%	-38,6%
30-34	149.315	18.290	98.860	32.165	102.419	2.813	68.783	30.823	-31,4%	-84,6%	-30,4%	-4,2%
35-39	145.824	22.543	92.167	31.114	108.356	2.976	72.770	32.610	-25,7%	-86,8%	-21,0%	4,8%
40-44	157.972	37.157	97.999	22.816	98.463	2.704	66.126	29.633	-37,7%	-92,7%	-32,5%	29,9%
45-49	165.093	44.815	93.485	26.793	106.727	2.931	71.676	32.120	-35,4%	-93,5%	-23,3%	19,9%
50-54	168.545	61.205	83.764	23.576	120.441	3.308	80.886	36.247	-28,5%	-94,6%	-3,4%	53,7%
55-59	153.924	65.548	67.821	20.555	122.324	3.359	82.151	36.814	-20,5%	-94,9%	21,1%	79,1%
60-64	120.603	56.530	46.105	17.968	132.527	3.640	89.003	39.884	9,9%	-93,6%	93,0%	122,0%
65-69	129.965	83.689	32.299	13.977	134.591	8.845	85.241	40.505	3,6%	-89,4%	163,9%	189,8%
70-74	128.028	100.362	21.707	5.959	119.410	14.627	79.060	25.723	-6,7%	-85,4%	264,2%	331,7%
75-79	105.066	87.429	13.341	4.296	98.447	15.219	62.223	21.005	-6,3%	-82,6%	366,4%	388,9%
80-84	66.217	55.801	8.101	2.315	76.585	18.014	47.510	11.061	15,7%	-67,7%	486,5%	377,8%
85-89	27.940	24.321	3.619	0	43.471	11.800	24.616	7.055	55,6%	-51,5%	580,2%	-
90-94	6.209	5.405	804	0	16.457	5.976	8.179	2.302	165,1%	10,6%	917,3%	-
95+	1.552	1.351	201	0	5.119	2.180	2.255	684	229,8%	61,4%	1021,9%	-
Sum	2.287.404	1.104.841	926.669	255.894	1.776.407	389.674	1.006.975	379.758	-22,3%	-64,7%	8,7%	48,4%

Table 19 - Population by age, sex and educational attainment in Croatia, 2008-2048 (EU2020 Scenario)

EUROPE 2020 SCENARIO - WITH MIGRATION (CROATIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	105.959	105.959	0	0	75.166	75.166	0	0	-29,1%	-29,1%	-	-
05-09	114.310	114.310	0	0	78.071	78.071	0	0	-31,7%	-31,7%	-	-
10-14	130.354	130.354	0	0	80.213	80.213	0	0	-38,5%	-38,5%	-	-
15-19	135.099	96.786	38.313	0	83.812	60.104	23.707	1	-38,0%	-37,9%	-38,1%	-
20-24	150.577	7.615	137.814	5.148	89.575	4.653	77.005	7.917	-40,5%	-38,9%	-44,1%	53,8%
25-29	159.750	14.802	120.679	24.269	96.838	5.157	53.544	38.137	-39,4%	-65,2%	-55,6%	57,1%
30-34	152.309	22.953	105.947	23.409	104.091	5.631	56.996	41.464	-31,7%	-75,5%	-46,2%	77,1%
35-39	147.163	26.978	97.119	23.066	109.403	5.990	59.840	43.573	-25,7%	-77,8%	-38,4%	88,9%
40-44	157.571	28.690	108.662	20.219	104.739	5.832	57.212	41.695	-33,5%	-79,7%	-47,3%	106,2%
45-49	162.702	28.402	105.391	28.909	110.968	6.233	61.196	43.539	-31,8%	-78,1%	-41,9%	50,6%
50-54	165.555	36.364	108.064	21.127	121.866	6.821	73.194	41.851	-26,4%	-81,2%	-32,3%	98,1%
55-59	147.391	37.760	83.363	26.268	119.338	6.701	83.826	28.811	-19,0%	-82,3%	0,6%	9,7%
60-64	104.518	24.774	61.327	18.417	122.224	6.735	96.233	19.256	16,9%	-72,8%	56,9%	4,6%
65-69	103.172	34.834	48.218	20.120	114.984	11.011	86.070	17.903	11,4%	-68,4%	78,5%	-11,0%
70-74	90.215	39.989	38.229	11.997	91.119	13.902	63.073	14.144	1,0%	-65,2%	65,0%	17,9%
75-79	62.262	32.568	23.431	6.263	65.346	12.041	43.001	10.304	5,0%	-63,0%	83,5%	64,5%
80-84	28.903	16.917	7.671	4.315	43.593	7.955	30.020	5.618	50,8%	-53,0%	291,3%	30,2%
85-89	9.412	5.829	2.672	911	20.912	3.648	13.547	3.717	122,2%	-37,4%	407,0%	308,0%
90-94	1.712	1.060	486	166	5.908	1.296	3.859	753	245,1%	22,3%	694,0%	353,6%
95+	856	530	243	83	1.850	473	1.048	329	116,1%	-10,8%	331,3%	296,4%
Sum	2.129.790	807.474	1.087.629	234.687	1.640.016	397.633	883.371	359.012	-23,0%	-50,8%	-18,8%	53,0%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	99.988	99.988	0	0	75.189	75.189	0	0	-24,8%	-24,8%	-	-
05-09	108.944	108.944	0	0	78.206	78.206	0	0	-28,2%	-28,2%	-	-
10-14	124.484	124.484	0	0	80.406	80.406	0	0	-35,4%	-35,4%	-	-
15-19	129.067	92.875	36.192	0	83.843	60.365	23.478	0	-35,0%	-35,0%	-35,1%	-
20-24	144.394	3.966	132.497	7.931	89.798	2.559	78.110	9.129	-37,8%	-35,5%	-41,0%	15,1%
25-29	154.274	10.138	97.707	46.429	97.495	2.942	40.255	54.298	-36,8%	-71,0%	-58,8%	16,9%
30-34	149.315	18.290	98.860	32.165	105.171	3.248	43.400	58.523	-29,6%	-82,2%	-56,1%	81,9%
35-39	145.824	22.543	92.167	31.114	110.978	3.478	45.780	61.720	-23,9%	-84,6%	-50,3%	98,4%
40-44	157.972	37.157	97.999	22.816	101.012	3.277	41.634	56.101	-36,1%	-91,2%	-57,5%	145,9%
45-49	165.093	44.815	93.485	26.793	109.203	3.567	45.399	60.237	-33,9%	-92,0%	-51,4%	124,8%
50-54	168.545	61.205	83.764	23.576	122.824	4.002	57.055	61.767	-27,1%	-93,5%	-31,9%	162,0%
55-59	153.924	65.548	67.821	20.555	124.467	4.070	71.260	49.137	-19,1%	-93,8%	5,1%	139,1%
60-64	120.603	56.530	46.105	17.968	134.109	4.259	89.479	40.371	11,2%	-92,5%	94,1%	124,7%
65-69	129.965	83.689	32.299	13.977	135.669	9.256	85.566	40.847	4,4%	-88,9%	164,9%	192,2%
70-74	128.028	100.362	21.707	5.959	120.018	14.856	79.249	25.913	-6,3%	-85,2%	265,1%	334,9%
75-79	105.066	87.429	13.341	4.296	98.713	15.310	62.317	21.086	-6,0%	-82,5%	367,1%	390,8%
80-84	66.217	55.801	8.101	2.315	76.634	18.022	47.538	11.074	15,7%	-67,7%	486,8%	378,4%
85-89	27.940	24.321	3.619	0	43.435	11.780	24.614	7.041	55,5%	-51,6%	580,1%	-
90-94	6.209	5.405	804	0	16.427	5.962	8.173	2.292	164,6%	10,3%	916,5%	-
95+	1.552	1.351	201	0	5.105	2.174	2.252	679	228,9%	60,9%	1020,4%	-
Sum	2.287.404	1.104.841	926.669	255.894	1.808.702	402.928	845.559	560.215	-20,9%	-63,5%	-8,8%	118,9%

EUROPE 2020 SCENARIO - WITHOUT MIGRATION (CROATIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	105.959	105.959	0	0	73.086	73.086	0	0	-31,0%	-31,0%	-	-
05-09	114.310	114.310	0	0	75.974	75.974	0	0	-33,5%	-33,5%	-	-
10-14	130.354	130.354	0	0	78.111	78.111	0	0	-40,1%	-40,1%	-	-
15-19	135.099	96.786	38.313	0	81.345	58.276	23.069	0	-39,8%	-39,8%	-39,8%	-
20-24	150.577	7.615	137.814	5.148	86.604	4.380	74.518	7.706	-42,5%	-42,5%	-45,9%	49,7%
25-29	159.750	14.802	120.679	24.269	93.708	4.739	51.918	37.051	-41,3%	-68,0%	-57,0%	52,7%
30-34	152.309	22.953	105.947	23.409	100.949	5.105	55.464	40.380	-33,7%	-77,8%	-47,6%	72,5%
35-39	147.163	26.978	97.119	23.066	106.312	5.376	58.411	42.525	-27,8%	-80,1%	-39,9%	84,4%
40-44	157.571	28.690	108.662	20.219	101.720	5.144	55.888	40.688	-35,4%	-82,1%	-48,6%	101,2%
45-49	162.702	28.402	105.391	28.909	107.951	5.459	59.941	42.551	-33,7%	-80,8%	-43,1%	47,2%
50-54	165.555	36.364	108.064	21.127	118.979	6.017	72.000	40.962	-28,1%	-83,5%	-33,4%	93,9%
55-59	147.391	37.760	83.363	26.268	116.946	5.914	82.903	28.129	-20,7%	-84,3%	-0,6%	7,1%
60-64	104.518	24.774	61.327	18.417	120.480	6.093	95.676	18.711	15,3%	-75,4%	56,0%	1,6%
65-69	103.172	34.834	48.218	20.120	113.694	10.534	85.686	17.474	10,2%	-69,8%	77,7%	-13,2%
70-74	90.215	39.989	38.229	11.997	90.332	13.613	62.836	13.883	0,1%	-66,0%	64,4%	15,7%
75-79	62.262	32.568	23.431	6.263	64.988	11.913	42.889	10.186	4,4%	-63,4%	83,0%	62,6%
80-84	28.903	16.917	7.671	4.315	43.469	7.915	29.976	5.578	50,4%	-53,2%	290,8%	29,3%
85-89	9.412	5.829	2.672	911	20.903	3.649	13.540	3.714	122,1%	-37,4%	406,7%	307,7%
90-94	1.712	1.060	486	166	5.912	1.299	3.859	754	245,3%	22,5%	694,0%	354,2%
95+	856	530	243	83	1.853	475	1.048	330	116,5%	-10,4%	331,3%	297,6%
Sum	2.129.790	807.474	1.087.629	234.687	1.603.316	383.072	869.622	350.622	-24,7%	-52,6%	-20,0%	49,4%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	99.988	99.988	0	0	73.135	73.135	0	0	-26,9%	-26,9%	-	-
05-09	108.944	108.944	0	0	76.127	76.127	0	0	-30,1%	-30,1%	-	-
10-14	124.484	124.484	0	0	78.287	78.287	0	0	-37,1%	-37,1%	-	-
15-19	129.067	92.875	36.192	0	81.627	58.738	22.889	0	-36,8%	-36,8%	-36,8%	-
20-24	144.394	3.966	132.497	7.931	87.184	2.394	75.898	8.892	-39,6%	-39,6%	-42,7%	12,1%
25-29	154.274	10.138	97.707	46.429	94.711	2.601	39.183	52.927	-38,6%	-74,3%	-59,9%	14,0%
30-34	149.315	18.290	98.860	32.165	102.419	2.813	42.372	57.234	-31,4%	-84,6%	-57,1%	77,9%
35-39	145.824	22.543	92.167	31.114	108.356	2.976	44.828	60.552	-25,7%	-86,8%	-51,4%	94,6%
40-44	157.972	37.157	97.999	22.816	98.463	2.704	40.735	55.024	-37,7%	-92,7%	-58,4%	141,2%
45-49	165.093	44.815	93.485	26.793	106.727	2.931	44.552	59.244	-35,4%	-93,5%	-52,3%	121,1%
50-54	168.545	61.205	83.764	23.576	120.441	3.308	56.232	60.901	-28,5%	-94,6%	-32,9%	158,3%
55-59	153.924	65.548	67.821	20.555	122.323	3.359	70.514	48.450	-20,5%	-94,9%	4,0%	135,7%
60-64	120.603	56.530	46.105	17.968	132.527	3.640	89.003	39.884	9,9%	-93,6%	93,0%	122,0%
65-69	129.965	83.689	32.299	13.977	134.591	8.845	85.241	40.505	3,6%	-89,4%	163,9%	189,8%
70-74	128.028	100.362	21.707	5.959	119.410	14.627	79.060	25.723	-6,7%	-85,4%	264,2%	331,7%
75-79	105.066	87.429	13.341	4.296	98.447	15.219	62.223	21.005	-6,3%	-82,6%	366,4%	388,9%
80-84	66.217	55.801	8.101	2.315	76.585	18.014	47.510	11.061	15,7%	-67,7%	486,5%	377,8%
85-89	27.940	24.321	3.619	0	43.471	11.800	24.616	7.055	55,6%	-51,5%	580,2%	-
90-94	6.209	5.405	804	0	16.457	5.976	8.179	2.302	165,1%	10,6%	917,3%	-
95+	1.552	1.351	201	0	5.119	2.180	2.255	684	229,8%	61,4%	1021,9%	-
Sum	2.287.404	1.104.841	926.669	255.894	1.776.407	389.674	835.290	551.443	-22,3%	-64,7%	-9,9%	115,5%

Table 20 - Population by age, sex and educational attainment in Croatia, 2008-2048 (Target-Trend EU2020 Scenario)

TARGET-TREND EUROPE 2020 SCENARIO - WITH MIGRATION (CROATIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	105.959	105.959	0	0	80.317	80.317	0	0	-24,2%	-24,2%	-	-
05-09	114.310	114.310	0	0	82.412	82.412	0	0	-27,9%	-27,9%	-	-
10-14	130.354	130.354	0	0	83.725	83.725	0	0	-35,8%	-35,8%	-	-
15-19	135.099	96.786	38.313	0	86.707	62.178	24.528	1	-35,8%	-35,8%	-36,0%	-
20-24	150.577	7.615	137.814	5.148	92.044	4.778	79.130	8.136	-38,9%	-37,3%	-42,6%	58,0%
25-29	159.750	14.802	120.679	24.269	98.884	5.260	54.678	38.946	-38,1%	-64,5%	-54,7%	60,5%
30-34	152.309	22.953	105.947	23.409	105.602	5.708	57.826	42.068	-30,7%	-75,1%	-45,4%	79,7%
35-39	147.163	26.978	97.119	23.066	110.322	6.038	60.344	43.940	-25,0%	-77,6%	-37,9%	90,5%
40-44	157.571	28.690	108.662	20.219	105.955	5.897	57.878	42.180	-32,8%	-79,4%	-46,7%	108,6%
45-49	162.702	28.402	105.391	28.909	112.964	6.342	62.299	44.323	-30,6%	-77,7%	-40,9%	53,3%
50-54	165.555	36.364	108.064	21.127	125.460	7.018	75.357	43.085	-24,2%	-80,7%	-30,3%	103,9%
55-59	147.391	37.760	83.363	26.268	125.057	7.017	87.850	30.190	-15,2%	-81,4%	5,4%	14,9%
60-64	104.518	24.774	61.327	18.417	131.519	7.241	103.561	20.717	25,8%	-70,8%	68,9%	12,5%
65-69	103.172	34.834	48.218	20.120	128.561	12.306	96.242	20.013	24,6%	-64,7%	99,6%	-0,5%
70-74	90.215	39.989	38.229	11.997	108.020	16.481	74.771	16.768	19,7%	-58,8%	95,6%	39,8%
75-79	62.262	32.568	23.431	6.263	85.208	15.708	56.059	13.441	36,9%	-51,8%	139,3%	114,6%
80-84	28.903	16.917	7.671	4.315	66.211	12.091	45.581	8.539	129,1%	-28,5%	494,2%	97,9%
85-89	9.412	5.829	2.672	911	40.847	7.132	26.451	7.264	334,0%	22,4%	889,9%	697,4%
90-94	1.712	1.060	486	166	18.309	4.018	11.955	2.336	969,5%	279,1%	2359,9%	1307,2%
95+	856	530	243	83	4.720	1.208	2.672	840	451,4%	127,9%	999,6%	912,0%
Sum	2.129.790	807.474	1.087.629	234.687	1.792.844	432.875	977.182	382.787	-15,8%	-46,4%	-10,2%	63,1%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	99.988	99.988	0	0	80.314	80.314	0	0	-19,7%	-19,7%	-	-
05-09	108.944	108.944	0	0	82.459	82.459	0	0	-24,3%	-24,3%	-	-
10-14	124.484	124.484	0	0	83.831	83.831	0	0	-32,7%	-32,7%	-	-
15-19	129.067	92.875	36.192	0	86.618	62.362	24.256	0	-32,9%	-32,9%	-33,0%	-
20-24	144.394	3.966	132.497	7.931	92.042	2.621	80.063	9.358	-36,3%	-33,9%	-39,6%	18,0%
25-29	154.274	10.138	97.707	46.429	99.172	2.988	40.950	55.234	-35,7%	-70,5%	-58,1%	19,0%
30-34	149.315	18.290	98.860	32.165	106.154	3.276	43.818	59.060	-28,9%	-82,1%	-55,7%	83,6%
35-39	145.824	22.543	92.167	31.114	111.183	3.486	45.887	61.810	-23,8%	-84,5%	-50,2%	98,7%
40-44	157.972	37.157	97.999	22.816	101.271	3.288	41.777	56.206	-35,9%	-91,2%	-57,4%	146,3%
45-49	165.093	44.815	93.485	26.793	109.642	3.586	45.648	60.408	-33,6%	-92,0%	-51,2%	125,5%
50-54	168.545	61.205	83.764	23.576	123.661	4.037	57.572	62.052	-26,6%	-93,4%	-31,3%	163,2%
55-59	153.924	65.548	67.821	20.555	125.972	4.130	72.333	49.509	-18,2%	-93,7%	6,7%	140,9%
60-64	120.603	56.530	46.105	17.968	136.860	4.360	91.654	40.846	13,5%	-92,3%	98,8%	127,3%
65-69	129.965	83.689	32.299	13.977	140.102	9.614	88.887	41.601	7,8%	-88,5%	175,2%	197,6%
70-74	128.028	100.362	21.707	5.959	126.893	15.815	84.347	26.731	-0,9%	-84,2%	288,6%	348,6%
75-79	105.066	87.429	13.341	4.296	109.126	17.114	69.628	22.384	3,9%	-80,4%	421,9%	421,0%
80-84	66.217	55.801	8.101	2.315	93.068	22.173	58.465	12.430	40,6%	-60,3%	621,7%	436,9%
85-89	27.940	24.321	3.619	0	62.112	17.291	36.115	8.706	122,3%	-28,9%	897,9%	-
90-94	6.209	5.405	804	0	31.409	11.851	16.244	3.314	405,9%	119,3%	1920,4%	-
95+	1.552	1.351	201	0	8.520	3.851	3.990	679	449,0%	185,0%	1885,1%	-
Sum	2.287.404	1.104.841	926.669	255.894	1.910.409	438.447	901.634	570.328	-16,5%	-60,3%	-2,7%	122,9%

TARGET-TREND EUROPE 2020 SCENARIO - WITHOUT MIGRATION (CROATIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	105.959	105.959	0	0	80.081	80.081	0	0	-24,4%	-24,4%	-	-
05-09	114.310	114.310	0	0	82.185	82.185	0	0	-28,1%	-28,1%	-	-
10-14	130.354	130.354	0	0	83.510	83.510	0	0	-35,9%	-35,9%	-	-
15-19	135.099	96.786	38.313	0	86.482	62.017	24.464	1	-36,0%	-35,9%	-36,1%	-
20-24	150.577	7.615	137.814	5.148	91.774	4.764	78.898	8.112	-39,1%	-37,4%	-42,8%	57,6%
25-29	159.750	14.802	120.679	24.269	98.563	5.244	54.500	38.819	-38,3%	-64,6%	-54,8%	60,0%
30-34	152.309	22.953	105.947	23.409	105.274	5.691	57.646	41.937	-30,9%	-75,2%	-45,6%	79,1%
35-39	147.163	26.978	97.119	23.066	110.025	6.023	60.181	43.821	-25,2%	-77,7%	-38,0%	90,0%
40-44	157.571	28.690	108.662	20.219	105.718	5.885	57.748	42.085	-32,9%	-79,5%	-46,9%	108,1%
45-49	162.702	28.402	105.391	28.909	112.751	6.331	62.181	44.239	-30,7%	-77,7%	-41,0%	53,0%
50-54	165.555	36.364	108.064	21.127	124.919	6.987	75.025	42.907	-24,5%	-80,8%	-30,6%	103,1%
55-59	147.391	37.760	83.363	26.268	124.389	6.874	87.465	30.050	-15,6%	-81,8%	4,9%	14,4%
60-64	104.518	24.774	61.327	18.417	131.141	7.103	103.408	20.630	25,5%	-71,3%	68,6%	12,0%
65-69	103.172	34.834	48.218	20.120	128.287	12.205	96.162	19.920	24,3%	-65,0%	99,4%	-1,0%
70-74	90.215	39.989	38.229	11.997	107.812	16.404	74.711	16.697	19,5%	-59,0%	95,4%	39,2%
75-79	62.262	32.568	23.431	6.263	85.060	15.652	56.018	13.390	36,6%	-51,9%	139,1%	113,8%
80-84	28.903	16.917	7.671	4.315	66.088	12.043	45.547	8.498	128,7%	-28,8%	493,8%	96,9%
85-89	9.412	5.829	2.672	911	40.801	7.115	26.437	7.249	333,5%	22,1%	889,4%	695,7%
90-94	1.712	1.060	486	166	18.291	4.012	11.949	2.330	968,4%	278,5%	2358,6%	1303,6%
95+	856	530	243	83	4.715	1.206	2.670	839	450,8%	127,5%	998,8%	910,8%
Sum	2.129.790	807.474	1.087.629	234.687	1.787.866	431.332	975.010	381.524	-16,1%	-46,6%	-10,4%	62,6%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	99.988	99.988	0	0	80.078	80.078	0	0	-19,9%	-19,9%	-	-
05-09	108.944	108.944	0	0	82.232	82.232	0	0	-24,5%	-24,5%	-	-
10-14	124.484	124.484	0	0	83.616	83.616	0	0	-32,8%	-32,8%	-	-
15-19	129.067	92.875	36.192	0	86.394	62.201	24.193	0	-33,1%	-33,0%	-33,2%	-
20-24	144.394	3.966	132.497	7.931	91.771	2.614	79.827	9.330	-36,4%	-34,1%	-39,8%	17,6%
25-29	154.274	10.138	97.707	46.429	98.848	2.979	40.816	55.053	-35,9%	-70,6%	-58,2%	18,6%
30-34	149.315	18.290	98.860	32.165	105.823	3.267	43.681	58.875	-29,1%	-82,1%	-55,8%	83,0%
35-39	145.824	22.543	92.167	31.114	110.909	3.478	45.774	61.657	-23,9%	-84,6%	-50,3%	98,2%
40-44	157.972	37.157	97.999	22.816	101.023	3.281	41.674	56.068	-36,1%	-91,2%	-57,5%	145,7%
45-49	165.093	44.815	93.485	26.793	109.391	3.579	45.543	60.269	-33,7%	-92,0%	-51,3%	124,9%
50-54	168.545	61.205	83.764	23.576	123.364	4.028	57.429	61.907	-26,8%	-93,4%	-31,4%	162,6%
55-59	153.924	65.548	67.821	20.555	125.378	4.025	72.052	49.301	-18,5%	-93,9%	6,2%	139,8%
60-64	120.603	56.530	46.105	17.968	136.451	4.188	91.531	40.732	13,1%	-92,6%	98,5%	126,7%
65-69	129.965	83.689	32.299	13.977	139.840	9.520	88.805	41.515	7,6%	-88,6%	174,9%	197,0%
70-74	128.028	100.362	21.707	5.959	126.721	15.749	84.295	26.677	-1,0%	-84,3%	288,3%	347,7%
75-79	105.066	87.429	13.341	4.296	108.967	17.052	69.579	22.336	3,7%	-80,5%	421,5%	419,9%
80-84	66.217	55.801	8.101	2.315	92.957	22.129	58.432	12.396	40,4%	-60,3%	621,3%	435,5%
85-89	27.940	24.321	3.619	0	62.042	17.262	36.093	8.687	122,1%	-29,0%	897,3%	-
90-94	6.209	5.405	804	0	31.390	11.843	16.237	3.310	405,6%	119,1%	1919,5%	-
95+	1.552	1.351	201	0	8.516	3.849	3.989	678	448,7%	184,9%	1884,6%	-
Sum	2.287.404	1.104.841	926.669	255.894	1.905.711	436.970	899.950	568.791	-16,7%	-60,4%	-2,9%	122,3%

7.3.2.4 Montenegro (Crna Gora - ME)

Table 21 – Population Structure by age, sex and educational attainment in Montenegro, 2008-2048

	Montenegro	Baseyear Population			Constant Scenario			EU 2020 Scenario			Target-Trend Scenario		
		MF 2008	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women
POPULATION	**Population**												
	Total	**627.509**	309.109	318.400	**549.971**	267.355	282.616	**615.186**	299.697	315.489	**587.381**	286.169	301.212
	ISCED0-2	**325.266**	155.246	170.020	**197.032**	100.321	96.711	**210.687**	105.151	105.536	**187.457**	92.316	95.141
	ISCED3-4	**237.964**	120.023	117.941	**279.487**	136.764	142.723	**270.348**	131.314	139.034	**268.695**	130.958	137.737
	ISCED5-6	**64.279**	33.840	30.439	**73.452**	30.270	43.182	**134.151**	63.232	70.919	**131.229**	62.895	68.334
	Age Distribution												
	00-14	**0,195**	0,206	0,185	**0,155**	0,160	0,150	**0,156**	0,161	0,152	**0,134**	0,138	0,131
	15-64	**0,676**	0,682	0,669	**0,595**	0,619	0,572	**0,594**	0,618	0,571	**0,561**	0,586	0,538
	65+	**0,129**	0,112	0,146	**0,250**	0,222	0,278	**0,250**	0,221	0,277	**0,304**	0,276	0,331
	85+	**0,007**	0,005	0,009	**0,037**	0,025	0,047	**0,036**	0,025	0,047	**0,065**	0,049	0,079
DEPENDENCY RATIO's	**Dependency Ratio's (DR)**												
	TDR	**0,480**	0,466	0,494	**0,682**	0,616	0,749	**0,683**	0,617	0,750	**0,782**	0,706	0,859
	YDR	**0,289**	0,302	0,276	**0,261**	0,258	0,263	**0,263**	0,260	0,265	**0,239**	0,236	0,243
	ADR	**0,191**	0,165	0,218	**0,421**	0,358	0,486	**0,421**	0,358	0,485	**0,542**	0,470	0,616
	OADR	**0,010**	0,007	0,013	**0,061**	0,041	0,083	**0,061**	0,041	0,083	**0,115**	0,084	0,148
	PSR	**5,2**	6,1	4,6	**2,4**	2,8	2,1	**2,4**	2,8	2,1	**1,8**	2,1	1,6
EDUCATION	**Educational Attainment - Total Population**												
	ISCED0-2	**0,518**	0,502	0,534	**0,358**	0,375	0,342	**0,331**	0,336	0,326	**0,319**	0,323	0,316
	ISCED3-4	**0,379**	0,388	0,370	**0,508**	0,512	0,505	**0,446**	0,445	0,447	**0,457**	0,458	0,457
	ISCED5-6	**0,102**	0,109	0,096	**0,134**	0,113	0,153	**0,223**	0,219	0,227	**0,223**	0,220	0,227
	Educational Attainment - Working Age Population (15-64y)												
	ISCED0-2	**0,355**	0,350	0,360	**0,218**	0,242	0,193	**0,170**	0,177	0,163	**0,167**	0,175	0,160
	ISCED3-4	**0,514**	0,518	0,510	**0,637**	0,636	0,637	**0,533**	0,529	0,536	**0,535**	0,531	0,538
	ISCED5-6	**0,130**	0,132	0,129	**0,146**	0,122	0,170	**0,297**	0,294	0,300	**0,298**	0,294	0,302
VITAL RATES	**Life Expectancy (LE)**												
	Total	**75,27**	72,61	77,86	**75,31**	72,61	77,86	**75,30**	72,61	77,86	**82,18**	79,78	84,46
	Total Fertility Rate (TFR)												
	Total	**1,75**	-	-	**1,70**	-	-	**1,72**	-	-	**1,57**	-	-
	ISCED0-2	**2,17**	-	-	**2,17**	-	-	**2,17**	-	-	**1,98**	-	-
	ISCED3-4	**1,55**	-	-	**1,55**	-	-	**1,55**	-	-	**1,41**	-	-
	ISCED5-6	**1,77**	-	-	**1,77**	-	-	**1,77**	-	-	**1,61**	-	-
	Net Migration (NM)												
	Total	**2.473**	302	2.171	**2.473**	302	2.171	**2.473**	302	2.171	**2.473**	302	2.171
	ISCED0-2	**332**	-533	865	**332**	-533	865	**332**	-533	865	**332**	-533	865
	ISCED3-4	**306**	-10	316	**306**	-10	316	**306**	-10	316	**306**	-10	316
	ISCED5-6	**1.835**	845	990	**1.835**	845	990	**1.835**	845	990	**1.835**	845	990

Table 22 - Population by age, sex and educational attainment in Montenegro, 2008-2048 (Constant Scenario)

CONSTANT SCENARIO - WITH MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	20.302	20.302	0	0	13.855	13.855	0	0	-31,8%	-31,8%	-	-
05-09	20.939	20.939	0	0	14.476	14.476	0	0	-30,9%	-30,9%	-	-
10-14	22.320	22.320	0	0	14.334	14.334	0	0	-35,8%	-35,8%	-	-
15-19	23.971	19.363	4.608	0	14.131	11.372	2.759	0	-41,0%	-41,3%	-40,1%	-
20-24	25.766	5.075	19.374	1.317	13.977	2.672	10.556	749	-45,8%	-47,3%	-45,5%	-43,1%
25-29	24.389	6.577	14.657	3.155	14.715	2.747	10.080	1.888	-39,7%	-58,2%	-31,2%	-40,2%
30-34	21.651	7.451	11.030	3.170	15.866	2.952	10.651	2.263	-26,7%	-60,4%	-3,4%	-28,6%
35-39	20.359	6.352	11.711	2.296	16.732	3.115	11.272	2.345	-17,8%	-51,0%	-3,7%	2,1%
40-44	21.060	5.581	12.700	2.779	15.545	2.871	10.585	2.089	-26,2%	-48,6%	-16,7%	-24,8%
45-49	21.967	6.498	11.349	4.120	16.007	2.961	10.891	2.155	-27,1%	-54,4%	-4,0%	-47,7%
50-54	21.862	6.106	10.544	5.212	17.543	3.290	11.812	2.441	-19,8%	-46,1%	12,0%	-53,2%
55-59	18.219	6.705	7.927	3.587	19.742	3.813	12.951	2.978	8,4%	-43,1%	63,4%	-17,0%
60-64	11.563	4.023	5.385	2.155	21.193	4.204	13.675	3.314	83,3%	4,5%	153,9%	53,8%
65-69	12.523	5.683	4.314	2.526	18.284	4.939	10.512	2.833	46,0%	-13,1%	143,7%	12,2%
70-74	10.539	5.821	3.047	1.671	14.685	4.946	7.267	2.472	39,3%	-15,0%	138,5%	47,9%
75-79	6.917	3.820	2.000	1.097	11.243	3.471	6.082	1.690	62,5%	-9,1%	204,1%	54,1%
80-84	3.349	1.850	968	531	8.296	2.274	4.544	1.478	147,7%	22,9%	369,4%	178,3%
85-89	1.079	596	312	171	4.550	1.363	2.168	1.019	321,7%	128,7%	594,9%	495,9%
90-94	214	118	62	34	1.645	477	739	429	668,7%	304,2%	1091,9%	1161,8%
95+	120	66	35	19	536	189	220	127	346,7%	186,4%	528,6%	568,4%
Sum	309.109	155.246	120.023	33.840	267.355	100.321	136.764	30.270	-13,5%	-35,4%	13,9%	-10,5%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	18.539	18.539	0	0	13.780	13.780	0	0	-25,7%	-25,7%	-	-
05-09	19.453	19.453	0	0	14.380	14.380	0	0	-26,1%	-26,1%	-	-
10-14	20.884	20.884	0	0	14.369	14.369	0	0	-31,2%	-31,2%	-	-
15-19	22.584	18.812	3.772	0	14.005	11.633	2.372	0	-38,0%	-38,2%	-37,1%	-
20-24	24.545	3.550	19.140	1.855	13.874	1.948	10.846	1.080	-43,5%	-45,1%	-43,3%	-41,8%
25-29	23.869	5.238	13.990	4.641	14.634	1.944	9.906	2.784	-38,7%	-62,9%	-29,2%	-40,0%
30-34	22.495	5.946	11.918	4.631	15.678	2.008	10.568	3.102	-30,3%	-66,2%	-11,3%	-33,0%
35-39	20.863	5.952	10.544	4.367	16.682	2.126	11.264	3.292	-20,0%	-64,3%	6,8%	-24,6%
40-44	21.427	6.949	11.376	3.102	13.980	1.685	9.599	2.696	-34,8%	-75,8%	-15,6%	-13,1%
45-49	22.212	6.230	12.675	3.307	15.041	1.868	10.240	2.933	-32,3%	-70,0%	-19,2%	-11,3%
50-54	21.741	7.236	11.780	2.725	16.727	2.150	11.272	3.305	-23,1%	-70,3%	-4,3%	21,3%
55-59	19.722	9.246	8.856	1.620	19.348	2.671	12.787	3.890	-1,9%	-71,1%	44,4%	140,1%
60-64	13.681	7.668	4.732	1.281	21.610	3.119	14.126	4.365	58,0%	-59,3%	198,5%	240,7%
65-69	15.510	10.745	3.507	1.258	20.324	4.503	11.673	4.148	31,0%	-58,1%	232,8%	229,7%
70-74	13.427	10.251	2.458	718	18.445	5.030	9.535	3.880	37,4%	-50,9%	287,9%	440,4%
75-79	9.453	7.217	1.730	506	14.968	4.522	7.204	3.242	58,3%	-37,3%	316,4%	540,7%
80-84	5.225	3.989	956	280	11.407	3.925	5.565	1.917	118,3%	-1,6%	482,1%	584,6%
85-89	2.033	1.552	372	109	8.517	3.022	3.851	1.644	318,9%	94,7%	935,2%	1408,3%
90-94	454	347	83	24	3.620	1.449	1.482	689	697,4%	317,6%	1685,5%	2770,8%
95+	283	216	52	15	1.227	579	433	215	333,6%	168,1%	732,7%	1333,3%
Sum	318.400	170.020	117.941	30.439	282.616	96.711	142.723	43.182	-11,2%	-43,1%	21,0%	41,9%

CONSTANT SCENARIO - WITHOUT MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	20.302	20.302	0	0	17.184	17.184	0	0	-15,4%	-15,4%	-	-
05-09	20.939	20.939	0	0	17.398	17.398	0	0	-16,9%	-16,9%	-	-
10-14	22.320	22.320	0	0	17.365	17.365	0	0	-22,2%	-22,2%	-	-
15-19	23.971	19.363	4.608	0	17.405	14.059	3.346	0	-27,4%	-27,4%	-27,4%	-
20-24	25.766	5.075	19.374	1.317	17.900	3.526	13.459	915	-30,5%	-30,5%	-30,5%	-30,5%
25-29	24.389	6.577	14.657	3.155	18.952	3.733	12.767	2.452	-22,3%	-43,2%	-12,9%	-22,3%
30-34	21.651	7.451	11.030	3.170	19.922	3.924	13.040	2.958	-8,0%	-47,3%	18,2%	-6,7%
35-39	20.359	6.352	11.711	2.296	20.327	4.004	13.305	3.018	-0,2%	-37,0%	13,6%	31,4%
40-44	21.060	5.581	12.700	2.779	19.499	3.841	12.763	2.895	-7,4%	-31,2%	0,5%	4,2%
45-49	21.967	6.498	11.349	4.120	19.882	3.916	13.014	2.952	-9,5%	-39,7%	14,7%	-28,3%
50-54	21.862	6.106	10.544	5.212	20.563	4.050	13.460	3.053	-5,9%	-33,7%	27,7%	-41,4%
55-59	18.219	6.705	7.927	3.587	20.998	4.136	13.745	3.117	15,3%	-38,3%	73,4%	-13,1%
60-64	11.563	4.023	5.385	2.155	20.818	4.101	13.626	3.091	80,0%	1,9%	153,0%	43,4%
65-69	12.523	5.683	4.314	2.526	17.535	4.729	10.239	2.567	40,0%	-16,8%	137,3%	1,6%
70-74	10.539	5.821	3.047	1.671	13.012	4.478	6.629	1.905	23,5%	-23,1%	117,6%	14,0%
75-79	6.917	3.820	2.000	1.097	9.272	2.893	5.333	1.046	34,0%	-24,3%	166,7%	-4,6%
80-84	3.349	1.850	968	531	6.248	1.656	3.768	824	86,6%	-10,5%	289,3%	55,2%
85-89	1.079	596	312	171	3.248	961	1.678	609	201,0%	61,2%	437,8%	256,1%
90-94	214	118	62	34	1.144	319	552	273	434,6%	170,3%	790,3%	702,9%
95+	120	66	35	19	335	123	146	66	179,2%	86,4%	317,1%	247,4%
Sum	309.109	155.246	120.023	33.840	299.007	116.396	150.870	31.741	-3,3%	-25,0%	25,7%	-6,2%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	18.539	18.539	0	0	17.201	17.201	0	0	-7,2%	-7,2%	-	-
05-09	19.453	19.453	0	0	17.447	17.447	0	0	-10,3%	-10,3%	-	-
10-14	20.884	20.884	0	0	17.428	17.428	0	0	-16,5%	-16,5%	-	-
15-19	22.584	18.812	3.772	0	17.510	14.585	2.925	0	-22,5%	-22,5%	-22,5%	-
20-24	24.545	3.550	19.140	1.855	18.062	2.612	14.085	1.365	-26,4%	-26,4%	-26,4%	-26,4%
25-29	23.869	5.238	13.990	4.641	19.183	2.774	12.679	3.730	-19,6%	-47,0%	-9,4%	-19,6%
30-34	22.495	5.946	11.918	4.631	20.232	2.926	13.112	4.194	-10,1%	-50,8%	10,0%	-9,4%
35-39	20.863	5.952	10.544	4.367	20.688	2.992	13.407	4.289	-0,8%	-49,7%	27,2%	-1,8%
40-44	21.427	6.949	11.376	3.102	18.173	2.628	11.777	3.768	-15,2%	-62,2%	3,5%	21,5%
45-49	22.212	6.230	12.675	3.307	18.957	2.742	12.285	3.930	-14,7%	-56,0%	-3,1%	18,8%
50-54	21.741	7.236	11.780	2.725	20.037	2.898	12.985	4.154	-7,8%	-60,0%	10,2%	52,4%
55-59	19.722	9.246	8.856	1.620	21.111	3.053	13.681	4.377	7,0%	-67,0%	54,5%	170,2%
60-64	13.681	7.668	4.732	1.281	22.038	3.187	14.282	4.569	61,1%	-58,4%	201,8%	256,7%
65-69	15.510	10.745	3.507	1.258	20.151	4.422	11.581	4.148	29,9%	-58,8%	230,2%	229,7%
70-74	13.427	10.251	2.458	718	17.066	4.511	9.042	3.513	27,1%	-56,0%	267,9%	389,3%
75-79	9.453	7.217	1.730	506	12.966	3.699	6.553	2.714	37,2%	-48,7%	278,8%	436,4%
80-84	5.225	3.989	956	280	9.173	2.975	4.870	1.328	75,6%	-25,4%	409,4%	374,3%
85-89	2.033	1.552	372	109	5.010	1.405	2.859	746	146,4%	-9,5%	668,5%	584,4%
90-94	454	347	83	24	1.803	600	977	226	297,1%	72,9%	1077,1%	841,7%
95+	283	216	52	15	560	263	251	46	97,9%	21,8%	382,7%	206,7%
Sum	318.400	170.020	117.941	30.439	314.796	110.348	157.351	47.097	-1,1%	-35,1%	33,4%	54,7%

Table 23 - Population by age, sex and educational attainment in Montenegro, 2008-2048 (EU2020 Scenario)

EUROPE 2020 SCENARIO - WITH MIGRATION (MONTENEGRO)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	20.302	20.302	0	0	14.004	14.004	0	0	-31,0%	-31,0%	-	-
05-09	20.939	20.939	0	0	14.604	14.604	0	0	-30,3%	-30,3%	-	-
10-14	22.320	22.320	0	0	14.452	14.452	0	0	-35,3%	-35,3%	-	-
15-19	23.971	19.363	4.608	0	14.245	11.464	2.781	0	-40,6%	-40,8%	-39,6%	-
20-24	25.766	5.075	19.374	1.317	14.058	1.235	10.719	2.104	-45,4%	-75,7%	-44,7%	59,8%
25-29	24.389	6.577	14.657	3.155	14.747	1.155	8.103	5.489	-39,5%	-82,4%	-44,7%	74,0%
30-34	21.651	7.451	11.030	3.170	15.866	1.198	7.978	6.690	-26,7%	-83,9%	-27,7%	111,0%
35-39	20.359	6.352	11.711	2.296	16.733	1.254	8.425	7.054	-17,8%	-80,3%	-28,1%	207,2%
40-44	21.060	5.581	12.700	2.779	15.545	1.086	7.858	6.601	-26,2%	-80,5%	-38,1%	137,5%
45-49	21.967	6.498	11.349	4.120	16.007	1.436	8.076	6.495	-27,1%	-77,9%	-28,8%	57,6%
50-54	21.862	6.106	10.544	5.212	17.543	2.482	9.159	5.902	-19,8%	-59,4%	-13,1%	13,2%
55-59	18.219	6.705	7.927	3.587	19.742	3.813	11.243	4.686	8,4%	-43,1%	41,8%	30,6%
60-64	11.563	4.023	5.385	2.155	21.193	4.204	13.371	3.618	83,3%	4,5%	148,3%	67,9%
65-69	12.523	5.683	4.314	2.526	18.284	4.939	10.512	2.833	46,0%	-13,1%	143,7%	12,2%
70-74	10.539	5.821	3.047	1.671	14.685	4.946	7.267	2.472	39,3%	-15,0%	138,5%	47,9%
75-79	6.917	3.820	2.000	1.097	11.243	3.471	6.082	1.690	62,5%	-9,1%	204,1%	54,1%
80-84	3.349	1.850	968	531	8.296	2.274	4.544	1.478	147,7%	22,9%	369,4%	178,3%
85-89	1.079	596	312	171	4.550	1.363	2.168	1.019	321,7%	128,7%	594,9%	495,9%
90-94	214	118	62	34	1.645	477	739	429	668,7%	304,2%	1091,9%	1161,8%
95+	120	66	35	19	536	189	220	127	346,7%	186,4%	528,6%	568,4%
Sum	309.109	155.246	120.023	33.840	267.978	90.046	119.245	58.687	-13,3%	-42,0%	-0,6%	73,4%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	18.539	18.539	0	0	13.929	13.929	0	0	-24,9%	-24,9%	-	-
05-09	19.453	19.453	0	0	14.508	14.508	0	0	-25,4%	-25,4%	-	-
10-14	20.884	20.884	0	0	14.487	14.487	0	0	-30,6%	-30,6%	-	-
15-19	22.584	18.812	3.772	0	14.119	11.728	2.391	0	-37,5%	-37,7%	-36,6%	-
20-24	24.545	3.550	19.140	1.855	13.956	1.294	10.496	2.166	-43,1%	-63,5%	-45,2%	16,8%
25-29	23.869	5.238	13.990	4.641	14.665	1.212	7.739	5.714	-38,6%	-76,9%	-44,7%	23,1%
30-34	22.495	5.946	11.918	4.631	15.677	1.197	7.990	6.490	-30,3%	-79,9%	-33,0%	40,1%
35-39	20.863	5.952	10.544	4.367	16.682	1.263	8.513	6.906	-20,0%	-78,8%	-19,3%	58,1%
40-44	21.427	6.949	11.376	3.102	13.981	929	7.201	5.851	-34,8%	-86,6%	-36,7%	88,6%
45-49	22.212	6.230	12.675	3.307	15.041	1.204	7.762	6.075	-32,3%	-80,7%	-38,8%	83,7%
50-54	21.741	7.236	11.780	2.725	16.727	1.791	9.087	5.849	-23,1%	-75,2%	-22,9%	114,6%
55-59	19.722	9.246	8.856	1.620	19.348	2.671	11.582	5.095	-1,9%	-71,1%	30,8%	214,5%
60-64	13.681	7.668	4.732	1.281	21.610	3.119	14.016	4.475	58,0%	-59,3%	196,2%	249,3%
65-69	15.510	10.745	3.507	1.258	20.324	4.503	11.673	4.148	31,0%	-58,1%	232,8%	229,7%
70-74	13.427	10.251	2.458	718	18.445	5.030	9.535	3.880	37,4%	-50,9%	287,9%	440,4%
75-79	9.453	7.217	1.730	506	14.968	4.522	7.204	3.242	58,3%	-37,3%	316,4%	540,7%
80-84	5.225	3.989	956	280	11.407	3.925	5.565	1.917	118,3%	-1,6%	482,1%	584,6%
85-89	2.033	1.552	372	109	8.517	3.022	3.851	1.644	318,9%	94,7%	935,2%	1408,3%
90-94	454	347	83	24	3.620	1.449	1.482	689	697,4%	317,6%	1685,5%	2770,8%
95+	283	216	52	15	1.227	579	433	215	333,6%	168,1%	732,7%	1333,3%
Sum	318.400	170.020	117.941	30.439	283.238	92.362	126.520	64.356	-11,0%	-45,7%	7,3%	111,4%

EUROPE 2020 SCENARIO - WITHOUT MIGRATION (MONTENEGRO)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	20.302	20.302	0	0	17.354	17.354	0	0	-14,5%	-14,5%	-	-
05-09	20.939	20.939	0	0	17.543	17.543	0	0	-16,2%	-16,2%	-	-
10-14	22.320	22.320	0	0	17.498	17.498	0	0	-21,6%	-21,6%	-	-
15-19	23.971	19.363	4.608	0	17.530	14.160	3.370	0	-26,9%	-26,9%	-26,9%	-
20-24	25.766	5.075	19.374	1.317	17.987	1.799	13.676	2.512	-30,2%	-64,6%	-29,4%	90,7%
25-29	24.389	6.577	14.657	3.155	18.983	1.898	10.375	6.710	-22,2%	-71,1%	-29,2%	112,7%
30-34	21.651	7.451	11.030	3.170	19.922	1.992	9.933	7.997	-8,0%	-73,3%	-9,9%	152,3%
35-39	20.359	6.352	11.711	2.296	20.328	2.033	10.135	8.160	-0,2%	-68,0%	-13,5%	255,4%
40-44	21.060	5.581	12.700	2.779	19.499	1.950	9.722	7.827	-7,4%	-65,1%	-23,4%	181,6%
45-49	21.967	6.498	11.349	4.120	19.882	2.310	9.894	7.678	-9,5%	-64,5%	-12,8%	86,4%
50-54	21.862	6.106	10.544	5.212	20.562	3.219	10.600	6.743	-5,9%	-47,3%	0,5%	29,4%
55-59	18.219	6.705	7.927	3.587	20.998	4.136	11.949	4.913	15,3%	-38,3%	50,7%	37,0%
60-64	11.563	4.023	5.385	2.155	20.817	4.100	13.315	3.402	80,0%	1,9%	147,3%	57,9%
65-69	12.523	5.683	4.314	2.526	17.535	4.729	10.239	2.567	40,0%	-16,8%	137,3%	1,6%
70-74	10.539	5.821	3.047	1.671	13.012	4.478	6.629	1.905	23,5%	-23,1%	117,6%	14,0%
75-79	6.917	3.820	2.000	1.097	9.272	2.893	5.333	1.046	34,0%	-24,3%	166,7%	-4,6%
80-84	3.349	1.850	968	531	6.248	1.656	3.768	824	86,6%	-10,5%	289,3%	55,2%
85-89	1.079	596	312	171	3.248	961	1.678	609	201,0%	61,2%	437,8%	256,1%
90-94	214	118	62	34	1.144	319	552	273	434,6%	170,3%	790,3%	702,9%
95+	120	66	35	19	335	123	146	66	179,2%	86,4%	317,1%	247,4%
Sum	309.109	155.246	120.023	33.840	299.697	105.151	131.314	63.232	-3,0%	-32,3%	9,4%	86,9%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	18.539	18.539	0	0	17.370	17.370	0	0	-6,3%	-6,3%	-	-
05-09	19.453	19.453	0	0	17.592	17.592	0	0	-9,6%	-9,6%	-	-
10-14	20.884	20.884	0	0	17.561	17.561	0	0	-15,9%	-15,9%	-	-
15-19	22.584	18.812	3.772	0	17.636	14.690	2.946	0	-21,9%	-21,9%	-21,9%	-
20-24	24.545	3.550	19.140	1.855	18.150	1.815	13.670	2.665	-26,1%	-48,9%	-28,6%	43,7%
25-29	23.869	5.238	13.990	4.641	19.216	1.922	10.034	7.260	-19,5%	-63,3%	-28,3%	56,4%
30-34	22.495	5.946	11.918	4.631	20.232	2.023	10.110	8.099	-10,1%	-66,0%	-15,2%	74,9%
35-39	20.863	5.952	10.544	4.367	20.688	2.069	10.337	8.282	-0,8%	-65,2%	-2,0%	89,6%
40-44	21.427	6.949	11.376	3.102	18.173	1.817	9.081	7.275	-15,2%	-73,9%	-20,2%	134,5%
45-49	22.212	6.230	12.675	3.307	18.957	2.037	9.528	7.392	-14,7%	-67,3%	-24,8%	123,5%
50-54	21.741	7.236	11.780	2.725	20.037	2.525	10.609	6.903	-7,8%	-65,1%	-9,9%	153,3%
55-59	19.722	9.246	8.856	1.620	21.110	3.053	12.416	5.641	7,0%	-67,0%	40,2%	248,2%
60-64	13.681	7.668	4.732	1.281	22.038	3.187	14.170	4.681	61,1%	-58,4%	199,5%	265,4%
65-69	15.510	10.745	3.507	1.258	20.151	4.422	11.581	4.148	29,9%	-58,8%	230,2%	229,7%
70-74	13.427	10.251	2.458	718	17.066	4.511	9.042	3.513	27,1%	-56,0%	267,9%	389,3%
75-79	9.453	7.217	1.730	506	12.966	3.699	6.553	2.714	37,2%	-48,7%	278,8%	436,4%
80-84	5.225	3.989	956	280	9.173	2.975	4.870	1.328	75,6%	-25,4%	409,4%	374,3%
85-89	2.033	1.552	372	109	5.010	1.405	2.859	746	146,4%	-9,5%	668,5%	584,4%
90-94	454	347	83	24	1.803	600	977	226	297,1%	72,9%	1077,1%	841,7%
95+	283	216	52	15	560	263	251	46	97,9%	21,8%	382,7%	206,7%
Sum	318.400	170.020	117.941	30.439	315.489	105.536	139.034	70.919	-0,9%	-37,9%	17,9%	133,0%

Table 24 - Population by age, sex and educational attainment in Montenegro, 2008-2048 (Target-Trend EU2020 Scenario)

TARGET-TREND EUROPE 2020 SCENARIO - WITH MIGRATION (MONTENEGRO)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	20.302	20.302	0	0	12.575	12.575	0	0	-38,1%	-38,1%	-	-
05-09	20.939	20.939	0	0	13.451	13.451	0	0	-35,8%	-35,8%	-	-
10-14	22.320	22.320	0	0	13.542	13.542	0	0	-39,3%	-39,3%	-	-
15-19	23.971	19.363	4.608	0	13.553	10.905	2.648	0	-43,5%	-43,7%	-42,5%	-
20-24	25.766	5.075	19.374	1.317	13.548	1.184	10.331	2.033	-47,4%	-76,7%	-46,7%	54,4%
25-29	24.389	6.577	14.657	3.155	14.417	1.121	7.923	5.373	-40,9%	-83,0%	-45,9%	70,3%
30-34	21.651	7.451	11.030	3.170	15.761	1.186	7.926	6.649	-27,2%	-84,1%	-28,1%	109,7%
35-39	20.359	6.352	11.711	2.296	16.895	1.268	8.506	7.121	-17,0%	-80,0%	-27,4%	210,1%
40-44	21.060	5.581	12.700	2.779	15.737	1.101	7.955	6.681	-25,3%	-80,3%	-37,4%	140,4%
45-49	21.967	6.498	11.349	4.120	16.293	1.463	8.220	6.610	-25,8%	-77,5%	-27,6%	60,4%
50-54	21.862	6.106	10.544	5.212	18.045	2.552	9.422	6.071	-17,5%	-58,2%	-10,6%	16,5%
55-59	18.219	6.705	7.927	3.587	20.652	3.984	11.771	4.897	13,4%	-40,6%	48,5%	36,5%
60-64	11.563	4.023	5.385	2.155	22.820	4.520	14.423	3.877	97,4%	12,4%	167,8%	79,9%
65-69	12.523	5.683	4.314	2.526	20.577	5.560	11.840	3.177	64,3%	-2,2%	174,5%	25,8%
70-74	10.539	5.821	3.047	1.671	17.471	5.895	8.668	2.908	65,8%	1,3%	184,5%	74,0%
75-79	6.917	3.820	2.000	1.097	14.591	4.502	7.949	2.140	110,9%	17,9%	297,5%	95,1%
80-84	3.349	1.850	968	531	12.226	3.322	6.795	2.109	265,1%	79,6%	602,0%	297,2%
85-89	1.079	596	312	171	8.433	2.509	4.080	1.844	681,6%	321,0%	1207,7%	978,4%
90-94	214	118	62	34	4.446	1.273	2.028	1.145	1977,6%	978,8%	3171,0%	3267,6%
95+	120	66	35	19	1.136	403	473	260	846,7%	510,6%	1251,4%	1268,4%
Sum	309.109	155.246	120.023	33.840	286.165	92.316	130.958	62.895	-7,4%	-40,5%	9,1%	85,9%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	18.539	18.539	0	0	12.494	12.494	0	0	-32,6%	-32,6%	-	-
05-09	19.453	19.453	0	0	13.338	13.338	0	0	-31,4%	-31,4%	-	-
10-14	20.884	20.884	0	0	13.558	13.558	0	0	-35,1%	-35,1%	-	-
15-19	22.584	18.812	3.772	0	13.393	11.123	2.270	0	-40,7%	-40,9%	-39,8%	-
20-24	24.545	3.550	19.140	1.855	13.394	1.237	10.073	2.084	-45,4%	-65,2%	-47,4%	12,3%
25-29	23.869	5.238	13.990	4.641	14.267	1.172	7.531	5.564	-40,2%	-77,6%	-46,2%	19,9%
30-34	22.495	5.946	11.918	4.631	15.491	1.178	7.897	6.416	-31,1%	-80,2%	-33,7%	38,5%
35-39	20.863	5.952	10.544	4.367	16.762	1.270	8.553	6.939	-19,7%	-78,7%	-18,9%	58,9%
40-44	21.427	6.949	11.376	3.102	14.078	936	7.250	5.892	-34,3%	-86,5%	-36,3%	89,9%
45-49	22.212	6.230	12.675	3.307	15.200	1.217	7.844	6.139	-31,6%	-80,5%	-38,1%	85,6%
50-54	21.741	7.236	11.780	2.725	17.007	1.821	9.239	5.947	-21,8%	-74,8%	-21,6%	118,2%
55-59	19.722	9.246	8.856	1.620	19.859	2.737	11.893	5.229	0,7%	-70,4%	34,3%	222,8%
60-64	13.681	7.668	4.732	1.281	22.537	3.247	14.625	4.665	64,7%	-57,7%	209,1%	264,2%
65-69	15.510	10.745	3.507	1.258	21.733	4.814	12.485	4.434	40,1%	-55,2%	256,0%	252,5%
70-74	13.427	10.251	2.458	718	20.518	5.582	10.626	4.310	52,8%	-45,5%	332,3%	500,3%
75-79	9.453	7.217	1.730	506	17.943	5.385	8.682	3.876	89,8%	-25,4%	401,8%	666,0%
80-84	5.225	3.989	956	280	15.730	5.355	7.771	2.604	201,1%	34,2%	712,9%	830,0%
85-89	2.033	1.552	372	109	13.513	4.517	6.525	2.471	564,7%	191,0%	1654,0%	2167,0%
90-94	454	347	83	24	8.114	3.087	3.616	1.411	1687,2%	789,6%	4256,6%	5779,2%
95+	283	216	52	15	2.283	1.073	857	353	706,7%	396,8%	1548,1%	2253,3%
Sum	318.400	170.020	117.941	30.439	301.212	95.141	137.737	68.334	-5,4%	-44,0%	16,8%	124,5%

TARGET-TREND EUROPE 2020 SCENARIO - WITHOUT MIGRATION (MONTENEGRO)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	20.302	20.302	0	0	15.622	15.622	0	0	-23,1%	-23,1%	-	-
05-09	20.939	20.939	0	0	16.181	16.181	0	0	-22,7%	-22,7%	-	-
10-14	22.320	22.320	0	0	16.443	16.443	0	0	-26,3%	-26,3%	-	-
15-19	23.971	19.363	4.608	0	16.740	13.522	3.218	0	-30,2%	-30,2%	-30,2%	-
20-24	25.766	5.075	19.374	1.317	17.420	1.742	13.245	2.433	-32,4%	-65,7%	-31,6%	84,7%
25-29	24.389	6.577	14.657	3.155	18.636	1.864	10.185	6.587	-23,6%	-71,7%	-30,5%	108,8%
30-34	21.651	7.451	11.030	3.170	19.829	1.983	9.886	7.960	-8,4%	-73,4%	-10,4%	151,1%
35-39	20.359	6.352	11.711	2.296	20.510	2.051	10.226	8.233	0,7%	-67,7%	-12,7%	258,6%
40-44	21.060	5.581	12.700	2.779	19.724	1.972	9.834	7.918	-6,3%	-64,7%	-22,6%	184,9%
45-49	21.967	6.498	11.349	4.120	20.226	2.349	10.066	7.811	-7,9%	-63,9%	-11,3%	89,6%
50-54	21.862	6.106	10.544	5.212	21.155	3.312	10.906	6.937	-3,2%	-45,8%	3,4%	33,1%
55-59	18.219	6.705	7.927	3.587	22.028	4.339	12.535	5.154	20,9%	-35,3%	58,1%	43,7%
60-64	11.563	4.023	5.385	2.155	22.521	4.436	14.405	3.680	94,8%	10,3%	167,5%	70,8%
65-69	12.523	5.683	4.314	2.526	19.791	5.337	11.557	2.897	58,0%	-6,1%	167,9%	14,7%
70-74	10.539	5.821	3.047	1.671	15.651	5.386	7.974	2.291	48,5%	-7,5%	161,7%	37,1%
75-79	6.917	3.820	2.000	1.097	12.298	3.837	7.074	1.387	77,8%	0,4%	253,7%	26,4%
80-84	3.349	1.850	968	531	9.618	2.549	5.800	1.269	187,2%	37,8%	499,2%	139,0%
85-89	1.079	596	312	171	6.423	1.900	3.318	1.205	495,3%	218,8%	963,5%	604,7%
90-94	214	118	62	34	3.348	935	1.615	798	1464,5%	692,4%	2504,8%	2247,1%
95+	120	66	35	19	812	299	353	160	576,7%	353,0%	908,6%	742,1%
Sum	309.109	155.246	120.023	33.840	314.976	106.059	142.197	66.720	1,9%	-31,7%	18,5%	97,2%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	18.539	18.539	0	0	15.631	15.631	0	0	-15,7%	-15,7%	-	-
05-09	19.453	19.453	0	0	16.211	16.211	0	0	-16,7%	-16,7%	-	-
10-14	20.884	20.884	0	0	16.483	16.483	0	0	-21,1%	-21,1%	-	-
15-19	22.584	18.812	3.772	0	16.806	13.999	2.807	0	-25,6%	-25,6%	-25,6%	-
20-24	24.545	3.550	19.140	1.855	17.523	1.752	13.198	2.573	-28,6%	-50,6%	-31,0%	38,7%
25-29	23.869	5.238	13.990	4.641	18.790	1.879	9.812	7.099	-21,3%	-64,1%	-29,9%	53,0%
30-34	22.495	5.946	11.918	4.631	20.044	2.004	10.016	8.024	-10,9%	-66,3%	-16,0%	73,3%
35-39	20.863	5.952	10.544	4.367	20.781	2.078	10.384	8.319	-0,4%	-65,1%	-1,5%	90,5%
40-44	21.427	6.949	11.376	3.102	18.293	1.829	9.141	7.323	-14,6%	-73,7%	-19,6%	136,1%
45-49	22.212	6.230	12.675	3.307	19.154	2.058	9.627	7.469	-13,8%	-67,0%	-24,0%	125,9%
50-54	21.741	7.236	11.780	2.725	20.374	2.568	10.787	7.019	-6,3%	-64,5%	-8,4%	157,6%
55-59	19.722	9.246	8.856	1.620	21.696	3.138	12.760	5.798	10,0%	-66,1%	44,1%	257,9%
60-64	13.681	7.668	4.732	1.281	23.020	3.329	14.801	4.890	68,3%	-56,6%	212,8%	281,7%
65-69	15.510	10.745	3.507	1.258	21.565	4.733	12.393	4.439	39,0%	-56,0%	253,4%	252,9%
70-74	13.427	10.251	2.458	718	19.073	5.042	10.105	3.926	42,0%	-50,8%	311,1%	446,8%
75-79	9.453	7.217	1.730	506	15.745	4.492	7.958	3.295	66,6%	-37,8%	360,0%	551,2%
80-84	5.225	3.989	956	280	13.014	4.221	6.909	1.884	149,1%	5,8%	622,7%	572,9%
85-89	2.033	1.552	372	109	9.291	2.606	5.302	1.383	357,0%	67,9%	1325,3%	1168,8%
90-94	454	347	83	24	5.094	1.696	2.760	638	1022,0%	388,8%	3225,3%	2558,3%
95+	283	216	52	15	1.325	621	595	109	368,2%	187,5%	1044,2%	626,7%
Sum	318.400	170.020	117.941	30.439	329.913	106.370	149.355	74.188	3,6%	-37,4%	26,6%	143,7%

7.3.2.5 The Republic of Macedonia (Makedonija - MK)

Table 25 – Population Structure by age, sex and educational attainment in Macedonia, 2008-2048

	Macedonia	Baseyear Population			Constant Scenario			EU 2020 Scenario			Target-Trend Scenario		
		MF 2008	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women
POPULATION	**Population**												
	Total	**2.044.471**	1.025.072	1.019.399	**1.781.447**	873.775	907.672	**1.794.587**	877.408	917.179	**1.996.495**	976.788	1.019.707
	ISCED0-2	**1.160.196**	532.228	627.968	**669.654**	290.160	379.494	**601.210**	271.836	329.374	**687.017**	308.130	378.887
	ISCED3-4	**705.841**	400.356	305.485	**881.678**	470.421	411.257	**677.811**	354.762	323.049	**765.053**	403.122	361.931
	ISCED5-6	**178.434**	92.488	85.946	**230.115**	113.194	116.921	**515.566**	250.810	264.756	**544.425**	265.536	278.889
	Age Distribution												
	00-14	**0,185**	0,190	0,179	**0,137**	0,139	0,134	**0,139**	0,142	0,136	**0,134**	0,137	0,132
	15-64	**0,702**	0,709	0,694	**0,653**	0,666	0,640	**0,653**	0,665	0,642	**0,605**	0,617	0,593
	65+	**0,114**	0,101	0,126	**0,210**	0,194	0,225	**0,208**	0,194	0,222	**0,261**	0,245	0,275
	85+	**0,005**	0,004	0,006	**0,014**	0,012	0,017	**0,014**	0,012	0,017	**0,039**	0,032	0,045
DEPENDENCY RATIO's	**Dependency Ratio's (DR)**												
	TDR	**0,425**	0,411	0,440	**0,531**	0,501	0,562	**0,531**	0,505	0,557	**0,653**	0,620	0,685
	YDR	**0,263**	0,268	0,258	**0,210**	0,209	0,210	**0,212**	0,213	0,211	**0,222**	0,222	0,222
	ADR	**0,162**	0,143	0,182	**0,322**	0,292	0,352	**0,319**	0,291	0,346	**0,431**	0,397	0,464
	OADR	**0,007**	0,006	0,009	**0,022**	0,017	0,027	**0,022**	0,017	0,026	**0,064**	0,051	0,076
	PSR	**6,2**	7,0	5,5	**3,1**	3,4	2,8	**3,1**	3,4	2,9	**2,3**	2,5	2,2
EDUCATION	**Educational Attainment - Total Population**												
	ISCED0-2	**0,567**	0,519	0,616	**0,376**	0,332	0,418	**0,335**	0,310	0,359	**0,344**	0,315	0,372
	ISCED3-4	**0,345**	0,391	0,300	**0,495**	0,538	0,453	**0,378**	0,404	0,352	**0,383**	0,413	0,355
	ISCED5-6	**0,087**	0,090	0,084	**0,129**	0,130	0,129	**0,287**	0,286	0,289	**0,273**	0,272	0,273
	Educational Attainment - Working Age Population (15-64y)												
	ISCED0-2	**0,425**	0,366	0,486	**0,250**	0,203	0,296	**0,186**	0,167	0,204	**0,187**	0,168	0,205
	ISCED3-4	**0,464**	0,521	0,407	**0,597**	0,643	0,550	**0,418**	0,444	0,393	**0,420**	0,446	0,394
	ISCED5-6	**0,110**	0,113	0,107	**0,154**	0,153	0,154	**0,396**	0,389	0,403	**0,393**	0,386	0,400
VITAL RATES	**Life Expectancy (LE)**												
	Total	**74,37**	72,35	76,4	**74,41**	72,35	76,4	**74,42**	72,35	76,4	**82,63**	80,47	84,7
	Total Fertility Rate (TFR)												
	Total	**1,48**	-	-	**1,44**	-	-	**1,44**	-	-	**1,54**	-	-
	ISCED0-2	**1,75**	-	-	**1,75**	-	-	**1,75**	-	-	**1,88**	-	-
	ISCED3-4	**1,26**	-	-	**1,26**	-	-	**1,26**	-	-	**1,35**	-	-
	ISCED5-6	**1,50**	-	-	**1,50**	-	-	**1,50**	-	-	**1,61**	-	-
	Net Migration (NM)												
	Total	**288**	-33	321	**288**	-33	321	**288**	-33	321	**288**	-33	321
	ISCED0-2	**71**	-34	105	**71**	-34	105	**71**	-34	105	**71**	-34	105
	ISCED3-4	**92**	-9	101	**92**	-9	101	**92**	-9	101	**92**	-9	101
	ISCED5-6	**125**	10	115	**125**	10	115	**125**	10	115	**125**	10	115

Table 26 - Population by age, sex and educational attainment in Macedonia, 2008-2048 (Constant Scenario)

CONSTANT SCENARIO - WITH MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	58.293	58.293	0	0	39.127	39.127	0	0	-32,9%	-32,9%	-	-
05-09	63.201	63.201	0	0	40.783	40.783	0	0	-35,5%	-35,5%	-	-
10-14	73.141	73.141	0	0	41.928	41.928	0	0	-42,7%	-42,7%	-	-
15-19	82.085	59.294	22.767	24	43.608	31.498	12.097	13	-46,9%	-46,9%	-46,9%	-45,8%
20-24	84.620	13.659	65.986	4.975	46.945	7.573	36.611	2.761	-44,5%	-44,6%	-44,5%	-44,5%
25-29	83.250	18.863	49.722	14.665	51.572	8.317	34.171	9.084	-38,1%	-55,9%	-31,3%	-38,1%
30-34	78.114	25.592	42.555	9.967	55.433	8.945	36.725	9.763	-29,0%	-65,0%	-13,7%	-2,0%
35-39	74.775	25.470	40.981	8.324	57.079	9.215	37.812	10.052	-23,7%	-63,8%	-7,7%	20,8%
40-44	75.882	24.006	43.635	8.241	56.313	9.093	37.304	9.916	-25,8%	-62,1%	-14,5%	20,3%
45-49	73.512	24.011	39.275	10.226	60.509	9.773	40.080	10.656	-17,7%	-59,3%	2,0%	4,2%
50-54	70.722	27.934	33.621	9.167	68.038	10.989	45.067	11.982	-3,8%	-60,7%	34,0%	30,7%
55-59	60.139	26.132	24.686	9.321	72.900	11.776	48.285	12.839	21,2%	-54,9%	95,6%	37,7%
60-64	43.327	21.082	14.965	7.280	69.762	11.273	46.203	12.286	61,0%	-46,5%	208,7%	68,8%
65-69	37.916	26.083	8.079	3.754	60.772	13.783	36.282	10.707	60,3%	-47,2%	349,1%	185,2%
70-74	32.297	22.217	6.882	3.198	46.958	15.389	25.572	5.997	45,4%	-30,7%	271,6%	87,5%
75-79	19.964	13.733	4.254	1.977	32.505	11.074	17.808	3.623	62,8%	-19,4%	318,6%	83,3%
80-84	9.727	6.691	2.073	963	19.405	6.141	11.153	2.111	99,5%	-8,2%	438,0%	119,2%
85-89	3.295	2.267	702	326	7.920	2.587	4.230	1.103	140,4%	14,1%	502,6%	238,3%
90-94	596	410	127	59	1.709	675	812	222	186,7%	64,6%	539,4%	276,3%
95+	216	149	46	21	509	221	209	79	135,6%	48,3%	354,3%	276,2%
Sum	1.025.072	532.228	400.356	92.488	873.775	290.160	470.421	113.194	-14,8%	-45,5%	17,5%	22,4%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	54.820	54.820	0	0	39.152	39.152	0	0	-28,6%	-28,6%	-	-
05-09	59.212	59.212	0	0	40.863	40.863	0	0	-31,0%	-31,0%	-	-
10-14	68.820	68.820	0	0	42.016	42.016	0	0	-38,9%	-38,9%	-	-
15-19	77.526	63.759	13.749	18	43.719	35.955	7.754	10	-43,6%	-43,6%	-43,6%	-44,4%
20-24	80.407	20.299	55.071	5.037	47.200	11.915	32.328	2.957	-41,3%	-41,3%	-41,3%	-41,3%
25-29	78.322	26.021	38.519	13.782	52.034	13.144	29.727	9.163	-33,6%	-49,5%	-22,8%	-33,5%
30-34	75.047	34.125	31.867	9.055	56.126	14.192	32.033	9.901	-25,2%	-58,4%	0,5%	9,3%
35-39	72.949	34.309	31.001	7.639	58.013	14.678	33.090	10.245	-20,5%	-57,2%	6,7%	34,1%
40-44	73.566	32.629	33.306	7.631	54.039	13.677	30.815	9.547	-26,5%	-58,1%	-7,5%	25,1%
45-49	71.031	32.160	29.540	9.331	58.187	14.725	33.184	10.278	-18,1%	-54,2%	12,3%	10,1%
50-54	68.595	36.112	24.409	8.074	66.531	16.833	37.949	11.749	-3,0%	-53,4%	55,5%	45,5%
55-59	63.159	35.612	18.893	8.654	72.938	18.453	41.607	12.878	15,5%	-48,2%	120,2%	48,8%
60-64	47.269	28.930	11.533	6.806	72.481	18.337	41.348	12.796	53,3%	-36,6%	258,5%	88,0%
65-69	42.954	33.769	5.874	3.311	65.598	21.810	32.209	11.579	52,7%	-35,4%	448,3%	249,7%
70-74	38.771	30.480	5.302	2.989	55.011	25.008	23.338	6.665	41,9%	-18,0%	340,2%	123,0%
75-79	26.492	20.827	3.623	2.042	41.694	19.606	17.707	4.381	57,4%	-5,9%	388,7%	114,5%
80-84	14.104	11.088	1.929	1.087	26.639	11.815	12.049	2.775	88,9%	6,6%	524,6%	155,3%
85-89	4.955	3.895	678	382	11.444	5.181	4.755	1.508	131,0%	33,0%	601,3%	294,8%
90-94	1.002	788	137	77	3.031	1.595	1.078	358	202,5%	102,4%	686,9%	364,9%
95+	398	313	54	31	956	539	286	131	140,2%	72,2%	429,6%	322,6%
Sum	1.019.399	627.968	305.485	85.946	907.677	379.494	411.257	116.921	-11,0%	-39,6%	34,6%	36,0%

CONSTANT SCENARIO - WITHOUT MIGRATION

MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	58.293	58.293	0	0	39.107	39.107	0	0	-32,9%	-32,9%	-	-
05-09	63.201	63.201	0	0	40.779	40.779	0	0	-35,5%	-35,5%	-	-
10-14	73.141	73.141	0	0	41.940	41.940	0	0	-42,7%	-42,7%	-	-
15-19	82.085	59.294	22.767	24	43.634	31.519	12.102	13	-46,8%	-46,8%	-46,8%	-45,8%
20-24	84.620	13.659	65.986	4.975	47.002	7.587	36.652	2.763	-44,5%	-44,5%	-44,5%	-44,5%
25-29	83.250	18.863	49.722	14.665	51.647	8.337	34.212	9.098	-38,0%	-55,8%	-31,2%	-38,0%
30-34	78.114	25.592	42.555	9.967	55.504	8.959	36.768	9.777	-28,9%	-65,0%	-13,6%	-1,9%
35-39	74.775	25.470	40.981	8.324	57.168	9.228	37.870	10.070	-23,5%	-63,8%	-7,6%	21,0%
40-44	75.882	24.006	43.635	8.241	56.378	9.100	37.347	9.931	-25,7%	-62,1%	-14,4%	20,5%
45-49	73.512	24.011	39.275	10.226	60.553	9.774	40.112	10.667	-17,6%	-59,3%	2,1%	4,3%
50-54	70.722	27.934	33.621	9.167	68.067	10.987	45.090	11.990	-3,8%	-60,7%	34,1%	30,8%
55-59	60.139	26.132	24.686	9.321	72.906	11.768	48.295	12.843	21,2%	-55,0%	95,6%	37,8%
60-64	43.327	21.082	14.965	7.280	69.734	11.256	46.194	12.284	60,9%	-46,6%	208,7%	68,7%
65-69	37.916	26.083	8.079	3.754	60.716	13.757	36.264	10.695	60,1%	-47,3%	348,9%	184,9%
70-74	32.297	22.217	6.882	3.198	46.914	15.370	25.558	5.986	45,3%	-30,8%	271,4%	87,2%
75-79	19.964	13.733	4.254	1.977	32.476	11.062	17.799	3.615	62,7%	-19,4%	318,4%	82,9%
80-84	9.727	6.691	2.073	963	19.386	6.133	11.148	2.105	99,3%	-8,3%	437,8%	118,6%
85-89	3.295	2.267	702	326	7.915	2.585	4.229	1.101	140,2%	14,0%	502,4%	237,7%
90-94	596	410	127	59	1.708	675	812	221	186,6%	64,6%	539,4%	274,6%
95+	216	149	46	21	509	221	209	79	135,6%	48,3%	354,3%	276,2%
Sum	1.025.072	532.228	400.356	92.488	874.043	290.144	470.661	113.238	-14,7%	-45,5%	17,6%	22,4%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	54.820	54.820	0	0	39.130	39.130	0	0	-28,6%	-28,6%	-	-
05-09	59.212	59.212	0	0	40.850	40.850	0	0	-31,0%	-31,0%	-	-
10-14	68.820	68.820	0	0	42.013	42.013	0	0	-39,0%	-39,0%	-	-
15-19	77.526	63.759	13.749	18	43.734	35.968	7.756	10	-43,6%	-43,6%	-43,6%	-44,4%
20-24	80.407	20.299	55.071	5.037	47.186	11.912	32.318	2.956	-41,3%	-41,3%	-41,3%	-41,3%
25-29	78.322	26.021	38.519	13.782	51.969	13.120	29.704	9.145	-33,6%	-49,6%	-22,9%	-33,6%
30-34	75.047	34.125	31.867	9.055	55.971	14.130	31.992	9.849	-25,4%	-58,6%	0,4%	8,8%
35-39	72.949	34.309	31.001	7.639	57.811	14.595	33.043	10.173	-20,8%	-57,5%	6,6%	33,2%
40-44	73.566	32.629	33.306	7.631	53.811	13.585	30.757	9.469	-26,9%	-58,4%	-7,7%	24,1%
45-49	71.031	32.160	29.540	9.331	57.948	14.629	33.122	10.197	-18,4%	-54,5%	12,1%	9,3%
50-54	68.595	36.112	24.409	8.074	66.270	16.730	37.879	11.661	-3,4%	-53,7%	55,2%	44,4%
55-59	63.159	35.612	18.893	8.654	72.647	18.340	41.524	12.783	15,0%	-48,5%	119,8%	47,7%
60-64	47.269	28.930	11.533	6.806	72.219	18.232	41.279	12.708	52,8%	-37,0%	257,9%	86,7%
65-69	42.954	33.769	5.874	3.311	65.376	21.720	32.152	11.504	52,2%	-35,7%	447,4%	247,4%
70-74	38.771	30.480	5.302	2.989	54.878	24.954	23.303	6.621	41,5%	-18,1%	339,5%	121,5%
75-79	26.492	20.827	3.623	2.042	41.626	19.577	17.690	4.359	57,1%	-6,0%	388,3%	113,5%
80-84	14.104	11.088	1.929	1.087	26.587	11.792	12.037	2.758	88,5%	6,3%	524,0%	153,7%
85-89	4.955	3.895	678	382	11.421	5.171	4.750	1.500	130,5%	32,8%	600,6%	292,7%
90-94	1.002	788	137	77	3.026	1.593	1.077	356	202,0%	102,2%	686,1%	362,3%
95+	398	313	54	31	956	539	286	131	140,2%	72,2%	429,6%	322,6%
Sum	1.019.399	627.968	305.485	85.946	905.429	378.580	410.669	116.180	-11,2%	-39,7%	34,4%	35,2%

Table 27 - Population by age, sex and educational attainment in Macedonia, 2008-2048 (EU2020 Scenario)

EUROPE 2020 SCENARIO - WITH MIGRATION (MACEDONIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	58.293	58.293	0	0	40.065	40.065	0	0	-31,3%	-31,3%	-	-
05-09	63.201	63.201	0	0	41.653	41.653	0	0	-34,1%	-34,1%	-	-
10-14	73.141	73.141	0	0	42.678	42.678	0	0	-41,6%	-41,6%	-	-
15-19	82.085	59.294	22.767	24	44.147	31.887	12.247	13	-46,2%	-46,2%	-46,2%	-45,8%
20-24	84.620	13.659	65.986	4.975	47.160	4.709	33.753	8.698	-44,3%	-65,5%	-48,8%	74,8%
25-29	83.250	18.863	49.722	14.665	51.625	5.152	17.954	28.519	-38,0%	-72,7%	-63,9%	94,5%
30-34	78.114	25.592	42.555	9.967	55.433	5.538	19.278	30.617	-29,0%	-78,4%	-54,7%	207,2%
35-39	74.775	25.470	40.981	8.324	57.079	5.708	19.850	31.521	-23,7%	-77,6%	-51,6%	278,7%
40-44	75.882	24.006	43.635	8.241	56.313	5.633	19.585	31.095	-25,8%	-76,5%	-55,1%	277,3%
45-49	73.512	24.011	39.275	10.226	60.509	6.675	21.358	32.476	-17,7%	-72,2%	-45,6%	217,6%
50-54	70.722	27.934	33.621	9.167	68.037	9.247	28.231	30.559	-3,8%	-66,9%	-16,0%	233,4%
55-59	60.139	26.132	24.686	9.321	72.899	11.776	40.103	21.020	21,2%	-54,9%	62,5%	125,5%
60-64	43.327	21.082	14.965	7.280	69.762	11.273	46.203	12.286	61,0%	-46,5%	208,7%	68,8%
65-69	37.916	26.083	8.079	3.754	60.772	13.783	36.282	10.707	60,3%	-47,2%	349,1%	185,2%
70-74	32.297	22.217	6.882	3.198	46.958	15.389	25.572	5.997	45,4%	-30,7%	271,6%	87,5%
75-79	19.964	13.733	4.254	1.977	32.505	11.074	17.808	3.623	62,8%	-19,4%	318,6%	83,3%
80-84	9.727	6.691	2.073	963	19.405	6.141	11.153	2.111	99,5%	-8,2%	438,0%	119,2%
85-89	3.295	2.267	702	326	7.920	2.587	4.230	1.103	140,4%	14,1%	502,6%	238,3%
90-94	596	410	127	59	1.709	675	812	222	186,7%	64,6%	539,4%	276,3%
95+	216	149	46	21	509	221	209	79	135,6%	48,3%	354,3%	276,2%
Sum	1.025.072	532.228	400.356	92.488	877.138	271.864	354.628	250.646	-14,4%	-48,9%	-11,4%	171,0%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	54.820	54.820	0	0	40.091	40.091	0	0	-26,9%	-26,9%	-	-
05-09	59.212	59.212	0	0	41.735	41.735	0	0	-29,5%	-29,5%	-	-
10-14	68.820	68.820	0	0	42.767	42.767	0	0	-37,9%	-37,9%	-	-
15-19	77.526	63.759	13.749	18	44.260	36.400	7.850	10	-42,9%	-42,9%	-42,9%	-44,4%
20-24	80.407	20.299	55.071	5.037	48.843	4.744	34.254	9.845	-39,3%	-76,6%	-37,8%	95,5%
25-29	78.322	26.021	38.519	13.782	53.652	5.228	17.205	31.219	-31,5%	-79,9%	-55,3%	126,5%
30-34	75.047	34.125	31.867	9.055	57.810	5.661	18.531	33.618	-23,0%	-83,4%	-41,8%	271,3%
35-39	72.949	34.309	31.001	7.639	59.752	5.871	19.151	34.730	-18,1%	-82,9%	-38,2%	354,6%
40-44	73.566	32.629	33.306	7.631	55.658	5.477	17.837	32.344	-24,3%	-83,2%	-46,4%	323,9%
45-49	71.031	32.160	29.540	9.331	58.530	7.366	18.534	32.630	-17,6%	-77,1%	-37,3%	249,7%
50-54	68.595	36.112	24.409	8.074	66.530	12.624	23.761	30.145	-3,0%	-65,0%	-2,7%	273,4%
55-59	63.159	35.612	18.893	8.654	72.939	18.453	33.736	20.750	15,5%	-48,2%	78,6%	139,8%
60-64	47.269	28.930	11.533	6.806	72.481	18.337	41.348	12.796	53,3%	-36,6%	258,5%	88,0%
65-69	42.954	33.769	5.874	3.311	65.598	21.810	32.209	11.579	52,7%	-35,4%	448,3%	249,7%
70-74	38.771	30.480	5.302	2.989	55.011	25.008	23.338	6.665	41,9%	-18,0%	340,2%	123,0%
75-79	26.492	20.827	3.623	2.042	41.694	19.606	17.707	4.381	57,4%	-5,9%	388,7%	114,5%
80-84	14.104	11.088	1.929	1.087	26.639	11.815	12.049	2.775	88,9%	6,6%	524,6%	155,3%
85-89	4.955	3.895	678	382	11.444	5.181	4.755	1.508	131,0%	33,0%	601,3%	294,8%
90-94	1.002	788	137	77	3.031	1.595	1.078	358	202,5%	102,4%	686,9%	364,9%
95+	398	313	54	31	956	539	286	131	140,2%	72,2%	429,6%	322,6%
Sum	1.019.399	627.968	305.485	85.946	919.423	330.308	323.629	265.484	-9,8%	-47,4%	5,9%	208,9%

EUROPE 2020 SCENARIO - WITHOUT MIGRATION (MACEDONIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	58.293	58.293	0	0	40.045	40.045	0	0	-31,3%	-31,3%	-	-
05-09	63.201	63.201	0	0	41.649	41.649	0	0	-34,1%	-34,1%	-	-
10-14	73.141	73.141	0	0	42.690	42.690	0	0	-41,6%	-41,6%	-	-
15-19	82.085	59.294	22.767	24	44.173	31.908	12.252	13	-46,2%	-46,2%	-46,2%	-45,8%
20-24	84.620	13.659	65.986	4.975	47.218	4.722	33.794	8.702	-44,2%	-65,4%	-48,8%	74,9%
25-29	83.250	18.863	49.722	14.665	51.698	5.170	17.980	28.548	-37,9%	-72,6%	-63,8%	94,7%
30-34	78.114	25.592	42.555	9.967	55.504	5.550	19.304	30.650	-28,9%	-78,3%	-54,6%	207,5%
35-39	74.775	25.470	40.981	8.324	57.168	5.717	19.882	31.569	-23,5%	-77,6%	-51,5%	279,3%
40-44	75.882	24.006	43.635	8.241	56.379	5.638	19.608	31.133	-25,7%	-76,5%	-55,1%	277,8%
45-49	73.512	24.011	39.275	10.226	60.553	6.675	21.374	32.504	-17,6%	-72,2%	-45,6%	217,9%
50-54	70.722	27.934	33.621	9.167	68.067	9.245	28.244	30.578	-3,8%	-66,9%	-16,0%	233,6%
55-59	60.139	26.132	24.686	9.321	72.906	11.768	40.111	21.027	21,2%	-55,0%	62,5%	125,6%
60-64	43.327	21.082	14.965	7.280	69.734	11.256	46.194	12.284	60,9%	-46,6%	208,7%	68,7%
65-69	37.916	26.083	8.079	3.754	60.716	13.757	36.264	10.695	60,1%	-47,3%	348,9%	184,9%
70-74	32.297	22.217	6.882	3.198	46.914	15.370	25.558	5.986	45,3%	-30,8%	271,4%	87,2%
75-79	19.964	13.733	4.254	1.977	32.476	11.062	17.799	3.615	62,7%	-19,4%	318,4%	82,9%
80-84	9.727	6.691	2.073	963	19.386	6.133	11.148	2.105	99,3%	-8,3%	437,8%	118,6%
85-89	3.295	2.267	702	326	7.915	2.585	4.229	1.101	140,2%	14,0%	502,4%	237,7%
90-94	596	410	127	59	1.708	675	812	221	186,6%	64,6%	539,4%	274,6%
95+	216	149	46	21	509	221	209	79	135,6%	48,3%	354,3%	276,2%
Sum	1.025.072	532.228	400.356	92.488	877.408	271.836	354.762	250.810	-14,4%	-48,9%	-11,4%	171,2%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	54.820	54.820	0	0	40.068	40.068	0	0	-26,9%	-26,9%	-	-
05-09	59.212	59.212	0	0	41.722	41.722	0	0	-29,5%	-29,5%	-	-
10-14	68.820	68.820	0	0	42.765	42.765	0	0	-37,9%	-37,9%	-	-
15-19	77.526	63.759	13.749	18	44.274	36.412	7.852	10	-42,9%	-42,9%	-42,9%	-44,4%
20-24	80.407	20.299	55.071	5.037	48.829	4.740	34.245	9.844	-39,3%	-76,6%	-37,8%	95,4%
25-29	78.322	26.021	38.519	13.782	53.585	5.202	17.187	31.196	-31,6%	-80,0%	-55,4%	126,4%
30-34	75.047	34.125	31.867	9.055	57.657	5.597	18.493	33.567	-23,2%	-83,6%	-42,0%	270,7%
35-39	72.949	34.309	31.001	7.639	59.550	5.781	19.100	34.669	-18,4%	-83,2%	-38,4%	353,8%
40-44	73.566	32.629	33.306	7.631	55.431	5.381	17.779	32.271	-24,7%	-83,5%	-46,6%	322,9%
45-49	71.031	32.160	29.540	9.331	58.291	7.267	18.472	32.552	-17,9%	-77,4%	-37,5%	248,9%
50-54	68.595	36.112	24.409	8.074	66.270	12.521	23.692	30.057	-3,4%	-65,3%	-2,9%	272,3%
55-59	63.159	35.612	18.893	8.654	72.648	18.340	33.655	20.653	15,0%	-48,5%	78,1%	138,7%
60-64	47.269	28.930	11.533	6.806	72.219	18.232	41.279	12.708	52,8%	-37,0%	257,9%	86,7%
65-69	42.954	33.769	5.874	3.311	65.376	21.720	32.152	11.504	52,2%	-35,7%	447,4%	247,4%
70-74	38.771	30.480	5.302	2.989	54.878	24.954	23.303	6.621	41,5%	-18,1%	339,5%	121,5%
75-79	26.492	20.827	3.623	2.042	41.626	19.577	17.690	4.359	57,1%	-6,0%	388,3%	113,5%
80-84	14.104	11.088	1.929	1.087	26.587	11.792	12.037	2.758	88,5%	6,3%	524,0%	153,7%
85-89	4.955	3.895	678	382	11.421	5.171	4.750	1.500	130,5%	32,8%	600,6%	292,7%
90-94	1.002	788	137	77	3.026	1.593	1.077	356	202,0%	102,2%	686,1%	362,3%
95+	398	313	54	31	956	539	286	131	140,2%	72,2%	429,6%	322,6%
Sum	1.019.399	627.968	305.485	85.946	917.179	329.374	323.049	264.756	-10,0%	-47,5%	5,7%	208,0%

Table 28 - Population by age, sex and educational attainment in Macedonia, 2008-2048 (Target-Trend EU2020 Scenario)

TARGET-TREND EUROPE 2020 SCENARIO - WITH MIGRATION (MACEDONIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	58.293	58.293	0	0	43.860	43.860	0	0	-24,8%	-24,8%	-	-
05-09	63.201	63.201	0	0	44.903	44.903	0	0	-29,0%	-29,0%	-	-
10-14	73.141	73.141	0	0	45.270	45.270	0	0	-38,1%	-38,1%	-	-
15-19	82.085	59.294	22.767	24	46.231	33.392	12.825	14	-43,7%	-43,7%	-43,7%	-41,7%
20-24	84.620	13.659	65.986	4.975	48.889	4.882	34.991	9.016	-42,2%	-64,3%	-47,0%	81,2%
25-29	83.250	18.863	49.722	14.665	53.016	5.291	18.438	29.287	-36,3%	-72,0%	-62,9%	99,7%
30-34	78.114	25.592	42.555	9.967	56.392	5.634	19.612	31.146	-27,8%	-78,0%	-53,9%	212,5%
35-39	74.775	25.470	40.981	8.324	57.547	5.754	20.013	31.780	-23,0%	-77,4%	-51,2%	281,8%
40-44	75.882	24.006	43.635	8.241	56.929	5.694	19.799	31.436	-25,0%	-76,3%	-54,6%	281,5%
45-49	73.512	24.011	39.275	10.226	61.564	6.791	21.731	33.042	-16,3%	-71,7%	-44,7%	223,1%
50-54	70.722	27.934	33.621	9.167	70.105	9.528	29.089	31.488	-0,9%	-65,9%	-13,5%	243,5%
55-59	60.139	26.132	24.686	9.321	76.652	12.382	42.168	22.102	27,5%	-52,6%	70,8%	137,1%
60-64	43.327	21.082	14.965	7.280	75.784	12.246	50.191	13.347	74,9%	-41,9%	235,4%	83,3%
65-69	37.916	26.083	8.079	3.754	69.578	15.780	41.540	12.258	83,5%	-39,5%	414,2%	226,5%
70-74	32.297	22.217	6.882	3.198	58.340	19.119	31.771	7.450	80,6%	-13,9%	361,7%	133,0%
75-79	19.964	13.733	4.254	1.977	46.249	15.756	25.338	5.155	131,7%	14,7%	495,6%	160,7%
80-84	9.727	6.691	2.073	963	34.496	10.916	19.828	3.752	254,6%	63,1%	856,5%	289,6%
85-89	3.295	2.267	702	326	20.257	6.617	10.819	2.821	514,8%	191,9%	1441,2%	765,3%
90-94	596	410	127	59	8.747	3.455	4.157	1.135	1367,6%	742,7%	3173,2%	1823,7%
95+	216	149	46	21	1.979	860	812	307	816,2%	477,2%	1665,2%	1361,9%
Sum	1.025.072	532.228	400.356	92.488	976.788	308.130	403.122	265.536	-4,7%	-42,1%	0,7%	187,1%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	54.820	54.820	0	0	43.882	43.882	0	0	-20,0%	-20,0%	-	-
05-09	59.212	59.212	0	0	44.972	44.972	0	0	-24,0%	-24,0%	-	-
10-14	68.820	68.820	0	0	45.349	45.349	0	0	-34,1%	-34,1%	-	-
15-19	77.526	63.759	13.749	18	46.327	38.099	8.217	11	-40,2%	-40,2%	-40,2%	-38,9%
20-24	80.407	20.299	55.071	5.037	50.571	4.912	35.465	10.194	-37,1%	-75,8%	-35,6%	102,4%
25-29	78.322	26.021	38.519	13.782	54.976	5.356	17.630	31.990	-29,8%	-79,4%	-54,2%	132,1%
30-34	75.047	34.125	31.867	9.055	58.644	5.742	18.799	34.103	-21,9%	-83,2%	-41,0%	276,6%
35-39	72.949	34.309	31.001	7.639	60.025	5.898	19.238	34.889	-17,7%	-82,8%	-37,9%	356,7%
40-44	73.566	32.629	33.306	7.631	55.992	5.510	17.944	32.538	-23,9%	-83,1%	-46,1%	326,4%
45-49	71.031	32.160	29.540	9.331	59.106	7.438	18.716	32.952	-16,8%	-76,9%	-36,6%	253,1%
50-54	68.595	36.112	24.409	8.074	67.738	12.853	24.192	30.693	-1,2%	-64,4%	-0,9%	280,1%
55-59	63.159	35.612	18.893	8.654	75.280	19.045	34.819	21.416	19,2%	-46,5%	84,3%	147,5%
60-64	47.269	28.930	11.533	6.806	76.364	19.319	43.564	13.481	61,6%	-33,2%	277,7%	98,1%
65-69	42.954	33.769	5.874	3.311	71.612	23.809	35.163	12.640	66,7%	-29,5%	498,6%	281,8%
70-74	38.771	30.480	5.302	2.989	64.070	29.126	27.182	7.762	65,3%	-4,4%	412,7%	159,7%
75-79	26.492	20.827	3.623	2.042	54.850	25.793	23.295	5.762	107,0%	23,8%	543,0%	182,2%
80-84	14.104	11.088	1.929	1.087	43.835	19.441	19.830	4.564	210,8%	75,3%	928,0%	319,9%
85-89	4.955	3.895	678	382	27.997	12.675	11.635	3.687	465,0%	225,4%	1616,1%	865,2%
90-94	1.002	788	137	77	14.562	7.664	5.179	1.719	1353,3%	872,6%	3680,3%	2132,5%
95+	398	313	54	31	3.555	2.004	1.063	488	793,2%	540,3%	1868,5%	1474,2%
Sum	1.019.399	627.968	305.485	85.946	1.019.707	378.887	361.931	278.889	0,0%	-39,7%	18,5%	224,5%

TARGET-TREND EUROPE 2020 SCENARIO - WITHOUT MIGRATION (MACEDONIA)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	58.293	58.293	0	0	43.837	43.837	0	0	-24,8%	-24,8%	-	-
05-09	63.201	63.201	0	0	44.897	44.897	0	0	-29,0%	-29,0%	-	-
10-14	73.141	73.141	0	0	45.280	45.280	0	0	-38,1%	-38,1%	-	-
15-19	82.085	59.294	22.767	24	46.256	33.412	12.830	14	-43,6%	-43,7%	-43,6%	-41,7%
20-24	84.620	13.659	65.986	4.975	48.947	4.895	35.031	9.021	-42,2%	-64,2%	-46,9%	81,3%
25-29	83.250	18.863	49.722	14.665	53.088	5.309	18.463	29.316	-36,2%	-71,9%	-62,9%	99,9%
30-34	78.114	25.592	42.555	9.967	56.464	5.646	19.638	31.180	-27,7%	-77,9%	-53,9%	212,8%
35-39	74.775	25.470	40.981	8.324	57.638	5.764	20.046	31.828	-22,9%	-77,4%	-51,1%	282,4%
40-44	75.882	24.006	43.635	8.241	56.997	5.700	19.823	31.474	-24,9%	-76,3%	-54,6%	281,9%
45-49	73.512	24.011	39.275	10.226	61.610	6.792	21.747	33.071	-16,2%	-71,7%	-44,6%	223,4%
50-54	70.722	27.934	33.621	9.167	70.135	9.526	29.102	31.507	-0,8%	-65,9%	-13,4%	243,7%
55-59	60.139	26.132	24.686	9.321	76.660	12.374	42.176	22.110	27,5%	-52,6%	70,8%	137,2%
60-64	43.327	21.082	14.965	7.280	75.753	12.228	50.181	13.344	74,8%	-42,0%	235,3%	83,3%
65-69	37.916	26.083	8.079	3.754	69.519	15.752	41.521	12.246	83,4%	-39,6%	413,9%	226,2%
70-74	32.297	22.217	6.882	3.198	58.287	19.096	31.754	7.437	80,5%	-14,0%	361,4%	132,6%
75-79	19.964	13.733	4.254	1.977	46.209	15.740	25.325	5.144	131,5%	14,6%	495,3%	160,2%
80-84	9.727	6.691	2.073	963	34.467	10.904	19.820	3.743	254,3%	63,0%	856,1%	288,7%
85-89	3.295	2.267	702	326	20.243	6.612	10.815	2.816	514,4%	191,7%	1440,6%	763,8%
90-94	596	410	127	59	8.740	3.452	4.155	1.133	1366,4%	742,0%	3171,7%	1820,3%
95+	216	149	46	21	1.978	859	812	307	815,7%	476,5%	1665,2%	1361,9%
Sum	1.025.072	532.228	400.356	92.488	977.005	308.075	403.239	265.691	-4,7%	-42,1%	0,7%	187,3%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	54.820	54.820	0	0	43.856	43.856	0	0	-20,0%	-20,0%	-	-
05-09	59.212	59.212	0	0	44.957	44.957	0	0	-24,1%	-24,1%	-	-
10-14	68.820	68.820	0	0	45.344	45.344	0	0	-34,1%	-34,1%	-	-
15-19	77.526	63.759	13.749	18	46.339	38.110	8.218	11	-40,2%	-40,2%	-40,2%	-38,9%
20-24	80.407	20.299	55.071	5.037	50.556	4.908	35.456	10.192	-37,1%	-75,8%	-35,6%	102,3%
25-29	78.322	26.021	38.519	13.782	54.908	5.330	17.611	31.967	-29,9%	-79,5%	-54,3%	131,9%
30-34	75.047	34.125	31.867	9.055	58.489	5.678	18.760	34.051	-22,1%	-83,4%	-41,1%	276,0%
35-39	72.949	34.309	31.001	7.639	59.824	5.808	19.188	34.828	-18,0%	-83,1%	-38,1%	355,9%
40-44	73.566	32.629	33.306	7.631	55.764	5.413	17.886	32.465	-24,2%	-83,4%	-46,3%	325,4%
45-49	71.031	32.160	29.540	9.331	58.866	7.339	18.654	32.873	-17,1%	-77,2%	-36,9%	252,3%
50-54	68.595	36.112	24.409	8.074	67.474	12.748	24.123	30.603	-1,6%	-64,7%	-1,2%	279,0%
55-59	63.159	35.612	18.893	8.654	74.981	18.929	34.736	21.316	18,7%	-46,8%	83,9%	146,3%
60-64	47.269	28.930	11.533	6.806	76.090	19.209	43.492	13.389	61,0%	-33,6%	277,1%	96,7%
65-69	42.954	33.769	5.874	3.311	71.374	23.713	35.102	12.559	66,2%	-29,8%	497,6%	279,3%
70-74	38.771	30.480	5.302	2.989	63.919	29.065	27.142	7.712	64,9%	-4,6%	411,9%	158,0%
75-79	26.492	20.827	3.623	2.042	54.766	25.757	23.274	5.735	106,7%	23,7%	542,4%	180,9%
80-84	14.104	11.088	1.929	1.087	43.760	19.409	19.812	4.539	210,3%	75,0%	927,1%	317,6%
85-89	4.955	3.895	678	382	27.950	12.654	11.624	3.672	464,1%	224,9%	1614,5%	861,3%
90-94	1.002	788	137	77	14.539	7.654	5.174	1.711	1351,0%	871,3%	3676,6%	2122,1%
95+	398	313	54	31	3.550	2.002	1.062	486	792,0%	539,6%	1866,7%	1467,7%
Sum	1.019.399	627.968	305.485	85.946	1.017.306	377.883	361.314	278.109	-0,2%	-39,8%	18,3%	223,6%

7.3.2.6 The Republic of Turkey (Türkiye - TR)

Table 29 – Population Structure by age, sex and educational attainment in Turkey, 2008-2048

	Turkey	Baseyear Population			Constant Scenario			EU 2020 Scenario			Target-Trend Scenario		
		MF 2008	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women	MF 2048	Men	Women
POPULATION	**Population**												
	Total	**71.517.097**	35.901.151	35.615.946	**88.232.394**	41.081.477	47.150.917	**84.202.118**	39.068.309	45.133.809	**86.182.871**	39.872.775	46.310.096
	ISCED0-2	**59.916.535**	30.044.397	29.872.138	**61.851.821**	29.328.781	32.523.040	**41.853.369**	19.547.377	22.305.992	**43.322.915**	20.126.446	23.196.469
	ISCED3-4	**8.539.247**	4.318.116	4.221.131	**20.361.660**	9.259.243	11.102.417	**26.371.458**	12.231.834	14.139.624	**26.643.413**	12.354.709	14.288.704
	ISCED5-6	**3.061.315**	1.538.638	1.522.677	**6.018.913**	2.493.453	3.525.460	**15.977.291**	7.289.098	8.688.193	**16.216.543**	7.391.620	8.824.923
	Age Distribution												
	00-14	**0,263**	0,269	0,257	**0,216**	0,229	0,205	**0,193**	0,205	0,182	**0,171**	0,182	0,162
	15-64	**0,669**	0,672	0,666	**0,631**	0,632	0,630	**0,647**	0,650	0,645	**0,629**	0,634	0,625
	65+	**0,068**	0,060	0,077	**0,153**	0,138	0,165	**0,160**	0,146	0,172	**0,200**	0,184	0,213
	85+	**0,003**	0,002	0,005	**0,010**	0,008	0,012	**0,011**	0,008	0,013	**0,024**	0,018	0,029
DEPENDENCY RATIO's	**Dependency Ratio's (DR)**												
	TDR	**0,495**	0,489	0,501	**0,584**	0,581	0,586	**0,545**	0,539	0,550	**0,590**	0,577	0,601
	YDR	**0,393**	0,400	0,385	**0,342**	0,362	0,325	**0,298**	0,315	0,283	**0,272**	0,287	0,259
	ADR	**0,102**	0,089	0,116	**0,242**	0,219	0,262	**0,247**	0,224	0,267	**0,317**	0,290	0,342
	OADR	**0,005**	0,003	0,007	**0,016**	0,012	0,020	**0,017**	0,012	0,020	**0,038**	0,028	0,046
	PSR	**9,8**	11,3	8,6	**4,1**	4,6	3,8	**4,0**	4,5	3,7	**3,2**	3,5	2,9
EDUCATION	**Educational Attainment - Total Population**												
	ISCED0-2	**0,838**	0,837	0,839	**0,701**	0,714	0,690	**0,497**	0,500	0,494	**0,503**	0,505	0,501
	ISCED3-4	**0,119**	0,120	0,119	**0,231**	0,225	0,235	**0,313**	0,313	0,313	**0,309**	0,310	0,309
	ISCED5-6	**0,043**	0,043	0,043	**0,068**	0,061	0,075	**0,190**	0,187	0,192	**0,188**	0,185	0,191
	Educational Attainment - Working Age Population (15-64y)												
	ISCED0-2	**0,761**	0,761	0,762	**0,590**	0,603	0,580	**0,288**	0,287	0,289	**0,289**	0,289	0,290
	ISCED3-4	**0,176**	0,177	0,175	**0,324**	0,319	0,327	**0,441**	0,444	0,438	**0,439**	0,442	0,437
	ISCED5-6	**0,063**	0,063	0,063	**0,086**	0,078	0,093	**0,271**	0,269	0,272	**0,271**	0,269	0,273
VITAL RATES	**Life Expectancy (LE)**												
	Total	**73,59**	71,4	75,8	**73,75**	71,4	75,8	**73,76**	71,4	75,8	**80,89**	77,91	83,46
	Total Fertility Rate (TFR)												
	Total	**2,14**	-	-	**2,06**	-	-	**1,68**	-	-	**1,60**	-	-
	ISCED0-2	**2,45**	-	-	**2,45**	-	-	**2,45**	-	-	**1,82**	-	-
	ISCED3-4	**1,54**	-	-	**1,54**	-	-	**1,54**	-	-	**1,54**	-	-
	ISCED5-6	**1,21**	-	-	**1,21**	-	-	**1,21**	-	-	**1,27**	-	-
	Net Migration (NM)												
	Total	**-808.615**	-738.775	-69.840	**-808.615**	-738.775	-69.840	**-808.615**	-738.775	-69.840	**-808.615**	-738.775	-69.840
	ISCED0-2	**-420.211**	-387.493	-32.718	**-420.211**	-387.493	-32.718	**-420.211**	-387.493	-32.718	**-420.211**	-387.493	-32.718
	ISCED3-4	**-253.271**	-230.977	-22.294	**-253.271**	-230.977	-22.294	**-253.271**	-230.977	-22.294	**-253.271**	-230.977	-22.294
	ISCED5-6	**-135.133**	-120.305	-14.828	**-135.133**	-120.305	-14.828	**-135.133**	-120.305	-14.828	**-135.133**	-120.305	-14.828

Table 30 - Population by age, sex and educational attainment in Turkey, 2008-2048 (Constant Scenario)

CONSTANT SCENARIO - WITH MIGRATION												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	3.082.338	3.082.338	0	0	3.224.492	3.224.492	0	0	4,6%	4,6%	-	-
05-09	3.242.581	3.242.581	0	0	3.131.779	3.131.779	0	0	-3,4%	-3,4%	-	-
10-14	3.322.041	3.322.041	0	0	3.053.108	3.053.108	0	0	-8,1%	-8,1%	-	-
15-19	3.171.916	2.715.372	456.141	403	2.882.395	2.482.753	399.642	0	-9,1%	-8,6%	-12,4%	-100,0%
20-24	3.187.625	1.736.737	1.366.191	84.697	2.754.002	1.545.020	1.144.931	64.051	-13,6%	-11,0%	-16,2%	-24,4%
25-29	3.300.291	2.108.509	806.668	385.114	2.720.357	1.532.602	895.982	291.773	-17,6%	-27,3%	11,1%	-24,2%
30-34	2.939.518	2.077.599	529.451	332.468	2.680.658	1.520.727	885.628	274.303	-8,8%	-26,8%	67,3%	-17,5%
35-39	2.680.940	2.101.191	352.074	227.675	2.630.470	1.502.446	870.379	257.645	-1,9%	-28,5%	147,2%	13,2%
40-44	2.397.705	1.963.440	267.897	166.368	2.434.157	1.402.637	804.565	226.955	1,5%	-28,6%	200,3%	36,4%
45-49	2.153.427	1.806.681	231.858	114.888	2.584.801	1.490.473	855.567	238.761	20,0%	-17,5%	269,0%	107,8%
50-54	1.824.582	1.586.935	135.669	101.978	2.585.601	1.494.038	856.075	235.488	41,7%	-5,9%	531,0%	130,9%
55-59	1.423.445	1.285.058	74.219	64.168	2.408.008	1.389.538	800.994	217.476	69,2%	8,1%	979,2%	238,9%
60-64	1.035.261	960.047	41.661	33.553	2.302.291	1.301.699	784.298	216.294	122,4%	35,6%	1782,6%	544,6%
65-69	783.679	745.799	23.778	14.102	2.138.890	1.427.695	503.555	207.640	172,9%	91,4%	2017,7%	1372,4%
70-74	575.434	554.865	14.446	6.123	1.571.428	1.164.100	258.028	149.300	173,1%	109,8%	1686,2%	2338,3%
75-79	492.227	477.870	10.521	3.836	1.067.938	877.289	119.349	71.300	117,0%	83,6%	1034,4%	1758,7%
80-84	213.336	205.626	5.411	2.299	595.357	510.151	54.523	30.683	179,1%	148,1%	907,6%	1234,6%
85-89	59.076	56.523	1.769	784	245.201	214.531	21.848	8.822	315,1%	279,5%	1135,0%	1025,3%
90-94	13.763	13.287	317	159	57.608	51.828	3.327	2.453	318,6%	290,1%	949,5%	1442,8%
95+	1.966	1.898	45	23	12.936	11.875	552	509	558,0%	525,7%	1126,7%	2113,0%
Sum	35.901.151	30.044.397	4.318.116	1.538.638	41.081.477	29.328.781	9.259.243	2.493.453	14,4%	-2,4%	114,4%	62,1%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.915.920	2.915.920	0	0	3.266.329	3.266.329	0	0	12,0%	12,0%	-	-
05-09	3.075.551	3.075.551	0	0	3.212.959	3.212.959	0	0	4,5%	4,5%	-	-
10-14	3.150.156	3.150.156	0	0	3.167.171	3.167.171	0	0	0,5%	0,5%	-	-
15-19	3.013.187	2.579.489	433.315	383	3.116.548	2.668.543	447.627	378	3,4%	3,5%	3,3%	-1,3%
20-24	3.068.933	1.672.069	1.315.321	81.543	3.093.003	1.689.344	1.322.606	81.053	0,8%	1,0%	0,6%	-0,6%
25-29	3.218.546	2.056.283	786.688	375.575	3.116.299	1.703.548	1.053.139	359.612	-3,2%	-17,2%	33,9%	-4,3%
30-34	2.870.589	2.028.881	517.036	324.672	3.130.766	1.712.672	1.058.753	359.341	9,1%	-15,6%	104,8%	10,7%
35-39	2.649.543	2.076.583	347.951	225.009	3.130.304	1.713.342	1.058.886	358.076	18,1%	-17,5%	204,3%	59,1%
40-44	2.342.544	1.918.269	261.734	162.541	2.773.792	1.519.790	938.327	315.675	18,4%	-20,8%	258,5%	94,2%
45-49	2.130.748	1.787.654	229.416	113.678	2.931.944	1.606.484	991.879	333.581	37,6%	-10,1%	332,3%	193,4%
50-54	1.818.591	1.581.724	135.224	101.643	2.958.660	1.621.452	1.000.917	336.291	62,7%	2,5%	640,2%	230,9%
55-59	1.454.659	1.313.237	75.847	65.575	2.761.461	1.513.786	934.370	313.305	89,8%	15,3%	1131,9%	377,8%
60-64	1.153.037	1.069.266	46.401	37.370	2.707.976	1.481.051	918.267	308.658	134,9%	38,5%	1879,0%	726,0%
65-69	917.704	873.345	27.845	16.514	2.652.845	1.701.421	646.870	304.554	189,1%	94,8%	2223,1%	1744,2%
70-74	699.248	674.254	17.554	7.440	2.082.453	1.477.304	372.646	232.503	197,8%	119,1%	2022,9%	3025,0%
75-79	618.556	600.515	13.221	4.820	1.539.300	1.210.614	199.980	128.706	148,9%	101,6%	1412,6%	2570,2%
80-84	357.843	344.910	9.076	3.857	924.328	759.311	101.975	63.042	158,3%	120,1%	1023,6%	1534,5%
85-89	116.145	111.125	3.478	1.542	424.932	357.460	45.235	22.237	265,9%	221,7%	1200,6%	1342,1%
90-94	39.217	37.859	904	454	125.487	109.382	9.185	6.920	220,0%	188,9%	916,0%	1424,2%
95+	5.229	5.048	120	61	34.360	31.077	1.755	1.528	557,1%	515,6%	1362,5%	2404,9%
Sum	35.615.946	29.872.138	4.221.131	1.522.677	47.150.917	32.523.040	11.102.417	3.525.460	32,4%	8,9%	163,0%	131,5%

CONSTANT SCENARIO - WITHOUT MIGRATION												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	3.082.338	3.082.338	0	0	3.307.634	3.307.634	0	0	7,3%	7,3%	-	-
05-09	3.242.581	3.242.581	0	0	3.246.741	3.246.741	0	0	0,1%	0,1%	-	-
10-14	3.322.041	3.322.041	0	0	3.197.191	3.197.191	0	0	-3,8%	-3,8%	-	-
15-19	3.171.916	2.715.372	456.141	403	3.145.464	2.692.727	452.337	400	-0,8%	-0,8%	-0,8%	-0,7%
20-24	3.187.625	1.736.737	1.366.191	84.697	3.126.267	1.703.307	1.339.894	83.066	-1,9%	-1,9%	-1,9%	-1,9%
25-29	3.300.291	2.108.509	806.668	385.114	3.151.761	1.717.197	1.066.782	367.782	-4,5%	-18,6%	32,2%	-4,5%
30-34	2.939.518	2.077.599	529.451	332.468	3.162.655	1.723.132	1.070.470	369.053	7,6%	-17,1%	102,2%	11,0%
35-39	2.680.940	2.101.191	352.074	227.675	3.152.728	1.717.723	1.067.110	367.895	17,6%	-18,3%	203,1%	61,6%
40-44	2.397.705	1.963.440	267.897	166.368	2.952.712	1.608.747	999.410	344.555	23,1%	-18,1%	273,1%	107,1%
45-49	2.153.427	1.806.681	231.858	114.888	3.093.473	1.685.439	1.047.054	360.980	43,7%	-6,7%	351,6%	214,2%
50-54	1.824.582	1.586.935	135.669	101.978	3.077.190	1.676.568	1.041.542	359.080	68,7%	5,6%	667,7%	252,1%
55-59	1.423.445	1.285.058	74.219	64.168	2.793.683	1.522.103	945.583	325.997	96,3%	18,4%	1174,0%	408,0%
60-64	1.035.261	960.047	41.661	33.553	2.591.940	1.412.185	877.299	302.456	150,4%	47,1%	2005,8%	801,4%
65-69	783.679	745.799	23.778	14.102	2.367.389	1.512.491	578.645	276.253	202,1%	102,8%	2333,5%	1859,0%
70-74	575.434	554.865	14.446	6.123	1.733.414	1.225.146	312.214	196.054	201,2%	120,8%	2061,2%	3101,9%
75-79	492.227	477.870	10.521	3.836	1.168.861	916.096	153.501	99.264	137,5%	91,7%	1359,0%	2487,7%
80-84	213.336	205.626	5.411	2.299	649.088	531.527	72.523	45.038	204,3%	158,5%	1240,3%	1859,0%
85-89	59.076	56.523	1.769	784	265.879	223.067	28.627	14.185	350,1%	294,6%	1518,3%	1709,3%
90-94	13.763	13.287	317	159	65.133	56.650	4.843	3.640	373,2%	326,4%	1427,8%	2189,3%
95+	1.966	1.898	45	23	17.850	16.114	931	805	807,9%	749,0%	1968,9%	3400,0%
Sum	35.901.151	30.044.397	4.318.116	1.538.638	46.267.053	31.691.785	11.058.765	3.516.503	28,9%	5,5%	156,1%	128,5%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.915.920	2.915.920	0	0	3.309.574	3.309.574	0	0	13,5%	13,5%	-	-
05-09	3.075.551	3.075.551	0	0	3.252.481	3.252.481	0	0	5,8%	5,8%	-	-
10-14	3.150.156	3.150.156	0	0	3.203.526	3.203.526	0	0	1,7%	1,7%	-	-
15-19	3.013.187	2.579.489	433.315	383	3.153.158	2.699.313	453.444	401	4,6%	4,6%	4,6%	4,7%
20-24	3.068.933	1.672.069	1.315.321	81.543	3.137.443	1.709.396	1.344.684	83.363	2,2%	2,2%	2,2%	2,2%
25-29	3.218.546	2.056.283	786.688	375.575	3.167.976	1.726.031	1.072.271	369.674	-1,6%	-16,1%	36,3%	-1,6%
30-34	2.870.589	2.028.881	517.036	324.672	3.184.433	1.734.998	1.077.841	371.594	10,9%	-14,5%	108,5%	14,5%
35-39	2.649.543	2.076.583	347.951	225.009	3.181.104	1.733.184	1.076.714	371.206	20,1%	-16,5%	209,4%	65,0%
40-44	2.342.544	1.918.269	261.734	162.541	2.825.866	1.539.637	956.476	329.753	20,6%	-19,7%	265,4%	102,9%
45-49	2.130.748	1.787.654	229.416	113.678	2.984.416	1.626.021	1.010.141	348.254	40,1%	-9,0%	340,3%	206,4%
50-54	1.818.591	1.581.724	135.224	101.643	3.011.142	1.640.582	1.019.187	351.373	65,6%	3,7%	653,7%	245,7%
55-59	1.454.659	1.313.237	75.847	65.575	2.810.665	1.531.355	951.331	327.979	93,2%	16,6%	1154,3%	400,2%
60-64	1.153.037	1.069.266	46.401	37.370	2.746.821	1.496.570	929.722	320.529	138,2%	40,0%	1903,7%	757,7%
65-69	917.704	873.345	27.845	16.514	2.680.032	1.712.234	655.063	312.735	192,0%	96,1%	2252,5%	1793,8%
70-74	699.248	674.254	17.554	7.440	2.100.368	1.484.502	378.308	237.558	200,4%	120,2%	2055,1%	3093,0%
75-79	618.556	600.515	13.221	4.820	1.550.720	1.215.379	203.648	131.693	150,7%	102,4%	1440,3%	2632,2%
80-84	357.843	344.910	9.076	3.857	930.621	762.069	103.979	64.573	160,1%	120,9%	1045,6%	1574,2%
85-89	116.145	111.125	3.478	1.542	427.539	358.696	46.033	22.810	268,1%	222,8%	1223,5%	1379,2%
90-94	39.217	37.859	904	454	126.151	109.720	9.380	7.051	221,7%	189,8%	937,6%	1453,1%
95+	5.229	5.048	120	61	34.521	31.165	1.800	1.556	560,2%	517,4%	1400,0%	2450,8%
Sum	35.615.946	29.872.138	4.221.131	1.522.677	47.818.557	32.876.433	11.290.022	3.652.102	34,3%	10,1%	167,5%	139,8%

Table 31 - Population by age, sex and educational attainment in Turkey, 2008-2048 (EU2020 Scenario)

EUROPE 2020 SCENARIO - WITH MIGRATION (TURKEY)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	3.082.338	3.082.338	0	0	2.680.108	2.680.108	0	0	-13,0%	-13,0%	-	-
05-09	3.242.581	3.242.581	0	0	2.664.681	2.664.681	0	0	-17,8%	-17,8%	-	-
10-14	3.322.041	3.322.041	0	0	2.655.549	2.655.549	0	0	-20,1%	-20,1%	-	-
15-19	3.171.916	2.715.372	456.141	403	2.571.767	2.216.801	354.966	0	-18,9%	-18,4%	-22,2%	-100,0%
20-24	3.187.625	1.736.737	1.366.191	84.697	2.542.814	240.306	2.071.937	230.571	-20,2%	-86,2%	51,7%	172,2%
25-29	3.300.291	2.108.509	806.668	385.114	2.638.049	226.925	1.311.816	1.099.308	-20,1%	-89,2%	62,6%	185,5%
30-34	2.939.518	2.077.599	529.451	332.468	2.680.657	215.001	1.344.250	1.121.406	-8,8%	-89,7%	153,9%	237,3%
35-39	2.680.940	2.101.191	352.074	227.675	2.630.469	196.835	1.328.831	1.104.803	-1,9%	-90,6%	277,4%	385,3%
40-44	2.397.705	1.963.440	267.897	166.368	2.434.156	166.876	1.239.443	1.027.837	1,5%	-91,5%	362,7%	517,8%
45-49	2.153.427	1.806.681	231.858	114.888	2.584.800	393.677	1.203.674	987.449	20,0%	-78,2%	419,1%	759,5%
50-54	1.824.582	1.586.935	135.669	101.978	2.585.602	941.912	950.249	693.441	41,7%	-40,6%	600,4%	580,0%
55-59	1.423.445	1.285.058	74.219	64.168	2.408.008	1.389.538	681.188	337.282	69,2%	8,1%	817,8%	425,6%
60-64	1.035.261	960.047	41.661	33.553	2.302.291	1.301.699	784.298	216.294	122,4%	35,6%	1782,6%	544,6%
65-69	783.679	745.799	23.778	14.102	2.138.890	1.427.695	503.555	207.640	172,9%	91,4%	2017,7%	1372,4%
70-74	575.434	554.865	14.446	6.123	1.571.428	1.164.100	258.028	149.300	173,1%	109,8%	1686,2%	2338,3%
75-79	492.227	477.870	10.521	3.836	1.067.938	877.289	119.349	71.300	117,0%	83,6%	1034,4%	1758,7%
80-84	213.336	205.626	5.411	2.299	595.357	510.151	54.523	30.683	179,1%	148,1%	907,6%	1234,6%
85-89	59.076	56.523	1.769	784	245.201	214.531	21.848	8.822	315,1%	279,5%	1135,0%	1025,3%
90-94	13.763	13.287	317	159	57.608	51.828	3.327	2.453	318,6%	290,1%	949,5%	1442,8%
95+	1.966	1.898	45	23	12.936	11.875	552	509	558,0%	525,7%	1126,7%	2113,0%
Sum	35.901.151	30.044.397	4.318.116	1.538.638	39.068.309	19.547.377	12.231.834	7.289.098	8,8%	-34,9%	183,3%	373,7%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.915.920	2.915.920	0	0	2.721.626	2.721.626	0	0	-6,7%	-6,7%	-	-
05-09	3.075.551	3.075.551	0	0	2.745.036	2.745.036	0	0	-10,7%	-10,7%	-	-
10-14	3.150.156	3.150.156	0	0	2.768.824	2.768.824	0	0	-12,1%	-12,1%	-	-
15-19	3.013.187	2.579.489	433.315	383	2.805.121	2.401.941	402.842	338	-6,9%	-6,9%	-7,0%	-11,7%
20-24	3.068.933	1.672.069	1.315.321	81.543	2.881.032	286.764	2.324.139	270.129	-6,1%	-82,8%	76,7%	231,3%
25-29	3.218.546	2.056.283	786.688	375.575	3.033.559	298.156	1.482.005	1.253.398	-5,7%	-85,5%	88,4%	233,7%
30-34	2.870.589	2.028.881	517.036	324.672	3.130.767	305.210	1.531.396	1.294.161	9,1%	-85,0%	196,2%	298,6%
35-39	2.649.543	2.076.583	347.951	225.009	3.130.305	303.599	1.532.285	1.294.421	18,1%	-85,4%	340,4%	475,3%
40-44	2.342.544	1.918.269	261.734	162.541	2.773.792	266.819	1.359.260	1.147.713	18,4%	-86,1%	419,3%	606,1%
45-49	2.130.748	1.787.654	229.416	113.678	2.931.944	502.540	1.323.517	1.105.887	37,6%	-71,9%	476,9%	872,8%
50-54	1.818.591	1.581.724	135.224	101.643	2.958.661	1.064.071	1.080.979	813.611	62,7%	-32,7%	699,4%	700,5%
55-59	1.454.659	1.313.237	75.847	65.575	2.761.461	1.513.786	807.288	440.387	89,8%	15,3%	964,4%	571,6%
60-64	1.153.037	1.069.266	46.401	37.370	2.707.976	1.481.051	918.267	308.658	134,9%	38,5%	1879,0%	726,0%
65-69	917.704	873.345	27.845	16.514	2.652.845	1.701.421	646.870	304.554	189,1%	94,8%	2223,1%	1744,2%
70-74	699.248	674.254	17.554	7.440	2.082.453	1.477.304	372.646	232.503	197,8%	119,1%	2022,9%	3025,0%
75-79	618.556	600.515	13.221	4.820	1.539.300	1.210.614	199.980	128.706	148,9%	101,6%	1412,6%	2570,2%
80-84	357.843	344.910	9.076	3.857	924.328	759.311	101.975	63.042	158,3%	120,1%	1023,6%	1534,5%
85-89	116.145	111.125	3.478	1.542	424.932	357.460	45.235	22.237	265,9%	221,7%	1200,6%	1342,1%
90-94	39.217	37.859	904	454	125.487	109.382	9.185	6.920	220,0%	188,9%	916,0%	1424,2%
95+	5.229	5.048	120	61	34.360	31.077	1.755	1.528	557,1%	515,6%	1362,5%	2404,9%
Sum	35.615.946	29.872.138	4.221.131	1.522.677	45.133.809	22.305.992	14.139.624	8.688.193	26,7%	-25,3%	235,0%	470,6%

EUROPE 2020 SCENARIO - WITHOUT MIGRATION (TURKEY)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	3.082.338	3.082.338	0	0	2.760.022	2.760.022	0	0	-10,5%	-10,5%	-	-
05-09	3.242.581	3.242.581	0	0	2.777.476	2.777.476	0	0	-14,3%	-14,3%	-	-
10-14	3.322.041	3.322.041	0	0	2.798.316	2.798.316	0	0	-15,8%	-15,8%	-	-
15-19	3.171.916	2.715.372	456.141	403	2.833.938	2.426.040	407.538	360	-10,7%	-10,7%	-10,7%	-10,7%
20-24	3.187.625	1.736.737	1.366.191	84.697	2.914.632	291.463	2.349.283	273.886	-8,6%	-83,2%	72,0%	223,4%
25-29	3.300.291	2.108.509	806.668	385.114	3.069.331	306.933	1.495.718	1.266.680	-7,0%	-85,4%	85,4%	228,9%
30-34	2.939.518	2.077.599	529.451	332.468	3.162.656	316.266	1.541.196	1.305.194	7,6%	-84,8%	191,1%	292,6%
35-39	2.680.940	2.101.191	352.074	227.675	3.152.728	315.273	1.536.358	1.301.097	17,6%	-85,0%	336,4%	471,5%
40-44	2.397.705	1.963.440	267.897	166.368	2.952.711	295.271	1.438.888	1.218.552	23,1%	-85,0%	437,1%	632,4%
45-49	2.153.427	1.806.681	231.858	114.888	3.093.473	538.696	1.389.832	1.164.945	43,7%	-70,2%	499,4%	914,0%
50-54	1.824.582	1.586.935	135.669	101.978	3.077.189	1.106.214	1.122.021	848.954	68,7%	-30,3%	727,0%	732,5%
55-59	1.423.445	1.285.058	74.219	64.168	2.793.684	1.522.103	818.500	453.081	96,3%	18,4%	1002,8%	606,1%
60-64	1.035.261	960.047	41.661	33.553	2.591.940	1.412.185	877.299	302.456	150,4%	47,1%	2005,8%	801,4%
65-69	783.679	745.799	23.778	14.102	2.367.389	1.512.491	578.645	276.253	202,1%	102,8%	2333,5%	1859,0%
70-74	575.434	554.865	14.446	6.123	1.733.414	1.225.146	312.214	196.054	201,2%	120,8%	2061,2%	3101,9%
75-79	492.227	477.870	10.521	3.836	1.168.861	916.096	153.501	99.264	137,5%	91,7%	1359,0%	2487,7%
80-84	213.336	205.626	5.411	2.299	649.088	531.527	72.523	45.038	204,3%	158,5%	1240,3%	1859,0%
85-89	59.076	56.523	1.769	784	265.879	223.067	28.627	14.185	350,1%	294,6%	1518,3%	1709,3%
90-94	13.763	13.287	317	159	65.133	56.650	4.843	3.640	373,2%	326,4%	1427,8%	2189,3%
95+	1.966	1.898	45	23	17.850	16.114	931	805	807,9%	749,0%	1968,9%	3400,0%
Sum	35.901.151	30.044.397	4.318.116	1.538.638	44.245.710	21.347.349	14.127.917	8.770.444	23,2%	-28,9%	227,2%	470,0%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.915.920	2.915.920	0	0	2.761.641	2.761.641	0	0	-5,3%	-5,3%	-	-
05-09	3.075.551	3.075.551	0	0	2.782.386	2.782.386	0	0	-9,5%	-9,5%	-	-
10-14	3.150.156	3.150.156	0	0	2.803.860	2.803.860	0	0	-11,0%	-11,0%	-	-
15-19	3.013.187	2.579.489	433.315	383	2.840.869	2.431.973	408.535	361	-5,7%	-5,7%	-5,7%	-5,7%
20-24	3.068.933	1.672.069	1.315.321	81.543	2.925.051	292.505	2.357.681	274.865	-4,7%	-82,5%	79,2%	237,1%
25-29	3.218.546	2.056.283	786.688	375.575	3.085.122	308.512	1.503.413	1.273.197	-4,1%	-85,0%	91,1%	239,0%
30-34	2.870.589	2.028.881	517.036	324.672	3.184.433	318.443	1.551.809	1.314.181	10,9%	-84,3%	200,1%	304,8%
35-39	2.649.543	2.076.583	347.951	225.009	3.181.103	318.110	1.550.186	1.312.807	20,1%	-84,7%	345,5%	483,4%
40-44	2.342.544	1.918.269	261.734	162.541	2.825.866	282.587	1.377.075	1.166.204	20,6%	-85,3%	426,1%	617,5%
45-49	2.130.748	1.787.654	229.416	113.678	2.984.416	519.705	1.340.835	1.123.876	40,1%	-70,9%	484,5%	888,6%
50-54	1.818.591	1.581.724	135.224	101.643	3.011.142	1.082.470	1.097.939	830.733	65,6%	-31,6%	711,9%	717,3%
55-59	1.454.659	1.313.237	75.847	65.575	2.810.665	1.531.355	823.475	455.835	93,2%	16,6%	985,7%	595,1%
60-64	1.153.037	1.069.266	46.401	37.370	2.746.821	1.496.570	929.722	320.529	138,2%	40,0%	1903,7%	757,7%
65-69	917.704	873.345	27.845	16.514	2.680.032	1.712.234	655.063	312.735	192,0%	96,1%	2252,5%	1793,8%
70-74	699.248	674.254	17.554	7.440	2.100.368	1.484.502	378.308	237.558	200,4%	120,2%	2055,1%	3093,0%
75-79	618.556	600.515	13.221	4.820	1.550.720	1.215.379	203.648	131.693	150,7%	102,4%	1440,3%	2632,2%
80-84	357.843	344.910	9.076	3.857	930.621	762.069	103.979	64.573	160,1%	120,9%	1045,6%	1574,2%
85-89	116.145	111.125	3.478	1.542	427.539	358.696	46.033	22.810	268,1%	222,8%	1223,5%	1379,2%
90-94	39.217	37.859	904	454	126.151	109.720	9.380	7.051	221,7%	189,8%	937,6%	1453,1%
95+	5.229	5.048	120	61	34.521	31.165	1.800	1.556	560,2%	517,4%	1400,0%	2450,8%
Sum	35.615.946	29.872.138	4.221.131	1.522.677	45.793.327	22.603.882	14.338.881	8.850.564	28,6%	-24,3%	239,7%	481,3%

Table 32 - Population by age, sex and educational attainment in Turkey, 2008-2048 (Target-Trend EU2020 Scenario)

TARGET-TREND EUROPE 2020 SCENARIO - WITH MIGRATION (TURKEY)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	3.082.338	3.082.338	0	0	2.376.289	2.376.289	0	0	-22,9%	-22,9%	-	-
05-09	3.242.581	3.242.581	0	0	2.427.191	2.427.191	0	0	-25,1%	-25,1%	-	-
10-14	3.322.041	3.322.041	0	0	2.458.647	2.458.647	0	0	-26,0%	-26,0%	-	-
15-19	3.171.916	2.715.372	456.141	403	2.399.039	2.068.916	330.123	0	-24,4%	-23,8%	-27,6%	-100,0%
20-24	3.187.625	1.736.737	1.366.191	84.697	2.386.861	224.711	1.946.228	215.922	-25,1%	-87,1%	42,5%	154,9%
25-29	3.300.291	2.108.509	806.668	385.114	2.509.248	214.023	1.249.068	1.046.157	-24,0%	-89,8%	54,8%	171,6%
30-34	2.939.518	2.077.599	529.451	332.468	2.615.976	208.445	1.312.798	1.094.733	-11,0%	-90,0%	148,0%	229,3%
35-39	2.680.940	2.101.191	352.074	227.675	2.651.331	198.712	1.339.156	1.113.463	-1,1%	-90,5%	280,4%	389,1%
40-44	2.397.705	1.963.440	267.897	166.368	2.458.169	168.838	1.251.464	1.037.867	2,5%	-91,4%	367,1%	523,8%
45-49	2.153.427	1.806.681	231.858	114.888	2.624.233	399.952	1.221.858	1.002.423	21,9%	-77,9%	427,0%	772,5%
50-54	1.824.582	1.586.935	135.669	101.978	2.652.757	966.368	974.881	711.508	45,4%	-39,1%	618,6%	597,7%
55-59	1.423.445	1.285.058	74.219	64.168	2.515.444	1.450.998	711.743	352.703	76,7%	12,9%	859,0%	449,7%
60-64	1.035.261	960.047	41.661	33.553	2.473.599	1.397.832	842.709	233.058	138,9%	45,6%	1922,8%	594,6%
65-69	783.679	745.799	23.778	14.102	2.398.477	1.599.574	565.248	233.655	206,1%	114,5%	2277,2%	1556,9%
70-74	575.434	554.865	14.446	6.123	1.880.818	1.391.588	309.708	179.522	226,9%	150,8%	2043,9%	2831,9%
75-79	492.227	477.870	10.521	3.836	1.410.117	1.156.573	158.552	94.992	186,5%	142,0%	1407,0%	2376,3%
80-84	213.336	205.626	5.411	2.299	917.570	784.639	84.843	48.088	330,1%	281,6%	1468,0%	1991,7%
85-89	59.076	56.523	1.769	784	490.388	427.938	44.198	18.252	730,1%	657,1%	2398,5%	2228,1%
90-94	13.763	13.287	317	159	187.339	168.753	10.665	7.921	1261,2%	1170,1%	3264,4%	4881,8%
95+	1.966	1.898	45	23	39.282	36.459	1.467	1.356	1898,1%	1820,9%	3160,0%	5795,7%
Sum	35.901.151	30.044.397	4.318.116	1.538.638	39.872.775	20.126.446	12.354.709	7.391.620	11,1%	-33,0%	186,1%	380,4%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.915.920	2.915.920	0	0	2.418.469	2.418.469	0	0	-17,1%	-17,1%	-	-
05-09	3.075.551	3.075.551	0	0	2.509.827	2.509.827	0	0	-18,4%	-18,4%	-	-
10-14	3.150.156	3.150.156	0	0	2.574.045	2.574.045	0	0	-18,3%	-18,3%	-	-
15-19	3.013.187	2.579.489	433.315	383	2.634.080	2.255.518	378.246	316	-12,6%	-12,6%	-12,7%	-17,5%
20-24	3.068.933	1.672.069	1.315.321	81.543	2.725.800	271.240	2.199.018	255.542	-11,2%	-83,8%	67,2%	213,4%
25-29	3.218.546	2.056.283	786.688	375.575	2.904.257	285.224	1.418.996	1.200.037	-9,8%	-86,1%	80,4%	219,5%
30-34	2.870.589	2.028.881	517.036	324.672	3.064.775	298.602	1.499.244	1.266.929	6,8%	-85,3%	190,0%	290,2%
35-39	2.649.543	2.076.583	347.951	225.009	3.149.788	305.523	1.541.797	1.302.468	18,9%	-85,3%	343,1%	478,9%
40-44	2.342.544	1.918.269	261.734	162.541	2.794.892	268.878	1.369.580	1.156.434	19,3%	-86,0%	423,3%	611,5%
45-49	2.130.748	1.787.654	229.416	113.678	2.965.747	508.358	1.338.759	1.118.630	39,2%	-71,6%	483,6%	884,0%
50-54	1.818.591	1.581.724	135.224	101.643	3.012.173	1.083.319	1.100.524	828.330	65,6%	-31,5%	713,9%	714,9%
55-59	1.454.659	1.313.237	75.847	65.575	2.840.964	1.557.340	830.537	453.087	95,3%	18,6%	995,0%	590,9%
60-64	1.153.037	1.069.266	46.401	37.370	2.835.838	1.550.952	961.623	323.263	145,9%	45,0%	1972,4%	765,0%
65-69	917.704	873.345	27.845	16.514	2.865.484	1.837.750	698.739	328.995	212,2%	110,4%	2409,4%	1892,2%
70-74	699.248	674.254	17.554	7.440	2.378.104	1.686.984	425.585	265.535	240,1%	150,2%	2324,4%	3469,0%
75-79	618.556	600.515	13.221	4.820	1.934.210	1.521.127	251.330	161.753	212,7%	153,3%	1801,0%	3255,9%
80-84	357.843	344.910	9.076	3.857	1.369.182	1.124.666	151.100	93.416	282,6%	226,1%	1564,8%	2322,0%
85-89	116.145	111.125	3.478	1.542	842.417	708.586	89.719	44.112	625,3%	537,6%	2479,6%	2760,7%
90-94	39.217	37.859	904	454	400.016	348.644	29.303	22.069	920,0%	820,9%	3141,5%	4761,0%
95+	5.229	5.048	120	61	90.028	81.417	4.604	4.007	1621,7%	1512,9%	3736,7%	6468,9%
Sum	35.615.946	29.872.138	4.221.131	1.522.677	46.310.096	23.196.469	14.288.704	8.824.923	30,0%	-22,3%	238,5%	479,6%

TARGET-TREND EUROPE 2020 SCENARIO - WITHOUT MIGRATION (TURKEY)												
MEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	3.082.338	3.082.338	0	0	2.452.261	2.452.261	0	0	-20,4%	-20,4%	-	-
05-09	3.242.581	3.242.581	0	0	2.537.440	2.537.440	0	0	-21,7%	-21,7%	-	-
10-14	3.322.041	3.322.041	0	0	2.599.740	2.599.740	0	0	-21,7%	-21,7%	-	-
15-19	3.171.916	2.715.372	456.141	403	2.660.290	2.277.386	382.566	338	-16,1%	-16,1%	-16,1%	-16,1%
20-24	3.187.625	1.736.737	1.366.191	84.697	2.758.470	275.847	2.223.412	259.211	-13,5%	-84,1%	62,7%	206,0%
25-29	3.300.291	2.108.509	806.668	385.114	2.941.165	294.116	1.433.262	1.213.787	-10,9%	-86,1%	77,7%	215,2%
30-34	2.939.518	2.077.599	529.451	332.468	3.099.513	309.951	1.510.426	1.279.136	5,4%	-85,1%	185,3%	284,7%
35-39	2.680.940	2.101.191	352.074	227.675	3.176.131	317.613	1.547.763	1.310.755	18,5%	-84,9%	339,6%	475,7%
40-44	2.397.705	1.963.440	267.897	166.368	2.980.480	298.048	1.452.420	1.230.012	24,3%	-84,8%	442,2%	639,3%
45-49	2.153.427	1.806.681	231.858	114.888	3.139.076	546.637	1.410.320	1.182.119	45,8%	-69,7%	508,3%	928,9%
50-54	1.824.582	1.586.935	135.669	101.978	3.155.062	1.134.208	1.150.416	870.438	72,9%	-28,5%	748,0%	753,6%
55-59	1.423.445	1.285.058	74.219	64.168	2.915.457	1.588.450	854.177	472.830	104,8%	23,6%	1050,9%	636,9%
60-64	1.035.261	960.047	41.661	33.553	2.780.538	1.514.941	941.134	324.463	168,6%	57,8%	2159,0%	867,0%
65-69	783.679	745.799	23.778	14.102	2.648.956	1.692.380	647.467	309.109	238,0%	126,9%	2623,0%	2092,0%
70-74	575.434	554.865	14.446	6.123	2.068.645	1.462.081	372.594	233.970	259,5%	163,5%	2479,2%	3721,2%
75-79	492.227	477.870	10.521	3.836	1.538.106	1.205.492	201.992	130.622	212,5%	152,3%	1819,9%	3305,2%
80-84	213.336	205.626	5.411	2.299	995.733	815.389	111.254	69.090	366,7%	296,5%	1956,1%	2905,2%
85-89	59.076	56.523	1.769	784	528.630	443.510	56.917	28.203	794,8%	684,7%	3117,5%	3497,3%
90-94	13.763	13.287	317	159	203.909	177.350	15.162	11.397	1381,6%	1234,8%	4683,0%	7067,9%
95+	1.966	1.898	45	23	45.912	41.448	2.394	2.070	2235,3%	2083,8%	5220,0%	8900,0%
Sum	35.901.151	30.044.397	4.318.116	1.538.638	45.225.514	21.984.288	14.313.676	8.927.550	26,0%	-26,8%	231,5%	480,2%

WOMEN	2008				2048				Change 2008-2048			
AGE / STATE		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6		ISCED0-2	ISCED3-4	ISCED5-6
00-04	2.915.920	2.915.920	0	0	2.454.551	2.454.551	0	0	-15,8%	-15,8%	-	-
05-09	3.075.551	3.075.551	0	0	2.544.444	2.544.444	0	0	-17,3%	-17,3%	-	-
10-14	3.150.156	3.150.156	0	0	2.607.198	2.607.198	0	0	-17,2%	-17,2%	-	-
15-19	3.013.187	2.579.489	433.315	383	2.668.656	2.284.548	383.769	339	-11,4%	-11,4%	-11,4%	-11,5%
20-24	3.068.933	1.672.069	1.315.321	81.543	2.769.098	276.910	2.231.978	260.210	-9,8%	-83,4%	69,7%	219,1%
25-29	3.218.546	2.056.283	786.688	375.575	2.955.496	295.550	1.440.245	1.219.701	-8,2%	-85,6%	83,1%	224,8%
30-34	2.870.589	2.028.881	517.036	324.672	3.118.451	311.845	1.519.655	1.286.951	8,6%	-84,6%	193,9%	296,4%
35-39	2.649.543	2.076.583	347.951	225.009	3.200.760	320.076	1.559.765	1.320.919	20,8%	-84,6%	348,3%	487,1%
40-44	2.342.544	1.918.269	261.734	162.541	2.847.252	284.725	1.387.497	1.175.030	21,5%	-85,2%	430,1%	622,9%
45-49	2.130.748	1.787.654	229.416	113.678	3.018.703	525.676	1.356.239	1.136.788	41,7%	-70,6%	491,2%	900,0%
50-54	1.818.591	1.581.724	135.224	101.643	3.065.461	1.101.998	1.117.745	845.718	68,6%	-30,3%	726,6%	732,0%
55-59	1.454.659	1.313.237	75.847	65.575	2.891.408	1.575.347	847.131	468.930	98,8%	20,0%	1016,9%	615,1%
60-64	1.153.037	1.069.266	46.401	37.370	2.876.283	1.567.106	973.541	335.636	149,5%	46,6%	1998,1%	798,1%
65-69	917.704	873.345	27.845	16.514	2.894.582	1.849.307	707.504	337.771	215,4%	111,7%	2440,9%	1945,4%
70-74	699.248	674.254	17.554	7.440	2.398.291	1.695.069	431.968	271.254	243,0%	151,4%	2360,8%	3545,9%
75-79	618.556	600.515	13.221	4.820	1.948.254	1.526.947	255.854	165.453	215,0%	154,3%	1835,2%	3332,6%
80-84	357.843	344.910	9.076	3.857	1.378.168	1.128.558	153.984	95.626	285,1%	227,2%	1596,6%	2379,3%
85-89	116.145	111.125	3.478	1.542	847.229	710.808	91.220	45.201	629,5%	539,6%	2522,8%	2831,3%
90-94	39.217	37.859	904	454	401.974	349.618	29.889	22.467	925,0%	823,5%	3206,3%	4848,7%
95+	5.229	5.048	120	61	90.416	81.626	4.714	4.076	1629,1%	1517,0%	3828,3%	6582,0%
Sum	35.615.946	29.872.138	4.221.131	1.522.677	46.976.675	23.491.907	14.492.698	8.992.070	31,9%	-21,4%	243,3%	490,5%

7.4 Annex IV – Maps & Figures

7.4.1 Thematic Maps

Figure 60 – Male Life Expectancy in EU27 and CC5, 2008

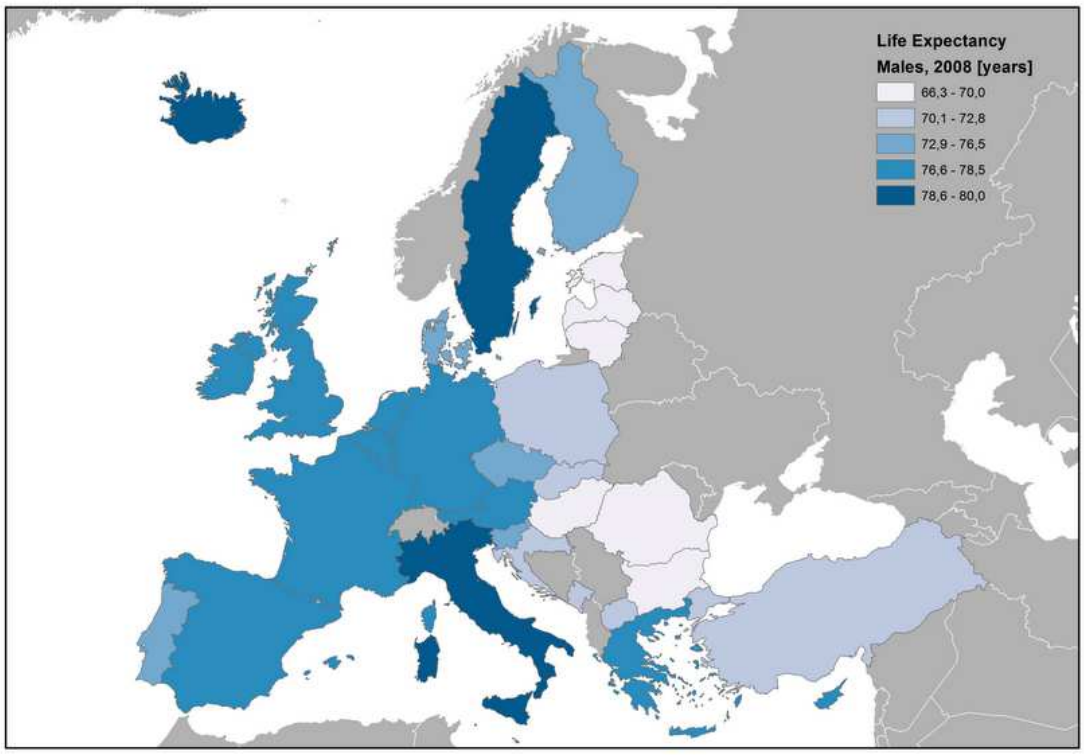


Figure 61 - Female Life Expectancy in EU27 and CC5, 2008

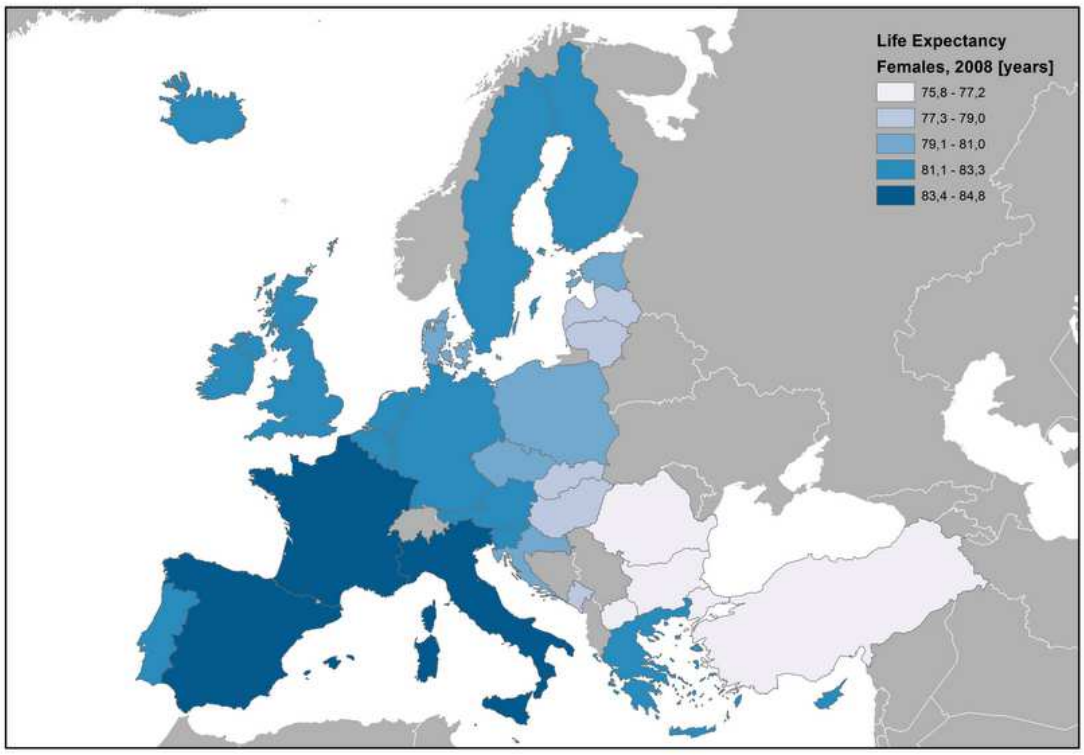


Figure 62 – Youth Dependency Ratio (YDR = 00-14y / 15-64y) in EU27 and CC5, 2008

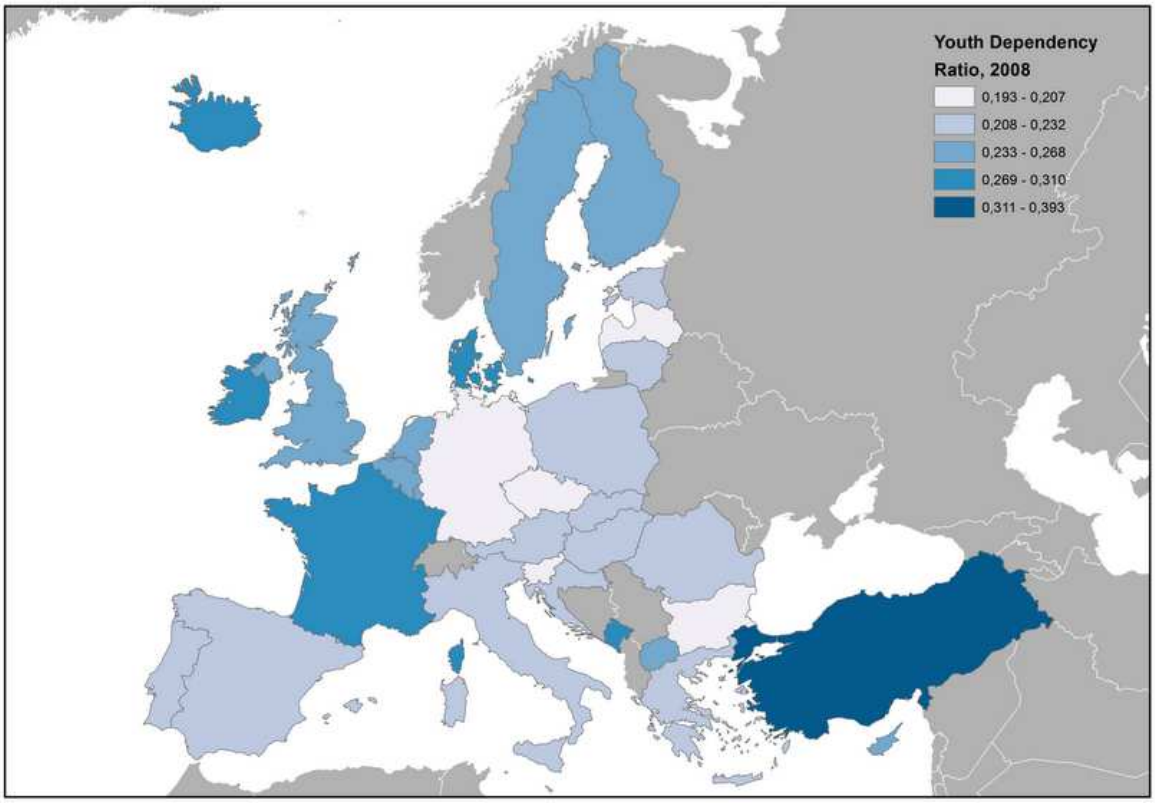
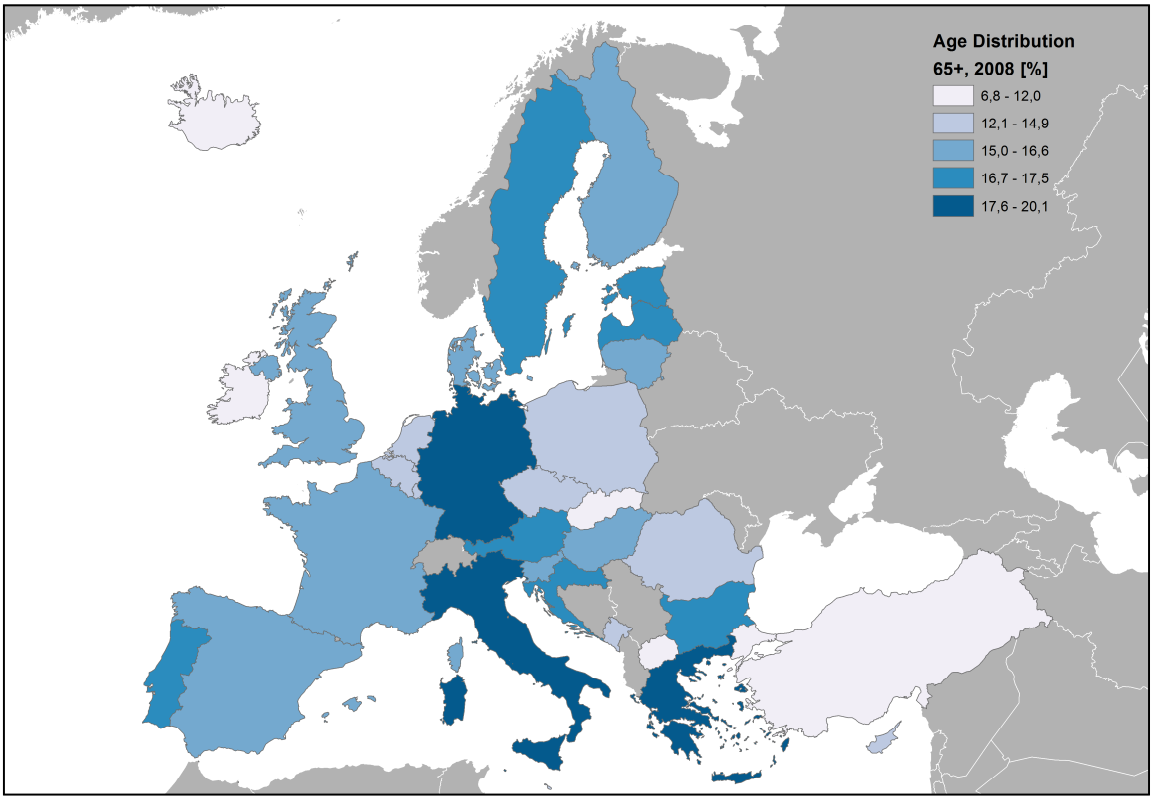


Figure 63 – Share of Population aged 65years plus (in %) in EU27 and CC5, 2008



7.4.2 Population Pyramid - Age Structure by educational attainment

Figure 64 – Age Structure by educational attainment in EU15, 2008

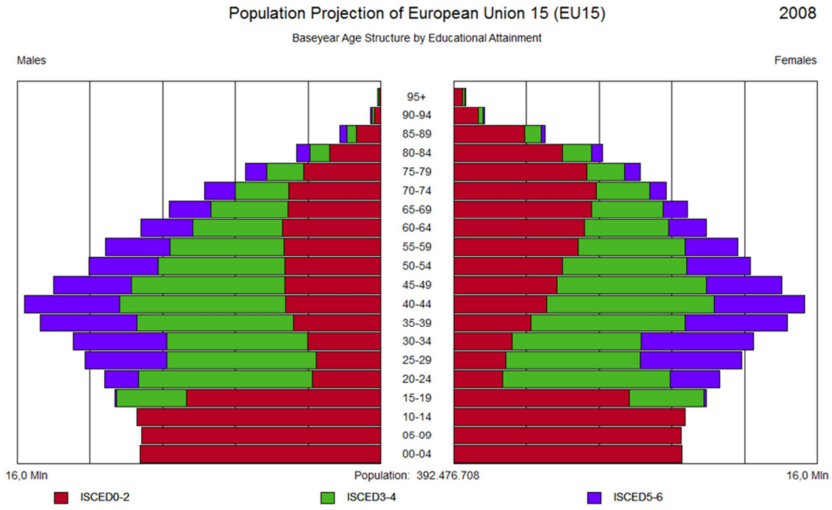


Figure 65 - Age Structure by educational attainment in EU12, 2008

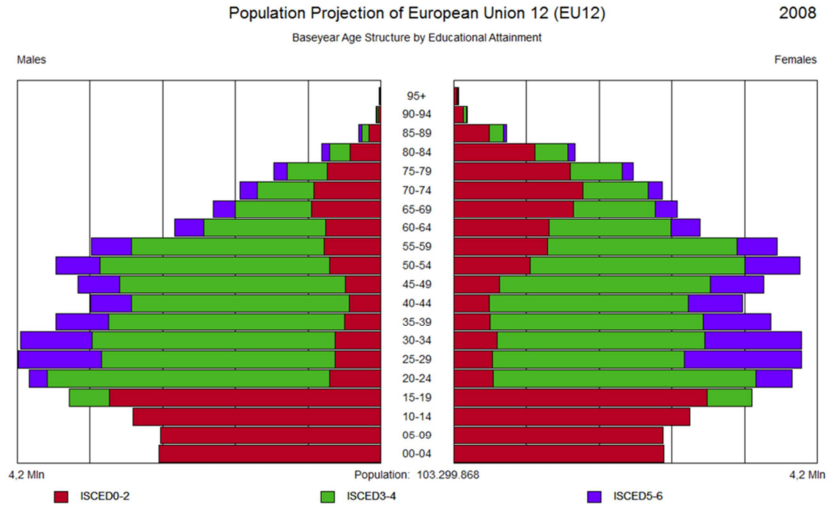


Figure 66 - Age Structure by educational attainment in Croatia, 2008

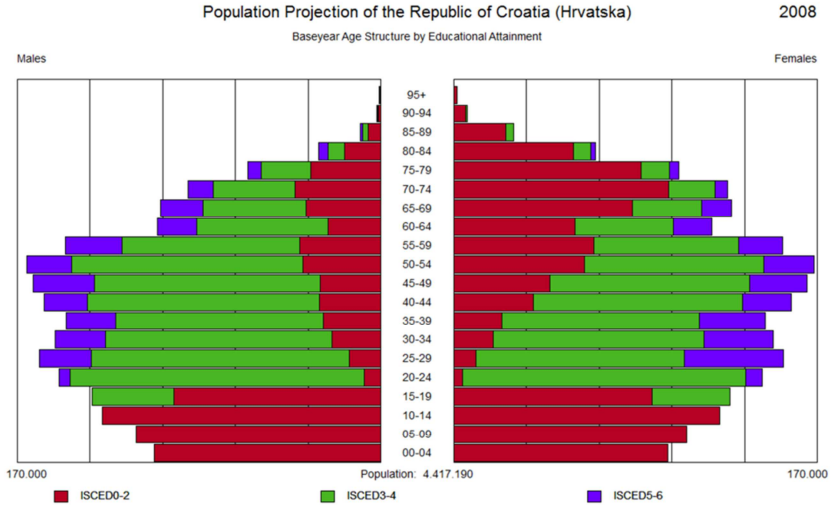


Figure 67 - Age Structure by educational attainment in Montenegro, 2008

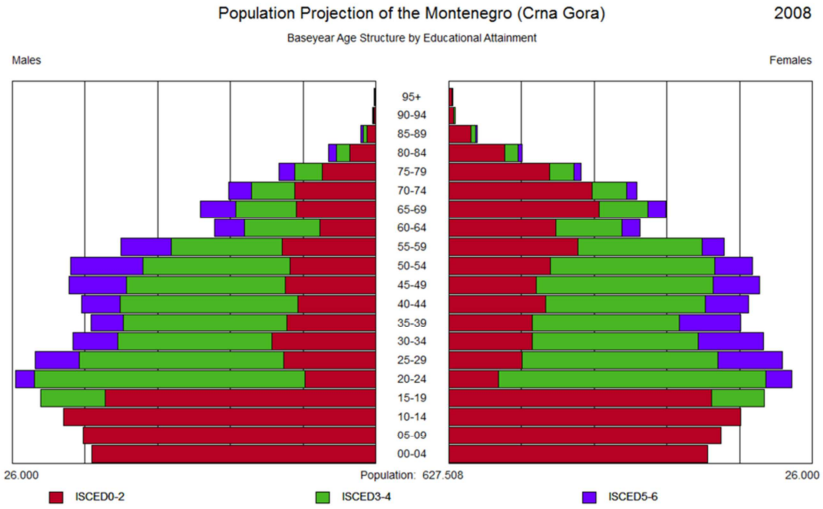


Figure 68 - Age Structure by educational attainment in Macedonia, 2008

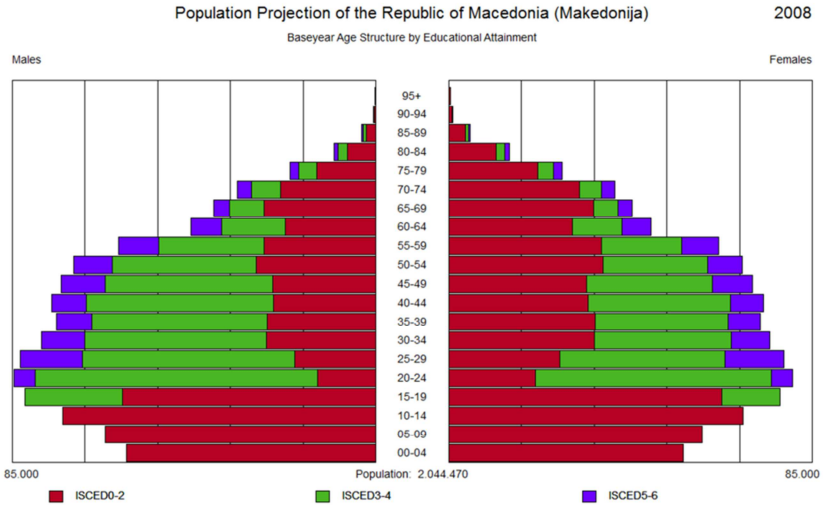
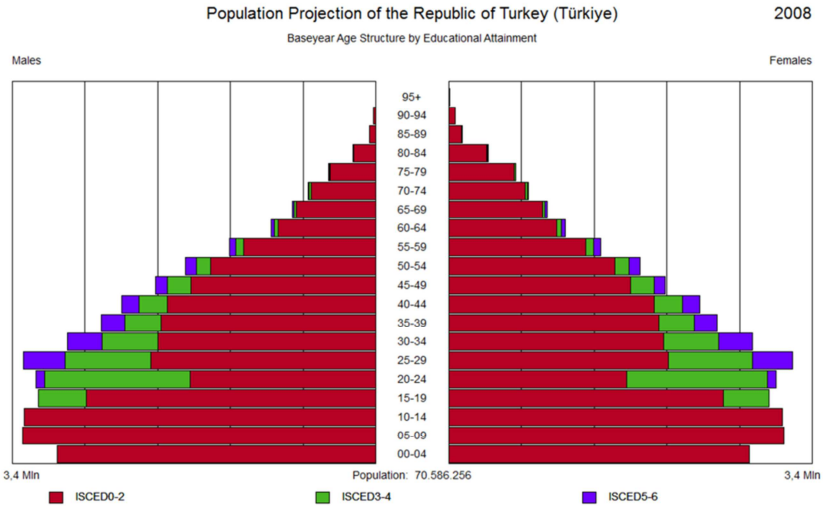


Figure 69 - Age Structure by educational attainment in Turkey, 2008



7.4.2.1 European Union 15 (EU15)

Figure 70 - Population by educational attainment in EU15, 2048 (Constant Scenario – with Migration)

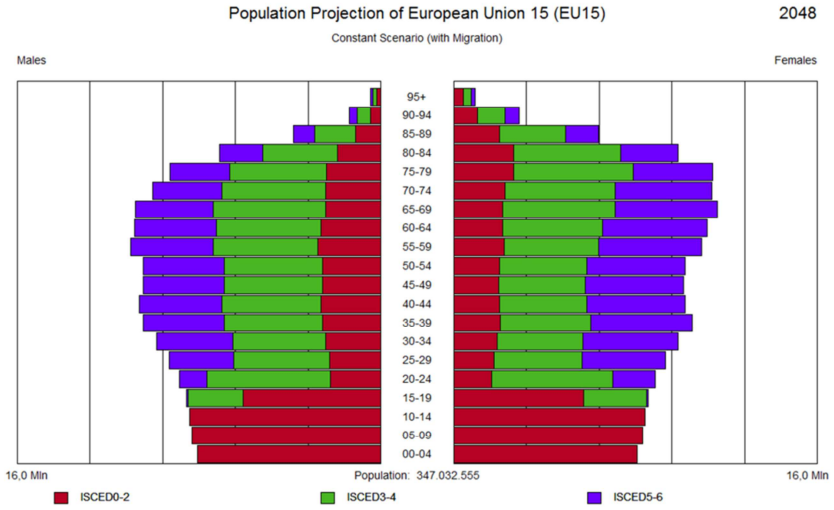


Figure 71 - Population by educational attainment in EU15, 2048 (EU2020 Scenario – with Migration)

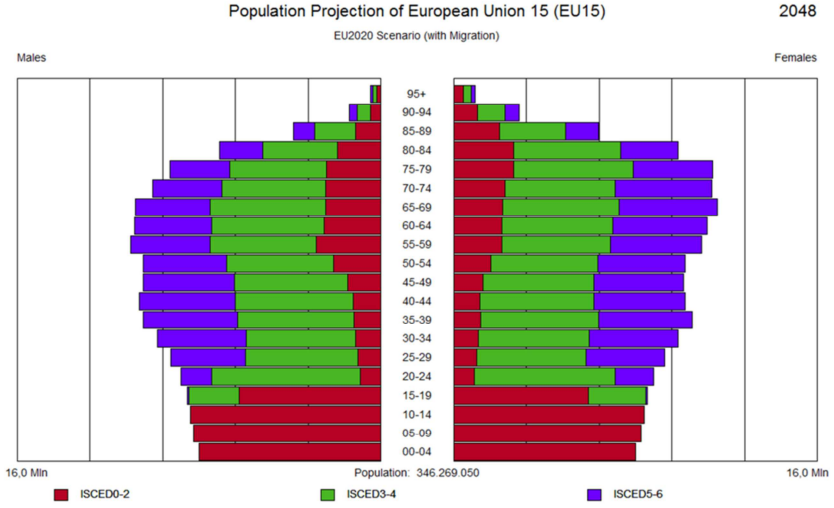


Figure 72 - Population by educational attainment in EU15, 2048 (Target-Trend EU2020 Scenario – with Migration)

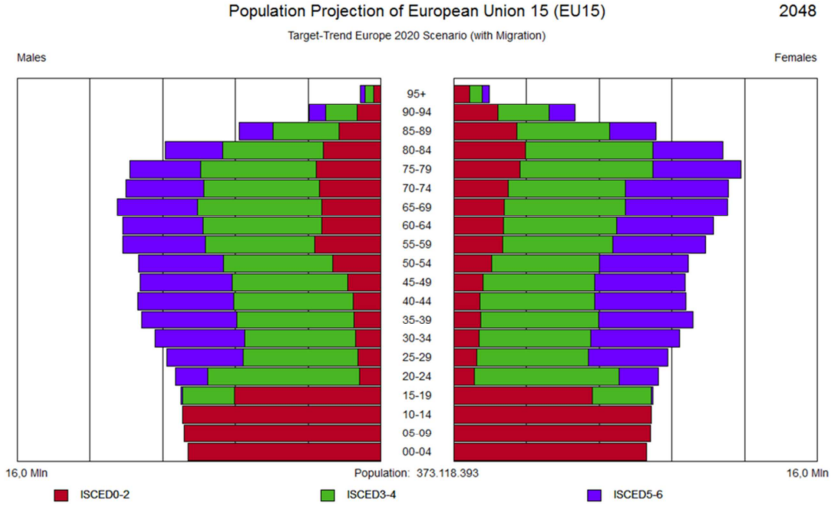


Figure 73 - Population by educational attainment in EU15, 2048 (Constant Scenario – without Migration)

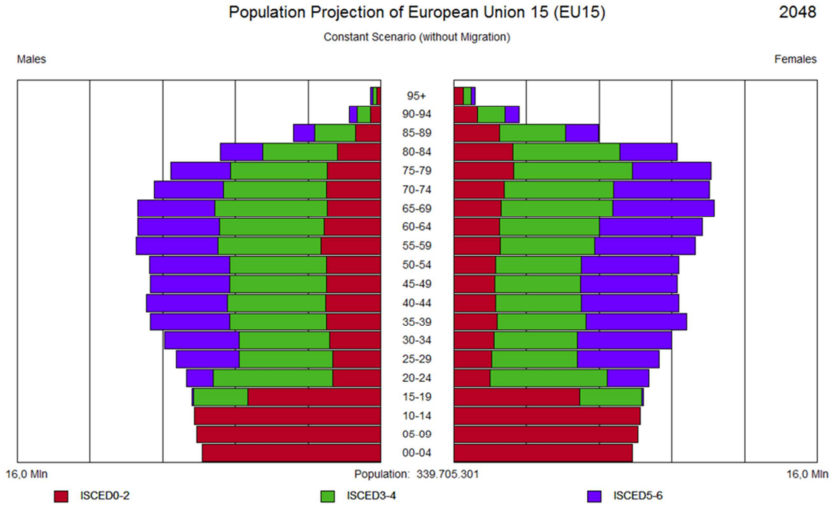


Figure 74 - Population by educational attainment in EU15, 2048 (EU2020 Scenario – without Migration)

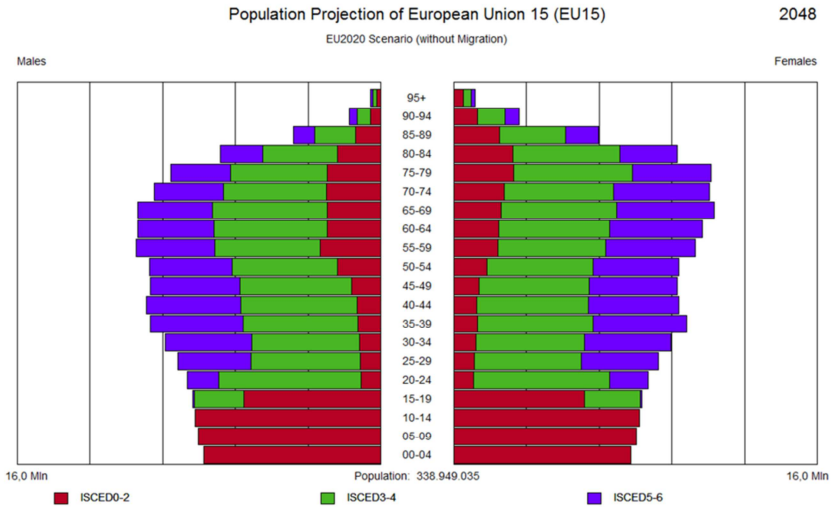
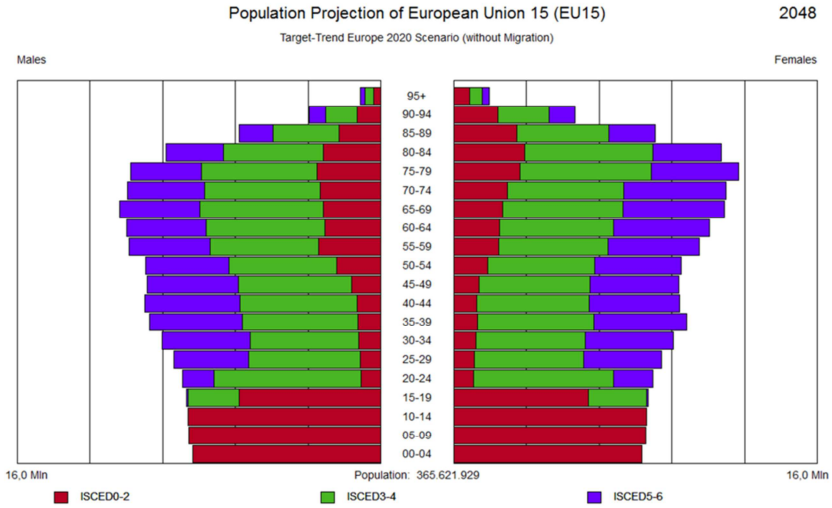


Figure 75 - Population by educational attainment in EU15, 2048 (Target-Trend EU2020 Scenario – without Migration)



7.4.2.2 European Union 12 (EU12)

Figure 76 - Population by educational attainment in EU12, 2048 (Constant Scenario – with Migration)

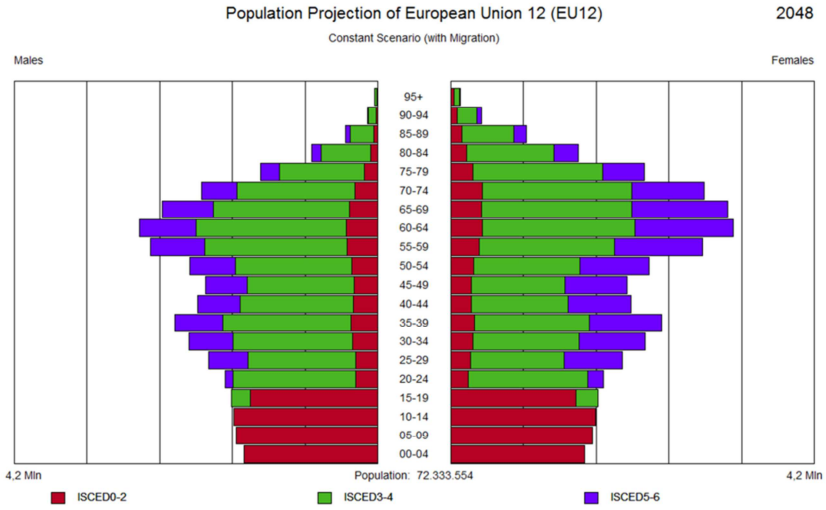


Figure 77 - Population by educational attainment in EU12, 2048 (EU2020 Scenario – with Migration)

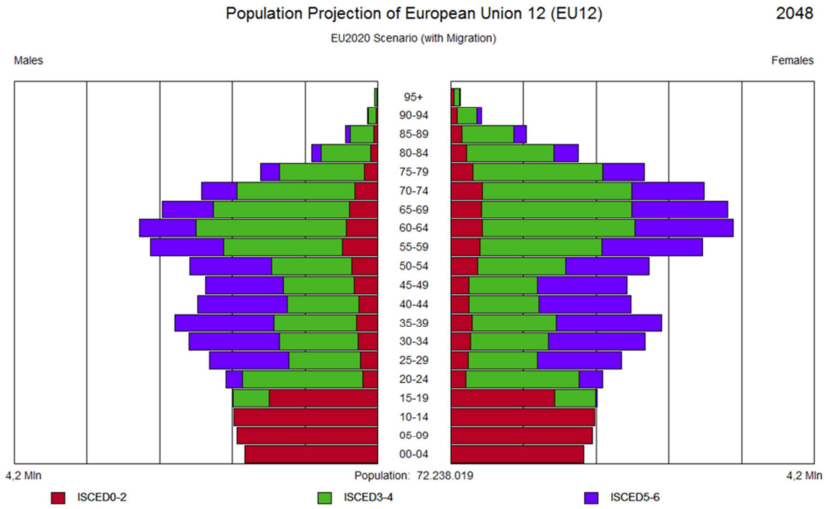


Figure 78 - Population by educational attainment in EU12, 2048 (Target-Trend EU2020 Scenario – with Migration)

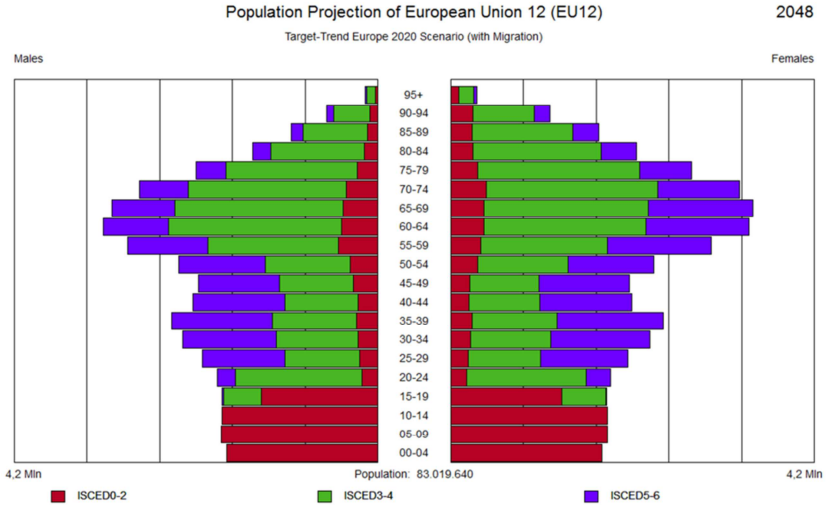


Figure 79 - Population by educational attainment in EU12, 2048 (Constant Scenario – without Migration)

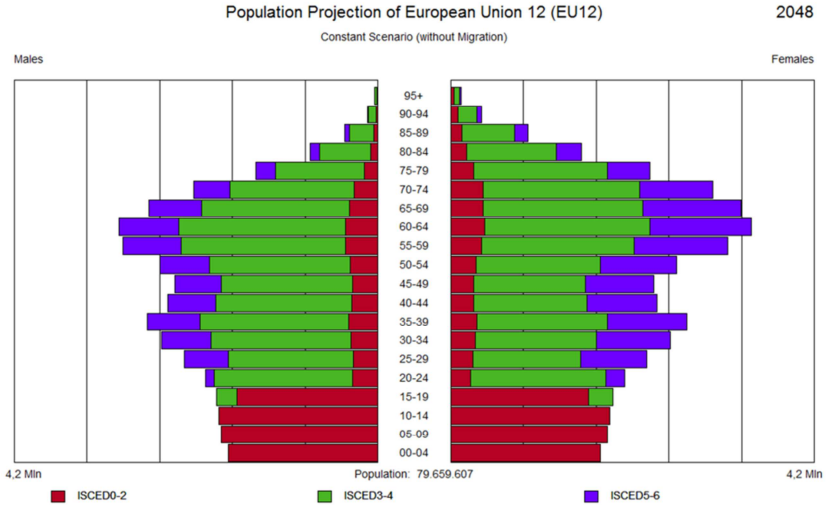


Figure 80 - Population by educational attainment in EU12, 2048 (EU2020 Scenario – without Migration)

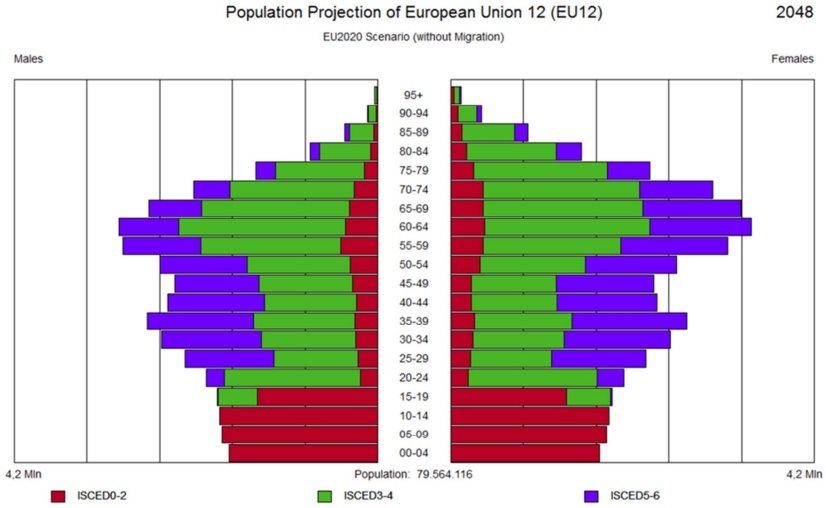
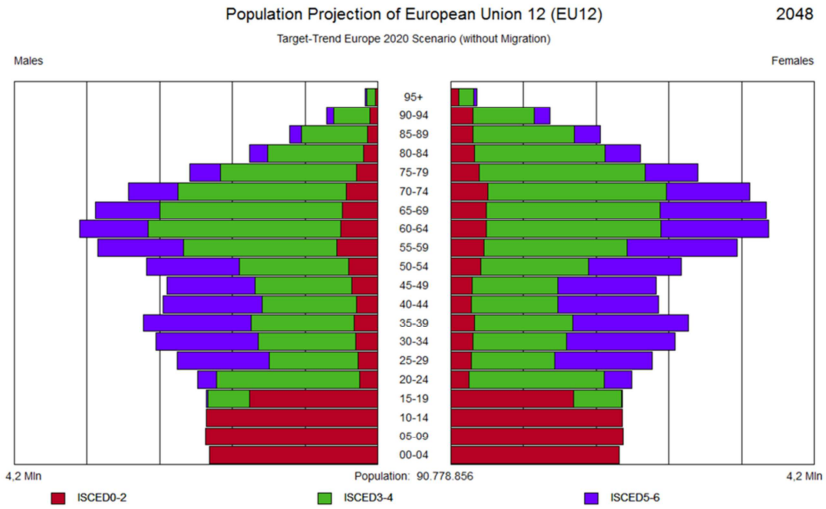


Figure 81 - Population by educational attainment in EU12, 2048 (Target-Trend EU2020 Scenario – without Migration)



7.4.2.3 Croatia (HR)

Figure 82 - Population by educational attainment in Croatia, 2048 (Constant Scenario – with Migration)

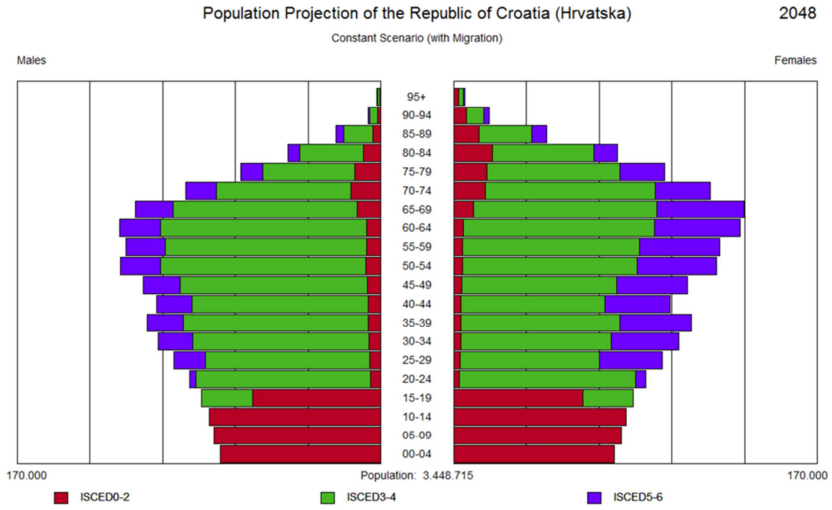


Figure 83 - Population by educational attainment in Croatia, 2048 (EU2020 Scenario – with Migration)

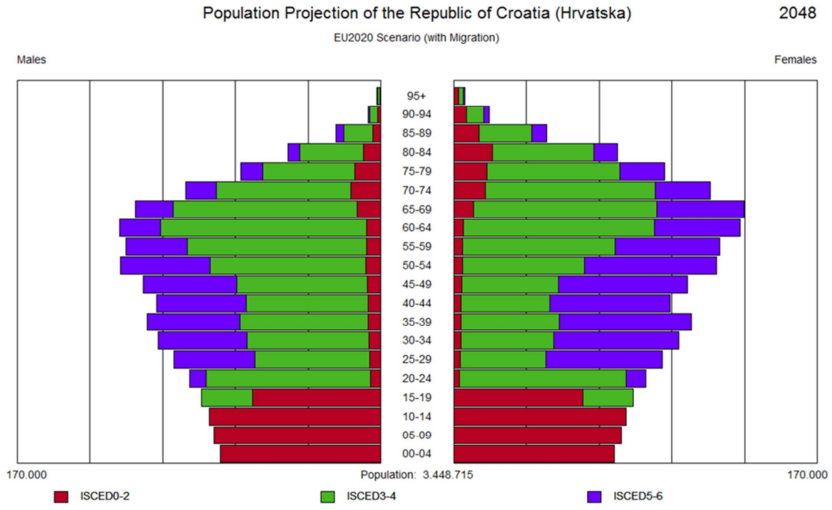


Figure 84 - Population by educational attainment in Croatia, 2048 (Target-Trend EU2020 Scenario – with Migration)

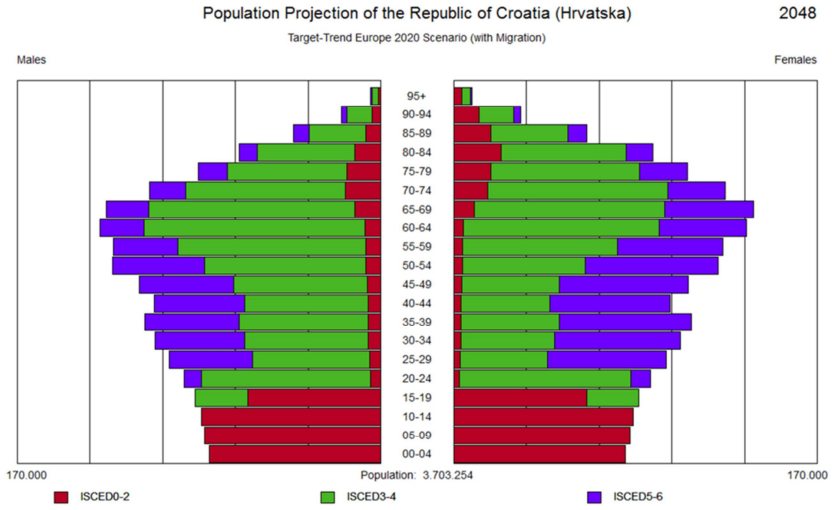


Figure 85 - Population by educational attainment in Croatia, 2048 (Constant Scenario – without Migration)

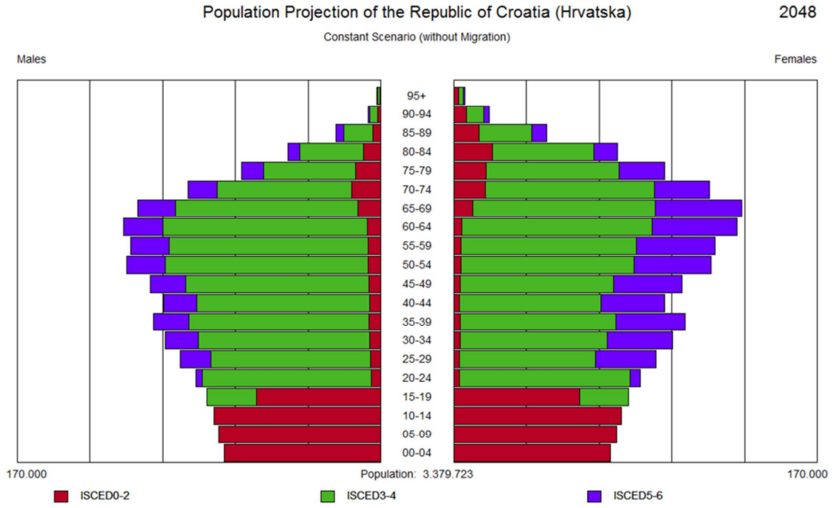


Figure 86 - Population by educational attainment in Croatia, 2048 (EU2020 Scenario – without Migration)

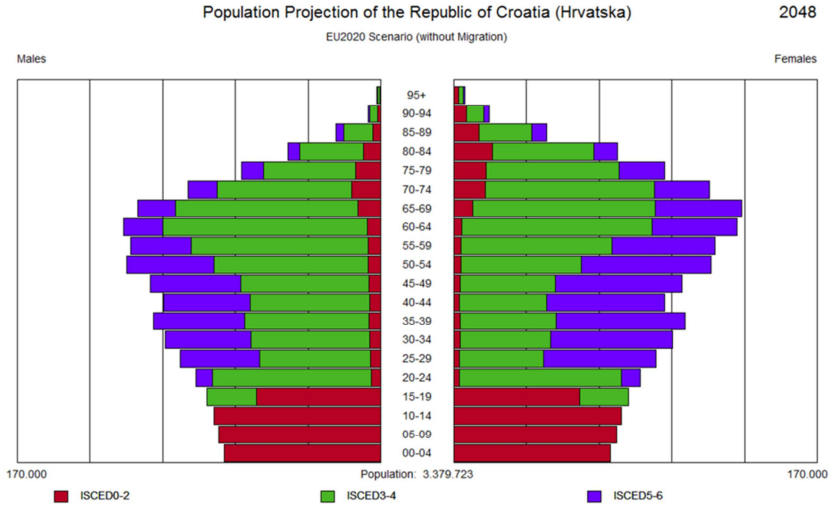
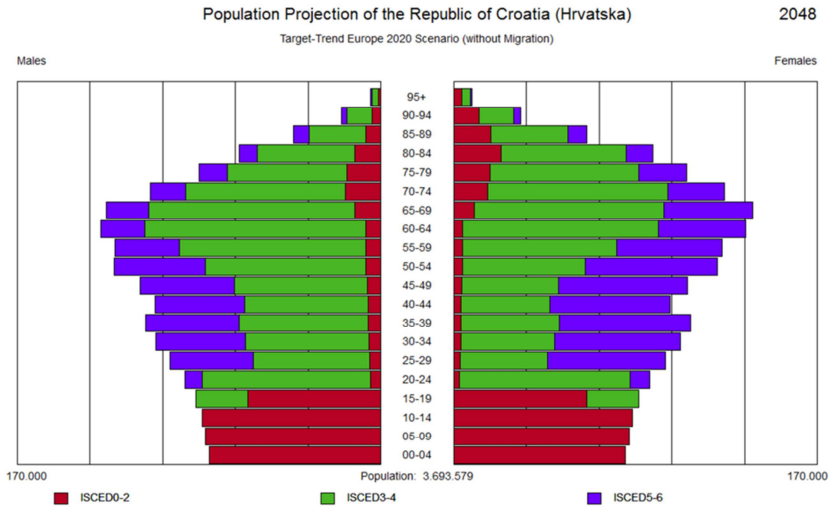


Figure 87 - Population by educational attainment in Croatia, 2048 (Target-Trend EU2020 Scenario – without Migration)



7.4.2.4 *Montenegro (ME)*

Figure 88 - Population by educational attainment in ME, 2048 (Constant Scenario – with Migration)

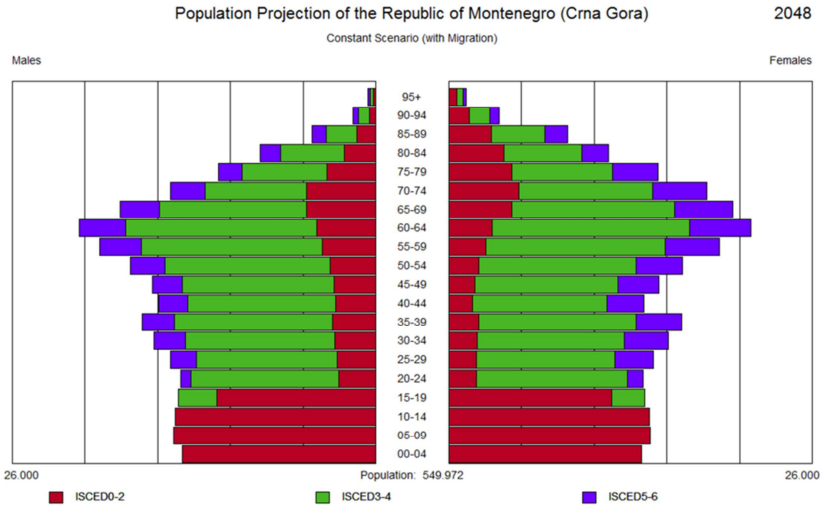


Figure 89 - Population by educational attainment in ME, 2048 (EU2020 Scenario – with Migration)

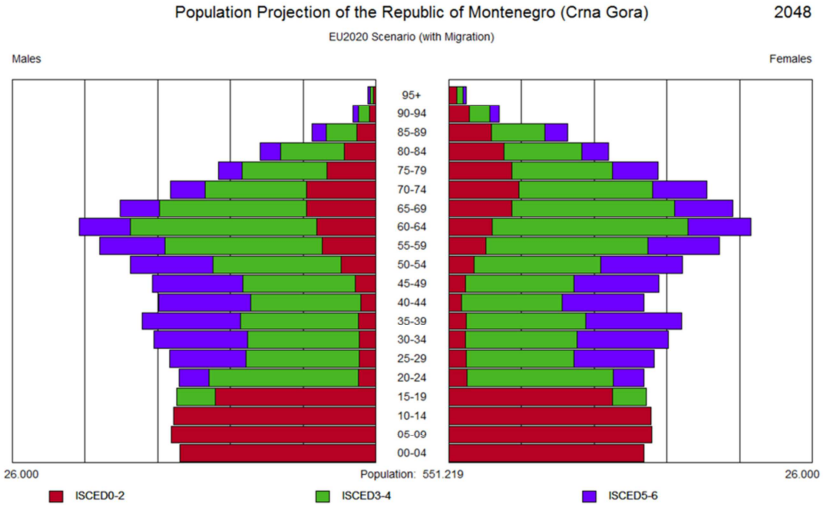


Figure 90 - Population by educational attainment in ME, 2048 (Target-Trend EU2020 Scenario – with Migration)

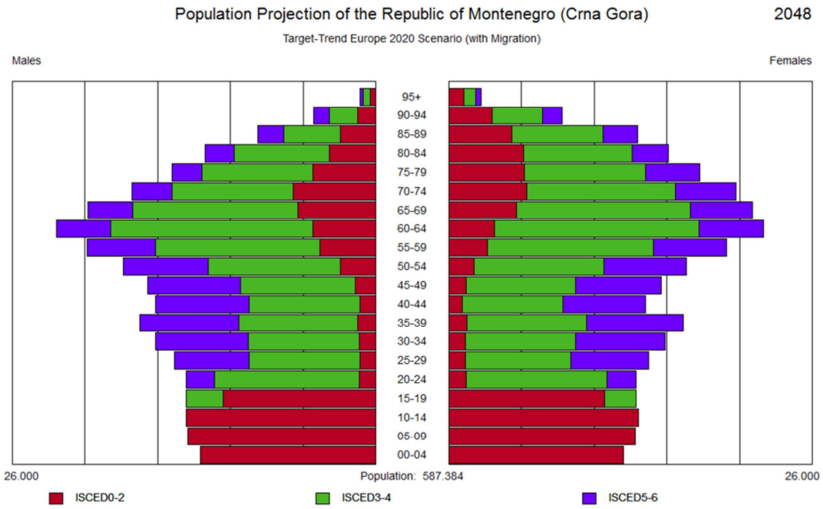


Figure 91 - Population by educational attainment in ME, 2048 (Constant Scenario – without Migration)

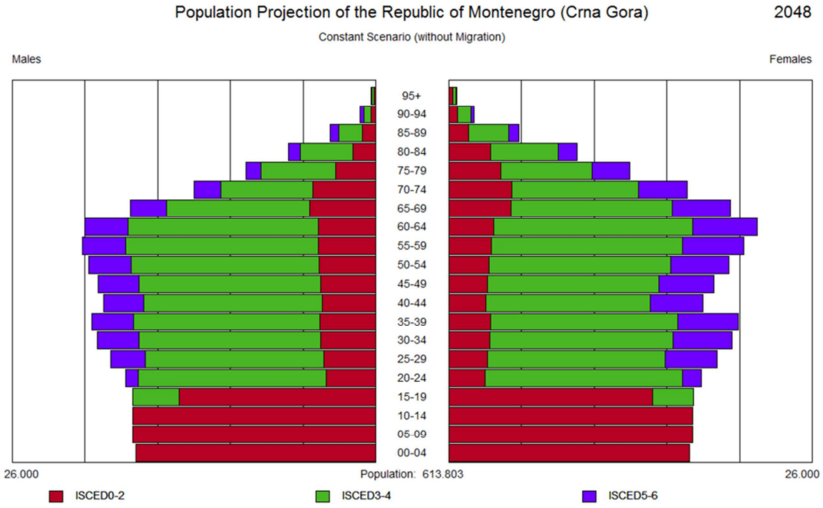


Figure 92 - Population by educational attainment in ME, 2048 (EU2020 Scenario – without Migration)

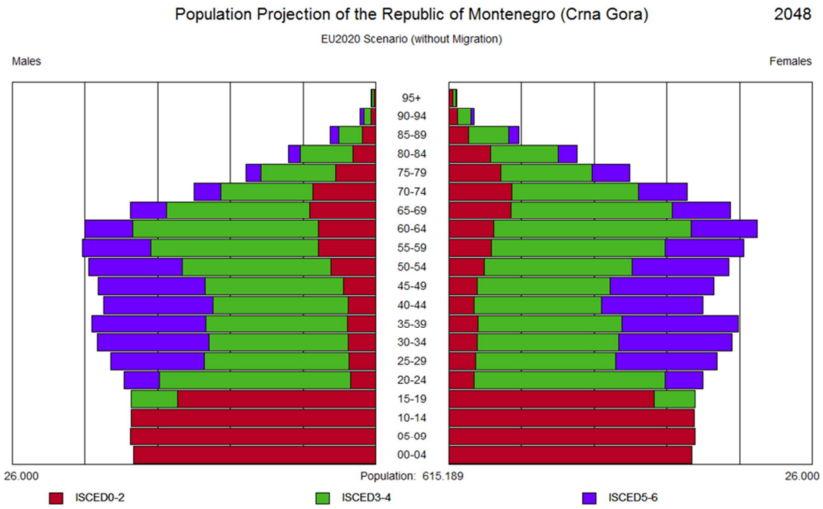
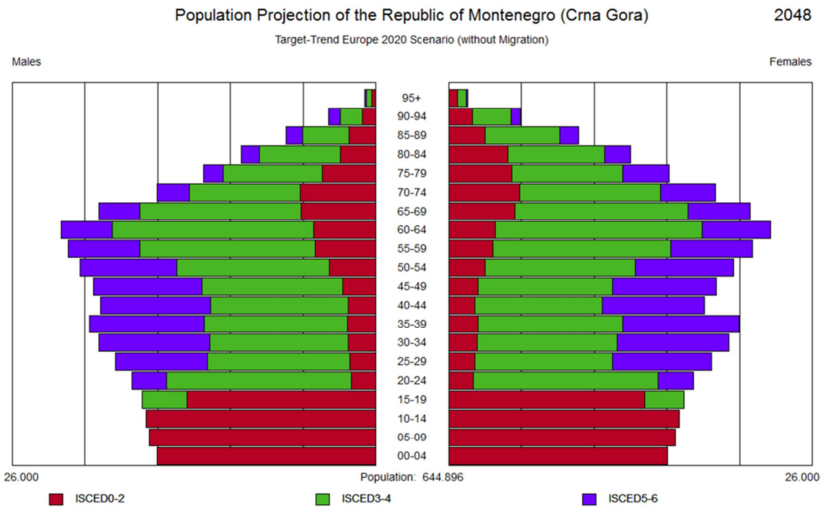


Figure 93 - Population by educational attainment in ME, 2048 (Target-Trend EU2020 Scenario – without Migration)



7.4.2.5 *Macedonia (MK)*

Figure 94 - Population by educational attainment in MK, 2048 (Target-Trend EU2020 Scenario – without Migration)

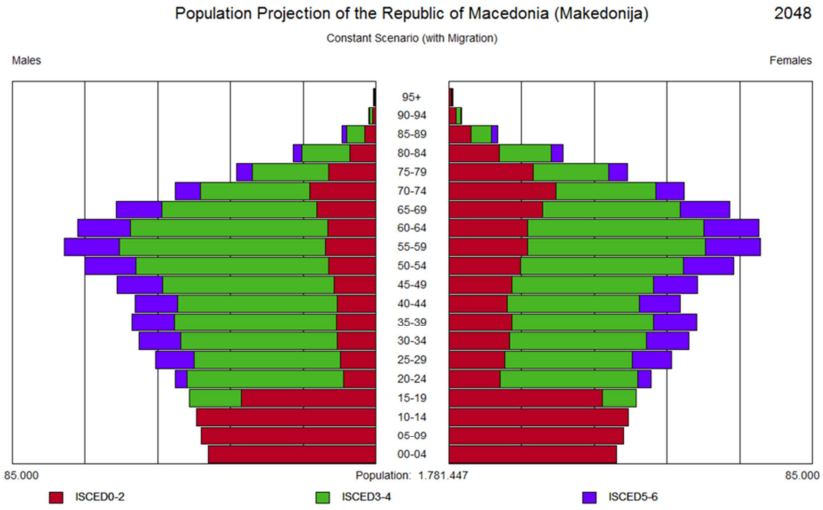


Figure 95 - Population by educational attainment in ME, 2048 (Target-Trend EU2020 Scenario – without Migration)

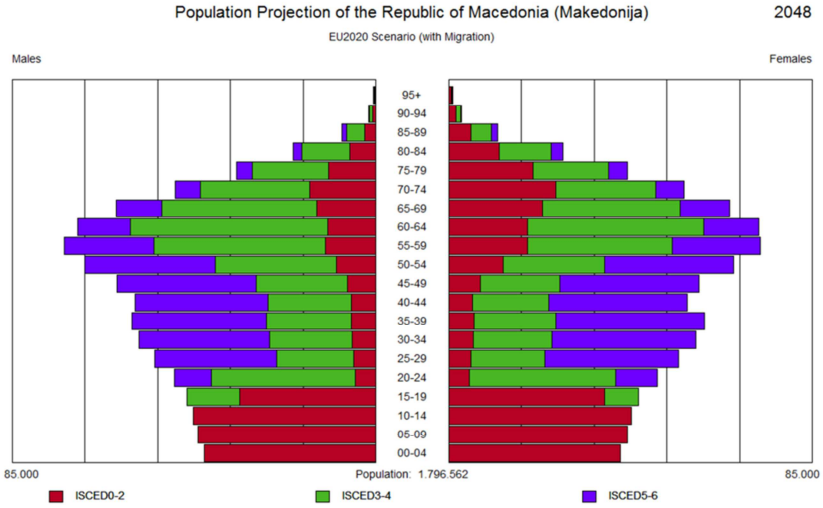


Figure 96 - Population by educational attainment in ME, 2048 (Target-Trend EU2020 Scenario – without Migration)

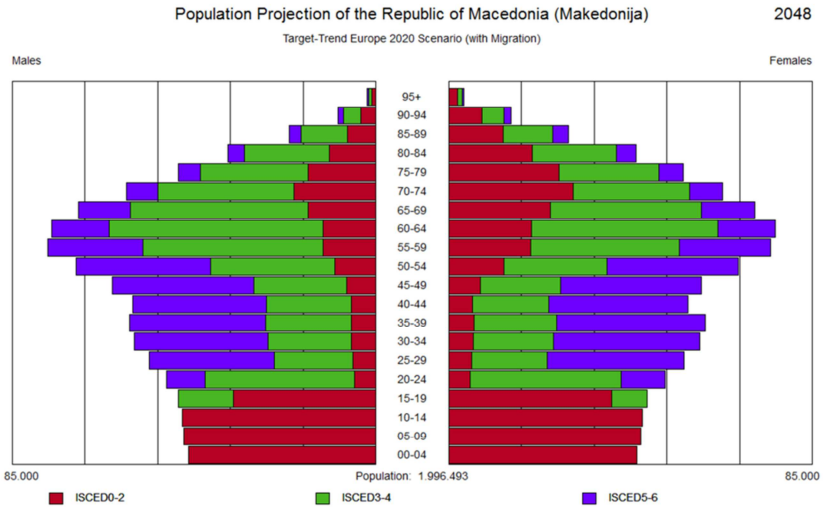


Figure 97 - Population by educational attainment in MK, 2048 (Constant Scenario – without Migration)

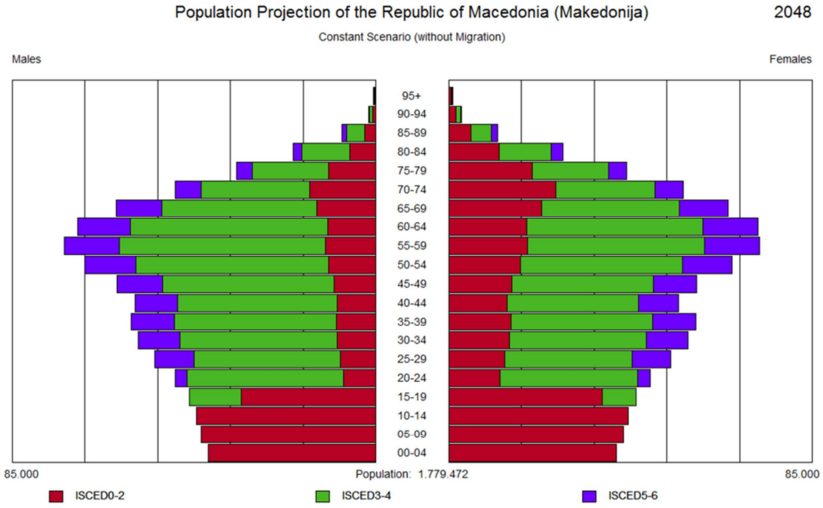


Figure 98 - Population by educational attainment in MK, 2048 (EU2020 Scenario – without Migration)

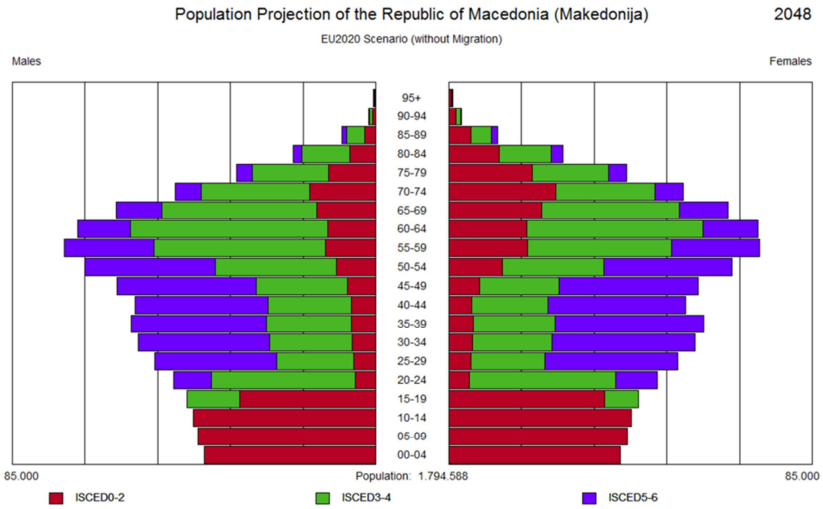
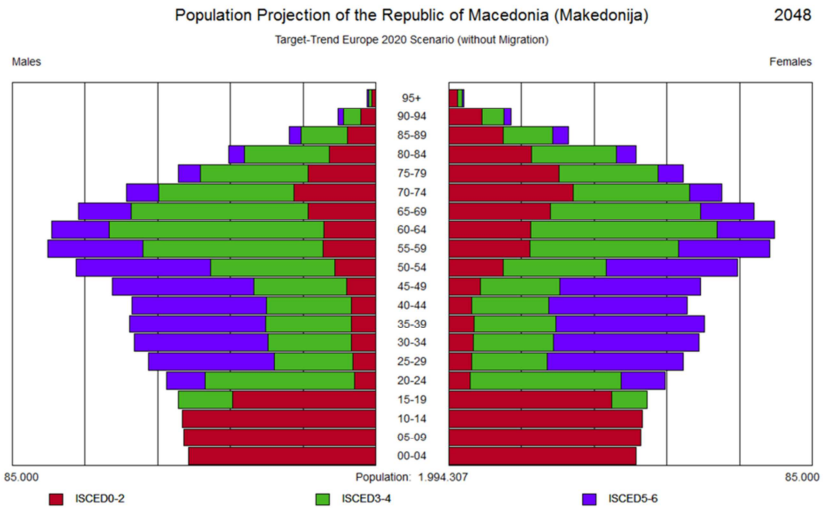


Figure 99 - Population by educational attainment in MK, 2048 (Target-Trend EU2020 Scenario – without Migration)



7.4.2.6 Turkey (TR)

Figure 100 - Population by educational attainment in TR, 2048 (Constant Scenario – with Migration)

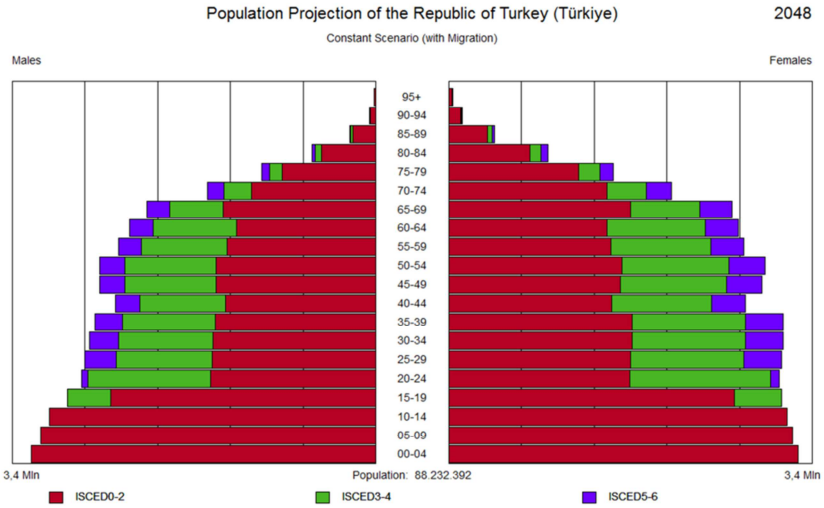


Figure 101 - Population by educational attainment in TR, 2048 (EU2020 Scenario – with Migration)

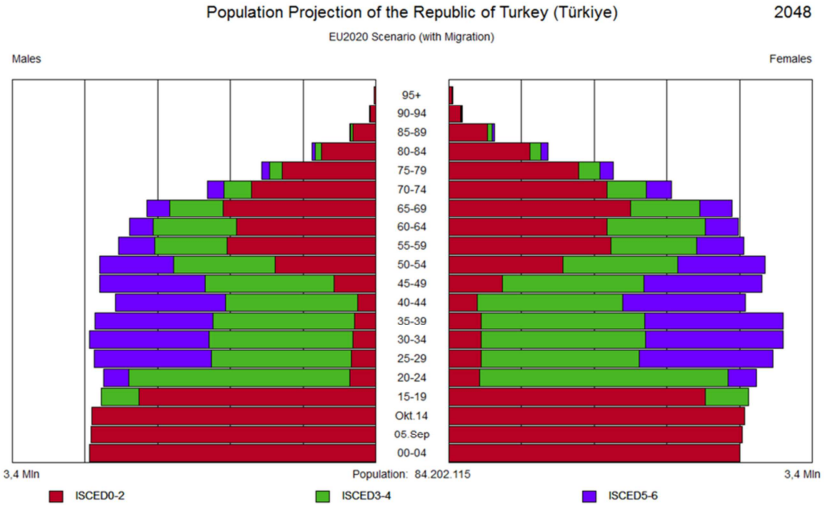


Figure 102 - Population by educational attainment in TR, 2048 (Target-Trend EU2020 Scenario – with Migration)

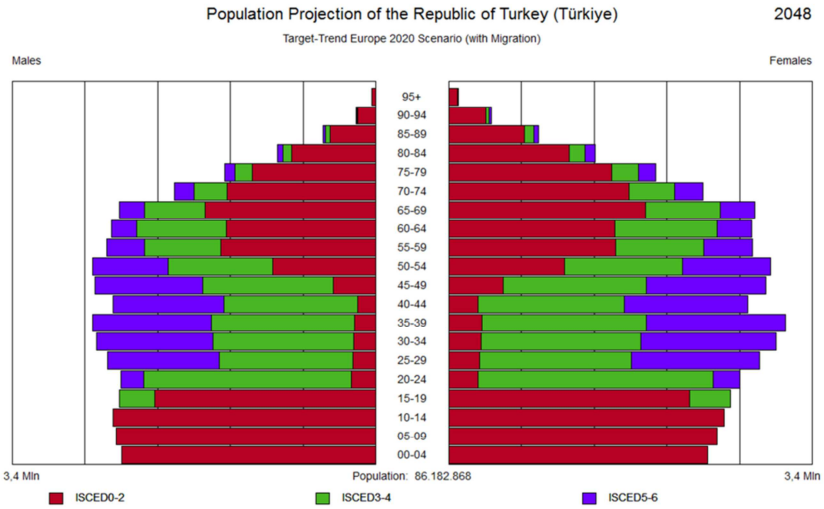


Figure 103 - Population by educational attainment in TR, 2048 (Constant Scenario – without Migration)

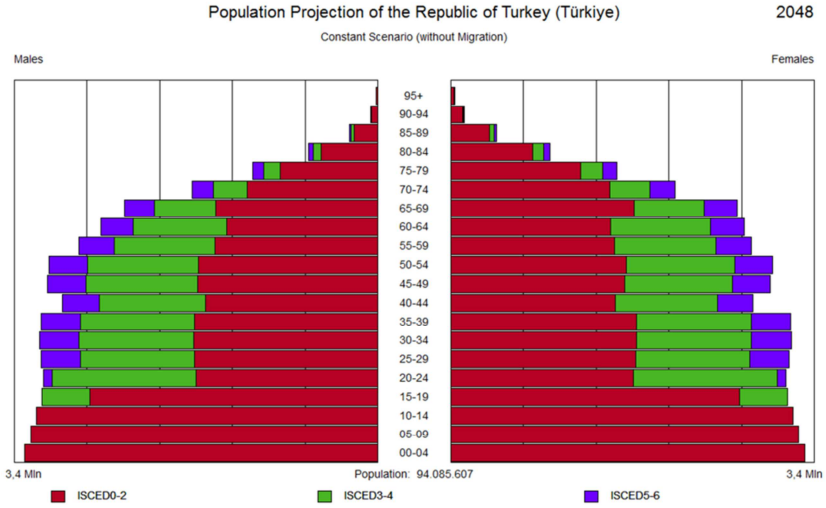


Figure 104 - Population by educational attainment in TR, 2048 (EU2020 Scenario – without Migration)

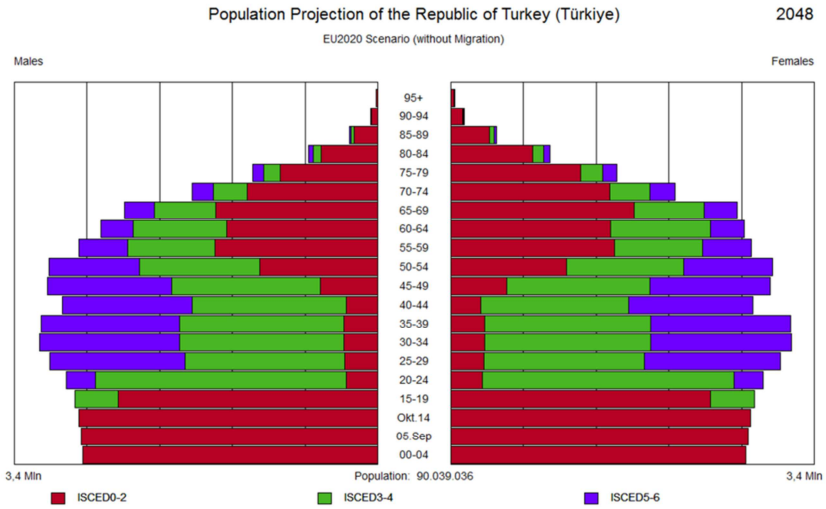
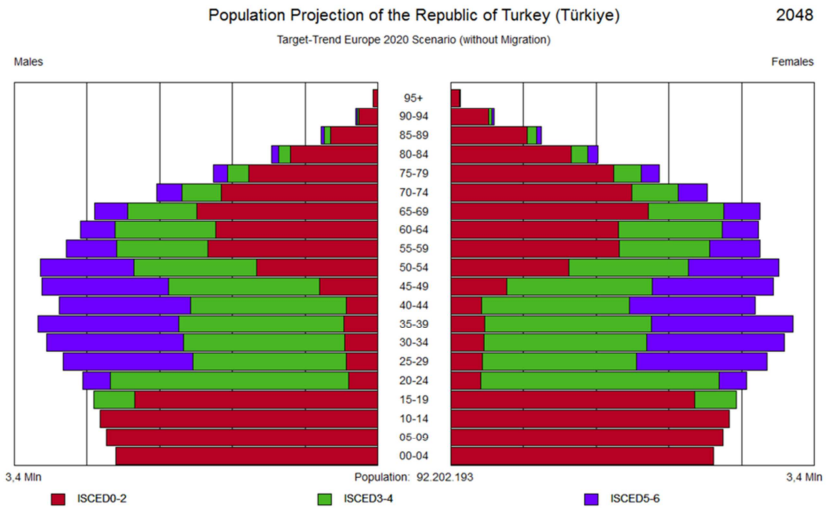


Figure 105 - Population by educational attainment in TR, 2048 (Target-Trend EU2020 Scenario – without Migration)



7.4.3 Charts

Figure 106 - Share of male population aged 65-84 years & 85 years plus, 2008-2048

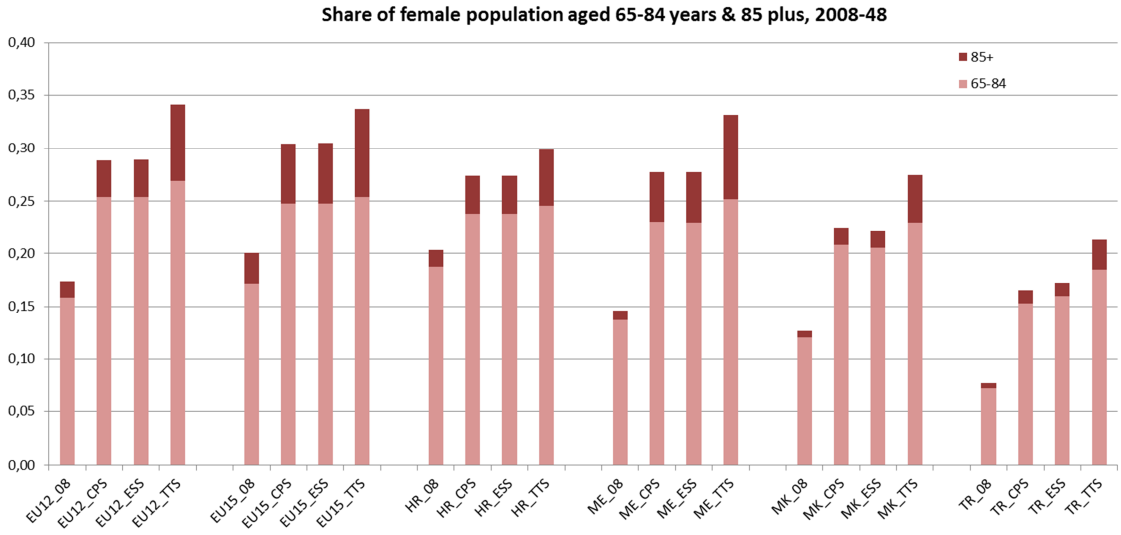


Figure 107 - Share of female population aged 65-84 years & 85 years plus, 2008-2048

7.5 Annex V – Statistical & Literature Sources

7.5.1 Data Sources and References

CSB - *Central Statistical Bureau of Latvia* - http://www.csb.gov.lv/en

Contact: Sanda Roze (Sanda.Roze@csb.gov.lv)

Destatis – *Deutsches Statistisches Bundesamt* - https://www.destatis.de/DE/Startseite.html

Contact: Anja Conradi-Freudenschuh (demografie@destatis.de)

DZS – *Croatian Bureau of Statistics* - http://www.dzs.hr/default_e.htm

Contact: Ivanka Puric (PuricI@dzs.hr)

Eurostat – *European Statistical System* - http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes

Gro-Scotland – *General Register Office for Scotland* - http://www.gro-scotland.gov.uk/

Contact: Marie Climson (Marie.Climson@gro-scotland.gsi.gov.uk)

MkStat – *State Statistical Office Republic of Macedonia* - http://www.stat.gov.mk/Default_en.aspx

Contact: Biljana Stefanovska (biljana.stefanova@stat.gov.mk); Tatjana Mitevska (tatjana.mitevska@stat.gov.mk)

MonStat - *Statistical Office of Montenegro* - http://www.monstat.org/eng/index.php

Contact: Snezana Remikovic (snezana.remikovic@monstat.org); Milica Pavlovic (milica.pavlovic@monstat.org)

StatBel – *Statistics Belgium* - http://statbel.fgov.be/en/statistics/figures/

Contact: Michel Willems (Michel.Willems@economie.fgov.be)

TurkStat – *Turkish Statistical Institute* - http://www.turkstat.gov.tr/

Contact: Ülkü Ünsal (ULKU.UNSAL@tuik.gov.tr)

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Thesis Declaration / Diplomarbeitserklärung

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Wiener Neustadt, at ……..

Markus Speringer

Curriculum Vitae

Personal Data

Name		**SPERINGER, Markus Alexander**
Born	1985-03-03	in Wiener Neustadt
Address		A-2700 Wiener Neustadt Hammerbachgasse 22
Telephone number		0043 676 / 320 22 76
Email		speringer.markus@gmail.com markus.speringer@univie.ac.at
Family status		single
nationality		Austria

Education

Schooling	1991 1994	Primary School in Wiener Neustadt (Elementary School Baumkirchnerring West)
	1995 1997	Lower Secondary School - Bundesrealgymnasium Wiener Neustadt - Allgemeinbildende Höhere Schule (AHS)
	1998 2003	Upper Secondary School - Bundesrealgymnasium Wiener Neustadt – with specialisation on natural sciences Graduation: Matriculation Certifacte
Study	2003 2012	University of Vienna Department of Geography and Regional Research Branch of Study:
	2006 2012	A453 – Theoretical and Applied Geography (with focus on Demography and Regional Research)
	2009 2012	A454 – Spatial Research and Spatial Planning

Language Skills	English, in speech and writing French basics (Level A1 and A2)
Further skills	Microsoft Office, SPSS, PDE – Population Projection Software, Adobe Illustrator & Professional, Project Management, Typo3 Content Management System, i3v Administration Software, Filemaker, ArcGIS, GeoDa, Quantum GIS, Crimestat, R, etc.

Professional Experience	2008 2012	Scientific assistant of the curriculum director of the faculty of geography (SPL29), Department of Geography and Regional Research, University of Vienna
	2008	Internship at the Vienna Institute of Demography (VID), Austrian Acadamy of Science (ÖAW), under the direction of Anne GOUJON
	2008 2009	Project employee at the Vienna Institute of Demography (VID), Austrian Acadamy of Science (ÖAW), under the direction of Anne GOUJON and Wolfgang LUTZ
	2010	Project employee at the Statistik Austria in the field of evaluation and analysis of Labour Force and Labour Market statistics of Austria and its regions, under the direction of Josef Kytir
Publications	2009	- Lutz, W. & A. Goujon, D. Ediev, M. Speringer (2009), From Vienna to Marrakesh – 50 Years of Independent IUSSP Conferences, 1959-2009. – Wien.
	2010	- Speringer, M. (2010), Future Demographics of Alpine Space. – Wien (In: EGEA Wien (2010), Living in the Alps – Congress Report. – Wien, S.28-29). - Gruber, E. & M. Speringer (2010), Education Matters – Projecting Demographic Behaviour by Educational Attainment. – Wien, Utrecht (In: The European Geographer, Nr.6 in Sep.2010, S.08-13).
	2011	- Deibl, C. & M. Speringer (2011), “Shifting Needs” - Change of Services of General Interest (SGI) following the socio-demographic transition in the EU. – Wien, München (In: EGEA Bayern (2011), Networks of Supply - Congress Report. – München, Erlangen. -> in print).