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Action 1.1.4:

*THE SPATIAL EFFECTS OF DEMOGRAPHIC TRENDS AND
MIGRATION*

1st interim report

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1. Introduction

The point of departure for this interim report is the instructions in the addendum for the contract for ESPON project 1.1.4 “The spatial effects of demographic trends and migration” and the recommendations from the evaluation of the tender. The instructions and recommendations have been followed as far as possible with the consequence being that many of the issues to be handled in future reports are only slightly hinted at here.

2. Brief overview of Work Packages

Below follows a short description of the content in the different Work Packages that shall be carried out and analysed in the study “The spatial effects of demographic trends and migration”. These WPs will be carried out in close contact with other ESPON project and especially then with 1.1.1, 1.1.2, 1.1.3 and 3.1.

WP1 Data, indicators, concepts

1. Specification and agreement of relevant definitions and indicators (common demographic data, explanatory variables)
2. Agreement on methods, sources and timing of data collection
3. Develop/employ map-making procedures
4. European wide typologies of regions and cities according to demographic development

WP2 Natural population development, ageing

1. Demographic processes behind ageing and regional demographic polarisation (esp. components explaining natural population development)
2. Fluctuations (and correlates of fluctuations) in birth/fertility rates
3. Impacts of point 2 on spatial demographic development
4. Impacts of ageing on reproductive and economic development of regions
5. Relevance of gender and age structures
6. Relevance of demographic cycles/waves
7. Scenarios of spatial development

WP3 Migration within and between European regions

1. Determinant factors, e.g. different level policies (on migration/population movements). (Determinant factors and migration patterns vary among phases of post-war development.)
2. Internal migration and spatial development/relations
3. Age, skills, education: Accentuated polarisation?
4. Effects of EU enlargement (east-west migration)
5. Immigration from outside EU
6. Implications of growing regions for policy/planning
7. Marginalisation/ghetto formation
8. Scenarios based on changing migration patterns

WP4 Fertility, migration and depopulation

1. The concept and phenomenon of ‘depopulation’ – dimensions, dynamics, implications
2. Crude picture of the geography and principal features of ‘depopulation’ processes in EU+
3. Identify and evaluate different demographic determinants and dynamics of ‘depopulation’, and their implications
4. Typological approach to analysis of variation in determinants, context/vulnerability, effects/implications, possible policy responses
5. Scenarios based on a few selected type-areas

WP5 Ageing, labour shortage, replacement migration

1. Ageing trends in EU regional populations (cf. WP2, WP3, WP4)
2. Needs and actual/potential imbalances in the labour market
3. Geography of/regional disparities in development of labour market needs and ageing
4. Migration of skilled persons from east to west
5. Regional effects of “replacement” (peripheral regions, modifying ageing process)
6. Scenarios/policy issues

WP6 Policy implications and policy recommendations

Point of departure: the ESDP document will be in focus when the policy implications and policy recommendations will be written. This is valid not only for WP6 – the policy orientations of ESDP will have high priority even in the other WPs.

3. Theories and models

The addendum recommended a review and assessment of recent theories and models that explained and could be helpful in projecting interregional migration trends and patterns. This is addressed here in the 1st interim report.

The project “Spatial Effects of Demographic Trends and Migration“ is based on the principal equation in demography linking birth, death and migration.¹ When demographic trends are, and should be, analysed it necessarily starts by analysing birth, death and migration. WP2 and WP3 are devoted to these three events and put the developments of birth and death (natural population development) in the focus of WP2 and migration into WP3. WP4 and WP5 are focussed on problems that can be derived from demographic trends (depopulation and replacement migration).

Birth, death and migration are analysed by different theories and models. A unified and general theory of these demographic processes does not exist. Although the theoretical approaches to birth, death and migration are quite different in terms of explanatory power

¹ The population in a certain time and region is equal to the population in a time period before plus the birth and the immigrants within this period minus death and the emigrants.

and nomothetic value, all of them are important to select indicators and to argue for certain analyses.

The development of birth is the central explanandum in the model of the fertility decline and this is essential in the model of the demographic transition (see Woods 1982, Schmid 1984, Birg 1996). It argues that with the change of the economic structure from an agrarian to an industrial and postindustrial society, the value of having many children has changed fundamentally. In a pre-industrial period children were useful and welcome additions to the work force. However in the industrial and postindustrial societies children are cost factors in a twofold way: there are direct costs for schooling and maintaining children up to the time when they leave the common household and there are indirect costs when the mother (in rare cases the father) has to give up their employment to stay at home and to take care of the child. With the ongoing rationalisation process in the modern society, the changing function and societal value of children has become apparent and reduction of births the consequence. Modern contraceptives are instruments but not the cause for the reduction of the birth (see also: Van de Kaa 1987).

Following these theoretical thoughts it is essential to include several indicators in the analyses of WP2 to measure the number of births in a valid manner and to explain it in a theoretically satisfying way. It is necessary to use age-standardised indicators for the level of birth. The theoretical construct of a total fertility expressing how many children a female will bear in her life is a useful indicator. It is also necessary to measure the social environment to explain regional differences in fertility. The possibility to combine work with maternity is an important factor in lowering the indirect costs of a child. Therefore indicators dealing with childcare infrastructure, the quality of maternity leave or with the possibilities of having a part time job are valid.

The development of death is conceptualised in the model of epidemiological transition (see: Phillips 1994, Rockett 1999), which can be also seen as a part of the model of demographic transition. It explains the very characteristic decline of several diseases (like infectious diseases), the increase of other diseases (like cancer, heart diseases) and the overall decline of mortality. Better nutrition and the improvement of the public infrastructure (water, waste and sewage) were the main factors in the fight against epidemic. The progress in medicine leads to a significant expansion of the life expectancy. In particular, the decline of the infant mortality and death in the first year of a child's life, were essential to explain the increasing life expectancy.

Similar to birth, it is important to define a birth rate that eliminates the effect of the age structure. If not, age structure will be measured rather than different mortality in the regions. A crude death rate is therefore not the proper measurement, but the given life expectancy at birth or at a specific age can be used for regional disparities in mortality. To integrate mortality into an explanatory model following the theoretical ideas it is necessary to use relevant indicators like nutrition, lifestyle habits, medical infrastructure and the healthcare system. WP2 will invest some efforts to prove which variables could be useful and are available in the European statistics.

The third demographic event is migration. In analogy to birth and death, a model of a migration transition was developed (see: Zelinsky 1971). This model describes the significant change of specific migration types but it is a very heuristic model without any explanatory effort. The model of migration transition emphasises the increase or decrease of migration from rural to urban regions, from urban to urban areas, or from urban to rural areas but it avoids linking these migration flows to explanatory variables.

More explanatory power can be attributed to traditional and new approaches in migration theory such as the push-and-pull model, the microeconomics of migration or the migratory system approach including political variables.

The *neoclassical macro-economic* theory on migration focuses on labour markets and wage differentials in the country of origin and in destination countries, and the process of economic development can explain the development of labour migration (e.g. Lewis 1954, Ranis & Fei 1961, Harris & Todaro 1970, Todaro 1976). Wage differentials induce persons, especially workers, to move from low wage countries to high wage countries, resulting in a decreased wage differential between the two countries (Massey et al. 1993).

In the *neoclassical micro-economic* theory individuals are assumed to undertake cost-benefit calculations, not only about deciding whether to move or not, but also where to move. The decision on when and where to move includes variables such as wage differentials, unemployment rates, travel costs, efforts in adapting to a new country, psychological aspects of leaving friends and family etc. (Sjaastad 1962, Todaro 1969, 1976 & 1989, Burda 1993). Individual characteristics (education, experience, training, language skills etc) produce different outcomes regarding the decisions to migrate and where to migrate (Schoorl 1995).

According to the *new economics of migration*, families and households, rather than individuals induce migration (Lauby & Stark 1988). The aim of migration is not only to maximise income, but also to minimise risks (Stark 1984 & 1991, Katz & Stark 1986, Taylor 1986). In the absence of collective and social insurances, as well as inefficient markets, a diversification of household resources through migration will create a diversification of risks. The family members abroad will bring in remittances to the family or household. Economic development will not necessarily reduce the pressure on international migration, since a second distinguished characteristic of migration, according to the new economics of migration theory, is relative deprivation. The need of risk diversification and minimisation is dependent on the perceived functioning of markets and the perceived relative deprivation (Stark & Levhari 1982, Stark & Taylor 1989, 1991, Stark & Yitzhaki 1988, Stark, Taylor & Yitzhaki 1986).

The *dual labour market theory* stresses the intrinsic demand of labour in modern industrial societies that creates a constant need for workers at the bottom of the social hierarchy (e.g. Piore 1979). The labour market is divided in two sectors, one with formal and secure high-skilled jobs, and a second with informal low-status, insecure and low-skilled jobs as well as wages, work conditions etc (Doeringer & Piore 1971). When natives leave the bottom of social hierarchy, and thereby leave the low paid, low status jobs without

social mobility perspectives, somebody must fill the vacancies. Only immigrants are willing to accept these jobs since they want to improve their social status in their country of origin rather than at destination (Piore 1979). The need of labour at the bottom of the social hierarchy induces migration, international as well as national and regional (Massey et al. 1993).

So far only voluntary migration, in the form of an economically motivated movement of workers, has been discussed. The politically induced *movement of refugees* is usually seen as an involuntarily migration. In most cases the classification of economic and political migrants is an oversimplification, since political and economic causes of migration often stem from the same factors. Besides this, the freedom of choice has many gradations, which makes it difficult to fix how voluntary a voluntary movement is and how involuntary an involuntary move is (e.g. Kunz 1981, Zolberg et al. 1989). Underlying predisposing factors (e.g. extreme inequalities between countries and political instability) and structural constraints (e.g. border controls) influence reactive migration, as well as immediate precipitating events (e.g. war, ethnical conflicts, and violations of human rights) and enabling circumstances (e.g. individual resources) will influence the volume and destination of migration (Richmond 1993).

The Continuance of Migration: Main Theoretical Approaches

The factors initiating migration can be quite different from those that perpetuate migration over time and space. Schoorl (1995) points out that the direction of migration is a relatively neglected research field. Former colonial bonds, family reunions, migrant networks and former migration usually trigger continued migration (e.g. Castles & Miller 1993).

In *network theory*, migrant networks are usually defined as sets of interpersonal ties that connect migrants, former migrants and non-migrants in areas of origin and destination through kinship, friendship and shared community origin (Boyd 1989, Massey et al 1993). Network connections can be regarded as a form of social capital that people can use to gain access to foreign employment. When the number of migrants reaches a critical threshold, the expansion of networks will reduce the costs and risks of migration, which causes the likelihood of migration to rise. This will cause additional migration, which further expands the networks and so on (Hugo 1981, Taylor 1986, Massey & García España 1987, Massey 1990, Gurak & Caces 1992).

Institutional theory points out that the flows of immigrants become more institutionalised and independent of the factors that originally induced it when private institutions, entrepreneurs and voluntary organisations develop to satisfy the demand of moving to certain countries. The process of institutionalisation of migration is difficult for governments to regulate since a part of the immigration is illegal (Massey et al. 1993).

Once started, the migration process alters circumstances both at origin and destination, which often increases the probability of future migration. This phenomenon is termed *cumulative causation* (Massey 1990b). There are six major socio-economic factors poten-

tially affected by migration in a cumulative fashion: the distribution of income, the distribution of land, the organisation of agriculture, culture, the regional distribution of human capital, and the social meaning of work (Stark, Taylor & Yitzhaki 1986, Taylor 1992).

Network theory, institutional theory and the theory of cumulative causation suggest that migration flows need stability and a structure over space and time to enable an identification of international migration systems. According to the *migration systems theory*, these systems are characterised by a relatively intense exchange of goods, capital and people between some countries and less intense exchanges between others. The migration systems are characterised by a core receiving region (one country or a group of countries) and a set of countries linked to it by unusually large flows of immigrants (Fawcett 1989, Zlotnik 1992). Multi-polar systems are possible and when economic and political conditions change, systems will evolve. Countries will drop out or join a migration system as a response to social, economic or political change (Massey et al. 1993).

The Economic Benefits of Migration

There is no general consensus regarding the economic benefits of migration. Different theories, based on different assumptions, reach different conclusions on the impact of international migration on economic growth, unemployment, labour force participation, wages, taxes, and transfers. Here is a short overview.

According to *neoclassical macroeconomics* immigration will promote economic growth (Simon 1989, Friedberg & Hunt 1995. See also Borjas 1995). Immigrants will constitute substitutive labour. Given that the number of jobs is constant, the wages will be lowered and the native workforce will have difficulties competing with cheap immigrant labour (Fassmann & Münz 1995). If the number of jobs is constant, adding more workers on the labour market will lead to competition of jobs. The equilibrium on the market will be changed, resulting in lower wages (Fassmann & Münz 1995. See also Zimmermann 1995 and OECD 2002). Low-income earners are the ones who will be hit most severely (Johnson 1980). The profits for the capital owners in the country of destination will gain from immigration (Layard et al. 1994) as well as the well educated (Johnson 1980). If the immigrant is young, well educated, has no dependents and gets a job immediately on arrival, the country of destination will gain from immigration: the tax contributions of this immigrant will exceed the transfers from the public (Layard et al. 1994). This kind of immigration ought to be encouraged. If the transfers to immigrants exceed their tax contributions, filters are needed in the immigration policy to only accept the most profitable immigrants be allowed to immigrate (Borjas 1995).

According to neoclassical macroeconomics a completely different scenario of the economic benefits of immigration is also possible: immigration can slow down a structural change in the economy. Economically stagnating sectors can survive by employing cheaper immigrants, preserving and maintaining the existing economic structure (Maillat (1974). An access to immigrant labour may also lead to labour intensive investment, keeping productivity down (Wadensjö 1981) and Elliott 1991).

According to the *dual labour market theory* we are accustomed to thinking of industrialisation and economic growth as a process that in some basic way involves increasingly sophisticated technologies and progressively more highly educated and well-trained labour force. At the same time unskilled and cheap labour is needed to do hard work under poor working conditions and low salaries, a kind of work the native labour does not want to do. According to this theory, immigrant labour constitutes a complementary work force. If labour at the lower segment of the labour market is missing, economic growth will slow down. Substituting labour with capital is one solution, but since it is not possible to substitute labour with capital in labour intensive sectors, hiring immigrants is another solution. Immigrant labour can keep up the economic growth on a short-term basis; on a long-term basis changes in society are needed. Since the immigrants work in the low-paid sectors their tax contributions will be lower than the tax contributions of the natives. A physically hard and monotonous job will affect health, resulting in a need for public transfers. Since the immigrants usually end up in hard and monotonous jobs, their need for public transfers will be bigger than for the natives (Piore 1979. See also School 1995).

According to the *new economics of migration* a continued immigration will lead to a lower economic growth, contingent on that the amount of low productive work increases and that the immigrants send home remittances to the family (Stark & Yitzhaki 1982). Immigrants will take jobs in sectors with many immigrants, which usually means sectors in which the natives do not want to work (Stark 1991). If the salary in the country of destination is much higher than in the country of origin, *low-quality migrants* are the ones who are most willing to migrate (Stark & Katz 1989). Since these immigrants usually are low educated and low skilled workers they will “experience higher unemployment rate and have fewer hours of work per year” (Stark 1991, p. 393). The employers have asymmetric information of the productivity of the immigrant workers, and, together with the fact that immigrants in general do low qualified jobs, this is the reason why the immigrants receive lower salaries until the employers have improved the knowledge about their workers. As a result of having a low salary, or working in the informal sector, the tax contribution of the immigrants will be lower than the natives’. If the immigrants work in the informal sector they are not entitled to any public transfers. If they work in the formal sector they have low salaries, and they will receive less in public transfers than the natives (Stark 1991).

Theoretical Relevance to the Project

For the purpose of our project the push-and-pull model is useful because it argues using regional disparities concerning income and employment. The differences of wages and of job opportunities are the decisive factors in the push-and-pull model to explain the size and the direction of interregional migration. Low income, high unemployment, and relative deprivation are push-factor in a certain region and high income and good employment opportunities work as pull-factors. So simple the basic approach is, so complicated will be the explanation in reality. It can be shown that regional disparities are not sufficient to evoke migration. It is necessary that disparities exaggerate a certain but unknown

threshold that migration takes place. Additionally it is necessary to introduce further variables like housing prices or purchasing power to judge the possible gain of migration in a correct way. Finally it is necessary to build other explanatory models for migration flows, which do not belong to labour migration (e.g. retirement migration, consumption migration, marriage migration, refugee migration)..

Conceptualising migration as an empirical phenomenon one has to ask first for a practical definition of migration. Comparing with birth and death migration is a more “unclear phenomena”. Following the international definition migration is the change of the place of living by crossing national or international borders and with the intention to stay for a minimum time period. It can be measured by using flow statistics (e.g. number of migrants per time period), stock statistics (e.g. number of persons born outside the region) or it can be derived as a residual from the change of the population to two time periods including death and birth (migration balance). In the WP3 the different methods and the availability of data will be discussed in detail.

Migration can be separated into out- and immigration or in the case of international migration into immigration and emigration. In both cases it is useful – simultaneously to the fertility rate – to separate the effect of the age structure from the propensity to migrate. When doing this it is possible to demonstrate regional differences independent from the age structure. Finally it is necessary to imbed the migration variable in a set of explanatory variables which are – following the push-and pull model – mainly economic indicators (unemployment rate, average wages). The different indicators will be discussed in detail in the WP3 and, to some extent, in the WP4.

The chosen theories are also relevant when discussing replacement migration (WP5) and its social and economic consequences. If 1,840 million immigrants are needed in Europe until 2050 (UN 2000), migration systems, networks and institutions are needed to find these immigrants. It will be very difficult to induce such a massive migration without both push and pull factors involved in the migration process.

4. Indicators and data

Provisional list of indicators/indicator areas

Below is a provisional list of indicators (to some degree indicator areas) relevant to the research tasks of all WPs. Most of the indicators (or indicator areas) and corresponding data listed, are also included in the lists “ESPON – Core indicators by theme covered/TPG responsible” prepared by ESPON Activity 3.1 from inputs by the different activities.

Each partner will inform WP1 and the TPG whether it is possible to obtain this group of variables – all of them or just some, for the countries of its area of influence. This means that we will create an inventory of the available variables, indicating the level of disag-

gregation and the years (or time periods) for which the data is available. This will be completed in the next interim report.

Most indicators may be based on data from REGIO, Eurostat, and National Statistical Agencies. Especially in the area of “causal and effect processes” and “territorial characteristics/regional contexts” a further assessment and elaboration of the indicators and data availability etc. is necessary. In these indicator areas different sources should also be considered, e.g. the OECD Territorial Data Base.

It may in some cases be necessary to adjust the requirements somewhat with regard to temporal scope and territorial level. Moreover, Terms of Reference indicate that WP 4 shall focus on administrative regions. Data for Territorial level II in the table are applicable only for the analysis of selected case-regions. For the stated time periods (temporal scope), the selection of a few “representative” years may prove necessary and satisfactory in relation to the overall purpose. This will have to be determined following a more comprehensive evaluation of data availability and some initial analysis of selected country data.

Table 1: Indicators

	Territorial level I²	Territorial level II³	Temporal scope
Basic indicators (depopulation process):			
Total population	NUTS 3 (2)	NUTS 5	1980/90-2002 (latest)
Area	NUTS 3 (2)	NUTS 5	---
<i>Population density</i>	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Total area of urban settlements	NUTS 3 (2)		2002 (latest)
Population in urban settlements	NUTS 3 (2)		1990-2002 (latest)
<i>Indicators on degree of urbanisation</i>	NUTS 3 (2)		1990-2002 (latest)
In-migration	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Out-migration	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
<i>Net migration</i>	NUTS 3 (2)	NUTS 5	1980/90-2002 (latest)
Number of births	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Number of deaths	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
<i>Natural population growth</i>	NUTS 3 (2)	NUTS 5	1980/90-2002 (latest)
Population in “functional”/”strategic” age groups	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Total Fertility Rate	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Indicators on relations to spatial structures and change, from activity 1.1.1 and 1.1.2 (polycentrism, FUA, urban/rural types, urban-rural relations; typologies)	Cf. Terms of Reference. General cross-activity indicators and typologies		
Indicators of territorial characteristics/regional context (vulnerability):			
Population density (cf. above)	NUTS 3 (2)	NUTS 5	2002 (latest)
Indicators on relative remoteness, central/peripheral location (natural geography, travelling distances)	NUTS 3 (2)		2002 (latest)
Indicators on degree of rural-urban structure	NUTS 3 (2)		2002 (latest)
Indicators on causal and effect processes:			
Demographic change rates, components of demographic change, recruitment (net migration/natural growth), population potential/fertility (see above)	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Socio-demographic performance ratios (ageing, dependency, sex composition, labour market pressure), educational level ⁴	NUTS 3 (2)	NUTS 5	1990-2002 (latest)
Indicators on economic and socioeconomic performance (participation rate/employment, unemployment, GDP, labour productivity, sector mix/restructuring, service provision) ⁵	NUTS 3 (2)	NUTS 5	1990-2002 (latest)

² EU27+2

³ Selected depopulation areas (case-areas)

⁴ To be assessed and elaborated further

⁵ To be assessed and elaborated further

5. Natural population development and its spatial effects (WP2)

The fact that population development affects economic development is well confirmed from many studies and analyses. As mentioned above, large cohorts have stronger effects on the development than smaller ones and this phenomenon has a tendency to follow the cohorts over the life cycle. Large cohorts give rise to spin-off effects on the economy from birth to death – from childcare to elderly care and other things in between, e.g. the building and construction cycle. Large cohorts in the ages of 20-30 also act as a reinforcing factor with regard to mobility and migration and then also as fuel and lubrication in the economic machinery. This approach also has similarities with the ‘long wave’ theories that put demography in focus with regard to the long-term economic development.

Birth rates in many European regions are so low today that they result in a population decrease within the European territory - the number of deaths is larger than the number of births (for TFR 1999, see figure 2). This is, however, not only a result of the low birth rates – instead it is in many cases a consequence of the lopsided age structure that hampers the natural population increase. Even if ageing is a more or less general ingredient in the population development in Europe, this process has progressed to various stages in different regions and nations. Ageing and its relation to the labour force and the future population development is also one of the most discussed topics with respect to labour market problems of today and in the future. (See also WP5).

Generally speaking, the changes in the number of births are consequences of the development of the birth rates and of the size of the cohorts of childbearing age. Standardised for changes in age-specific fertility rates, large cohorts of childbearing age result in large new cohorts and vice versa. Consequently, the number of births fluctuates as a function of the size of the cohorts in cycles or waves of around 25 to 30 years. From a regional perspective, age structure and the size of the cohorts are of great importance for the natural population development – the difference between the births and the deaths – since the age structure varies in different regions and between different regions and nations. Depopulation areas have e.g. much larger proportions of elderly compared to metropolitan areas or university towns, where the proportion of persons in ages 20-30 is much larger.

The differences in the population structure are, however, not only a function of the differences in fertility rates – neither the crude birth rates nor the total fertility rates (TFR).⁶ At least the latter one should rather result in a larger part of children and youngsters in rural and sparsely populated areas compared to the metro areas at same age structures. It is, however, rather the migratory movements that cause the regional differences in age structure. Migration intensities are highest in ages 20-30, which has differing impacts on in- or

⁶ The crude birth rate is defined as the number of births per thousands of total population. The total fertility rate is a theoretical measure and is defined as the number of birth related to the number of women in the childbearing ages and is standardised for variances in cohort sizes. TFR is often defined in the following

way but the time span can vary: $TFR_t = \sum_{x=16}^{49} f_x$ where t = year and x = age.

out-migration regions. This also means that the “population crisis” can take quite different shapes in various parts of a country or within the EU. In some regions, low fertility rates have traditionally dominated, while in other parts the problems have been connected with out-migration and lopsided age structures – out-migration of especially younger women. During the 1990s, declining fertility rates and out-migration has, however, reinforced each other in many European regions and communities resulting in an accentuated population decrease.

The developments in different regions regarding labour market performance, education possibilities and values have impacts on both geographic mobility and birth rates – the crude birth rate as well as the total fertility rate. The impact on migratory movements is most pronounced in younger ages. Moreover, many of the internal migrants today seem to move for other reasons than labour market ones. These reasons are primarily higher education and changed ‘mental maps’ among younger people. The consequence is that many regions are drained of younger people. On the other hand, some other regions – metro areas and university towns – gain with regard to these ages where the migration propensities are as highest. This also has impacts on the gender distribution, since younger women have higher migration intensities than men, especially in traditional out-migration and depopulation areas. The shortage of women will moreover have impacts on the marital status in these regions, as a higher share of the women includes those married or living in cohabiting relation (see figure 1). From a demographic point of view, the effects of these inter-regional processes are thus that the gender, marital and age structure are changed in both the out- and in-migration areas.

These factors have impacts on the natural population increase. Even if TFR still is somewhat higher in out-migration areas compared to in-migration ones, the number of women of childbearing age is so small that it is difficult to maintain the lead of births over deaths. The effects of ageing and lop-sided age structure in these areas have also been reinforced by the decline of TFR during the past decades - a decline that has resulted in a TFR that is below the natural reproduction rate in many European regions.

Even if TFR is below the reproduction rate, there are regions, towns and municipalities with a natural population increase – especially then in the metropolitan and big city areas. The reason is not a high TFR – this rather is very low in many of these areas - but rather the fact that the proportion of women of childbearing age are over-represented compared to the other regions. The beneficial age structure in these areas is, as mentioned above, hampered by the fact that relatively many of the women in childbearing ages are living as ‘singles’. Despite this, as mentioned above, there has been a natural population increase in many of these expanding and fast growing regions.

One important factor is that the average age of women having their first baby has increased trendily during the past decades. One reason for this is higher education among women - another is their higher labour force participation rate. Investment in higher education has two effects – one income effect and one price or substitution effect. The income effect should result in higher fertility as households with higher incomes have more money to spend on children than households with lower incomes. The price or substitu-

tion effect, however, implies that higher incomes also result in an increase in the relative price of children. This, in its turn, reduces the demand for children and increases the demand for other commodities (for a more thorough discussion of the economic theory of fertility, see Leibenstein, 1954, 1957, 1974; Becker, 1960, 1965, 1993; Schultz, 1974). The consequence of these price trends will be a decrease in childbirths and then also a decrease in TFR.

This conclusion should, however, be interpreted with some caution, since the income development has been divergent between different income groups and labour force categories. It seems that the substitution effect has had a greater impact on births than the income effect, at least during the past decades. Investment in higher education also has a decreasing effect of its own: having invested in a higher education, you are more oriented towards capitalising on your investment in human capital, even if the return is not as high, *ex post*, as it was supposed to be, *ex ante*. Education and working life should consequently also be included in the utility functions that differ between various categories on the labour market. This also means that the same income increase/decrease or the same income levels may have different effects on TFR depending on satisfaction with working life. This also implies – with some exaggeration – that the income effect is smaller for satisfied people with higher education than for dissatisfied people with lower education, even if the income increase/decrease or the income level is the same. At regional level, the implications are *ceteris paribus* that in regions with a high share of low educated people, TFR is more sensitive to changed economic conditions than in regions where the share of highly educated people is high. This trend factor should have a negative effect on the development of TFR in all regions, especially in regions where the education level traditionally has been low – e.g. in old industrial, rural or sparsely populated areas.

The focus in WP2 is concentrated on these processes behind the ageing process where the regional perspective is put in focus. The *indicators* that are relevant for WP2 are the same indicators that are presented in the table above – demographic variables as total fertility rates (TFR), crude birth rates, earlier migratory movements, age and gender structure but also economic and social variables such as unemployment, labour force participation rates – especially the female ones – education levels, social inclusion/exclusion, traditions, etc.

Rural areas, small and medium-sized towns

Metro areas, university regions

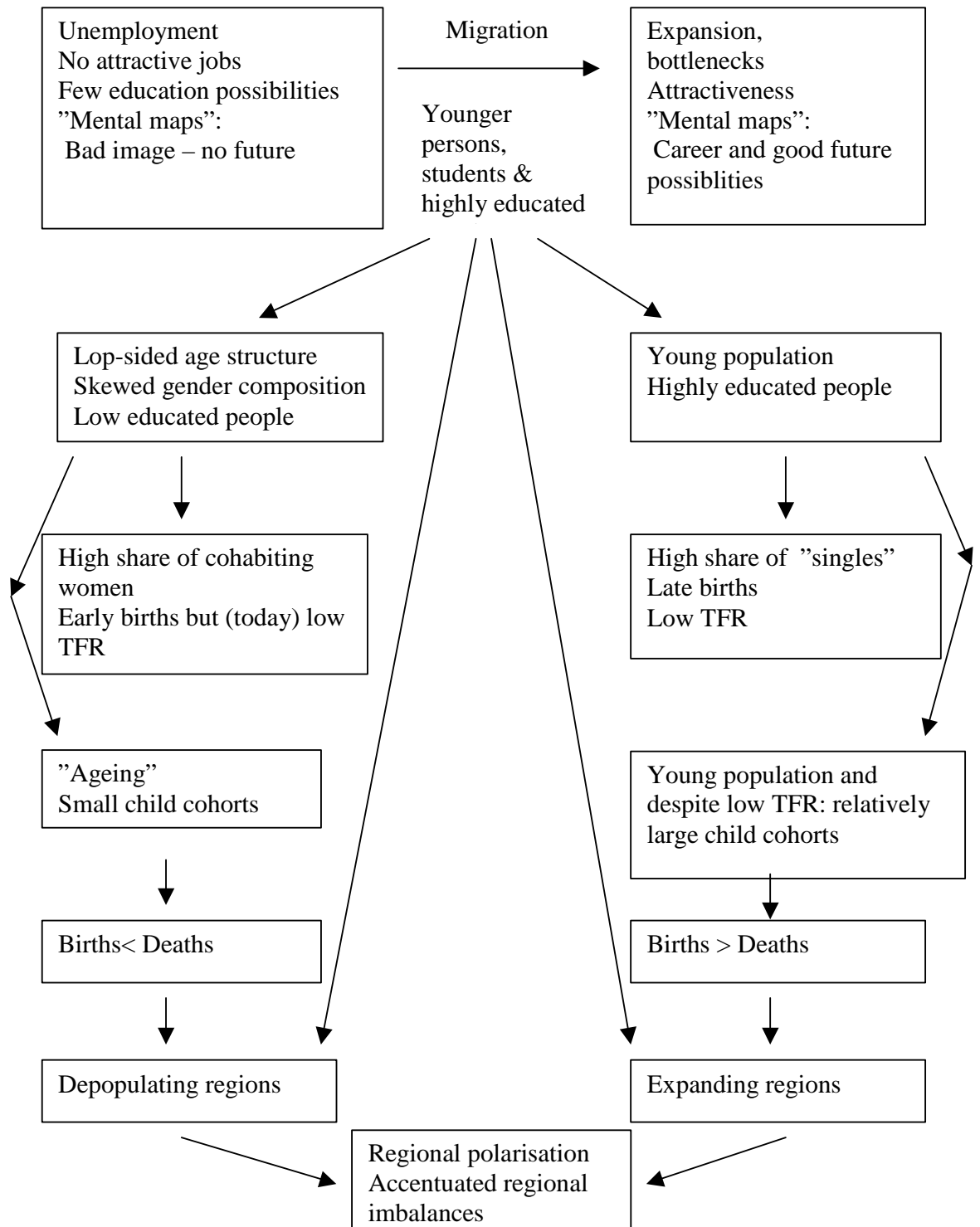


Figure 1. A schematic view of the spatial problems with regard to economic development, values, and population changes.

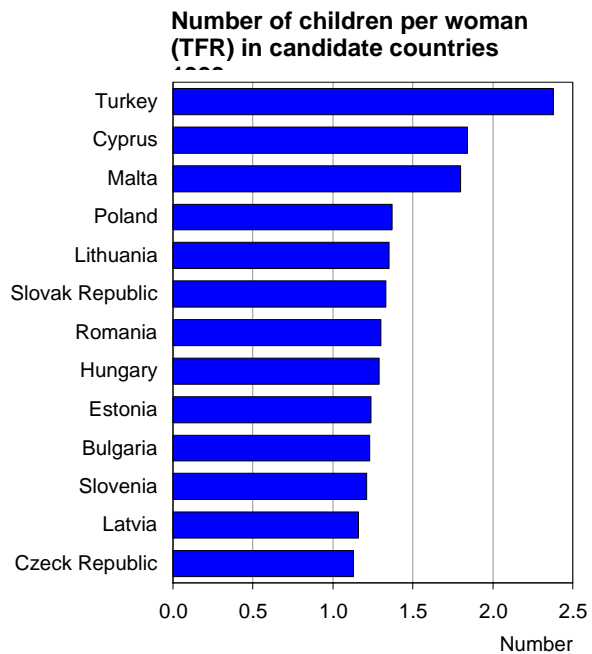
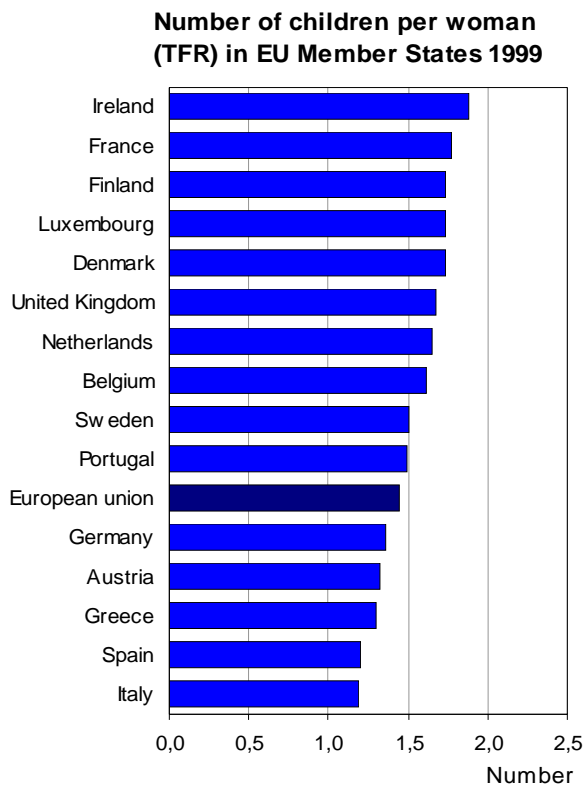


Figure 2. TFR in the EU and the candidate countries 1999

6. Indicators, methods and availability of the data with special relevance for WP3

General statistical problems for migration's measurement

Migratory analysis contains various difficulties, both on a conceptual and on a statistical level.

The conceptual difficulties are increasing:

- Western Europe has increasingly more clandestine immigration;
- Since the start of the 90's, a large number of nationals from Central and Eastern Europe work and live during most of the year in the European Union, covered by tourist visas, and even now as "tourists" without any need of a visa;
- the increasing mobility of the European population and the development of second residences, both in their country as abroad, can weaken the pertinence of population count based on the so-called main residence, which moreover can be chosen not in function of main residence but for fiscal reasons.

The correct taking into account of migrations and their quality of follow-up varies according to whether countries work uniquely by census or, on the contrary, keep a population register. In the latter case, the entries from foreign countries are in general well registered, as long as they are of legal origin, but on the other hand those leaving for abroad are often under-stated; those leaving often omit notifying the local authorities. In addition, the assessment methods, very different from country to country, can make international comparisons uneasy.

Main global indicators

1. Migratory balances

Migratory balance is a fundamental indicator that permits distinguishing attractive regions from repulsive regions. This indicator is an essential basis to understand migratory processes in Europe at the regional level.

At the regional level, the study of migration is confronted with several further statistical problems, such as the lack of annual statistics on migratory balances. In the countries with a population register, migratory exchanges are generally recorded as they occur between the country's administrative entities, but not at all or poorly with the foreign countries. The significance of hidden movements, especially clandestine immigration, is quite variable from one area to another.

The methodology adopted here to make up an assessment of the migratory balances at the regional level is the natural movement method. The principle is simple: one calculates the difference between, on the one hand, population at the end and at the beginning of a period, and the natural balance (births less deaths) during that very period, on the other hand. This method is relatively safe as the statistics on these three indicators are globally reliable. Nevertheless "some relatively small errors relating to the population at the be-

ginning and the end of the period, above all in the countries with no population register, can bring about a much bigger error on the assessment of the final balance, especially if they are of opposite mathematical signs” (J.M. Decroly & J. Vanlaer, 1991).

By this method, it is possible to have complete and comparable data.

The only problem concerns some Eastern European countries where these are not always available for each of the new nuts-divisions. So it will be very difficult to integrate Eastern European countries in the new division for all of 1990's, but it will be possible for the late 90's.

2. Migratory flows, mobility and internal migratory balances

Migratory flows measure the flows of population between two regions. With these flows, we can calculate the mobility of a population : $\text{mobility} = (\text{outflow} + \text{inflow}) / \text{population}$

This indicator is essential because migratory balances are only the result of contradictory flows. For example, some regions have negative balances with many exchanges of population (for example, metropolitan regions) and others could have the same balance with a weak mobility (for example old industrial regions).

Unfortunately, these data are only available inside each country. Eurostat only provides these data at NUTS 2 level and sometimes not for the same period from one country to another.

To our knowledge, as far as Eurostat is concerned, these data are not available for Eastern European countries.

3. Migratory balances with foreign countries (balance with inside EU foreign countries and with outside EU foreign countries)

This indicator permits identification of regions attractive to foreigners. It is an important indicator because many regions are repulsive for nationals but attractive to foreigners. These situations have sociological consequences and induce, for example in big metropolitan areas, a change in the ethnic and social composition of the towns.

Unfortunately, as far as Eurostat is concerned, these data are very incomplete. So to find relevant data, we will have to use other sources, especially national statistical institutes and any other specific study about this essential question. For sure, these data will never be comparable, in particular because of the problems of illegal immigration. Illegal immigration is by definition not measurable *a fortiori* at the regional level, but also the illegality of immigration depends on legal definition that may vary considerably from one country to another.

So this indicator has to be treated very carefully, especially if we aim for international comparison at regional level. Inside each country, it would be possible at least for some countries and by proceeding with care, to measure migratory balances of foreigners.

4. Migratory balances by ages

To understand migratory balances, it is not only necessary to know where people are coming from or going to (at both intra-national and international scale), but also to know their age, in order to understand the causes of the process but also to evaluate the consequences: for example, with the same global migratory balance, one region can attract mostly young people and an another one, mostly pensioners.

To evaluate migratory balances by ages, we will compare age structures at regional levels between two different dates. The difference between the same age group at two dates is an evaluation of migratory balance for this age group.

Migratory balance of group age $n = ((\text{number of people group age } n+1 \text{ at date } m+1) - (\text{number of people of group age } n \text{ at date } m)) / \text{number of people of group age } n \text{ at date } m$

Age structures at regional level are not complete as far as Eurostat is concerned, so we will have to use data by National Statistical Institutes.

7. Ageing and replacement migration (WP5)

With reference to the evaluator's recommendation special attention shall be given to replacement migration. This topic will also be a central ingredient in the project 1.1.4.

In 2000 the United Nations (2000) published a report on immigration as a solution to the population aging and population decline. The term *replacement migration* was used and defined as the international migration that would be needed to offset declines in the size of population, declines in the population in working ages as well as to offset the overall aging of population. The report concluded that Europe would need an immigration of *1, 850 million persons* for the period 1995-2050 to maintain the potential support ratio. "Such high levels of migration have not been observed in the past for any of [the studied] countries and regions. Moreover, it seems extremely unlikely that such flows could happen in these countries in the foreseeable time. Therefore, it appears inevitable that the populations of the low-fertility countries will age rapidly in the 21st century".⁷

The gains of immigration are difficult to calculate, and the results depend very much on the used method.⁸ In general, immigration confers small net gains, in terms of per capita output, to the host country. However, the distribution of the benefits is not even and depends, to a large extent, on the qualification structure of the immigrant and the native

⁷ United Nations (2000, p. 94).

⁸ See also Kelley & Schmidt (1994).

workforce. So far the net impact at national levels on government expenditures and revenues seems to have been negligible for most countries. Coppel et al. (2001) argue that replacement migration can, *perhaps*, reduce the bottle-necks in the production and limit the negative impact on the government budgetary positions, but replacement migration *cannot* solve the problems with population ageing.

The local or regional impact of an immigration responding to declines in the population in working ages can differ from the impact on an aggregate level. Regions with a very labour intensive sector *and* population decline need labour to reduce the bottle-necks in the production. Some sectors can substitute labour for capital, but this is difficult when it comes to the production of olives, oranges and a public sector focused on elderly care etc.

It is our belief that it is possible to determine the need of an immigration responding to declines in the population in working ages at the NUTS 3 level by analysing how labour intensive the production is in different sectors. By using this approach typologies of the need of an immigration responding to declines in the population in working ages will be generated. Once typologies and the economic structure at the NUTS 3 level are known it is possible to make policy recommendations.

These variables should be disaggregated at NUTS 3 level. Should the information be unavailable at that level, they should be collected at the NUTS 2 or NUTS 1 and in some cases even at NUTS 0 level.

These elements will be needed by WP1 for coordination purposes after the necessary process of compilation and collection; WP1 shall inform the other WPs with the available data.

With regard to the periods to be analysed, we intend to know the present stock (year 2000 or, preferably, 2001), as well as data with regard to the years 1995 and 1990. In the case of the immigrant data, we would also like to know the flows between 1990 and 1995 and between 1995 and 2000 (or 2001).

Table 2: Indicators and variables with special relevance for ‘replacement migration’ (WP5)

The team and the WP leader (CEG) consider the following variables to be necessary for the success of WP5 where some indicators are overlapping with the variables above:

Issues	Indicators
General, demographic/ /migrants	<ul style="list-style-type: none"> - stock of resident population (by gender and age structure)⁹ - number of deaths (by gender and age structure for convenient time-periods)¹⁰ - number of births (by gender and age structure of the mother, for convenient time-periods) - schooling level of all the population (1991, 1995 or 1996, 2001) - professional skills of all the population (1991, 1995 or 1996, 2001) - birth rate of the foreign population (weight by gender and age structure) - mortality of the foreign population (weight by gender and age structure) - age structure of the foreign citizens (as compared with that of the nationals) - stock of foreign population (relative weight of foreigners in the resident population) according to nationalities - proportion of women in the foreign population stocks - level of schooling of the foreign citizens (as compared with that of the nationals) - professional skills of the foreign citizens (as compared with that of the nationals)
Migrants Flows	<ul style="list-style-type: none"> - inflows of foreign population during the last decade (relative weight of foreigners in the resident population) according to sending areas or nationalities (by year between 1990 and 2000 or 2001, preferably) - inflows of asylum seekers according to sending countries or nationalities - proportion of women in the recent inflows
General, economic	<ul style="list-style-type: none"> - gross domestic product (GDP) - active population by activity sectors (and GDP if possible) - relative weight of the foreign citizens in the active population according to activity sectors - relative weight of the foreign citizens in the active population according to professional groups

⁹ Regarding the age structure, the best would be to use five-year groups (1995 to 2000 or 1996 to 2001), but it would also be a good idea to use ten-year groups.

¹⁰ Regarding the time-periods, the best would be yearly or five-year periods (1995 to 2000 or 1996 to 2001), but it would also be a good idea to use ten-year periods (1991 to 2001).

8. Regional levels for all WPs

Migratory flows are seldom studied on a regional level if one considers the whole of the EU countries. However, this relatively fine scale is the one on which it is most relevant to examine the evolution of migratory flows in relation to the regional economic structures and their positioning within the major socio-economic trends. One such scale is not yet satisfying to understand a wide range of essential demographic processes (international migrations, intra-urban migrations...). This is why this study will not be limited to a single scale but will look into migrations from the finest to the largest scales available.

The scale we will favour is mostly nuts 3 level, because it is a good compromise between the necessity to study the demographic processes at a precise scale and the possibility of obtaining data for the entire EU, and the Eastern European countries (+ Switzerland and Norway).

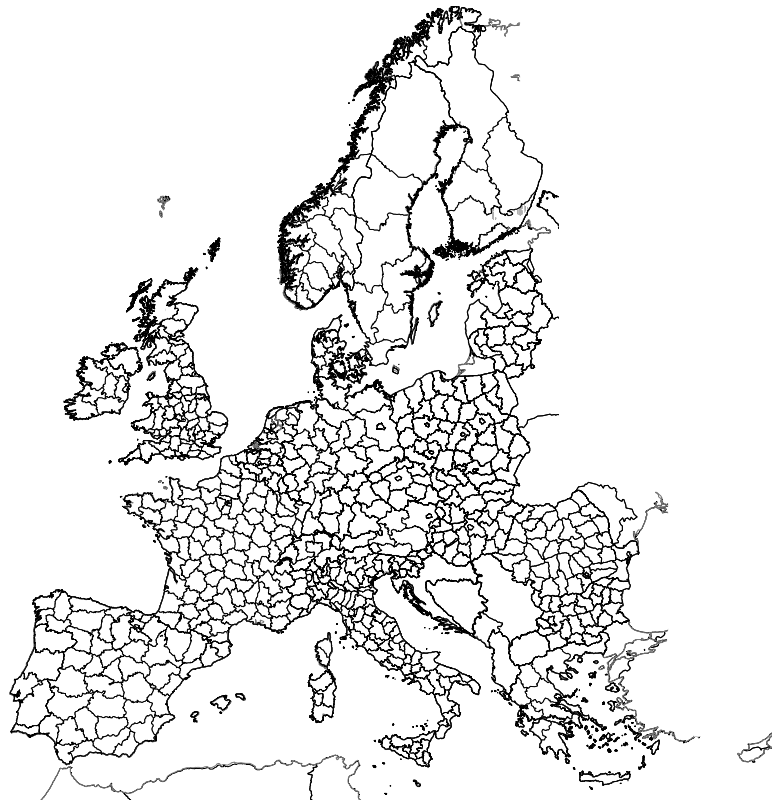
To be more precise, we will use our NUTS C level, which mainly corresponds to the Eurostat NUTS 3 level (French départements, Italian provinces, English counties...). But in the case of Germany, we have retained the scale of the “Regierungsbezirke”, corresponding to NUTS 2 European level, as the inferior level (the one of the “Kreis”) was too small, as well as it is in Belgium and for other countries for the NUTS 3 level ¹¹. Below, the exact

¹¹ We use the following spatial grid:

NUTS 0	« NUTS » A			« NUTS » B			« NUTS » C		
	NUTS LEVEL EUROSTAT	Nbr. units	inhab/ unit	NUTS LEVEL EUROSTAT	Nbr. units	inhab/ unit	NUTS LEVEL EUROSTAT	Nbr. units	inhab/ unit
Germany	Land (1)	16	5,13	Regierungsbez.(2)	38	2,16	Regierungsbez.(2)	38	2,16
Austria	Country (0)	1	8,08	Main division (1)	3	2,69	Land (2)	9	0,90
Belgium	Country (0)	1	10,19	Région (1)	3	3,40	Province (2)	11	0,93
Denmark	Country (0)	1	5,29	Country (0)	1	5,29	Amt (3)	15	0,35
Spain	Main division (1)	7	6,56	Autonomie (2)	17	2,46	Province (3)	50	0,82
Finland	Country (0)	1	5,15	Country (0)	1	5,15	Région (2)	6	0,86
France	Main division (1)	8	7,29	Région (2)	23	2,53	Département (3)	96	0,61
Greece	Country (0)	1	10,51	Main division (1)	4	2,63	Région (2)	13	0,81
Ireland	Country (0)	1	3,68	Country (0)	1	3,68	Région (3)	8	0,46
Italy	Main division (1)	11	5,23	Région (2)	20	2,88	Province (3)	95	0,61
Luxemburg	Country (0)	1	0,42	Country (0)	1	0,42	Country (0)	1	0,42
Norway	Country (0)	1	4,42	Country (0)	1	4,42	Fylke (3)	19	0,23
Netherlands	Main division (1)	4	3,91	Main division (1)	4	3,91	Province (2)	12	1,30
Portugal	Country (0)	1	9,96	Région (2)	7	1,99	Région (2)	7	1,99
Sweden	Country (0)	1	8,85	Country (0)	1	8,85	Région (2)	8	1,11
Switzerland	Country (0)	1	7,12	Country (0)	1	7,12	Région (1)	5	1,42
Great-Britain	Main division (1)	11	5,37	Main division (1)	11	5,37	Comté (3)	49	1,21

way we intend to divide the countries of EU15, and the number of people of each region, which is an indicator of the homogeneity of the division, is shown. For eastern countries, the divisions we will use will be very dependent of the data we can obtain. The map below illustrates the basic division we intend to use.

If we decide to use an adapted nuts-3 division to get data and to “map” it, we have to keep in mind that to understand the demographic processes, we will need to have a multiscalar analysis: for some processes, a more precise, for others more general scale could be more relevant.



Map 1 : Nuts “C” division for UE 15, Norway, Switzerland, the 10 qualified countries, plus Romania and Bulgaria.

Regional levels with special relevance for WP5

As mentioned above, preferably NUTS 3 will be used. If this is not possible, NUTS 2 or another level will be used, always taking into account what is most appropriate in each case, as well as the degree of availability and comparability.

Proposals for case-studies

For WP5, case studies will also have to be considered. At this moment, we are in a position to ensuring the following case studies:

- Lisbon Metropolitan Area
- Rural areas in *Alentejo*
- Depopulated areas of *Castilla-Léon*

We also think that other case studies in Europe must be considered, such as metropolitan areas, tourist areas, and rural areas – namely, in Southern Europe, *València* (Spain) and a rural case in Italy, *Salónica* or *Athens* (Greece), *Brussels* (Belgium), and specific cases in Northern Europe – but the final choice of the case studies to be presented will be a consequence of the typologies that are found in the analyses to be made, and of the availability of information.

In the meantime, it would be quite convenient for each partner to inform the WP1 and CEG (as WP5 leader) of the case studies that each knows that have been already done and published in the various countries, and which you think might be interesting for the goals and purposes of TPG 1.1.4 and/or WP5.

9. Typologies

A simplified typology of population change

The following table shows schematically the different consequences of natural population development in combination with net migration. In the figure the pluses and minuses are equivalents with regard to the population development. This means e.g. that two plus outweighs one minus – the result will thus be a population increase. The opposite is naturally also valid – two minus outweigh one plus with the consequence of a population decrease.

Table 3: A simplified typology of population change

		Net migration/Migration balance				
		++	+	=	-	--
Natural population growth	+	Fast Increase	Fast Increase	Increase	Increase	?
	+	Fast Increase	Increase	Increase	?	?
	=	Increase	Increase	?	Decline	Decline/Depopulation
	-	Increase	?	Decline	Decline/Depopulation	Decline/Depopulation
	--	?	Decline	Decline/Depopulation	Decline/Depopulation	Depopulation

Natural population change = live births minus deaths. Live births and deaths may be further decomposed into rates, size/composition of relevant population groups etc. We may be particularly interested in *the relative impact of falling fertility rates and negative net migration*, respectively (changes in net migration being the outcome of changes in out-migration and/or in-migration, in their turn decomposable into changes in rates, size and composition of relevant population groups etc.). In the case-oriented part of the study, a more detailed look at the demographic components of change may be relevant and possible. “Relative depopulation” (specific population segments) may take place even if total population change is zero or slightly positive. Correspondingly, some depopulating areas may experience severe distortions of their age-pyramids, making comparisons of depopulating areas by total population change figures alone, less relevant. The crude picture of the depopulation process should be accompanied by information on changes in age composition.

10. Typologies with special relevance for WP4: Fertility, migration and depopulation

Main research interest:

- A. Identify problems related to territorial disparities in demographic processes, in general and related to spatial development in context of enlargement and integration.

- B. Processes and implications of population decline in different types of regions and regional contexts

Contributions to WP4:

The basic approach in this work package is the development and analytical employment of a multipurpose *typological* tool.

Five step procedure:

1. Discuss and clarify the concept and phenomenon of ‘depopulation’ – especially in the light of related concepts/phenomena like population decline, fertility decline, migration loss, ageing etc.
2. Establish a crude picture of the European geography of population stagnation and decline and identify variation in timing/duration, degree/level, relative impact of main demographic determinants, and spatial context
3. Venture – and qualify – an initial operational definition of ‘depopulation area’ and an initial delimitation and classification of the regions of ‘depopulating Europe’.
4. Select the appropriate indicators and develop a three-module typology of ‘depopulating Europe’ according to i) characteristics of the demographic process, ii) relevant territorial aspects, and iii) probable causal/effect variables
5. Selection and analysis of a few depopulation “case-regions” (based on the typology).

Important research questions are:

- What is the relationship between different types of depopulation processes and territorial/spatial characteristics (regional structure, degree of peripherality, rural-urban status etc)?
- What are the policy relevant features (regional policy relevance) of different types and territorial contexts of depopulation processes (such as. age/sex distribution; distortion of the age-pyramid, shrinkage of the youth population, ageing in general, development of strategic age-groups)?
- What are the socio-demographic and socio-economic implications of different types and territorial contexts of depopulation processes (demographic/reproduction potential, migration/attraction, human capital, demand/supply of services, labour market, housing market etc.)?
- What are the (variation in) prospects and future challenges in the light of the case regions (representing different typological situations)? Implications for policy considerations?
- What are the implications and possible policy responses to processes following enlargement?

Indicators and typologies

There are close interrelationships between WP2, WP3, WP4 and WP5 regarding data and indicators as well as analysis. Coordination advantages exist also between WP2, WP4 and WP5, especially regarding the ageing aspect. The indicators needed to establish the three-module typology are indicated below:

1. *A typology of depopulation processes* in Europe will have to take into consideration
 - (a) indicators of the timing and pace/rate of population decline
 - (b) indicators of the relative importance to population decline of net migration and natural population growth, respectively
 - (c) indicators based on further decomposition of the components of change (fertility/mortality, in-/out-migration, etc.), the possibilities mainly limited by data accessibility.

2. *A typology of regions/areas of depopulation* will have to take into consideration
 - (a) indicators of population density
 - (b) indicators of remoteness/periphery/centrality
 - (c) indicators of degree of rural-urban structure (economic and settlement criteria)
 - (d) other indicators of socio-demographic/-economic territorial structure, elaborated on the basis of evaluation of data accessibility

3. *A typology of causal and effect processes related to regional depopulation* will have to take into consideration:
 - (a) Indicators of demographic and socio-demographic structural change in relation to socio-economically important ratios; ageing/dependency, labour market pressure, sex-ratio, reproduction potential etc.
 - (b) Indicators of economic and socio-economic performance (employment, unemployment, GDP, productivity, service provision, economic restructuring)
 - (c) Indicators of socio-demographic performance (net migration/recruitment, fertility, educational development etc.)

11. Map-making

The spatial cartographic representation of the main features and processes is a relevant issue. One single basic cartographic basis must be adopted within the present project, for the various indicators, variables and combinations of them, at the NUT 2 and NUT 3 level. It should be pointed out that, in the case of some of the variables, a combination of NUT 2 and NUT 3 (or even NUT 1 or NUT 0) may be needed.

The maps that shall be made shall mainly be of the choropletas type, but the system adopted by us should also be able to make isoline maps (if with smoothing, all the better), and flows (at list, some). All these considerations point towards the need for a shared car-

tographic platform that will allow us to do all these representations in a quick and easy way. Possible solutions will be the use of simple GIS or Desktop Mapping software, such as Arc View or MapInfo based software.

We must consider from the very beginning the possibility of using GIS software, and all the databases to be created within the project must be built considering that fact. WP1, and all other WPs, should then treat all the collected information as part of an Integrated Information System, in which each of us shall be a provider and a user at the same time. The use of Internet solutions to share the information must also be taken into account.

12. Time schedule

Stage 1 is concentrated on discussing and improving indicators from a methodological point of view. Common definitions, methodological tasks, data needs, review of earlier studies are issues that will have a central role in this part of the study. This is valid both with respect to demographic trends and migratory movements. A central ingredient here is inventory and gathering of data – old as well as new ones – and examines if and how they can be used in the following analyses and Work Packages. Connections to other Actions (1.1.1, 1.1.2, 1.1.3 and 3.1) will be established.

Stage 2 will be focused on analyses based on the preliminary results from the data gathering and an explicit discussion of the strengths and weaknesses in the different databases and indicators. Data from Eurostat, and national institutes of statistics have now been gathered and evaluated. Here the first results from the Work Packages will be shown and even some preliminary policy recommendations. A first set of typologies of regions with regard to the demographic variables and migratory movements have been developed. The analyses will be illustrated by maps and map-making. The connection to the other Actions (1.1.1, 1.1.2, 1.1.3 and 3.1) will be more pronounced in this part of the study. Phase 2 will end up in August 2003 when the second interim report is delivered.

Stage 3 will be focused on presentation of more elaborated analyses within the differing Work Packages and scenario writings. Now, more explicit policy recommendations can be done on bases of the statistical analyses based on new or improved data and inputs from the different Work Packages. The policy relevance is thus even more pronounced in this stage of the work. Typologies of regions with regard to the demographic variables and migratory movements will now been developed even more than in phase 2 and the analyses of preconditions for a polycentric development with respect to demographic trends and migration will be investigated. Maps covering the whole investigated European area will illustrate the results.

Stage 4 will continue, accentuate and synthesize the inputs and results from the earlier phases and the policy relevance will increase in importance. At this time the database will have been completed, corrections and adjustment of the analyses have been done, more maps and figures have been produced, the typologies developed and illustrated by maps and analyses of the demographic development and the migratory movements completed. Explicit policy recommendations and suggestions to stimulate a polycentric development

with regard to settlement and mobility will be delivered in the final report. Stage 4 ends up in March of 2004 when the final report is delivered and the project is finished.

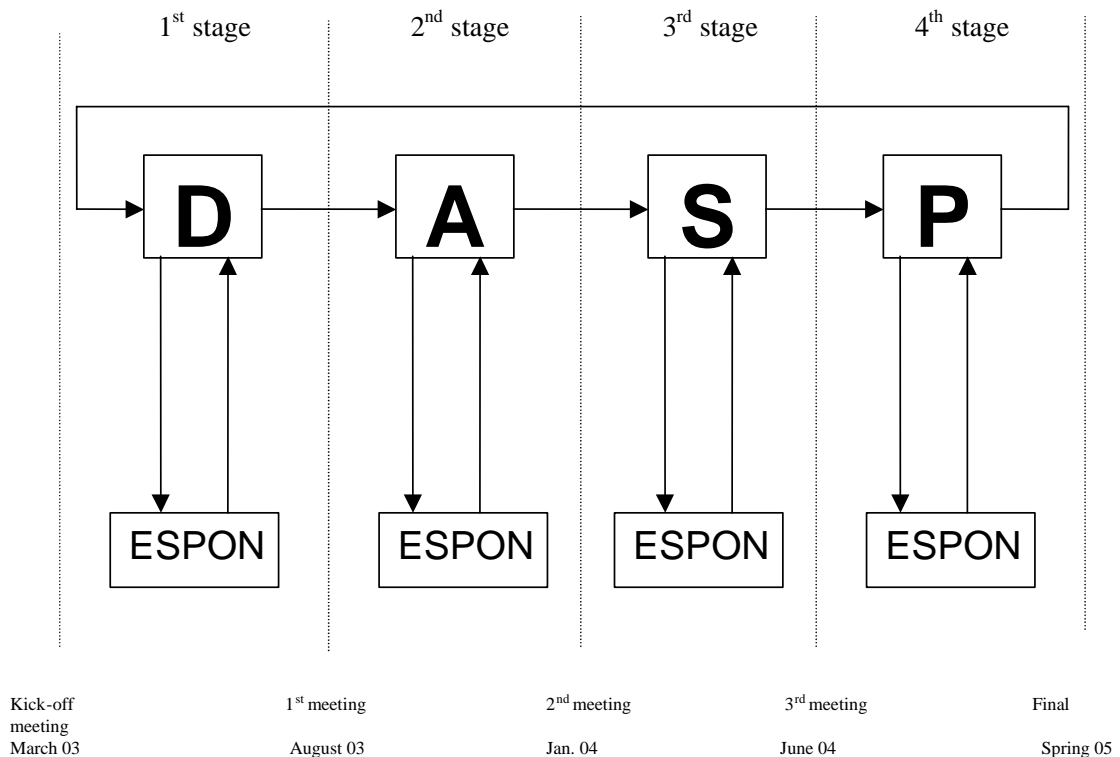
Action ESPON 1.1.4. develops along four major stages (Figure

- 1st descriptive stage (D)
- 2nd diagnosis and analysis stage (A)
- 3rd scenario building stage (S)
- 4th policy recommendation stage (P)

The first stage is necessary to adequate the objectives of ESPON 1.1.4. to the and comparability of data and it is finalised to match the characteristics of expected scenarios to built and policy recommendations to be

Data will be used according to the selected indicators, geographical units and time allocation. Analysis of data will be realised within the targets of each Work Package, within Packages, and among ESPON 1.1.4. and other ESPON

Meetings will be organised in order to facilitate the move from each stage to the following. Co-ordination with other ESPON Actions will be assured during each stage of Action



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