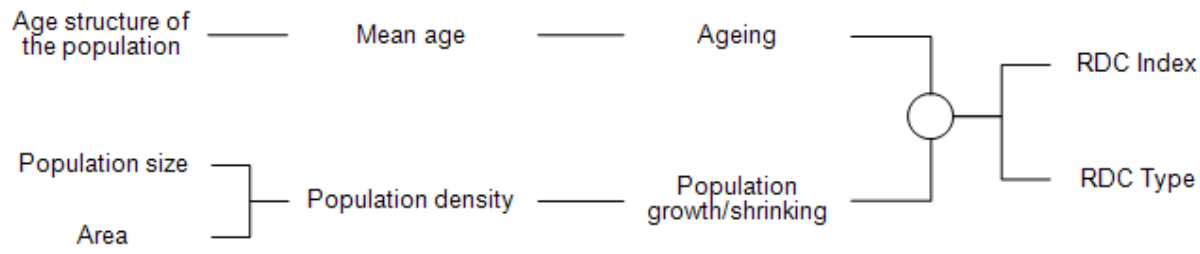
List of Indicators

Regional Demographic Change (RDC)

Overview



Indicators[1)]

RDC Index	
Scope	Index of Regional Demographic Change
Interpretation	Measure for the absolute extent of regional demographic change within a period of time. Allows simultaneous cross-regional and cross-period comparisons.
Measurement	Unweighted average of yearly ageing and shrinking rates, normalised to the interval [0,1], with 0 as weakest and 1 as strongest demographic change. Outliers are captured within the 10%- and 90%-percentiles. Values very close to 0 (1) only occur if a region simultaneously displays extremely slow (fast) ageing and high population growth (shrinking) as compared to all periods and all regions.
Contributing Indicators	Population growth/shrinking, Ageing

RDC Type	
Scope	Type of Regional Demographic Change
Interpretation	Classification for the relative pattern of demographic change within a period of time. Shows weather a region's population is growing and ageing faster or slower than the EU-27 on average; hence, four types are distinguished. Allows cross-regional but not cross-period comparisons.
Measurement	Z-standardisation converts indicators for yearly ageing and shrinking to a common scale with EU-mean = 0 and standard deviation = 1. Regions with faster (slower) ageing or lower population growth or even shrinking as compared to the EU-27 on average in the period under observation receive positive (negative) indicator values. Based on these values, four types of regions are distinguished: Type I (shrinking/lower growth and faster ageing), Type II (shrinking/lower growth and slower ageing), Type III (higher growth and slower ageing) and Type IV (higher growth and faster ageing).
Contributing Indicators	Population growth/shrinking, Ageing

Population Growth/Shrinking	
Scope	Population growth/shrinking
Interpretation	Provides insight into the absolute extent of population growth/shrinking in a region within a period of time. Allows cross-regional and cross-period comparisons. For a comparison of the speed of population growth/shrinking between periods of different length, calculation of yearly average rates is necessary.
Measurement	Rate of change of population size in a period and region (in %). Defined negatively, such that shrinking adds to demographic change.
Contributing Indicators	Population density

Population Density	
Scope	Indicator for relative population size in a region
Interpretation	Inhabitants per 1 km^2. Allows comparisons of population size across regions.
Measurement	Ratio of population size to area in a region.
Contributing Indicators	Population size, area

Population Size	
Scope	Population size
Interpretation	Number of persons living in a region at a point of time.
Measurement	Population on 1. January. Own calculations based on official population statistics.

Area	
Scope	Area
Interpretation	Includes spaces not appropriate for settlement. Assumed to remain constant on country and regional level over time.
Measurement	km^2 (Eurostat, ESPON)

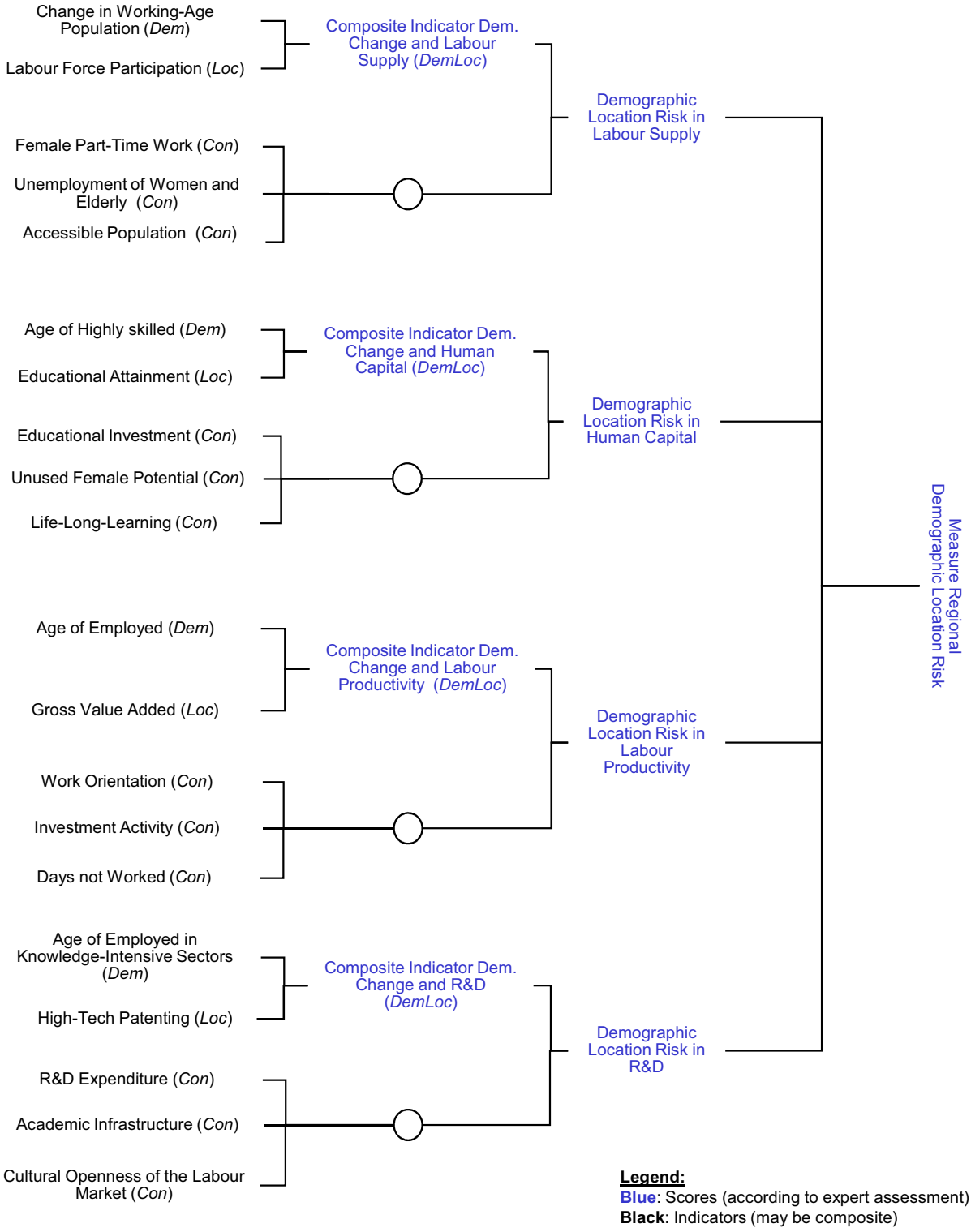
Ageing	
Scope	Population ageing
Interpretation	Provides insight into the absolute extent of ageing in a region within a period of time. Adds to demographic change. Allows cross-regional and cross-period comparisons. For a comparison of the speed of population growth/shrinking between periods of different length, calculation of yearly average rates is necessary.
Measurement	Increase in mean age. Calculated as difference in years between mean age at the end and beginning of a period.
Contributing Indicators	Mean age

Mean Age	
Scope	Indicator of population ageing
Interpretation	Mean age is a frequently used indicator of population ageing. It relies on information about the entire age distribution and is highly correlated with other age indicators (median age and ratios of age-subgroups). Allows comparisons across regions and times.
Measurement	Weighted arithmetic mean of middle ages of age groups, with weights equal to population size in these age groups.
Contributing Indicators	Population size by age groups. Own calculations based on official population statistics.

[1)] Additional data notes are available in Appendix B (p. B.31)

Regional Demographic Location Risk (RDLR)

Overview



Indicators[1)]

RDLR Measure (Regional Demographic Location Risk)	
Scope	Overall RDLR measure
Interpretation	Regional Demographic Location Risk or opportunities in a period result from the interplay of location characteristics, demographic processes and contextual factors in the fields of Labour Supply, Human capital, Labour Productivity and R&D performance.
Measurement	The RDLR score is calculated as arithmetic mean of the individual scores for the four fields, ranging from -5 (high risk) to +5 (high opportunity); fractions are possible.
Contributing Indicators	RDLR in: Labour Supply, Human Capital, Labour Productivity and R&D
More information	

RDLR in Labour Supply	
Scope	Specific RDLR measure for Labour Supply
Interpretation	Regional Demographic Location Risk with respect to the regional labour supply.
Measurement	Expert assessment of the interplay between demographic, location and contextual factors. Scores between -5 (high risk) and +5 (high opportunity).
Contributing Indicators	Labour force participation (location component); Change in working-age population (demographic component); Female part-time work, Unemployment of women and elderly, Accessible population (contextual components).

Dem: Change in Working-Age Population	
Scope	Demographic component for RDLR in Labour Supply.
Interpretation	Population ageing and shrinking translates into ageing and shrinking of the working-age population. Relative increases in the size of older age groups shift the age composition of the working-age population upwards.
Measurement	Change in size of 10-years age groups of population aged 25-64 years, 2004-2030, in %. Own calculations based on Eurostat and National Statistics Offices, NUTS 2.

Loc: Labour Force Participation	
Scope	Location component for RDLR in Labour Supply.
Interpretation	Labour supply is a fundamental location factor. It depends on labour force participation rates and the usual working time; both differ by age. High (adjusted) labour force participation rates, especially at older ages, may attenuate the negative effect of workforce ageing on labour supply.
Measurement	Age-specific labour force participation rates (in %) by 10-year age groups of population aged 25-64 years, adjusted by age-specific usual weekly working time. Own calculations based on Eurostat and the Labour force survey, 2004, NUTS 2.
More information	For the usual weekly working time see The European Union labour force survey database: User Guide (European Commission, 2007b); for economic activity rates the European regional and urban statistics – Reference guide (European Commission, 2007a)****

DemLoc: Composite Indicator Demographic Change and Labour Supply	
Scope	Determines the joint outcome of the demographic and location component for RDLR in Labour Supply.
Interpretation	Population ageing and shrinking (Dem) translate to the working-age population through age-specific labour force participation (Loc). Slower ageing and an increase (or at least smaller decline) in a region's future labour supply are beneficial.
Measurement	Change in labour supply 2004-2030, in %. Based on demographic trends in the working-age population (Dem) and assuming that (working-time adjusted) labour force participation rates (Loc) remain at the 2004 level. Expert assessment of Dem·Loc. Scores between -5 and +5. Own calculations, NUTS 2.
Contributing Indicators	Dem and Loc for Labour Supply

Con: Female Part-Time Work	
Scope	One of three contextual components for RDLR in Labour Supply.
Interpretation	A high incidence of female part-time work indicates opportunities for women to combine work and family. It also suggests that the female labour force potential is not yet exhausted as part-timers could increase their working time.
Measurement	Share of female part-timers in total employment, in %. Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Own calculations based on Eurostat, 2004, NUTS 2.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a) ****

Con: Unemployment of Women and Elderly	
Scope	One of three contextual factors for RDLR in Labour Supply
Interpretation	Unused labour potential is highest among women and elderly. Better labour market integration of these groups (as indicated by a low incidence of unemployment as compared to other population groups in the same region) at present indicates readiness to reap their potential in future.
Measurement	Unemployment of women (20-64 years) and elderly (50-64 years) as compared to general unemployment in age group 25-64 years, in %. Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Own calculations based on the Labour force survey, 2004: CZ/SE/SK NUTS 2, the rest of regions NUTS 1.
More information	The European Union labour force survey database: User Guide (European Commission, 2007b)

Con: Accessible Population	
Scope	One of three contextual factors for RDLR in Labour Supply
Interpretation	The larger the accessible population, the easier it is to attract labour from adjacent and more distant EU-regions. A good transport infrastructure and access to agglomerations also increase the chance to retain those already working in a region.
Measurement	Multimodal accessibility: Population in other EU-regions weighted by the time it takes to reach it by road, rail or air. Expert assessment yields scores -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Data from ESPON, 2004, NUTS 2, five levels: very peripheral, peripheral, intermediate, central, very central.
More information	ESPON Atlas: Mapping the Structure of the European Territory (ESPON, 2006); Regional disparities and cohesion: What strategies for the future? (European Parliament, 2007)

Con: Result of all three Contextual Factors	
Scope	Measures the influence of the three contextual factors on RDLR in Labour Supply.
Interpretation	Contextual influences may attenuate or aggravate consequences of demographic change for the location factor that are captured in the DemLoc component.
Measurement	Sum of scores for the three contextual factors, ranging from -3 to +3
Contributing indicators	Female part-time work (Con), Unemployment of women and elderly (Con), Accessible population (Con)

RDLR in Human Capital	
Scope	Specific RDLR measure for Human Capital
Interpretation	Regional Demographic Location Risk with respect to regional availability of human capital
Measurement	Expert assessment of the interplay between demographic, location and contextual factors. Scores range from -5 (high risk) to +5 (high opportunity).
Contributing Indicators	Educational attainment (location component), Age of highly skilled (demographic component), Educational investment, Unused female potential, Life-long learning (contextual component)

Dem: Age of Highly Skilled	
Scope	Demographic component for RDLR in Human Capital
Interpretation	High shares of younger (25-44 years) highly skilled employed at present indicate that at least the core stock of human capital can be sustained in the next two decades. High shares of older highly skilled workers (45-64 years) suggest that their replacement will be a topic in a decade or two. A higher ratio of younger to older highly skilled bears opportunities.
Measurement	Ratio of 25-44-year-old to 45-64-year-old highly skilled** population. Own calculations based on Labour force survey, 2004, NUTS 2.
More information	The European Union labour force survey database: User Guide (European Commission, 2007b)

Loc: Educational Attainment	
Scope	Location component for RDLR in Human Capital
Interpretation	Innovation and economic growth in advanced industrial countries crucially depend on availability of labour holding a university degree.
Measurement	Share of highly skilled** in the working age population (20-64 years), in %. Own calculations based on Labour force survey, 2004, NUTS 2.
More information	The European Union labour force survey database: User Guide (European Commission, 2007b)

DemLoc: Composite Indicator Demographic Change and Human Capital	
Scope	Determines the joint outcome of the demographic and location component for RDLR in Human Capital.
Interpretation	Not only the stock of human capital in a region (Loc), but also itsage structure (Dem) is believed to influence economic performance. Higher shares of younger holders of university degrees imply availability of more up-to-date formal knowledge and are thus beneficial.
Measurement	Expert assessment based on Dem·Loc. Scores -5 to +5. Own calculations, NUTS 2.
Contributing Indicators	Dem and Loc for Human Capital

Con: Educational Investment	
Scope	One of three contextual factors for RDLR in Human Capital
Interpretation	Educational investment contributes to raising the stock and quality of human capital in a region.
Measurement	National public expenditure on education, in % of GDP, weighted by the ratio of the proportion of students (ISCED 5-6) over the proportion of the population by NUTS 2 regions to account for the uneven distribution of higher-education institutions across a country's regions.Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Own calculations based on Eurostat, 2004, NUTS 2.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****; Education statistics – Glossary (Eurostat, 2008b)

Con: Unused Female Potential	
Scope	One of three contextual factors for RDLR in Human Capital
Interpretation	The larger the unused highly-educated female labour-force potential is, the better are chances to cope with future shortages in the availability of human capital.
Measurement	Share of highly skilled** women in total highly skilled working-age population (20-64 years) who are currently not working, in %. Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Own calculations based on Labour force survey, 2004, NUTS 2.
More information	The European Union labour force survey database: User Guide (European Commission, 2007b)

Con: Life-Long Learning	
Scope	One of three contextual factors for RDLR in Human Capital
Interpretation	Life-long learning is necessary in order to sustain the availability of human capital in the context of workforce ageing and shrinking.
Measurement	Share of participants aged 25-64 years in life-long learning, in %. Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Own calculations based on Eurostat, 2004, NUTS 2.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****

Con: Result of all three Contextual Factors	
Scope	Measures the influence of the three contextual factors on RDLR in Human Capital.
Interpretation	Contextual influences may attenuate or aggravate consequences of demographic change for the location factors that are captured in the DemLoc component.
Measurement	Sum of scores for the three contextual factors, ranging from -3 to +3
Contributing indicators	Educational investment (Con), Unused female potential (Con), Life-long learning (Con)

RDLR in Labour Productivity	
Scope	Specific RDLR measure for Labour Productivity
Interpretation	Regional Demographic Location Risk with respect to regional labour productivity
Measurement	Expert assessment of the interplay between demographic, location and contextual factors. Scores between -5 (high risk) and +5 (high opportunity).
Contributing Indicators	Gross value added (location component), Age of employed (demographic component), Work orientation, Investment activity, Days not worked (contextual components)

Dem: Age of Employed	
Scope	Demographic component for RDLR in Labour Productivity
Interpretation	Productivity peaks at rather high ages (40-50 years) and then slowly levels off. Workers aged 25-44-years will thus pass through highly productive ages within the next one or two decades. The higher their share, the larger the future productivity potential.
Measurement	Share of 25-44 year-old in total employment (15+ years), in %. Own calculations based on Eurostat 2004, NUTS 2.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****

Loc: Gross Value Added	
Scope	Location component for RDLR in Labour Productivity
Interpretation	Labour productivity is a fundamental location factor.
Measurement	Gross value added (GVA) in basic prices per hour worked, in €/hour. Own calculations based on Eurostat, 2004, NUTS 2 and using NACE C-K.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a for GVA; employment and average number of usual weekly hours of work)****; Regional accounts methods – Gross value added and gross fixed capital formation by activity (European Communities, 1995)

DemLoc: Composite Indicator Demographic Change and Productivity	
Scope	Determines the joint outcome of the demographic and location component for RDLR in Labour Productivity.
Interpretation	Current labour productivity (Loc) is challenged by the fact that productivity is believed to be age-specific. The higher the current share of younger workers (Dem), the more opportunities open in future
Measurement	Expert assessment based on Dem·Loc yields scores from -5 to +5. Own calculations, NUTS 2.
Contributing Indicators	Dem and Loc for Human Capital

Con: Work Orientation	
Scope	One of three contextual factors for RDLR in Labour Productivity
Interpretation	A population's orientation towards work influences labour productivity. Attributing high importance to work may mitigate negative effects of demographic change on labour productivity to some extent.
Measurement	Share of persons answering 'Work is very important', in % (European values study, 1999, NUTS 0). Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR).
More information	The European values study – A third wave (Halman, 2001)

Con: Investment Activity	
Scope	One of three contextual components for RDLR in Labour Productivity
Interpretation	Investments in production technologies and infrastructures provide chances to sustain productivity even if the labour force shifts towards a less favourable age composition.
Measurement	Gross fixed capital formation per employed and year, in 1.000 €/employed. Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR). Own calculations based on Eurostat, 2003, NUTS 2.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****; Regional accounts methods – Gross value added and gross fixed capital formation by activity (European Communities, 1995)

Con: Days Not Worked	
Scope	One of three contextual factors for RDLR in Labour Productivity.
Interpretation	Payments for days not worked are age-dependent. Costs for sick leave and, in some countries, for annual leave, too, increase whereas costs for parental leave may decrease after a certain age. We assume that in the sum demographic change increases labour costs through payments for more days not worked.
Measurement	Share of payments for days not worked (annual leave and vacation, sick and parental leave) in total labour cost, in % (Eurostat, 2004, NUTS 1). Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR).
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****

Con: Result of all three Contextual Factors	
Scope	Measures the influence of the three contextual factors on RDLR in Labour Productivity
Interpretation	Contextual influences may attenuate or aggravate consequences of demographic change for the location factor that are captured in the DemLoc component.
Measurement	Sum of scores of the three contextual factors, ranging between -3 and +3.
Contributing indicators	Work orientation (Con), Investment activity (Con), Days not worked (Con)

RDLR in R&D	
Scope	Specific RDLR measure for R&D
Interpretation	Regional Demographic Location Risk with respect to R&D performance
Measurement	Expert assessment of the interplay of demographic, location and contextual factors. Scores between -5 (high risk) and +5 (high opportunity)
Contributing Indicators	High-tech patenting (location component), Age of employed in knowledge-intensive sectors (demographic component), R&D expenditures, Academic infrastructure, Openness of the labour market (contextual components)

Dem: Age of Employed in knowledge-Intensive Sectors	
Scope	Demographic component for RDLR in R&D
Interpretation	High shares of young professionals today provide a good mix of up-to-date formal knowledge, learning capacity and work experience, both today and in the next 1-2 decades. High shares of older workers may induce risks due to knowledge loss with transition to retirement. A high ratio of the former to the latter in knowledge-intensive sectors is particularly favourable for R&D performance,
Measurement	Ratio of 25-34- to 50-64-year-old medium- and highly skilled** employed in knowledge -intensive*** sectors. Own calculations based on Labour force survey, 2004, NUTS 1.
More information	The European Union labour force survey database: User Guide (European Commission, 2007b)***

Loc: High-Tech Patenting	
Scope	Location component for RDLR in R&D
Interpretation	Patenting in high-tech sectors reflects innovation and technological progress.
Measurement	High-tech* patent applications to the EPO by priority year, per million of labour force. Own calculations based on Eurostat, 2002, NUTS 2.
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****; Frascati Manual –– Proposed standard practice for surveys on research and experimental development (OECD, 2002); Compendium of Patent Statistics (OECD 2007)
Scope	Location component for RDLR in R&D

DemLoc: Composite Indicator Demographic Change and R&D	
Scope	Determines the joint outcome of demographic and location components for RDLR in R&D
Interpretation	Future changes in the age composition of the labour force in knowledge-intensive sectors (Dem) affect R&D performance (Loc). Relatively high shares of young professionals today are beneficial.
Measurement	Expert assessment based on Dem·Loc yields scores between -5 (high risk) and +5 (high opportunity)
Contributing Indicators	Dem and Loc for Human Capital

Con: R&D Expenditure	
Scope	One of the three contextual factors for RDLR in R&D
Interpretation	R&D expenditures foster regional R&D performance. They drive R&D productivity and may attenuate negative effects of workforce ageing in the knowledge-intensive sector.
Measurement	Total intramural R&D expenditure in the business enterprise sector in % of GDP (Eurostat, 2003, NUTS 2). Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR).
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****; Frascati Manual – Proposed standard practice for surveys on research and experimental development (OECD, 2002)

Con: Academic Infrastructure	
Scope	One of the three contextual factors for RDLR in R&D
Interpretation	The academic infrastructure as represented by universities and research institutes brings forward own marketable innovations and produces knowledge that spills over to the business sector.
Measurement	R&D expenditure in the higher education sector, in % of GDP (Eurostat, 2003, NUTS 2). Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR).
More information	European regional and urban statistics – Reference guide (European Commission, 2007a)****; Frascati Manual – Proposed standard practice for surveys on research and experimental development (OECD, 2002)

Con: Cultural Openness of the Labour Market	
Scope	One of the three contextual factors for RDLR in R&D
Interpretation	Attractiveness of a region's labour market for labour from abroad depends on cultural openness of its population. The more non-nationals are integrated in a country's labour market, the easier it will be to further attract foreign skilled labour.
Measurement	Share of non-nationals (EU or non-EU) in total employed 15+ years, in % (own calculations based on Labour force survey, 2005, NUTS 0). Expert assessment yields scores of -1 (unfavourable), 0 (neutral) or +1 (favourable effect on RDLR).
More information	The European Union labour force survey database: User Guide (European Commission, 2007b)

Con: Result of all three Contextual Factors	
Scope	Measures the influence of the three contextual factors on RDLR in R&D
Interpretation	Contextual influences may attenuate or aggravate consequences of demographic change for the location factor that are captured in the DemLoc component.
Measurement	Sum of scores of the three contextual factors, ranging between -3 and +3.
Contributing indicators	R&D expenditure (Con), Academic infrastructure (Con), Cultural openness of the labour market (Con).

*High-tech sectors are defined according to the Eurostat classification for high-tech patent applications to the EPO and comprise six areas: computer and automated business equipment, micro-organism and genetic engineering, aviation, communication technology, semiconductors and laser (European Commission, 2007a, p. 132)

**Medium and highly skilled refer to ISCED 3/4 (medium) and ISCED 4/5 (high) (European Commission, 2007b, pp. 61)

***Knowledge-intensive sectors refer to high and medium technology manufacturing as well as knowledge intensive high-technology services; includes NACE codes 24, 29-35, 64, 72 and 73 (see Eurostat, 2008a).

****Continuously updated information is also available online in Eurostat Metadata:

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=2353,1&_dad=portal&_schema=PORTAL

[1)] Additional data notes are available