ESPON

TPM
Territorial Performance Monitoring
Annexes

Regional Report
Greater Dublin

Project partner 4

Targeted Analysis 2013/02/13

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This report presents the draft final results of a Targeted Analysis conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

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This basic report exists only in an electronic version.

NIRSA

National Institute For Regional and Spatial Analysis
An Institiúd Náisiúnta um Anailís Réigiúnach agus Spásúil

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1. Description of the stakeholder and its position in national structure

Prior to discussing the development of the methodology set out within this research project it is important to describe the characteristics, competencies and role of the project stakeholder, the Dublin Regional Authority (DRA) and the region it represents within this work, the Greater Dublin Area (GDA). The development of a territorial performance monitoring toolkit for the GDA is set against the roles and responsibilities that the GDA and DRA currently have within the planning system in Ireland. Having a limited range of functions and powers the GDA is only in a position to develop a series of indicators that can assist in the measurement of the implementation of its core responsibility, the delivery of Regional Planning Guidelines (RPGs).

1.1 The Planning System in Ireland

Inaugurated on the 1st October 1964, following the introduction of the Local Government (Planning and Development) Act 1963, the Planning System in the Republic of Ireland has since been augmented by a variety of additional planning acts designed to make it congruent with the changing conditions and legislative landscape of Ireland and Europe. While the Irish planning system has evolved considerable since its inception it continues to be categorised as both hierarchical and centralised. In recent times an intermediate level of regional planning has been introduced to supplement the established planning functions at central and local government, the two levels of longstanding authority and power in Ireland. The new regional planning authorities have no substantive powers or funding but have been assigned the important function of addressing the centre-local disconnect by "bridging and co-ordinating" between the two established layers with a view to achieving 'joined-up' multi-level governance and integrated multi-scale planning.

Local Authorities are principally responsible for the implementation of planning policy in Ireland. Their remit includes the promotion of sustainable development to improve the quality of life through the protection of the environment and heritage, the provision of infrastructure, and achieving balanced regional development and good local government. At an operational level, the planning system is sub-divided into 88 local planning authorities; 29 County Councils, 5 County Borough Corporations, 5 Borough Corporations and 49 Town Councils. The planning system in Ireland is also unique among European countries in that it has an independent, third party planning appeals system operated by An Bord Planeála. Established in 1977, An Bord Planeála is responsible for the determination of appeals made at the request of applicants or other interested bodies that relate to planning application decisions made by a planning authority.

Under the Local Government Act (1991) eight Regional Authorities were set up in Ireland with a responsibility for promoting coordination and cooperation among Local Authorities, reviewing development requirements of a region, reviewing Local Authority development plans and monitoring spending and progress of the National Development Plan and EU funds. The Planning and Development Act, 2000 introduced the requirement for the development of Regional Planning Guidelines (RPGs) in respect of the whole of the combined area of each region. The RPGs are operationalised in the form of policy documents that aim to implement the strategic planning framework set out in the National Spatial Strategy (NSS), and other key national policies such as transport, energy and

climate change, and thereby inform and direct the City and County Development Plans (CDPs)[1] of each of the Local Authorities within its jurisdiction.
The major policy frameworks that guide planning at the national level are the National Development Plan (NDP, 2007)[2] and the National Spatial Strategy (NSS, 2002)[3]. The basic objectives of the NDP, a seven-year strategy which sets out investment priorities for strategic investment and economic development, are to support sustainable national economic and employment growth, to strengthen Ireland's international competitiveness, to foster balanced regional development and to promote social inclusion. It is also important that the NDP follows the EU programming periods and it is directly related to EU Structural Funds investment in Ireland. The NSS, adopted in 2002 as a 20-year spatial planning framework for the nation state, aims to promote and direct balanced regional development and sustainable growth. The strategy proposes that areas of sufficient scale and critical mass will be built up through a network of urban gateways and hubs that will link Ireland more effectively into the economic 'hot-spots' acknowledged by territorial strategy devised for Europe by the European Spatial Development Perspective (ESDP) and its successors (Bartley and Kitchin, 2007)[4]. The NSS strategy emphasises continued growth in the Greater Dublin Area but also enhanced and significant growth in the regions outside Dublin, with an emphasis on nine '*gateway*' cities and nine '*hub*' towns. The NSS is implemented at the regional level through the Regional Planning Guidelines (RPGs) and at local level through City and County Development Plans (CDPs). The linking of the national economic plan (the NDP) with a national spatial plan (NSS) which occurred in 2007 accorded a new 'management' status to planning and expanded its scope beyond land-use. Planning was to be a key coordination tool in the drive to stimulate, enable and support pro-active cross-sectorial efforts at all levels (national, regional and local) to identify and harness the potential for socio-economic development of all regions across the island of Ireland.

1.2 The Greater Dublin Area (GDA) and the role of the Dublin Regional Authority (DRA) in planning (Project Stakeholder)

The Dublin Regional Authority (DRA), one of the eight Regional Authorities in Ireland, is a stakeholder in the ESPON Territorial Performance Monitoring (TPM) project. The geographical focus of this project in Ireland is the Greater Dublin Area (GDA). The GDA consists of seven Local Authorities; Dublin City, Dún Laoighre-Rathdown, Fingal, South Dublin, Meath, Kildare and Wicklow and incorporates two of the Irelands NUTS III regions; Dublin Regional Authority (DRA) and the Mid East Regional Authority (MERA). It is a legal requirement through the Planning and Development Act, 2000 that Regional Planning Guidelines (RPGs) are prepared for the combined GDA[5]. This policy document, jointly produced by the DRA and the MERA, provides guidance and recommendations that enable Local Authorities within the region to prepare

[1] The main instrument for regulation and control of development is the Development Plan. Each planning authority is required to publish notice of its intention to review its plan, not later than four years after the making of a development plan. A new plan must be made every six years (ie. two years after the notice of the intention to review the plan has been published). The plan states the authority's policies for land use and for development control and promotion in its area. The authority, in exercising control, must consider the provisions of the Plan, and try to secure its objectives.

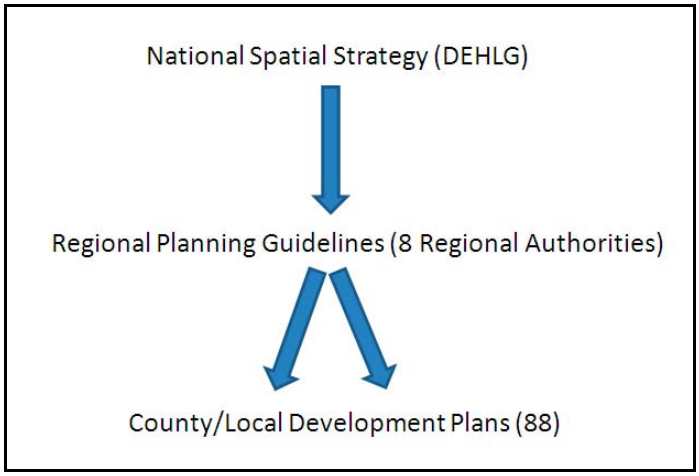
[2] National Development Plan 2007-2013 'Transforming Ireland – A Better Quality of Life for All' www.ndp.ie
[3] National Spatial Strategy for Ireland 2002-2020 'People, Places and Potential' www.nss.ie
[4] Bartley, B. and Kitchin, R. (Eds) (2007) *Understanding Contemporary Ireland.* Pluto Press, London
[5] Regional Planning Guidelines for the Greater Dublin Area 2010-2022 http://www.rpg.ie/documents/RPGPrintA4-SinglePages.pdf

development plans that meet the requirements and targets set out for the overall region within the NSS (see Figure 1).

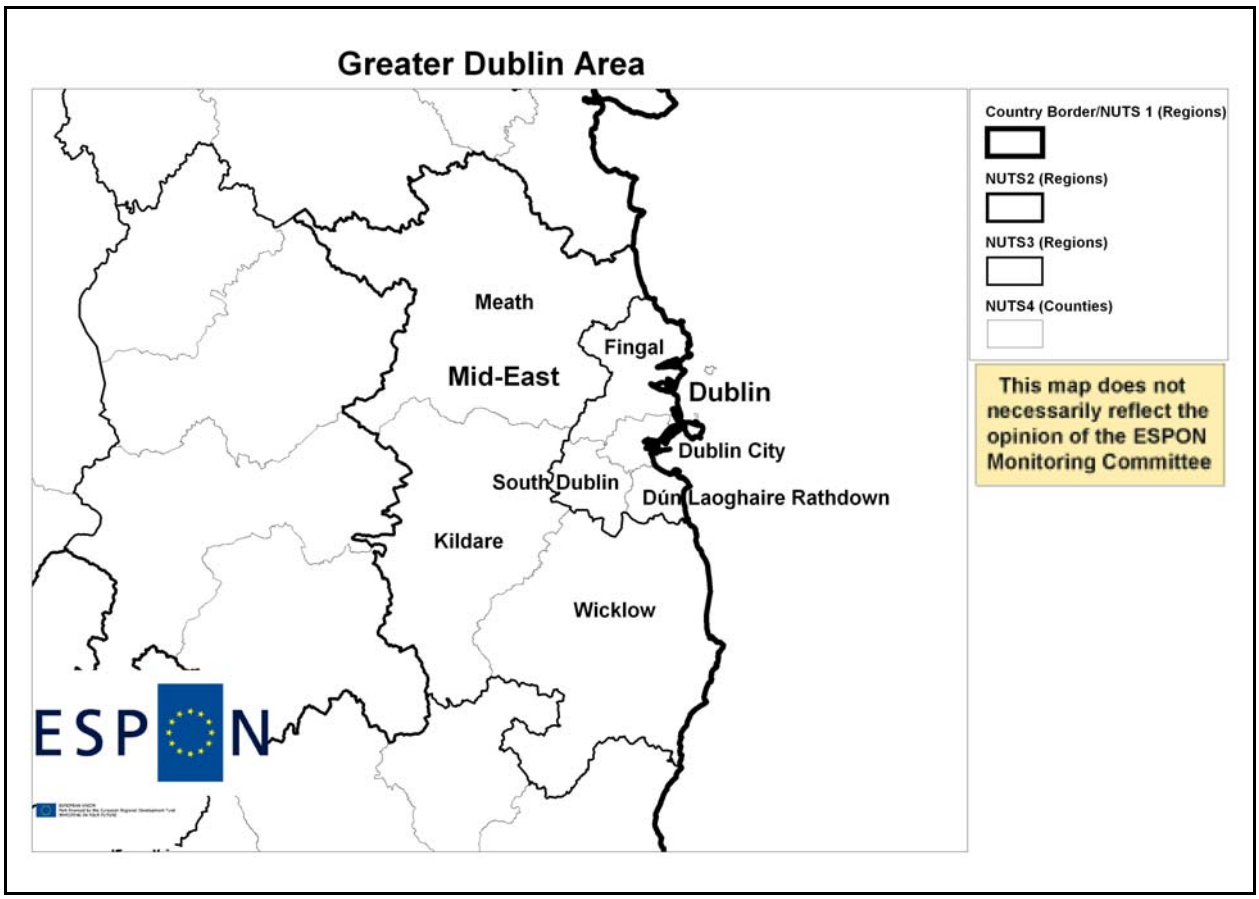
It is important to note at this point that there is a distinct difference between the planning system that operates within the GDA and the other 4 participating regions in this project: Flanders; North Rhine-Westphalia; Navarra and Catalonia. These regions all have a large range of legislative competencies for territorial policies in areas such as housing, demographics, economic development, transport, environment quality and planning, climate change, energy, water and waste management etc. Compared to other European states, the regional and local government system in Ireland are relatively weak with a much more limited range of functions and powers. Local Authorities do not have a role in policing, public transport or personal social services and powers in respect of education, health and agriculture are also very limited. The main social function relates to housing. The lack of financial autonomy within Local Authorities, with all funding coming from central government, also severely curtails their scope for independent action. In general, core competencies on most policies are managed by various Government Departments at the national level. The Regional Authorities (including the GDA) have an even more limited range of functions and powers with core responsibility being the development of the Regional Planning Guidelines (RPGs)[6] and review of CDPs to ensure successful alignment with national policies such as the NSS and associated guidance documents. Unlike other regions in this project, the GDA, therefore does not have specific policies and strategies for the macro-challenges of this project (demographics, globalisation, climate change and energy) but instead develops a series of guidance and recommendations that aim to align local implementation within the region in a coherent manner with national policies.

[6] The Regional Planning Guidelines (RPGs) aim to give regional effect to the National Spatial Strategy and to guide the development plans for each county. The RPGs inform the Development Plans in each Council area and have effect for six years.

Figure 1: Hierarchical Planning System



Map 1 Greater Dublin Area



2. Fields of Policy Interest of Stakeholders

This section provides a review of the work carried out by the research partner and stakeholder in defining key regional challenges, specific areas of policy interest to the stakeholder and the development of an initial set of policy relevant monitoring indicators for the Greater Dublin Area.

2.1 Macro Challenges and Mind Map development

The macro challenges outlined within this research project (demographics, globalisation, climate change and energy) are of interest to the stakeholder and are all in some way embedded within the policies and objectives as set out within the RPGs. The level of interest in each macro challenge is however dependent on a number of factors; the seriousness of the challenge within the region, the competencies of the stakeholder in dealing with the actual challenge through spatial planning, and finally, the changing focus of the stakeholder in light of the crisis management priorities that have come to the fore since the financial crisis of 2008. As an example, although the stakeholder does focus on all four challenges through the published RPGs, the key areas of interest to the DRA are currently demographics, employment and business, and social infrastructure.

In order to focus on the main policy interests of the stakeholder it was necessary to highlight the key regional issues that are linked to each of the four macro challenges. It was also necessary to detail any possible future threats or opportunities that the macro challenges could present in the coming decades. A detailed piece of qualitative research was carried out in the early stages of the project through an iterative desktop study on key policy documents combined with a series of interviews with the stakeholder and local and national sectoral experts. This process proved to be a useful method of detailing the main issues and challenges facing the region and is outlined in more detail below from section 2.2 onwards.

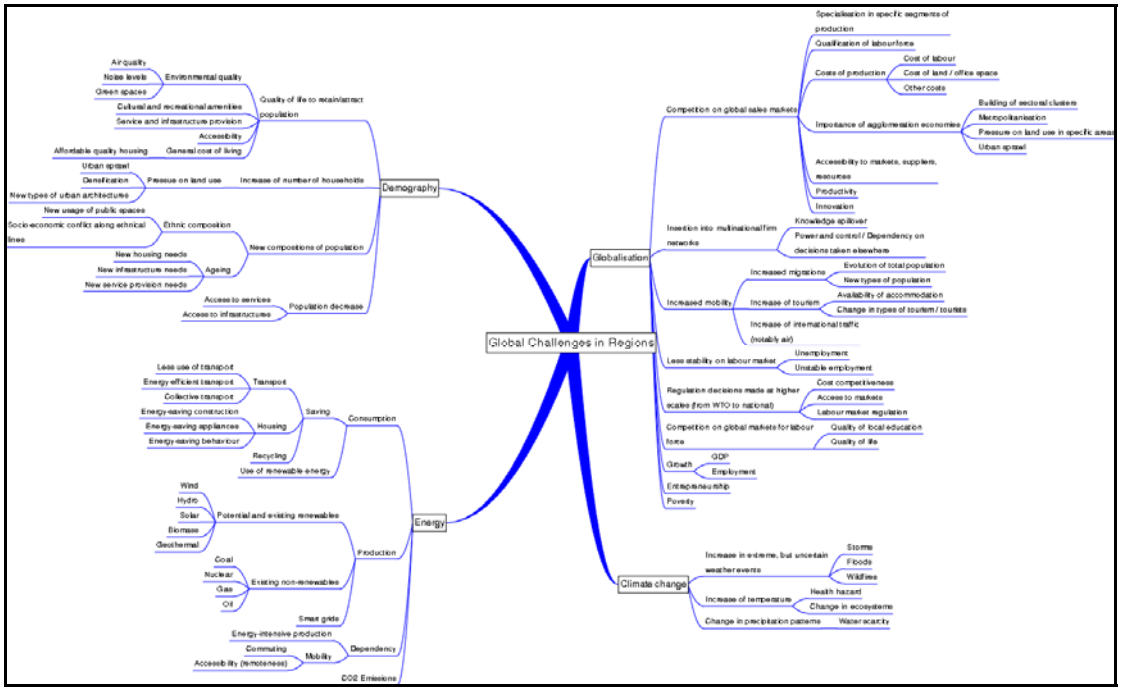
A key part of this research has been on the identification of a set of policy relevant indicators that can be used to monitor the main issues and challenges highlighted through the qualitative study. This is of great interest to the stakeholder, as an ability to monitor and evaluate the success of the recommendations and progress of the RPGs is of paramount importance, but as yet there is no functioning indicator system in place. The involvement of the stakeholder in the ESPON TPM project has therefore provided a unique opportunity to develop a set of monitoring indicators that can be used to enable a better understanding of the four macro challenges and also make an advance in the monitoring process of RPG implementation. According to the stakeholder, indicators must be representative (reflective of the objections of the RPGs and of environmental, social or economic conditions), quantifiable (able to show trends and have baseline reference values), comparable (across local authorities and regions where possible), reliable, reproducible and robust (must be sources from a reliable source, scientifically robust and reproducible over time), adaptable (new or modified indicators must be developed, where necessary, in accordance with changes in data, targets and policies) and finally, indicators must be accessible and relevant to stakeholders (elected members, government officials, general public)[7].

During the initial stages of the project the regional research partners (lead by the IGEAT research team) developed a 'Mind-Map' focussing on the four macro challenges. This was an initial attempt at analysing the different paths by which the global challenges can influence regions and provided a broad listing of indicators that could be used in a regional monitoring system, see Figure 2. This

[7] Regional Planning Guidelines for The Greater Dublin Area, 2010-2022 pg195

initial map was incomplete in so far as it did not include the many cross-linkages between the different branches. In addition, some issues raised in one branch were also relevant in other branches, but were not repeated in order to reduce redundancy. The development of this initial list of indicators and a subsequent comparison with the issues detailed in the qualitative research was a useful first step in working towards a suitable list of monitoring indicators for each macro challenge.

Figure 2: Mind-Map of the regional manifestations of the global challenges (see breakdown per macro challenge in sections below)



2.2 Macro Challenge 1: Demographics

2.2.1 Overview

The demographic challenge within Europe is a major concern and it has been estimated that, without changes in demographic and migratory flows, one third of Europe will face considerable population decline in the region of 20 per cent by 2050. Population growth in Europe has slowed to less that 0.5 per cent per year since 2000. This compares to 1.88 per cent per year for Ireland (2002-2011). The recent DEMIFER project[8] classifies Europe into seven types of regions, the Greater Dublin Area (GDA) and Ireland are classed as being within the most favourable grouping – 'Young potential regions'. The classification indicates both a young age profile and high level of natural increase and high net migration. It is important to

[8] Demifer – Demography and Migratory Flows Affecting European Regions and Cities http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/demifer.html

note that demographic patterns in Ireland have changed in very recent years with migration levels changing from net migration to increasing levels of emigration. However, Ireland is currently estimated to have the highest birth rate in Europe (Ireland 16.5 per 1000 populations, EU27 10.7 per 1000 population) suggesting that despite large number now leaving the State that population numbers are continuing to grow. This is evident through the provisional results from the 2011 Census outlining that the GDA has increased in population by 8.33 per cent since 2006 representing a population increase from 1,662,536 in 2006 to 1,801,040 in 2011[9].

The provisional results also detail that all counties in Ireland experienced positive natural increase[10] in the inter-censal period 2006-2011 with the highest rates of increase in GDA counties such as Fingal, South-Dublin, Kildare and Meath. In a follow on study to the DEMIFER report (Summary Report 1: DEMIFER, ESPON Ireland)[11] , ESPON Ireland outlined that the GDA can in fact be further broken down into a number of separate demographic classifications (based on 2006 data). Employing the methodology used in the DEMIFER project, ESPON Ireland has sub-divided the 34 Local Authorities in the Republic into six distinct demographic profiles. The seven Local Authorities within the GDA are within the following profiles in Table 1.

Table 1 ESPON Ireland Demographic Profiles

Profile Name	Description	GDA Local Authorities
Standard Profile	closely resembles the profile of the State as a whole in terms of age structure and rate of natural increase	Wicklow
Urban Aging	Low rate of population change (1996-2006), negative net migration, higher than average share of population aged 65 plus	Dublin City, Dun-Laoghaire-Rathdown
Sub-urban Families	Very high level of natural increase counterbalanced by net out-migration	South Dublin
Peri-urban Rapid Growth	Highest rates of population increase, very high rates of net migration to areas of new residential development. Expected that high rates of population increase will be sustained in future years, driven by natural increase	Meath, Fingal and Kildare

The DEMIFER project highlights the extent to which Ireland continues to be in a favourable position with respect to demographic developments. Ireland and the GDA will need to make provision for an ageing population in future years, but in the medium term Ireland remains at a comparative advantage to other regions and countries in Europe. Taking the DEMIFER report and ESPON Ireland

[9] Analysis undertaken using provisional results from the 2011 Census http://www.cso.ie/census/2011_preliminaryreport.htm

[10] Births and Deaths combined give the Natural Increase in the population

[11] ESPON Ireland, Summary Report 1: DEMIFER, 2010 http://espon-ireland.ie/ Analysis undertaken by Dr. Cormac Walsh, NUIM

demographic profile of the GDA into account the main demographic challenges within the region are varied and differ within individual Local Authorities.

2.2.2 Regional Challenges

At present the key demographic challenge for Ireland and the GDA is ensuring that increasing population and housing is directed in a consolidated manner and is aligned with guidance set out within the national spatial planning framework, the National Spatial Strategy (NSS). A key focus of the NSS is to ensure that future population growth within the GDA is consolidated within the metropolitan area of the region and that growth in the hinterland is concentrated in strategically placed, strong and dynamic centres.

Following on from a decade of high levels of residential development and population growth - both natural increase and migration - the GDA now also faces a number of service specific related challenges to provide and improve the overall quality of life for its population. Local Authorities that have experienced large growth in new housing and subsequently have a younger population profile, require increased investment to ensure the delivery of education facilities, childcare facilities and other amenities (Fingal, Kildare and Meath). The de-population and ageing of some areas within the GDA (parts of Dublin City and DLR, small hinterland towns) is also having an impact on the financial viability of services within areas. Results from the 2006 Census also highlighted that the GDA has become a more ethnically diverse region with some electoral divisions recording immigrant population increases ranging from 20 per cent to 46 per cent. The establishment of areas of high levels of ethnicity also presents potential challenges for the GDA in terms of service delivery, education and integration. The adoption of a life-course approach informed by demographic analysis and the awareness of future social and community infrastructure need and delivery is a key challenge that the GDA and Local Authorities need to address.

2.2.3 Threats and Risks

- Lack of key infrastructural investment in priority locations may lead to development and population growth in areas counter to guidance in RPGs and National Spatial Strategy. The current fiscal situation in Ireland may have an impact on the delivery of outlined infrastructure requirements in the short term.
- Another threat is the perceived shortfall in the coordination of strategic goals between Government Departments in terms of where to invest money in infrastructure.
- Limited fiscal autonomy of Local Authorities
- Continued growth of 'one-off' rural housing in parts of the GDA
- Increasing levels of ageing suburbs in some parts of the GDA (Dublin City and DLR). This will lead to drop off in services – schools, buses, shops etc
- Areas of recent population growth combined with the high birth rate in Ireland and the GDA will create additional need for the provision of adequate community facilities – schools, childcare facilities etc.
- High level of housing vacancy and Unfinished Estates in parts of the GDA
- Increasing level of emigration forecast as a result of economic crisis and high level of unemployment

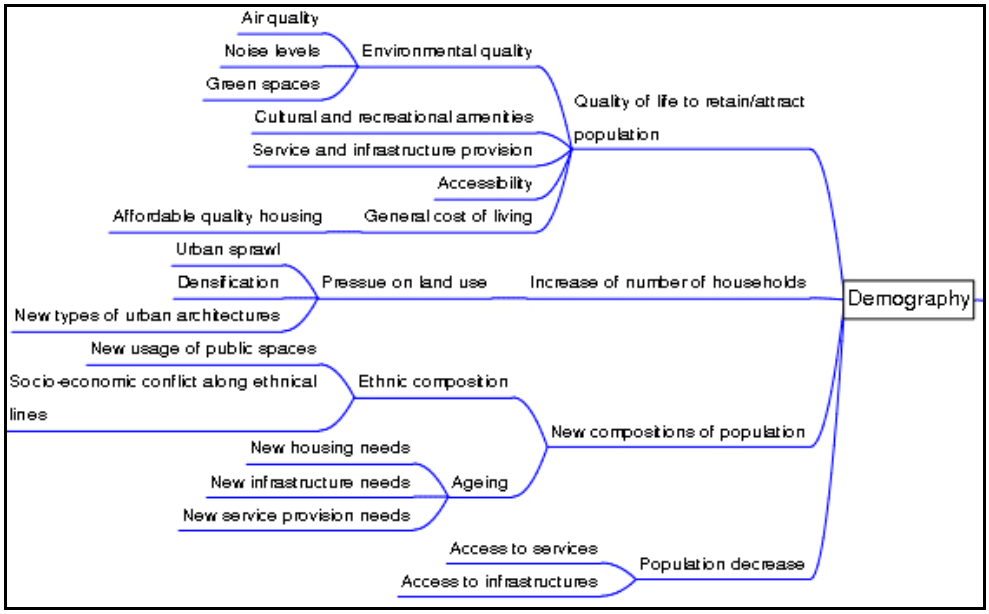
2.2.4 Opportunities

- Increased levels of vertical and horizontal integration through the National Spatial Strategy, Regional Planning Guidelines and City and County

Development Plans will lead to more consolidated and sustainable levels of demographic and housing growth.

- More consolidated and sustainable pattern of demographic and housing growth will lead to a reduction in commuting and provide opportunities for increased energy efficiencies, reduced emissions and less demand on imported energy.
- Slow down in housing development and drop in land prices can provide an opportunity to plan for and develop better community services
- Comparatively young age profile and high birth rate will lead to competitive advantages in terms of economic development and international competitiveness in the future
- There is a potential for land-banking (to be used for social housing, schools, strategic infrastructure etc) through the NAMA property portfolio, in order for the State to build up a stock of housing and land for future use.

Figure 3: Initial 'Mind-Map' set of Demographic indicators



2.3 Macro Challenge 2: Globalisation

2.3.1 Overview

Ireland has benefited greatly from globalisation in recent decades and is now ranked as one of the most globalised economies in the world. According to the Ernst & Young Globalisation Index 2010[12], Ireland is now the second most globalised economy in the world, moving up one place from the 2009 index. This globalisation index is based on openness to trade, capital movements, exchange of technology and ideas, labour movements and cultural integration. In January 2009 the European Commission Regions 2020 also produced a globalisation

[12] http://www.ey.com/IE/en/Newsroom/News-releases/Press-release-2011---Ireland-overtakes-Singapore-to-become-the-worlds-second-most-globalised-nation

vulnerability index of regions in Europe up to 2020[13]. The index concluded that regions located in the North-West periphery of the EU appeared to be in a rather favourable position relative to other areas of Europe. Ireland was ranked amongst the most favourable with the Southern and Eastern NUTS II region (GDA) ranked as the 10th least vulnerable in Europe. Key advantages for these regions are expected to be as a result of high levels of educated workforce, high level of employment, high level of employment in advanced sectors and high levels of labour productivity.

The Greater Dublin Area (GDA) is now a truly globalised region and its economic development is tied in with the experience of the evolving Irish economy over the last number of decades. Ireland has changed considerably since the 1980s from a relatively poor, peripheral nation on the edge of Europe. Ireland moved away from protectionist policy in the 1950s with an aim to take advantage of the changing and increasingly more mobile nature of business, and actively sought foreign direct investment (FDI) in the economy. Initially, Ireland attracted US-owned, low skilled export oriented manufacturing plants with key advantages for locating, being a low cost and educated workforce, government subsidies and importantly access to the European market. The introduction of low corporation tax was a key incentive in attracting further investment, an initial rate of 10 per cent for manufacturing was introduced in 1981 to be increased to a 12.5 per cent rate in the mid-1990s for all corporate trading bodies. By the 1990s, Ireland embraced free-market and neoliberal principles and aggressively courted foreign direct investment (FDI), with the result that there was a rapid shift to high-skilled manufacturing, a phenomenal growth in the service sector, and the development of a domestic consumer society. This immediately gave Ireland and particularly the GDA, the economic core of the country, a competitive advantage over other European countries in attracting FDI.

From the early 1990s, the country entered a period of economic expansion where its GDP growth per annum was double or more that of its European neighbours, and its wealth levels, in terms of average income, rose to amongst the highest of any developed nation (in 2003 the OECD estimated that in terms of GDP per capita, based on Purchasing Power Parities, Ireland was ranked 4th in the world) (ESRI, 2005)[14]. This was accompanied by low interest rates, a large expansion of the workforce, a consistently low unemployment rate, and a sustained growth in population, fuelled by return migration, immigrants seeking work, and natural increase, that saw the population increase by 16.8% between 1996 and 2006[15]. Throughout this period the GDA played a key role and was the location for most of Irelands export sectors. To understand the success of the GDA during this period it is possible to measure regional Gross Value Added (GVA), the most appropriate economic performance indicator available at a regional level, with the national figure. Based on the Indices of GVA per Person as Basic Prices with the State representing 100, the GDA was 120.2 in 2000 and 125 in 2008. Equating this to the equivalent indices at the EU27 level shows the relative strength of the GDA in European terms with the 2000 figure at 157.4 and the 2008 figure increasing to 181.9 (CSO QNHS, 2011)[16].

Whilst investment from FDI and related exports growth over the 1990s and 2000s continued, in more recent years the main driver of the economy was primarily linked to domestic growth with a particular emphasis on an inflated property

[13] Commission of European Communities, Regions 2020, Globalisation Challenges for European Regions http://ec.europa.eu/regional_policy/sources/docoffic/working/regions2020/index_en.htm

[14] Economic and Social Research Institute (2005) *Irish Economic Overview*. http://www.esri.ie/content.cfm?t=Irish%20Economyandmid=4

[15] Drawn from A Haunted Landscape: Housing and Ghost Estates in Post-Celtic Tiger Ireland, Kitchin, Gleeson, Keaveney and O'Callaghan http://www.nuim.ie/nirsa/research/working_papers.shtml

[16] Central Statistics Office, Quarterly National Household Survey 2011 http://www.cso.ie/qnhs/calendar_quarters_qnhs.htm

market and on a domestic consumer society. As the domestic economy grew, the international competitiveness of the country weakened as costs of doing business increased, reforms to improve competitiveness were delayed – particularly in relation to the non-traded sector where prices increased almost double that of EU averages for many years (Forfas, 2010)[17]. The value of Ireland's exports grew by just 2 per cent per annum over the period from 2002 to 2005 while global trade grew by an average of 6 per cent. Increasing levels of international competition for FDI led to a decline in Ireland's share of new investments and therefore presented Ireland and the GDA with a new set of challenges primarily in terms of international competitiveness. As the global crisis deepened, the Irish property bubble burst, and the vast overexposure of Irish banks to toxic property loans became apparent.

The effects of the global downturn and crash of the Irish property sector has had significant affect on the county and the GDA. The level of GDP in 2010 was some 11 per cent below and the level of GNP some 15 per cent below their respective levels of 2007 in real terms. Whilst the GDA remains relatively strong in terms of employment (on a national basis) it has certainly experienced a change in its economic structure. As of Q1, 2011 there were 744,400 people at work in the GDA. This represents 41.2 per cent of national employment. At the peak of the boom employment levels within the GDA were recorded at 884,100, the collapse in recent years representing an 18.7 per cent decrease in overall employment levels within the region from Q3 2007, this compares with a national decrease of 19 per cent. Within the GDA itself the decline in employment has been more severe in the Mid-East (Kildare, Wicklow and Meath) with employment decreasing by 21.7 per cent from the peak whereas the decrease within Dublin has been significantly lower at 12 per cent. The unemployment rate within the region now stands at 12.5 per cent compared to the national figure of 14.1 per cent (Q1, 2011). Both the national and regional rates are now considerably higher than other EU member states including project partners with the exception for Spain: EU27 9.5 per cent, Spain 20.3 per cent, Germany 6.5 per cent and Belgium 7.9 per cent[18]. At the peak of the boom the largest sectoral employers in the region were the public sector (22.5 per cent), financial and business services (20 per cent), wholesale and retailing (14.3 per cent) and construction (10.6 per cent). The economic crisis has had a greatest impact on the construction industry with levels of employment in the region decreasing by 150 per cent over the two and half year period. It is now clear that domestic lead growth linked to the inflated property bubble and cheap credit was not a sustainable basis for economic growth and development in Ireland. Key economic advisory groups in Ireland[19] now highlight that the generation of export led growth is the viable strategy to secure long term growth and prosperity. This in turn means that the economy in Ireland and the GDA will be more dependent on its performance in the global economy, the key to ensuring success here is a restructuring and improvement in regional and national competitiveness.

2.3.2 Regional Challenges

Globalisation represents both a challenge and an opportunity for the GDA. In general, the GDA is better placed to take advantage of the globalised world than

[17] Annual Competitiveness Report 2010 – Volume 1: Benchmarking Ireland's Performance http://www.forfas.ie/publication/search.jsp?ft=/publications/2010/Title,6563,en.php

[18] All data sourced from the Central Statistics Office – Quarterly National Household Survey http://www.cso.ie/qnhs/calendar_quarters_qnhs.htm and National Accounts http://www.cso.ie/releasespublications/pr_natacc.htm

[19] Forfas http://www.forfas.ie/ and the National Competitiveness Council http://www.competitiveness.ie/

other regions in Ireland with specific advantages being critical mass (population, workforce), enterprise, communications and the education/skills base within the region. The internationally traded sector in the region is strong and represents approximately 14 per cent (121,700) of all employment in the region. The vast majority of this employment is linked to key enterprise agencies such as the Industrial Development Authority (IDA)[20] and Enterprise Ireland[21]. It has been estimated that 56 per cent of this employment was provided by foreign owned companies in 2008, the remaining coming from indigenous, export oriented companies (Forfas). The GDA currently has 424 FDI companies in the area, 54 per cent of all national FDI with names such as Citibank, Dell Direct, Google, IBM, Intel, Microsoft, Facebook, AON and Wyeth Biopharma located in the region. 85 per cent of all GDA FDI companies are within the Dublin area with the remainder in the Mid-East region. The companies are involved in a wide range of sectors such as business services, chemicals, construction, financial services, ICT, medical technologies and pharmaceuticals. ICT services are by far the largest FDI sector in the region followed by financial services and the food and drink sectors. Ireland and the GDA is now also seen by many as the 'Internet Capital of Europe' with recent major investments by companies such as Facebook, EA Games, LinkedIn, Big Fish Games, Accenture and ZeniMax[22]. The internationally trading sector in the GDA has remained quite strong throughout the recession and the IDA have made 75 investment announcements relating to new investments or expansions of existing investments in the region since 2009[23].

Although the GDA, in particular the Dublin City region, is at an advantage nationally, there are a number of key areas that have been highlighted by the national enterprise and innovation advice agency, Forfás, as requiring intervention to address the short and long-term competitiveness of the region. These areas are listed in the section on 'Threats' and 'Opportunities' below;

2.3.3 Threats

- The economy of Ireland and the GDA is burdened by very high levels of private debt and increasing levels of public debt – this is major threat to the future economic recovery of the country and poses serious sustainability issues for the State's finances.
- A key threat in terms of Foreign Direct Investment (FDI) is a potential increase in the current 12.5 per cent corporate tax rate that is in place in Ireland. It is likely that any increase on this change could affect the current level of FDI in Ireland and GDA and pose future difficulties in attracting new investments.
- The growth of new global markets in developing regions may pose a threat to the competitiveness of both Ireland and the GDA in future years. The need for a diversification of the reach of FDI with an emphasis on BRIC counties has been highlighted.
- A potential threat also relates to the reliance of future export success based on a small number of sectors – the broadening of the export base has been highlighted as a key issue that needs to be addressed.
- A potential threat is the development of a two speed economy where the export economy is growing and the domestic economy is stagnant. There is a need to improve the competitiveness of the domestic economy, this is

[20] Industrial Development Authority http://www.idaireland.com/
[21] Enterprise Ireland http://www.enterprise-ireland.com/en/
[22] http://www.idaireland.com/news-media/featured-news/delivering-on-digital-how/index.xml
[23] Analysis based on data sourced through IDA website http://www.idaireland.com/search-companies.xml

essential to generate jobs and reduce unemployment. A key challenge is increasing the level of internationally traded indigenous firms and levels of export activity.

- Levels of unemployment, falling levels of labour force participation rates and increasing levels of out migration present a significant threat to the strength of the labour force and the potential for economic growth and overall competitiveness of Ireland and the GDA.
- Productivity levels in Ireland (excluding foreign owned companies) are well below the OECD average – this will pose threats to Ireland's return to competitiveness in the future unless addressed. The lack of any specific part of Government being responsible for driving productivity and monitoring progress is seen as a further obstacle.
- The onset of climate change is a potential threat to national economic competitiveness. Action is required to developed early and appropriate actions to deal with mitigation and adaptation measures.
- Continued investment is required to improve physical, educational and research infrastructure to improve the current and future competitiveness of the Ireland and key investment locations such as the GDA. Current fiscal cutbacks pose a significant threat to the delivery of key infrastructures such as water, waste, energy, telecommunications, research and education.
    - Requirement for improvements in broadband performance across the GDA – focus on uptake, performance and availability is required with a particular emphasis on the delivery of fibre connections.
    - Requirement for improvements in regional power infrastructure. Developments are necessary to cater for forecast demand in the GDA. If no action is taken there will be no capacity to cater for new customers or new industry investment. A potential threat in terms of energy is also linked to Ireland's dependence on imported fossil fuels and national energy security problems – this is now seen as a key strategic issue for Ireland.
    - Requirement for improvements in regional water and waste water infrastructure to support regional growth and allow for new industry developments – this is particularly the case in the GDA but also in other regional centres in Ireland such as Athlone, Galway, Letterkenny, Mallow and Wexford
    - Congestion and poor transport networks are considered a competitiveness weakness and require improvements -
- In terms of education and skills issues a number of key areas have been highlighted as potential threats to industry (indigenous and foreign) in Ireland reaching their potential. Industry in Ireland has highlighted the need for an up-skilling of labour force and graduates in key areas such as maths, science and technology[24]
    - there is a need for an improvement in the quality of the learning experience at primary and secondary level education: improvement in learning of maths and science, development of critical thinking, problem solving and independent learning skills

[24] The Expert Group on Future Skills Needs Statement of Activity 2011 http://www.skillsireland.ie/

    - Increase of STEM skills pipeline: graduates who are competent in ICT, engineering, maths, science, financial and multi-lingual skills
    - Improvement in mathematical proficiency – increased number taking higher level maths at Leaving Certificate. This will lead to more science, maths and technology graduates
    - Increased alignment of training and up-skilling programmes with identified business skill requirements
- A potential threat has been highlighted as the continuation of a dispersed and unconsolidated pattern of population and housing growth, which is particularly relevant to the GDA. This will lead to increased levels of 'car-based' long-distance commuting and transport congestion and lead to a further weakness of regions competitiveness in terms of transportation.

2.3.4 Opportunities

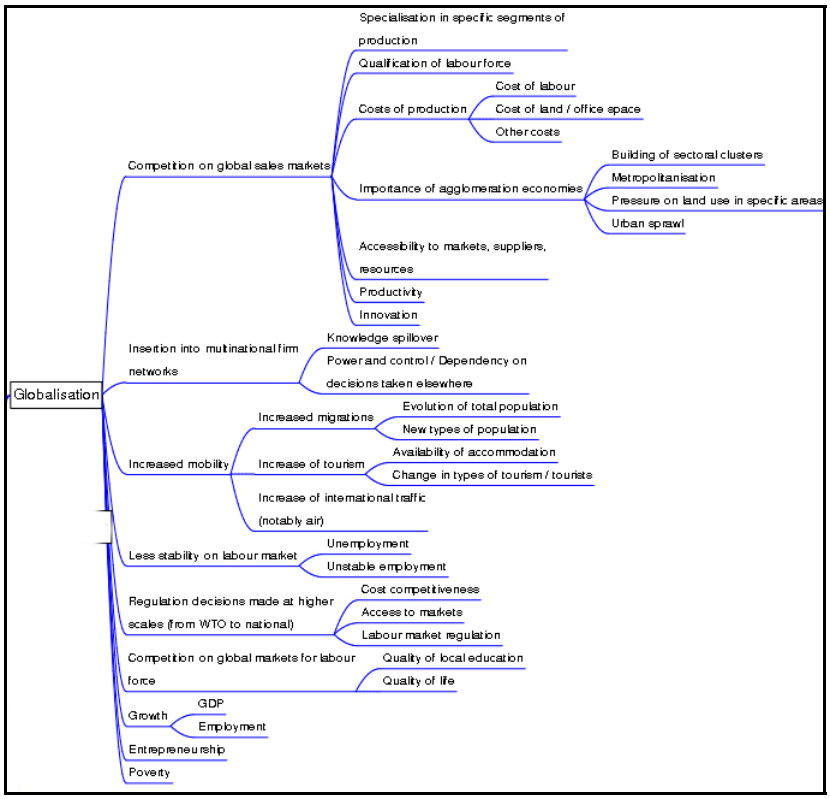
- Ireland and in particular the GDA has a long track record as a location for foreign direct investment (FDI). Ireland's stock of FDI is five times greater than the OECD average and the rate of return to US owned companies in Ireland is third in the EU-15. With 985 FDI companies from 33 countries already established in Ireland (125,432 employees) there are many opportunities for continued levels of FDI in the future[25].
- Membership of the EU, including access to an internal market of almost 500m people is a key enterprise opportunity for Ireland and is an important advantage in attractive FDI from non EU countries.
- Ireland's cost competitiveness has decreased in recent years. Decreasing the cost of doing business in Ireland relative to trading partners is a key aspect in improving competitiveness. Recent evidence suggests that decreased costs in Ireland are leading to increased levels of investment in labour intensive investment projects (both services and manufacturing) than levels of investment achieved in 2003. This suggests that continued adjustments and downward price adjustments may lead to further investment opportunities in the future.
- With the youngest population in Europe (35% under 25), the highest birth rate per 1000 population at 16.5% (EU27 10.7) and a far higher annual population growth rate per annum than elsewhere in Europe, Ireland and the GDA is in a unique position to take advantage of clear demographic and labour force advantages over the coming decades.
- Ireland and in particular the GDA have a young, educated and English speaking workforce at its disposal. With the highest levels of third level attainment in the country and a number of internationally renowned educational institutions and universities, the GDA is in a good position to build on its current international position as an attractive location for R&D investment and commercialisation of world class research.
- The National Competitiveness Council has highlighted the importance and opportunity of a move towards an adoption of a more 'entrepreneurial' approach to governance rather than the more traditional 'managerial' approach which is primarily focussed on the effective provision of services. The 'entrepreneurial' approach supports the partnership of different

[25] IDA Ireland

administrative institutions and a range of public and private stakeholders aimed at promoting economic development and improving competitiveness

- With a strong base of companies and research capabilities across a range of sectors and activities, Ireland and the GDA are well placed to take advantage of the increasing convergence of technologies. Development of skill sets in mathematics, science, engineering and electronics will provide Ireland and the GDA with clear opportunities in taking advantage of emerging trends.
- The successful implementation of the settlement strategy within the RPGs, a more consolidated and sustainable pattern of demographic and housing growth, will lead to a reduction in commuting and provide opportunities for increased energy efficiencies, reduced emissions and less demand on imported energy. This will enhance the overall competitiveness of the region and attractiveness to international investment.

Figure 4: Initial 'Mind-Map' set of Globalisation indicators



2.4 Macro Challenge: Climate Change

2.4.1 Overview

The onset of global warming is now fully acknowledged, with increases in air and ocean temperatures already happening. The Intergovernmental Panel on Climate Change (IPPC, 2007)[26] has suggested that the warming of the climate is unequivocal and is clearly linked to increases in greenhouse gases, particularly

[26] Climate Change 2007 Synthesis Report – An Assessment of the Intergovernmental Panel on Climate Change http://www.ipcc.ch/index.htm

carbon dioxide, methane and nitrous oxide. Increased levels of greenhouse gases result in increased amounts of energy trapped in the atmosphere, this in turn leads to increases in average air and ocean temperatures, melting of snow and ice, rising sea levels, large fluctuations in precipitation rates and increased levels of extreme weather. Such a scenario affects agriculture, water supply and quality, increase risk of flooding, de-stabilises ecosystems and marine life amongst others.

Over the next 15 to 20 years it is expected that climate change impacts in European regions will be primarily related to extreme weather conditions. The recent European Commission report, *The Climate Change Challenge for European Regions* (Regions 2020)[27], suggests that Mediterranean regions will be subject to droughts and peak summer temperatures, while winter floods and summer droughts will become more common in continental Europe, and biophysical conditions in Western Europe will change with an increase in storms and heavy rainfall as well as milder winters. The report also developed an index of climate change vulnerability for regions in Europe. Regions were ranked based on a number of factors such as increases in population affected by river flooding, population in areas below 5m, potential drought hazard, vulnerability of agriculture, fisheries and tourism, taking into account temperature and precipitation changes. Regions under highest pressure were generally located in the south and east of Europe. Within this index Ireland was represented by its two NUTS II regions, the Border Midlands and West (IE01) and the Southern and Eastern (IE02). Both regions were ranked amongst the lowest 5 per cent vulnerable to climate change suggesting somewhat limited impact on a comparative European scale. The Southern and Eastern region of Ireland contains the Greater Dublin Area (GDA), the focus of this study. The index score for this region was 18 on a scale from 0 to 100, with 100 being the most vulnerable.

2.4.2 Regional Challenges

It must be noted that the relative vulnerability of Ireland in comparison to European counterparts does not however suggest that Ireland and the GDA will not face significant climate change challenges in terms of adaptation and mitigation. Government departments and planning authorities (national, regional and local) in Ireland are fully aware of the challenges of climate change and have developed a series of strategies to deal with international and EU mitigation targets and are starting to develop measures of adaptation for future climate change impacts. This is primarily lead through national policies and implemented at the regional and local level through the RPGs and City and County Development Plans.

The effects of climate change are already being felt in Ireland. Levels of greenhouse gases are rising on a global basis and increases have also been detected in Ireland and the consequences of such are evident in the temperature record. Ireland is now on average 0.7^{o}C warmer over the period 1890 -2007 and six of the ten warmest summers have occurred since 1995 (Comhar, 2009)[28] . Ireland's emissions profile has changed considerably since 1990 with the contribution from transport more than doubling. The key challenge in terms of mitigation is reducing GHG emissions at a national level and complying with legally binding international and EU targets. Containing over 40 per cent of the national population and acting as the core driver to the national economy, the GDA contributes heavily to national emission estimates. A major challenge for the

[27] European Commission, Regions 2020, The Climate Change Challenge for European Regions

[28] Comhar Sustainable Development Council, Adapting to Climate Change: The Challenge Ahead for Local Government, 2009

GDA is therefore to decouple economic growth from emissions of GHGs (RPGs, GDA)[29].

The most significant impact of climate change in Ireland and the GDA will undoubtedly be related to the water environment. Fluctuating rainfall patterns and increasing sea levels will have an impact on agriculture and ecosystems and also result in increased levels of inland and coastal flooding and coastal erosion, thereby having a direct affect on existing population settlements and infrastructure and also on planned future developments. It is likely that all river catchments will experience increasing flows and potential flooding in winter with water flows expected to increase by 12-15 per cent by the 2050s (Comhar, 2009). Increasing sea levels and more frequent storm surges will have an impact on settlements in coastal areas. A key issue relating to water supply in Ireland is the fact that areas of greatest need tend to be farthest away from greatest levels of supply. This is particularly the case in the GDA and currently the Dublin Water Region spare capacity stands at 1 per cent, against a best practice of 10 per cent minimum availability (RPGs, GDA). Predictions of future decreases in rainfall in the GDA and surrounding region, a likely impact of climate change, coupled with proposed increased housing and population, presents a major infrastructural challenge for the region.

2.4.3 Threats

- Sea-level is projected to rise by between 18cm and 59cm this century – this will pose a threat to coastal areas of Ireland and coastal settlements in the Greater Dublin Area.
- More intense storms and rainfall events will lead to increased likelihood and magnitude of flooding of rivers and coastal areas. It is suggested that current '50 year floods' could by mid to late century happen once every decade. The Greater Dublin Area will be affected by this and adaptation measures are required for all coastal zones and river catchments.
- Drier summers in the East will result in water shortages and a need for irrigation of crops. Significant changes in stream-flows are expected by the 2050's and further enhanced later in the century. Predicted water reductions in autumn are expected by up to 70 per cent in vital water supply rivers in the east[30].
- Adaptation measures are required to combat such water resource management threats – flood frequency calculations require amendment for civil engineering structures, increased levels of erosion and greater suspended loads will require management for all rivers, storm-flow drainage systems will pose greater threat to water quality. There is also a requirement for amended calculations for water supply and water quality (particularly in Greater Dublin Area), low flow conditions and higher temperatures will pose a threat to discharge consents – this may compromise successful implementation of the Water Framework Directive[31].
- Increased frequency of wild fires and pest infestation.
- Agriculture in Ireland can adapt to the challenges of climate change – future threats will primarily come from wetter winters and drier summer soils, increased temperatures will also play an important role. For the eastern region of Ireland (including the GDA) water stress on grass,

[29] See page 27 of the Regional Planning Guidelines for the Greater Dublin Area 2010-2022 http://www.rpg.ie/documents/RPGPrintA4-SinglePages.pdf

[30] Climate Change in Ireland: Refining the Impacts for Ireland 2007-2013 (EPA)

[31] Climate Change in Ireland: Refining the Impacts for Ireland 2007-2013 (EPA)

barley, potato and maze will occur on a much more frequent basis. Dairy farming will also be affected by summer soil moisture deficits.

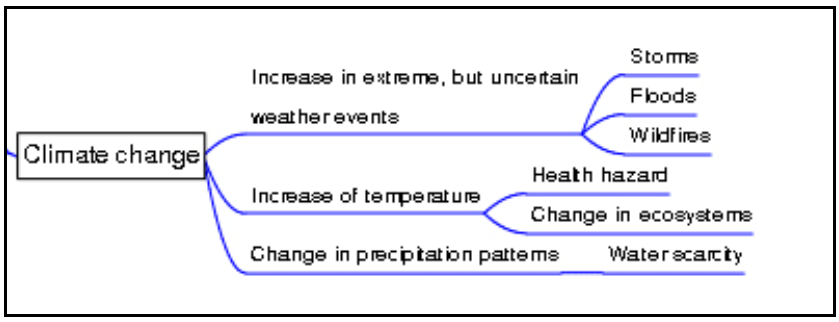
- The challenge of climate change will pose a significant threat to the water supply in Ireland and the Greater Dublin Area. Climate change will pose a threat to the amount, seasonality and regional distribution of rainfall and will therefore not only affect availability for agriculture but also for domestic and commercial use.
- Climate Change also presents specific threats to bio-diversity in Ireland – changes in the timing of leafing, bud-burst and leaf fall can be expected as a preliminary response.
- Increased levels of GHG emissions from main sectors such as Agriculture and Transport are likely in increase without policy intervention.
- There is currently no Climate Change Bill or any legal enforcement of climate change strategies in Ireland. This is a serious threat to the future of Ireland and the GDA particularly in relation to achieving emission targets as set through Kyoto and the EU and adapting to changes that are going to happen and positioning Ireland and the GDA to be competitive in the changed world effectively.
- The lack of clear national legislation on climate change mitigation and adaptation measures to ensure implementation of policy at local level is a potential threat for successfully addressing climate change challenges. To date there is no national requirement to integrate climate change into general policy or to prepare local climate change strategies – this is done on an ad-hoc and voluntary basis.
- The potential introduction of an increased target of a 30 per cent reduction in emissions by 2020, compared with 1990 levels will pose major difficulties for Ireland in reaching this target.

2.4.4 Opportunities

- The main opportunities for climate change in Ireland are related to agriculture. Increased levels of carbon dioxide in the atmosphere will lead to increased photosynthesis and agricultural yields for most crops will increase. Crops such as maize will do very well, wheat and barley will improve however crops such as potatoes will suffer particularly in summer due to lack of moisture.
- There are opportunities for farmers to adapt to climate change by adjusting management and pasture practices. Research has been carried out to model how farmers can adapt to climate change in different parts of Ireland. Opportunities can be gained by integrating research results into agricultural practice.
- Some benefits can be achieved if global mean temperatures are limited to a 1c increase above pre-industrial levels – Longer growing season, potential for new crops, e.g soybean, increased production of existing cereal and grass crops, earlier breeding of animals and birds
- A potential climate change opportunity for Ireland relates to tourism. Currently the peak tourism season in Ireland is June and July, it is expected that the shoulder season can be extended from May to September. There is also potential for tourists to travel from regions in southern Europe to gain access to the cooler climate in Ireland.
- From a planning point of view the main benefit will be in relation to energy reduction – there is already evidence of a reduced amount of energy needed for space heating in the Dublin region on a per capita basis. This will be a positive benefit of climate change and will in turn reduce emissions and have a positive effect on energy security.

- The successful implementation of the National Spatial Strategy and settlement strategy outlined within the RPGs will promote a more consolidated and sustainable pattern of growth. This will reduce levels of long distance commuting and provide opportunities for increased energy efficiencies, reduced emissions and less demand on imported energy.
- Increased levels of flood risk management and research, the delineation of flood risk maps and an improved evidence base in this area provides an opportunity to limit the development of further settlements in 'at-risk' areas.
- A series of local level research is being carried out by the Irish Climate Analysis and Research Unit (funded by the EPA) at the moment. The results of this research will be made available to all Local Authorities in Ireland and will be customised to focus on specific climate change threats relevant to each area. This will provide an opportunity for Local Authorities to develop adaptation strategies to deal with forecasted climate change impacts.
- The introduction of universal water charging will provide clear opportunities for the conservation of an increasingly scarce resource as the century progresses.
- There is an opportunity for the introduction of clear leadership and commitment to climate change at the top level within Government in Ireland. The introduction of a proposed Climate Change Bill, the 3rd National Climate Change Strategy and the proposed National Climate Change Adaptation Framework would be positive moves in dealing with the climate change challenge in Ireland. It is as yet unclear when such legislation and policies will become available and whether they will be actually fully supported and enforced at the sectoral and local level.
- The introduction of a Climate Change Expert Advisory Body to advice Government, and place appropriate statutory responsibilities and duties on all public bodies is also seen as an opportunity in dealing with climate change challenges.

Figure 5: Initial 'Mind-Map' set of Climate Change indicators



2.5 Macro Challenge: Energy

2.5.1 Overview

The European Commission introduced the new European Energy Policy (EEP) in 2007 as a mechanism designed to meet the challenges of climate change, energy import dependence and rising energy prices. This policy focuses on three main challenges and objectives: sustainability, security of supply and competitiveness. The objectives set three targets to be met by 2020: a 20 per cent reduction in greenhouse gas emissions; a 20 per cent increase in energy efficiency; and

ensuring that 20 per cent of the EU's energy consumption is to be from renewable sources. Under the terms of the EEP Member States are set individual renewable energy targets. A sub-target of 10 per cent in the transport sector applies to all Members, but apart from this measure there is flexibility as to how members achieve the overall renewable target.

Ireland faces a similar set of energy challenges as our European and international counterparts. The challenge in Ireland is perhaps greater as a result of our small energy market, peripherality and dependence on imported fuel resources (DCENR, 2007)[32]. This is reflected in the recent EC Regions 2020 report where both of Ireland's NUTS II regions were ranked in the top 10 most vulnerable regions in Europe in terms of energy import dependence and consumption. The Greater Dublin Region (GDA) (Southern and Eastern) was ranked as the fifth most vulnerable in Europe[33]. To address these challenges and adhere to European commitments, Ireland's energy policy is therefore set within the European context with an overall agreed target to achieve 16 per cent from renewable sources by 2020.

2.5.2 Regional Challenges

Energy usage and supply trends have changed considerably in Ireland over the last two decades, with demand increasing by nearly 69 per cent in the period from 1990 to 2009 and increasing in every sector of the economy. Transport continues to be the largest user of energy accounting for 41.4 per cent of total demand in 2009, this relates to a 151 per cent increase in demand from 1990 levels. Total energy demand from other sectors is as follows: industry 18.1 per cent; residential 25.3 per cent; commercial/public 13 per cent and agriculture 2.2 per cent. Fossil fuels accounted for 95 per cent of all energy used in Ireland in 2009, the vast bulk of this coming from oil (52.1 per cent) (which is mostly imported), gas (29 per cent) and coal (8.2 per cent). The remainder of the supply comes from peat (5.8 per cent), renewable energy sources (4.5 per cent) and imported electricity (0.5 per cent) (SEAI, 2010)[34]. Significant progress has already been made in terms of renewable energy with an increase of 14 per cent during 2009 and an annual average increase of 15 per cent between 2005 and 2009.

Energy usage and supply statistics are not available for the GDA as a region. However, national estimates provide proxies heavily weighted towards GDA transport activity (public and private), economic and industrial production and social activity. Containing 40 per cent of the national population, contributing just under half of the GVA output nationally and being the largest commuter based region in the country, the GDA is a significant consumer of national energy supply[35].

Throughout the course of the qualitative study a series of energy 'threats' and 'opportunities' were highlighted for Ireland the GDA.

2.5.3 Threats

- Security of supply is crucial for the economy of Ireland and the GDA. Currently 90 per cent of Irish energy requirements are imported (EU average is 55 per cent). Along with the peripheral location of Ireland and

[32] *The Energy Policy Framework 2007-2020 Delivering a Sustainable Energy Future for Ireland (2007) Government White Paper* http://www.dcenr.gov.ie/Energy/Energy+Planning+Division/Energy+White+Paper.htm

[33] Regional Challenges in the perspective of 2020, Regional Disparities and future challenges, Background paper on Energy, ISMERI Europa

[34] Sustainable Energy Authority of Ireland, Energy in Ireland 1990 – 2009, (2010) http://www.seai.ie/Publications/Statistics_Publications/EPSSU_Publications/

[35] See page 40 of the Regional Planning Guidelines for the Greater Dublin Area 2010-2022 http://www.rpg.ie/documents/RPGPrintA4-SinglePages.pdf

small market scale, this current reality leaves Ireland vulnerable to supply disruption and imported price volatility. The fact that Ireland has not yet harnessed significant quantities of renewable resources will further exacerbate this future threat. This threat is equally pressing for the GDA as the rest of the country.

- Ireland's import dependency has grown considerably since the 1990s due to increased demand but also due to a decline in indigenous fossil fuel resources. In 2009 the production of indigenous gas decreased by 83 per cent from 1990 levels and indigenous peat by 59 per cent. This reduction in indigenous fossil fuel resources will in turn have future impacts on import dependency and pose a further threat to Ireland's energy security. Professor J Owen, CEO of SEAI, has recently commented on the scale of Ireland's energy security problems:

> "Security of energy supply is emerging globally as a key concern. Nowhere is this issue more relevant than in Ireland where our reliance on oil accounts for over half of all energy consumption. Energy security is now a key strategic issue for Ireland"[36]

- The introduction of the proposed single European electricity market in 2014 may pose some difficulty for Ireland - if the Irish market requires radical change to conform with the new EU trading scheme it may involve substantial cost, estimated at €100m by the ESRI. There will also be a threat to the current Irish Single Electricity Market (SEM) – it is expected that this will be inconsistent with the new EU market and may have to be abandoned
- Demand for energy (electricity) in the East is estimated by EIRGRID to increase significantly by 2025 (80 per cent). To combat this threat there is a requirement for the appropriate reinforcement and expansion of the energy network. This is a critical part of securing the region's future and central to regional competitiveness.
- The GDA has the highest demand for energy in Ireland but is not an area with the greatest renewable generation potential. The region will be primarily dependent on renewable energy generation in other regions, particularly the West.
- A potential threat has been highlighted as the continuation of a dispersed and unconsolidated pattern of population and housing growth. This will lead to increased levels of 'car-based' long-distance commuting (increased transport energy costs and energy demand) and have a negative impact on proposed increased usage of more energy efficient public transport.
- Existing energy infrastructure is at risk from climate change. Many of Ireland's power stations, oil refineries and storage facilities are located on the coast and therefore at risk of rising sea levels and storm surges. Critical infrastructure and below ground facilities are at increasing risk of flooding. Extreme floods will affect dam safety and operating procedures for hydro power stations. Demand for electricity may increase to power air conditioning during heat waves and to pump water for water supplies, waste water treatment and irrigation during droughts[37].
- Local Authorities are not in a position to implement their own energy development plans as they don't have the financial resources to do so. Their remit within CDPs is to create suitable and favourable conditions for the development of new renewable technologies through recommendations and policies.

[36] http://www.seai.ie/News_Events/Press_Releases/2011/Energy_security_is_a_key_national_strategic_issue.html
[37] Ireland at Risk – Critical Infrastructure: Adaptation for Climate Change

- The current fiscal situation in Ireland may have an impact on the delivery of outlined energy infrastructure requirements in the short term.
- A number of issues are also preventing the uptake and implementations of energy efficiency measures such as financial barriers including lack of access to capital and high cost of capital, and lack of information about the true costs and benefits of energy efficiency measures. These potential threats are being addressed by SEAI and Government awareness campaigns.

2.5.4 Opportunities

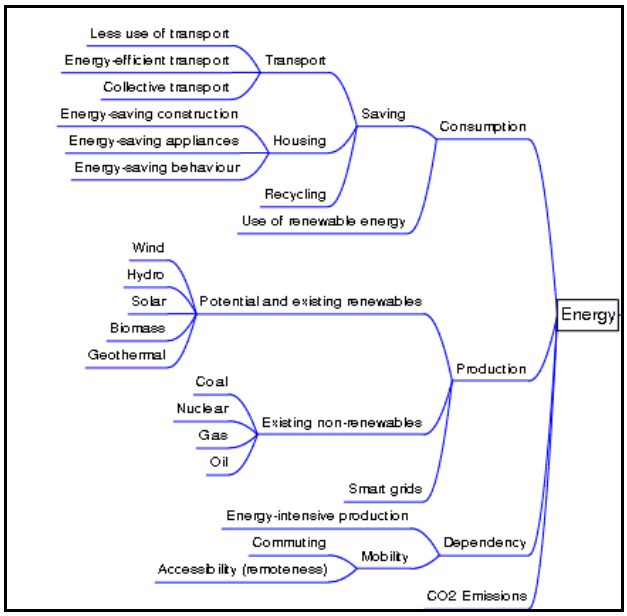
- The delivery of the overall renewable energy Directive target (16 per cent by 2020) is a clear opportunity in reducing Ireland security supply issues. Clear and efficient government guidance and support on energy efficiency and energy renewable policy will greatly assist in reaching these targets.
- Ireland (to a lesser extent the GDA) is relatively rich in wind, wave and tidal resources. Containing 13 per cent of EU coastal resource, Ireland has the potential to be a centre of activity in ocean energy development. As technology develops Ireland is in a unique position to exploit these indigenous energy sources and reduce dependency on imported fossil fuels. Depending on investment in electrical interconnection between Ireland and Western Europe, there may also be potential for Ireland to become a net exporter of clean energy. Significant employment opportunity also exists, a recent study suggest that meeting the 2020 renewable targets will create in excess of 10,000 jobs[38].
- The development of clean energy in Ireland can lead to entrepreneurial opportunities for Irish business in future years
- At the GDA level all Local Authorities have now produced Wind Energy Strategies to highlight suitable locations within counties - this will provide an adequate evidence base to feed into the planning and development of wind farms.
- There are some potential opportunities for strengthening Ireland's energy security through proposed indigenous gas developments at the Corrib Gas field – this is likely to improve dependence on imported gas and make a positive contribution to imported energy dependency
- Significant opportunities arise in updating and enforcing mandatory regulations in relation to the building sector – thermal insulation of walls, floors etc; ventilation systems; boiler thermal efficiencies etc
- A large proportion of Irish homes were built prior to the introduction of building regulations. While this may be seen as an opportunity lost it also presents a significant opportunity in increasing energy efficiency by undertaking retrofitting programmes. The National Energy Retrofit Programme builds on existing energy saving programmes in both the domestic and non-domestic sectors. Through the involvement of a host of stakeholders the programme will focus on delivering energy savings, cost reductions and smaller carbon footprints for energy customers.
- The successful implementation of the National Spatial Strategy and settlement strategy outlined within the RPGs will promote a more consolidated and sustainable pattern of growth. This will reduce levels of long distance commuting and provide opportunities for increased energy efficiencies, reduced emissions and less demand on imported energy.
- In terms of transport, a major opportunity to reduce emissions is through behavioural shifts – this entails the user of smaller, more efficient cars and fewer car journeys. Relevant policy, such as the National Energy Efficiency

[38] Jobs and Investment in Irish Wind Energy, Irish Wind Energy Association, June 2009.

Action Plan (NEEAP), aim to promote car sharing and provide incentives to increase use of public transport.

- GRID25 has been introduced with an objective to support enterprise development in regional locations. This is critical and aims to ensure that regional centres can support new energy intensive investment projects and thereby provides significant competitiveness opportunities.

Figure 6: Initial 'Mind-Map' set of Energy indicators



2.6 Main field of interest for Stakeholder

As detailed at the outset of this section, the stakeholder is interested in all of the four macro challenges, each being in some way embedded within the policies and recommendations as set out within the various chapters of the RPGs. In terms of spatial planning, the stakeholder is however limited in its competency in dealing with the various challenges. In general, core competencies on most policies (energy, climate change, globalisation etc) are managed and steered by various Government Departments at the national level. The stakeholder has a much more limited range of functions and powers with core responsibility being the development of the Regional Planning Guidelines (RPGs)[39] and review of County/City Development Plans (CDPs) to ensure successful alignment with national policies such as the NSS and associated guidance documents (energy, climate change, globalisation, competitiveness etc).

[39] The Regional Planning Guidelines (RPGs) aim to give regional effect to the National Spatial Strategy and to guide the development plans for each county. The RPGs inform the Development Plans in each Council area and have effect for six years.

The main area where the stakeholder has a specific role to play is in the delivery of population targets to local authorities. These targets, driven by the spatial settlement policies of the National Spatial Strategy and recommendations from key transport strategies, aim to guide the future direction of growth and investment by setting and defining the settlement hierarchy and the identification of key growth areas within the GDA. Therefore, the main field of interest to the stakeholder is in population and demographic change within and across the GDA. Other key areas of interest are employment and business development and the delivery of sustainable physical (transport, water, waste water and communications) and social (housing, education, health facilities etc) infrastructure across the region.

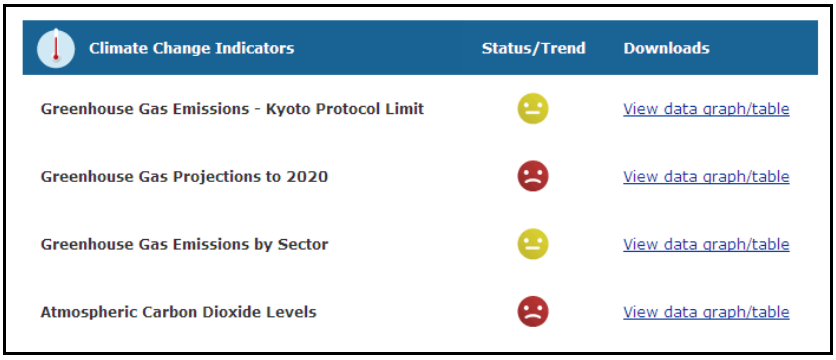
3. Assessment of the Regional Indicator Systems Completeness

3.1 Existing Indicator Systems

There are a number of different monitoring systems in place in Ireland, mainly available at the national scale but as yet there are no sub-national or regional monitoring systems. At the national scale, the NDP is subjected to an ex-ante, ongoing (including mid-term) and ex-post evaluation. The NSS is also reviewed and recently produced The Development Gateway Index which reports on the development of the nine National Spatial Strategy (NSS) Gateways measuring the extent to which these gateways are progressing as drivers of regional economic development. A number of other monitoring systems are also available but are specifically related to individual sectors such as energy or climate change. As an example, the Environmental Protection Agency (EPA) 'Environment in Focus' system provides the latest information on Ireland's environment under seven separate themes and displays each indicator in a dashboard; socio-economic, climate change, air, water, waste, land, nature and environment and you (Figure 7)[40]. Datasets within this system are only available at a national level and do not provide any regional trends.

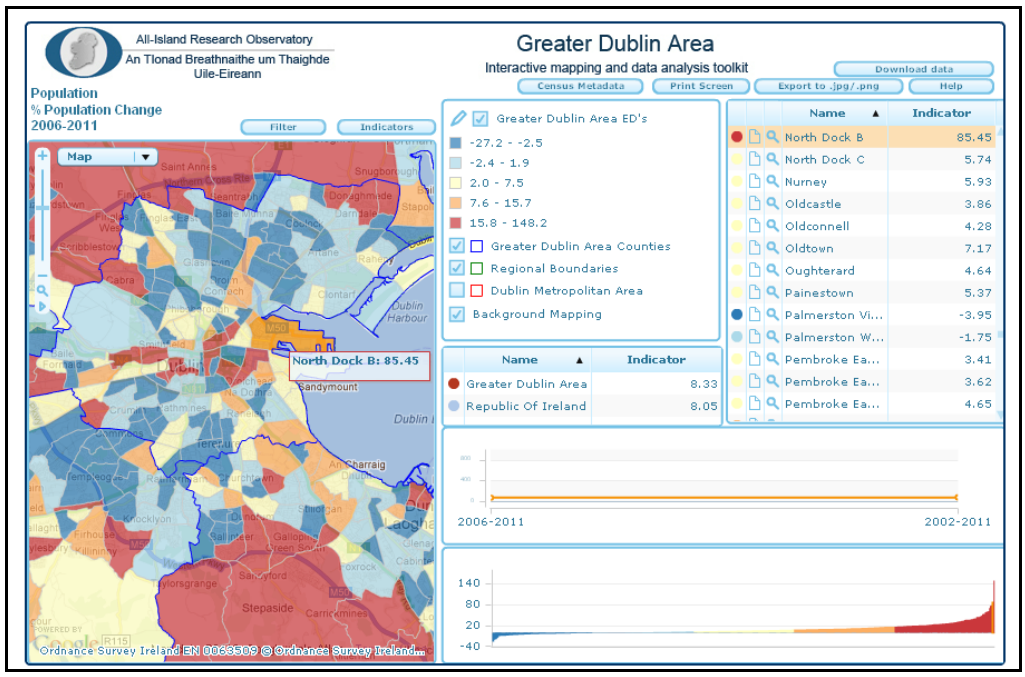
[40] http://www.epa.ie/environmentinfocus/

Figure 7: EPA Climate Change Indicator System



At the regional level the All-Island Research Observatory (AIRO), a research unit and interactive spatial data portal at the National University of Ireland, Maynooth (NUIM), has developed a number of regional mapping tools with a focus primarily on census information. In excess of 300 variables are available to each regional authority and can be mapped on a time-series basis at the LAU2 spatial level (Figure 8)[41]. Information is currently available on demographics, religion, economic status, industry, housing, households, social class, education and transport. This mapping system is currently available to the stakeholder and is used in the development of annual reports on the monitoring of RPGs. The current drawback to this system is that it is primarily based on census information and is only updated on a 5 year basis in line with census updates.

Figure 8: All-Island Research Observatory GDA Census Mapping System



[41] http://www.airo.ie/mapping-module/atlas/regional/AIRO_IA---NUTS%2B111_Greater%2BDublin%2BArea

Although not directly involved in the actuation of objectives on the ground, the regional authorities in Ireland, including the stakeholder, are responsible for ensuring that the objectives are implemented within the time frame of the plan and are required to provide annual updates on implementation progress to the Technical Working Group, Implementation Steering Group of the RPGs and regional members. With the exception of the AIRO GDA Mapping system, there is currently no specific regional indicator system available to the stakeholder. A large inventory of performance indicators have been highlighted as being useful in measuring the implementation of the plan, but it has been clearly stated within the RPGs that all reporting will be dependent on the resources available to the DRA during the life time of the plan.

The stakeholder is currently in the process of producing five annual update reports that aim to measure the implementation of the objectives set out within the RPGs. The reports currently focus on population and housing, energy and communications, water, wastewater and transport. This is done through a process of gathering ad-hoc datasets that can feed into the up-date reports but currently there is no actual monitoring system that can host, query and display such indicators.

3.2 Revision of Mind Map and collation of policy relevant indicators

As the stakeholder does not have a monitoring system in place, the generation of the initial Mind-Map presented a useful opportunity to develop a working monitoring system with the assistance of the research partner. Following a review of the results from the qualitative analysis, in particular the potential threats and opportunities posed by each macro challenge to the region, the research project team, in close collaboration with the stakeholder, revised the list of indicators in the existing Mind Map with a focus on answering the following questions;

- Is this indicator available for the GDA?
- What spatial scale is it available at?
- Is this a key indicator for the stakeholder?
- Can the indicator be linked to current policy?
- If yes, what policies can the indicator be linked to?
- How should the indicator be measured?
    - What is good, what is bad? (important for IGEAT Monitoring Toolkit, see section on Analysing Quantitative Data)
- Is there a summary of the data available? (metadata)
- Is there a direct link to the datasets available?

With a revised and more detailed list of potential indicators now completed, it was then possible to undertake a further review process with the stakeholder with an emphasis on identifying new needs of information. As the stakeholder does not have an indicator system in place it was decided that all relevant and available indicators linked to the Mind Map should be collated if possible and were, as such, classed as new needs of information. Through further discussion with the stakeholder it was decided that the revised Mind Map should then be cross referenced with the headline list of potential indicators set out within the RPGs. This process would allow the identification of any new needs of information not included in the Mind Map.

3.3 Defining new needs of information

The review process with the stakeholder resulted in the identification of a number of 'necessary' indicators that were seen to be either unavailable due to lack of data or not included in the initial Mind Map but seen as headline indicators in the RPG list. This identification process provided the stakeholder with an opportunity to work with the research partner towards the development of a qualitative survey that would harvest both expert opinion and qualitative information in an attempt at constructing the missing indicators.
A number of additional and readily available indicators were added to the Mind Map but due to time constraints it was decided than the research team would focus on the development of only two new indicators, both listed in the RPGs but not currently unavailable (see 4.2.1 and 4.2.2 for further details);

- Climate Change Headline Indicator: Information was required on the quantity and quality of climate change strategies in place across the region, the focus of the strategies, barriers to the implementation of strategies etc

- Demographic (Population/Social Infrastructure Headline Indicator: ***GDA Infrastructure Survey***

4. Additional indicators/information

4.1 Analysing quantitative data

Following the completion of the revised Mind Map and identification of new needs of information, the project team was in a position to focus on the gathering and analysis of the quantitative indicators.
As the stakeholder does not have any existing monitoring system in place it was decided that every effort should be made to develop a working tool throughout the lifetime of the project. This was carried out in two ways. Firstly, the lead research partner based at IGEAT developed a benchmarking tool based on initial work that was completed in the early part of the project. This quantitative benchmarking tool examines regions under the key indicators listed in a European, national and neighbourhood perspective. This tool has proved to be useful in benchmarking the performance of the GDA within Europe. Secondly, the local research partner worked with the stakeholder to develop an interactive monitoring toolkit that could be used by the stakeholder to monitor, view and share indicators and inform elected members (councillors) and the public on the progress of policies as set out in development plans and the RPGs.

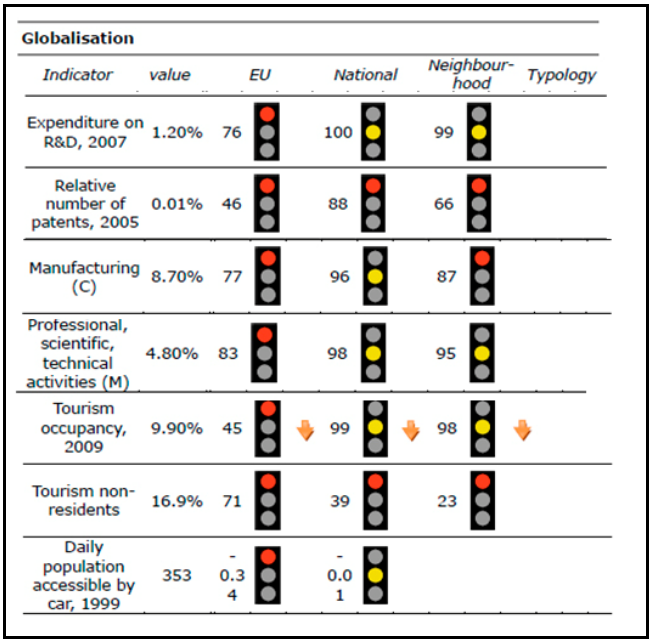
4.1.1 IGEAT Quantitative toolkit

The IGEAT team have developed a series of indicator benchmarking tools based on the ESPON HyperAtlas. The benchmarking values have been derived from setting each regions performance for one indicator in relation to the overall European/national/regional performance. Benchmarking values generated by the HyperAtlas vary around a reference value of 100 and were classified as follows: benchmarking value=>100 = good, 90-100 = average, <90 = bad. Results from this benchmarking exercise are available through the *Interim* report and available

on the ESPON TPM project page on the ESPON website[42]. As an example, the benchmarking of globalisation indicators in the GDA from a European perspective suggests poor performance in the following economic fields; expenditure on R&D, relative number of patents filed, employment in the manufacturing and professional activities sector, the average salaries per economic sector, tourism aspects, accessibility by car and plane as well as unemployment (Figure 9). As part of this analysis a series of 35 maps have been developed showing the distribution of trends across Europe at both NUTS II and NUTS III level. For those indicators where there is an official European quantitative policy objective they have been mapped using a red-yellow-green colour scheme. For other indicators, the mapping was produced using quintiles, meaning that the middle class represents the median. Maps x to x below provide an interesting insight into the relative position of the GDA across Europe in terms of population (old age dependency 2009 and 2050), expenditure on research & development, accessibility to populations, accessibility to flights, education attainment, solar energy resource potential, change in mean precipitation (summer) and ozone concentration levels. It is the intention of the research team at NIRSA to embed all of these indicators within mapping tool that will be readily accessible to the GDA and also other regional authorities within Ireland.

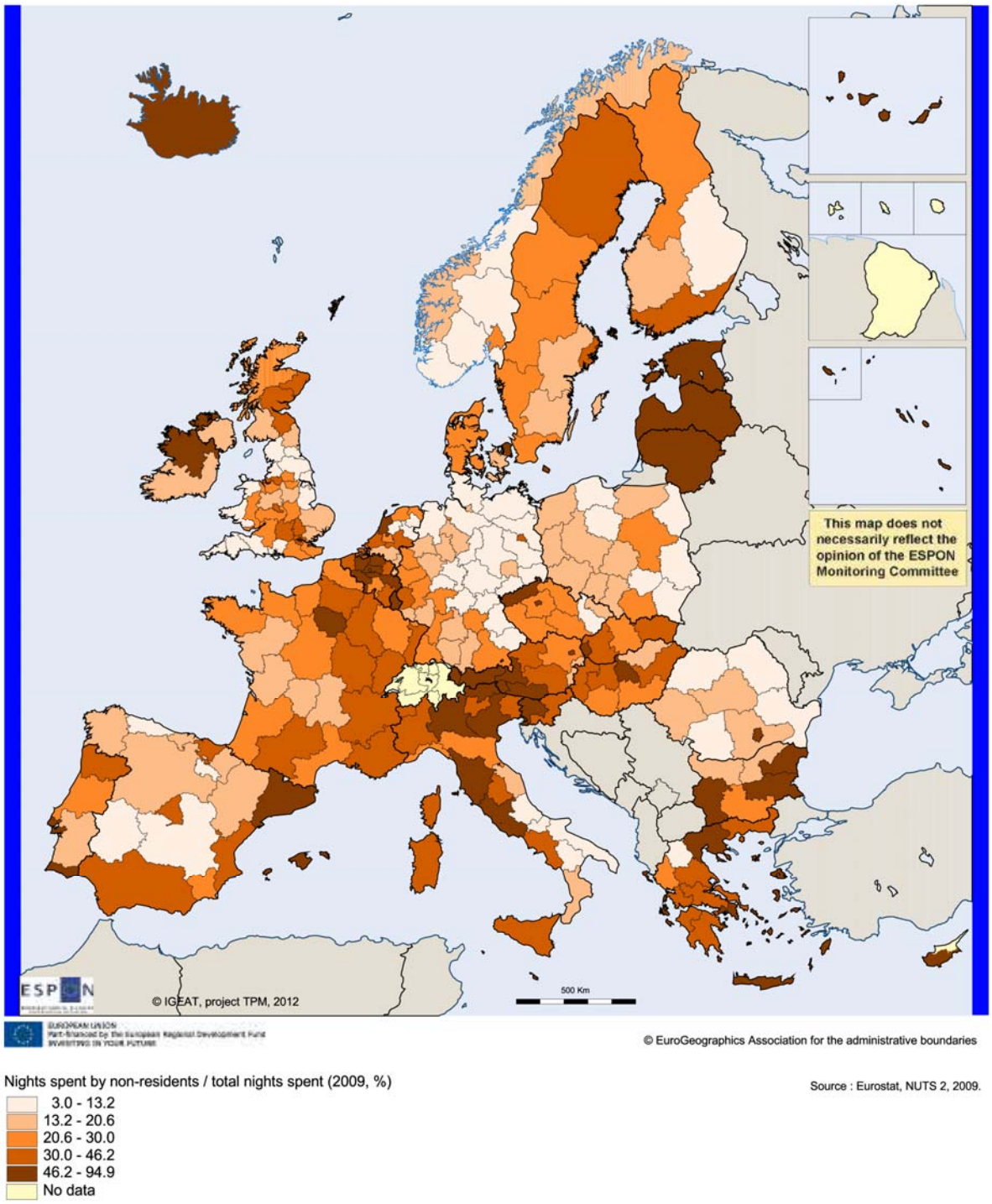
A beta toolkit has also been developed by IGEAT and is similar to the ESPON HyperAtlas but has the added advantage of making comparisons between benchmarking results of different indicators more robust. The tool works by using the regional deviation to the reference value and comparing it to the standard deviation across all of Europe at the lowest available scale. Values thus vary around 0, with e.g. -0.5 indicating a negative deviation (less than reference value) or half the standard deviation and 2 indicating a positive deviation of twice the standard deviation. Further details on this are available in the main project report.

Figure 9: Benchmarking GDA with Europe

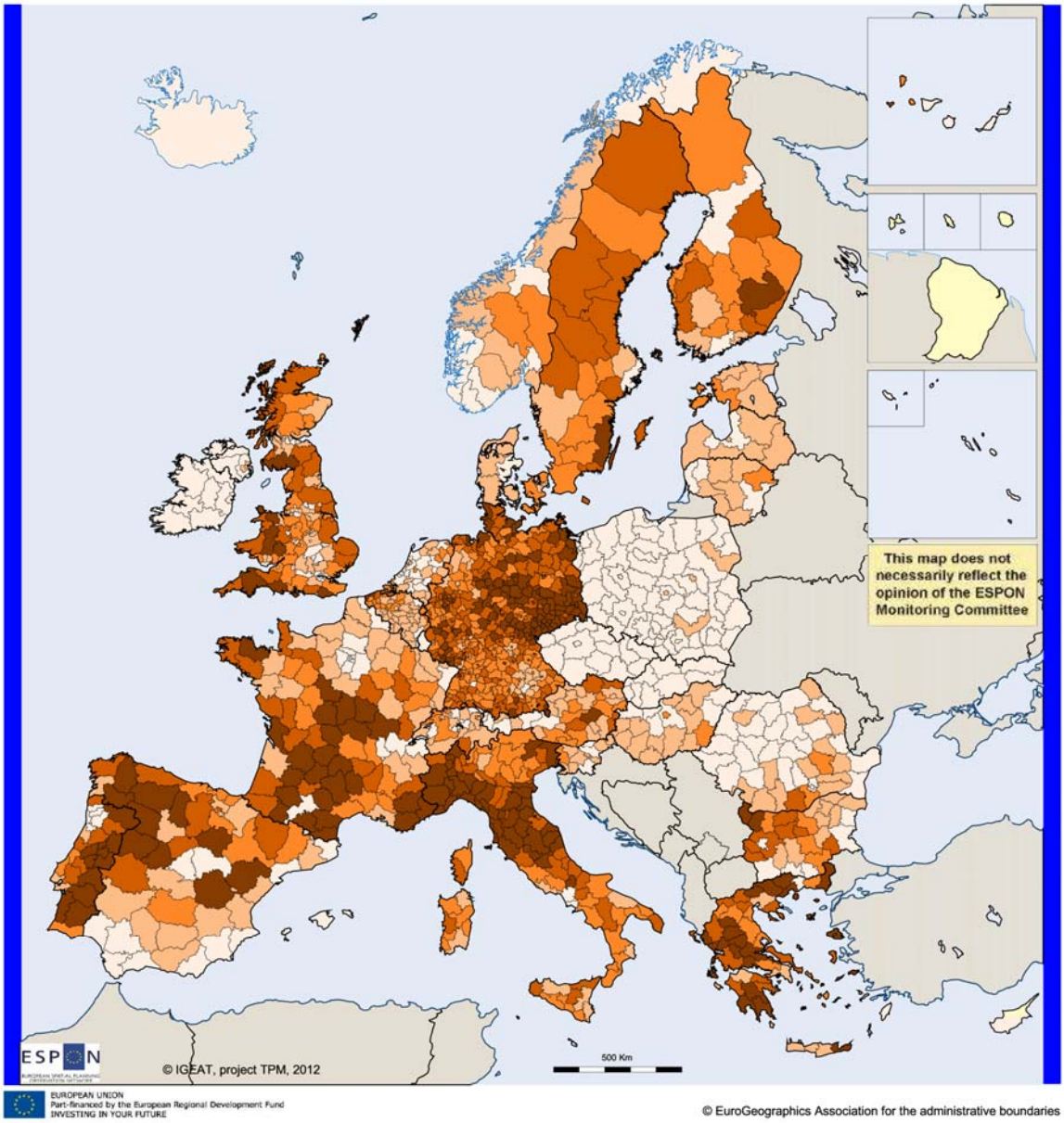


[42] http://www.espon.eu/main/Menu_Projects/Menu_TargetedAnalyses/TPM.html

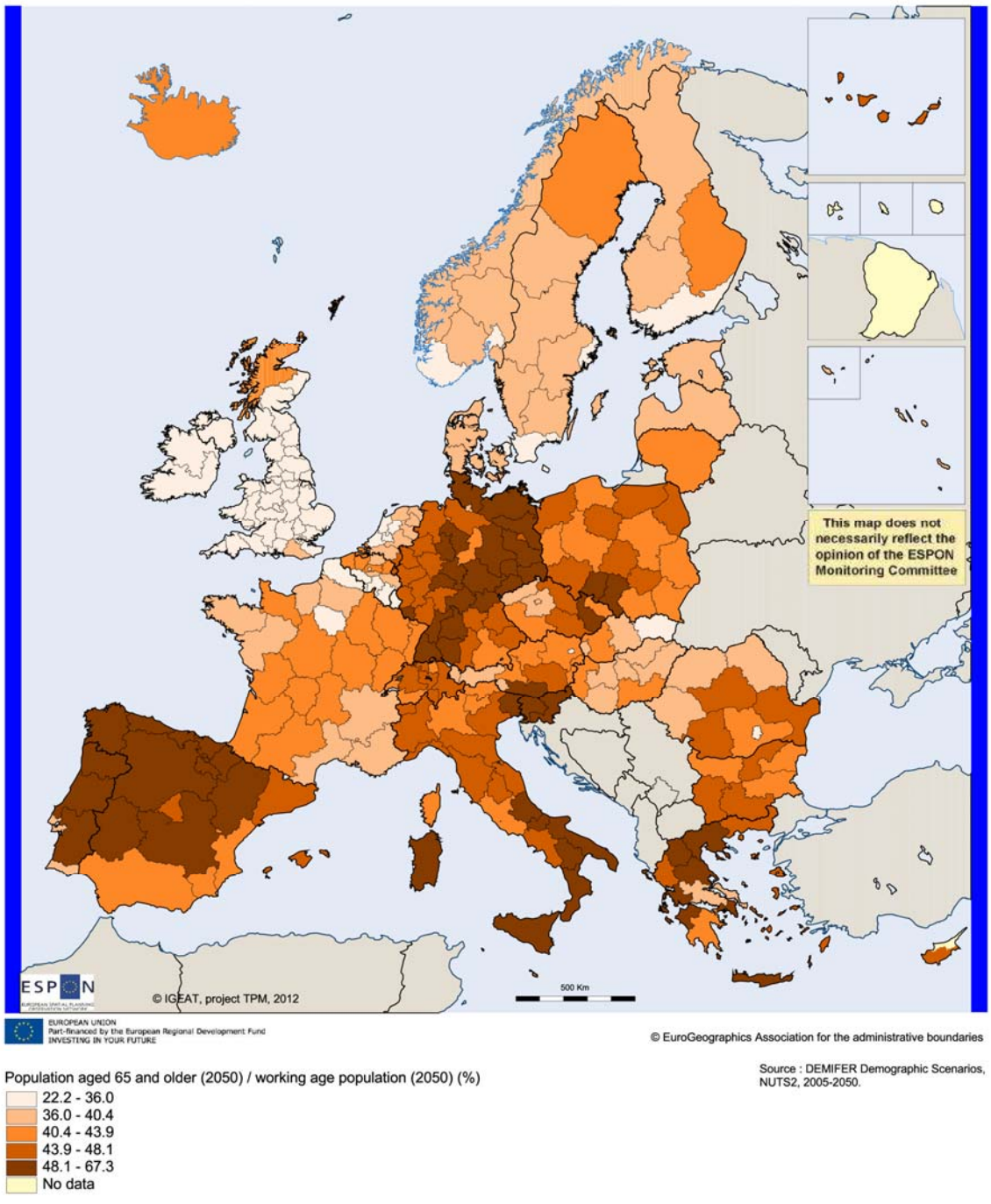
Map 2 IGEAT Hyper Atlas Example: Tourism non-residents, 2009



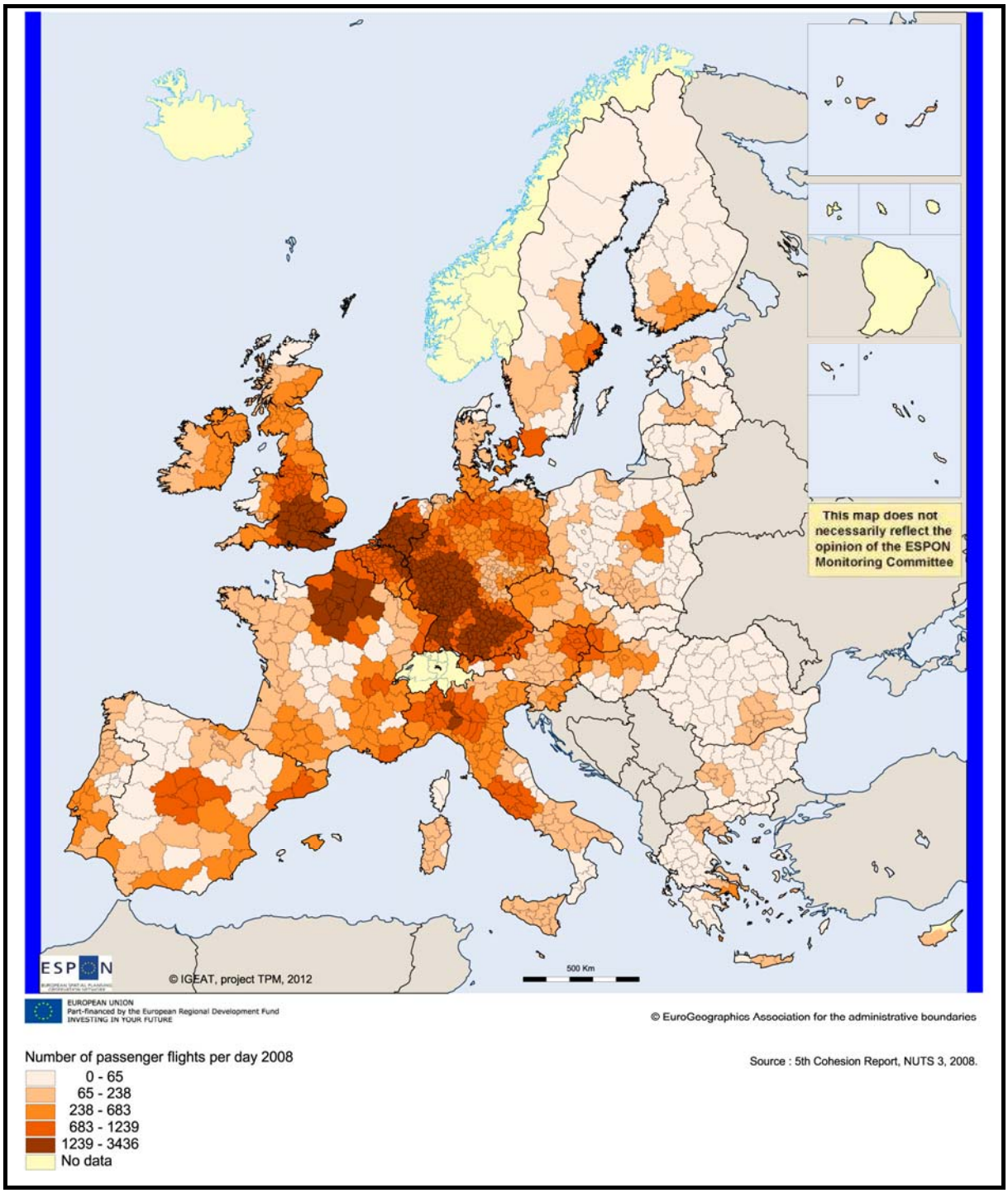
Map 3 IGEAT Hyper Atlas Example: Old Age Dependency, 2009



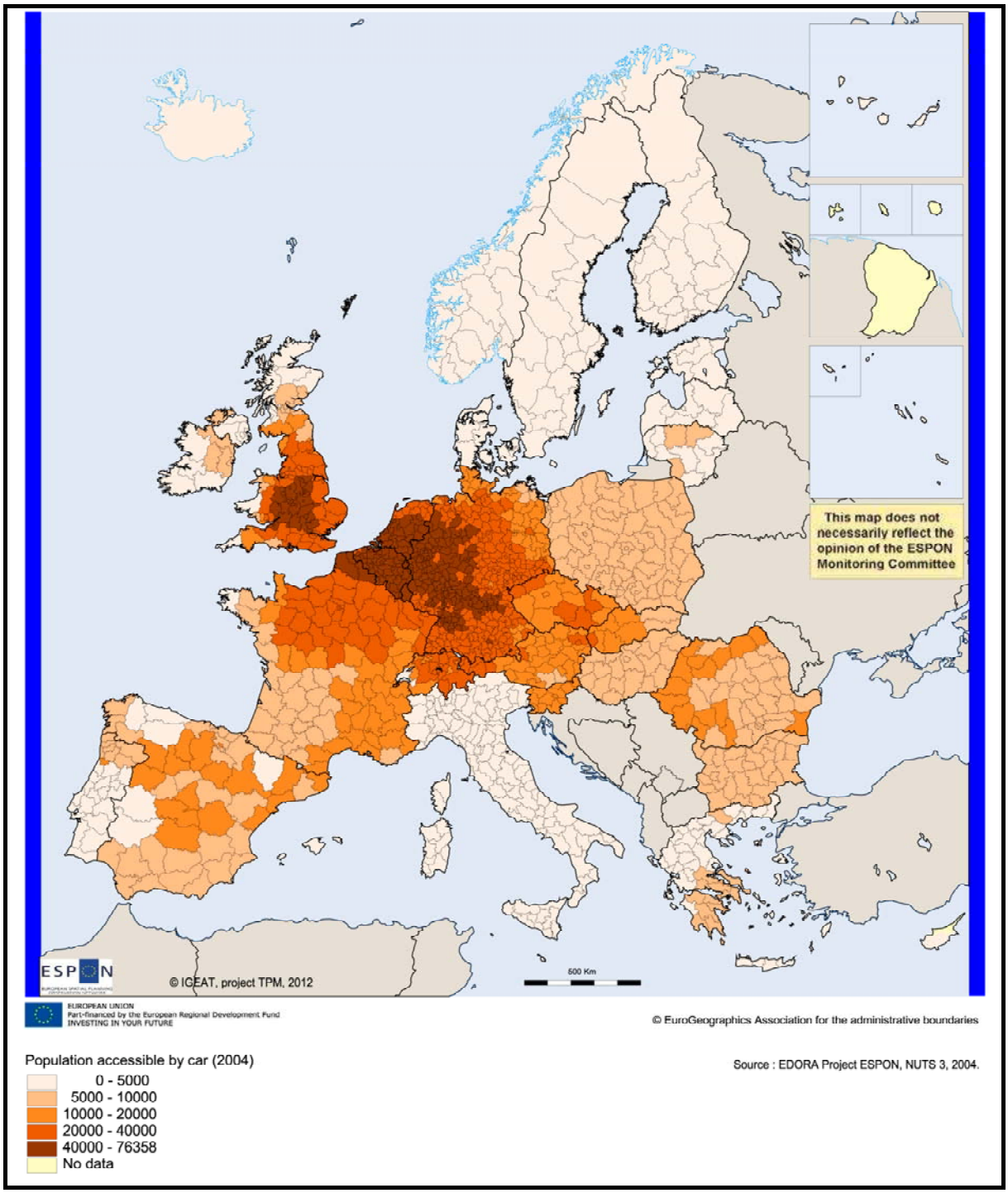
Map 4 IGEAT Hyper Atlas Example: Old Age Dependency, 2050



Map 5 IGEAT Hyper Atlas Example: Access to Passenger Flights, 2008



Map 6 IGEAT Hyper Atlas Example: Daily population accessible by car, 2004



Map 7 IGEAT Hyper Atlas Example: Expenditure on R&D, 2007

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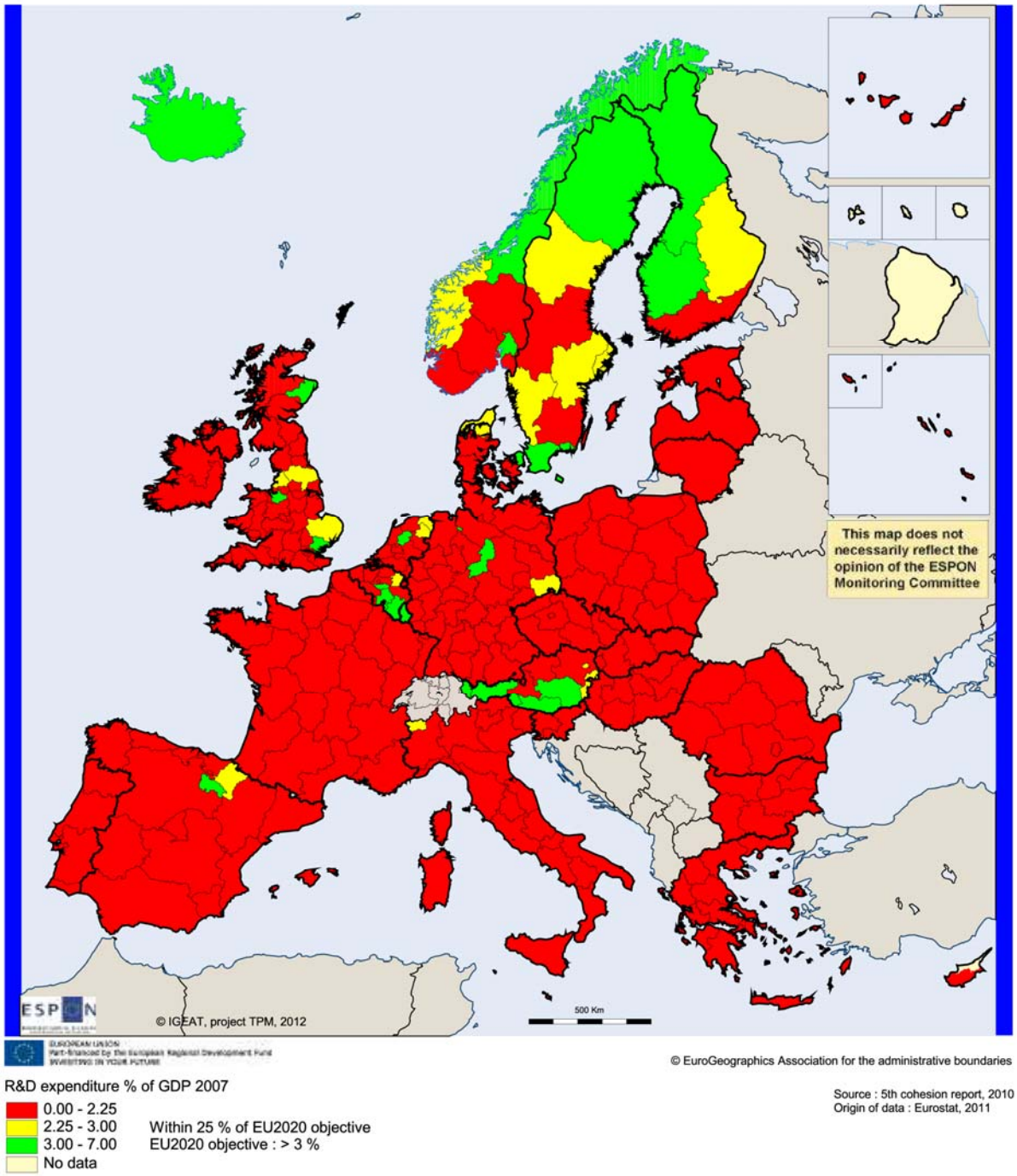
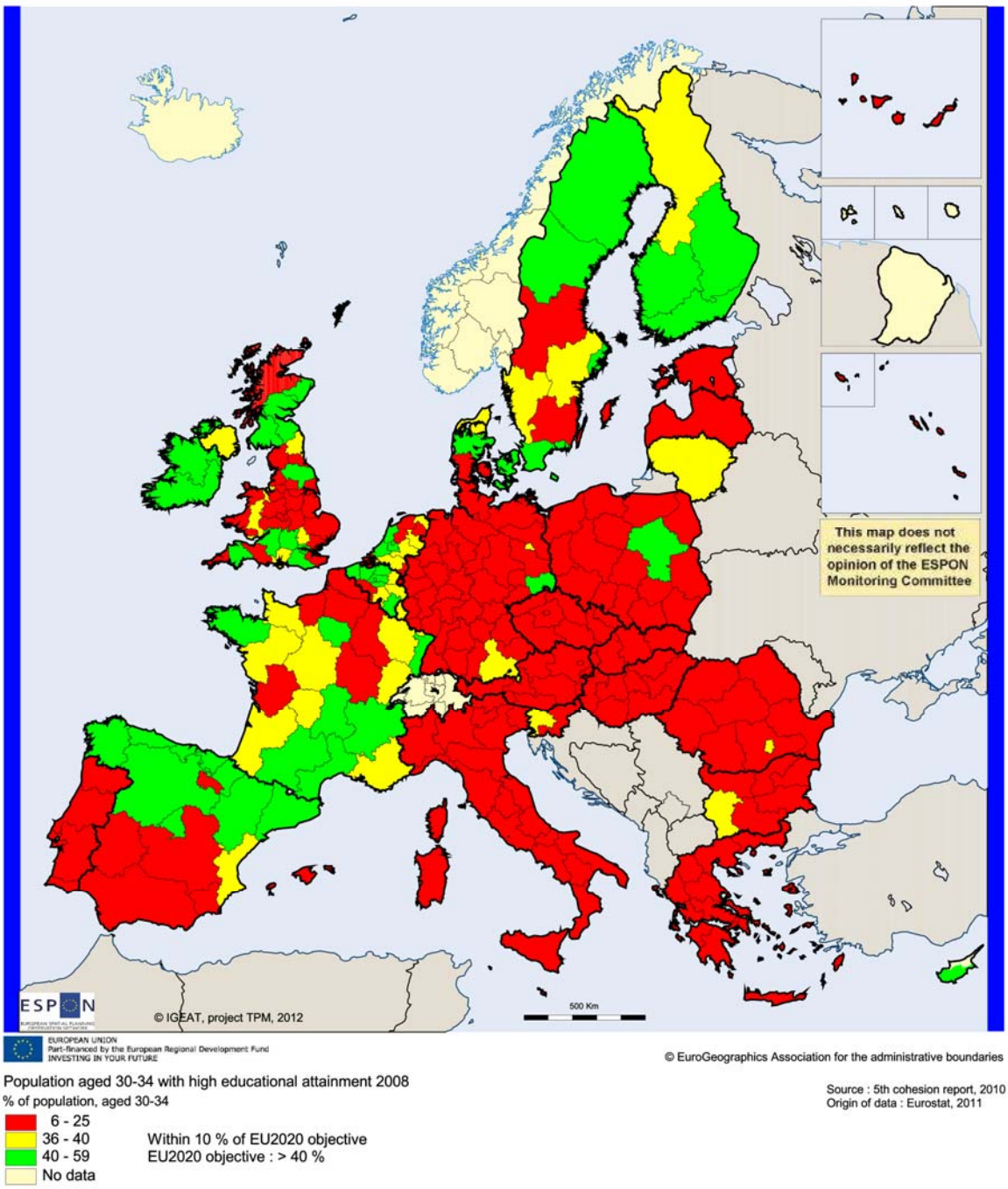
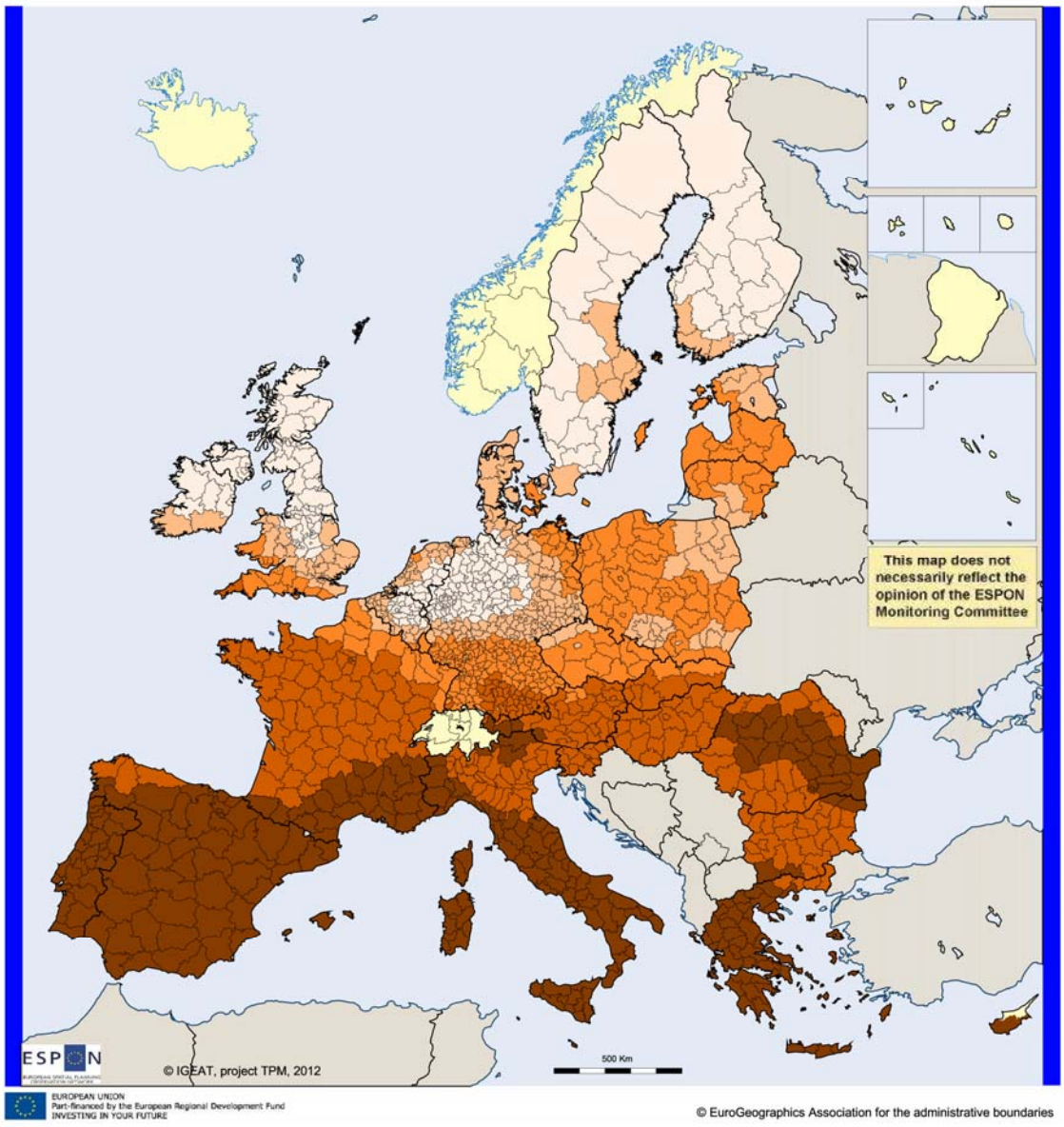


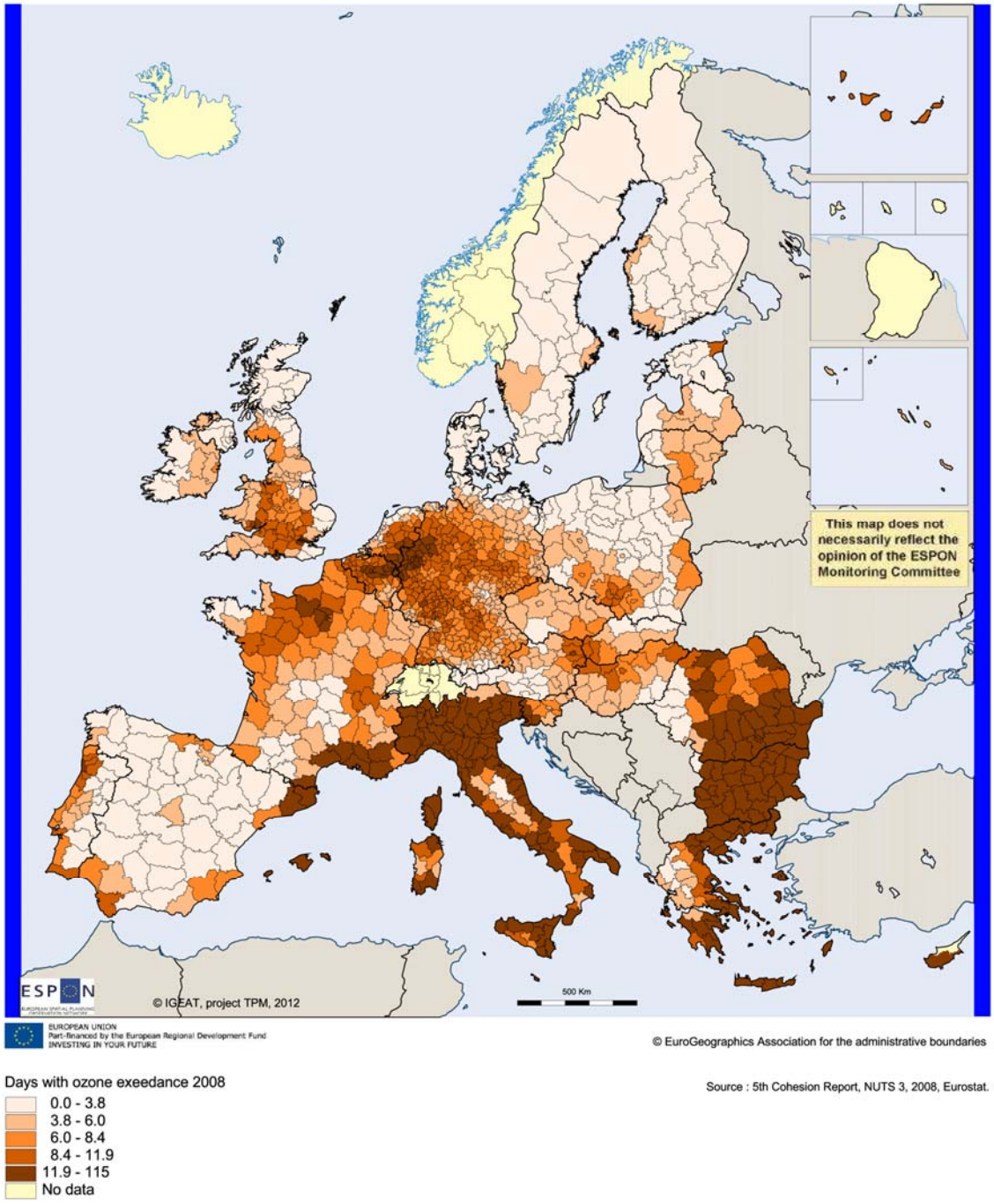
Map 8 IGEAT Hyper Atlas Example: Population with high education attainment, 2008



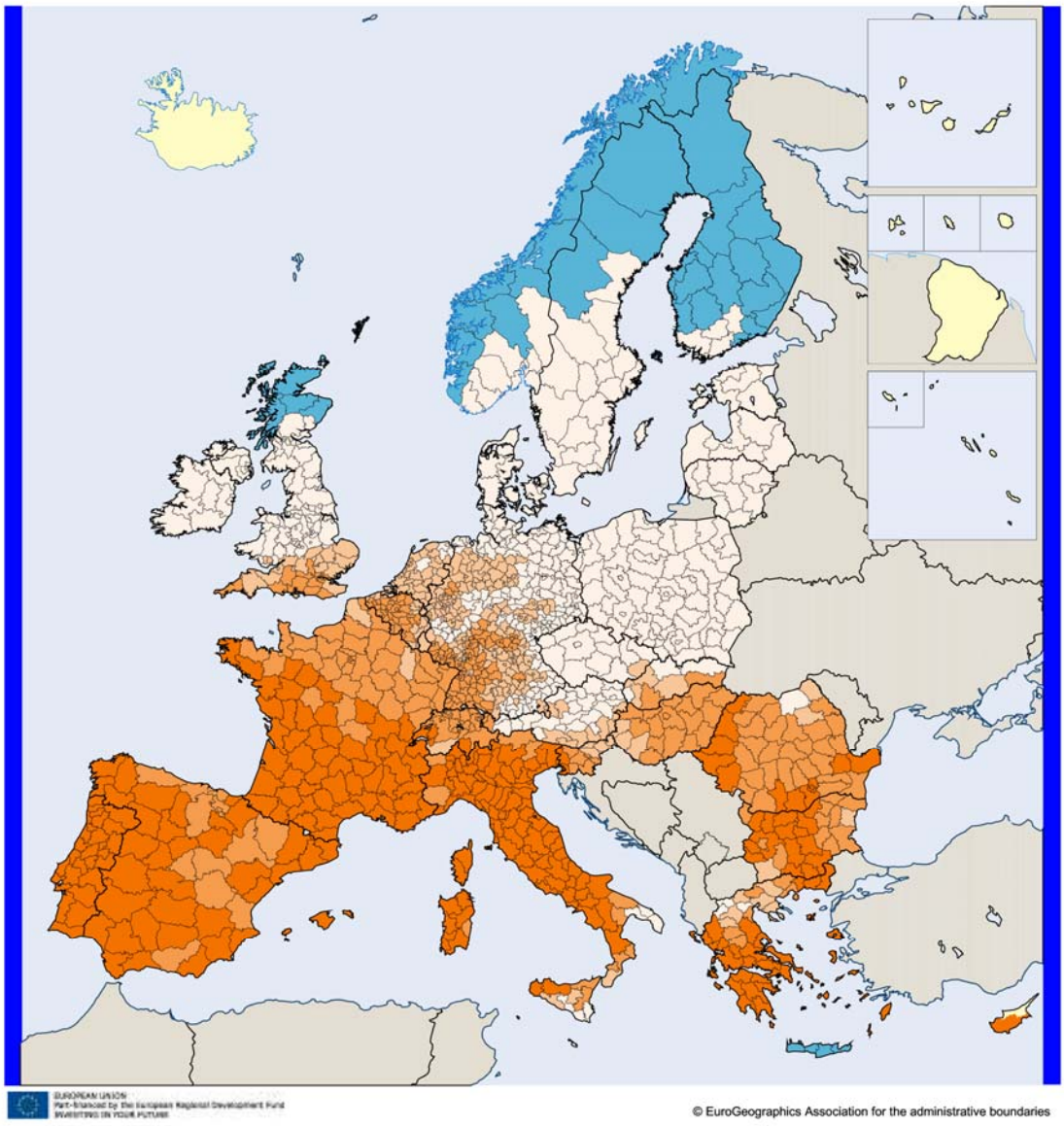
Map 9 IGEAT Hyper Atlas Example: Solar Energy Resources



Map 10 IGEAT Hyper Atlas Example: Ozone Concentration Exceedances



Map 11 IGEAT Hyper Atlas Example: Change in annual mean precipitation in summer months



4.1.2 NIRSA Quantitative toolkit (Research Partner)

The research team have developed a quantitative toolkit for the DRA containing 41 multiple indicators that were collated based on the revised Mind Map. This toolkit is based on all indicators where data was available and could be linked to policies and objectives with the RPGs. Indicators are available for all four macro challenges.

The toolkit has been set up using two different technologies. Initially, the indicators were published in a stand-alone presentation tool that allow users (stakeholder, elected members, general public) to view the key policy relevant datasets for the region. An example of this can be seen in Figure 9 and Figure 10.

In the interest of developing a more sustainable monitoring tool it was decided to integrate the collated indicators to a web tool that has been developed by the research partners. The All-Island Research Observatory (AIRO) (www.airo.ie) has been developed by NIRSA over the past number of years with the aim of making spatial and statistical data more accessible to users such as planners, policy makers and the general public. One of the new tools that have been developed is the Spatial Indicators Toolkit. As part of the ESPON TPM project both the stakeholder and the research partner were interested in integrating all 41 indicators into the AIRO web interface. This provided the stakeholder with an on-line tool for the display and dissemination of policy and objective related indicators. The new online tool now contains indicators on the following:

Climate Change: C1.0 Anticipated Impacts as a result of climate change 2050, C1.1 Overview of sub-national climate change policies, C1.2 Perceived barriers to local authorities addressing climate change, C1.3 Climate change strategies published at County level 2010, C2.0 Listed NATURA 2000 Areas, C3.0 Water Quality, C4.0 Seimens Green Cities Climate Index

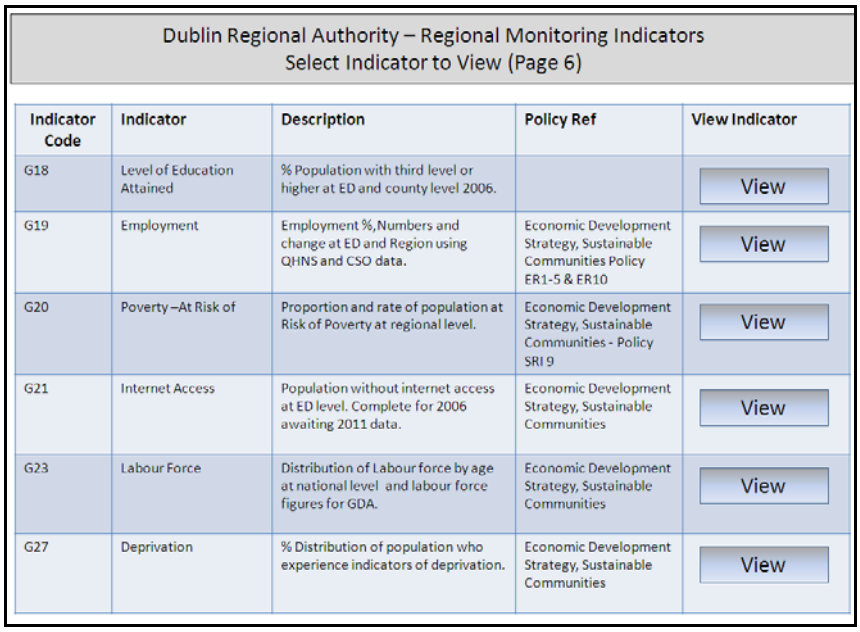
Demography: D1.0 Population Growth, D2.0 Population Density Change, D3.0 Affordable Quality Housing, D4.0 Percentage Population Aged 65+, D5.0 Life Expectancy, D6.0 Young Age Dependency Ratio, D6.1 Old Age Dependency, D7.0 Ethnic Composition (i), D7.1 Ethnic Composition (ii), D8.0 Quality of Local Education, D9.0 Level of Education Attained, D10.0 Qualification of Labour Force –PT1, D10.1 Qualification of Labour Force –PT1, D11.0 Labour Force, D12.0 Unemployment, D13.0 Unstable Employment – Live Register, D14.0 Quality of Life, D15.0 At Risk of Poverty, D16.0 Deprivation

Energy: E1.0 Energy Saving behaviour, E2.0 Water Leakage, E3.0 Less Use of Sustainable Transport (Pt 1), E3.1 Less Use of Sustainable Transport (Pt2) , E4.0 Recycling, E5.0 Seimens Smart Cities Climate Index, E6.0 Population Density Change 2002-2011.

Globalisation: G1.0 Cost of Office Space, G2.0 Building Sectoral Clusters, G3.0 Components of Population Change, G4.0 New Types of Population, G5.0 Availability of Tourism Accommodation, G5.1 Change in Type of Tourism/Tourists, G6.0 Increase in International Traffic, G7.0 Internet Access

The tool provides users with access to data in an interactive and accessible manner and allows the view, selection and downloading of data to suit needs, this can done be at the regional, local authority of LAU2 level. The interactive nature of the tool also allows users to download, export or embed the data and visualisation if and when required. Some examples of the tool can be seen in Figure 12, 13 and 14. For further details see http://www.airo.ie/spatial-indicators and click on GDA Territorial Performance Monitoring (ESPON TPM).

Figure 10: NIRSA/DRA Indicator Presentation Toolkit Main Page



Dublin Regional Authority – Regional Monitoring Indicators
Select Indicator to View (Page 6)

Indicator Code	Indicator	Description	Policy Ref	View Indicator
G18	Level of Education Attained	% Population with third level or higher at ED and county level 2006.		View
G19	Employment	Employment %, Numbers and change at ED and Region using QHNS and CSO data.	Economic Development Strategy, Sustainable Communities Policy ER1-5 & ER10	View
G20	Poverty –At Risk of	Proportion and rate of population at Risk of Poverty at regional level.	Economic Development Strategy, Sustainable Communities - Policy SRI 9	View
G21	Internet Access	Population without internet access at ED level. Complete for 2006 awaiting 2011 data.	Economic Development Strategy, Sustainable Communities	View
G23	Labour Force	Distribution of Labour force by age at national level and labour force figures for GDA.	Economic Development Strategy, Sustainable Communities	View
G27	Deprivation	% Distribution of population who experience indicators of deprivation.	Economic Development Strategy, Sustainable Communities	View

Figure 11: NIRSA/DRA Indicator Presentation Toolkit Example 1 – Water Quality

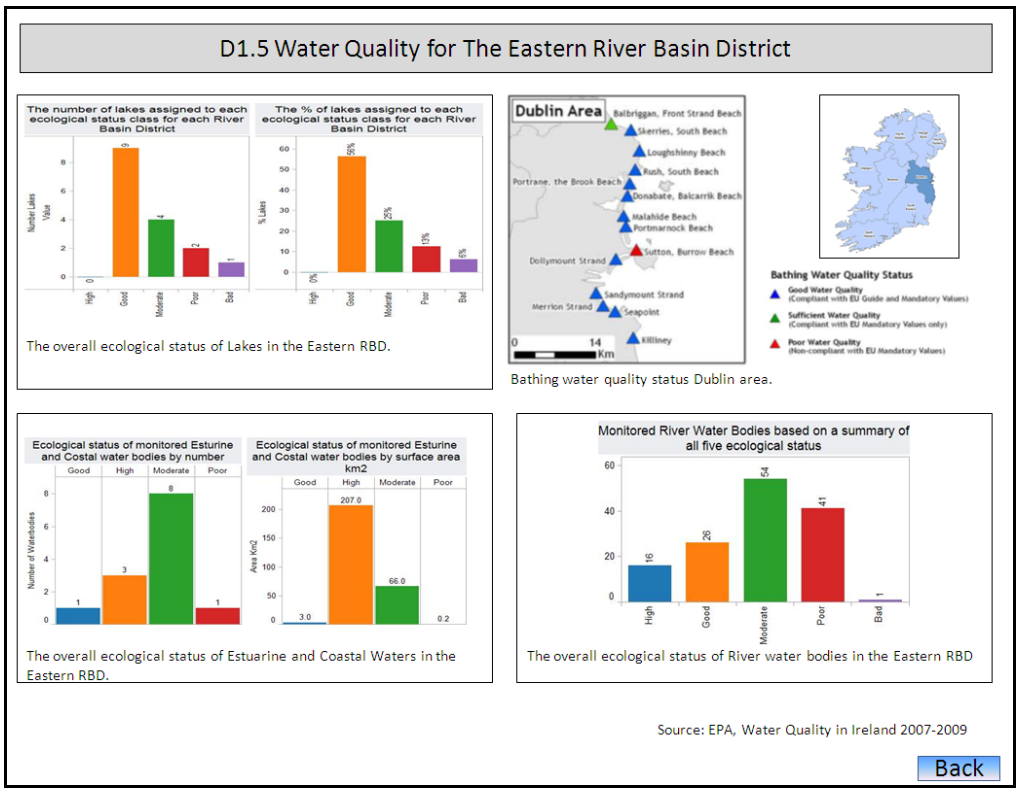


Figure 12: NIRSA/DRA Web-portal Indicator Toolkit Example 1 - D13.0 Unstable Employment – Live Register

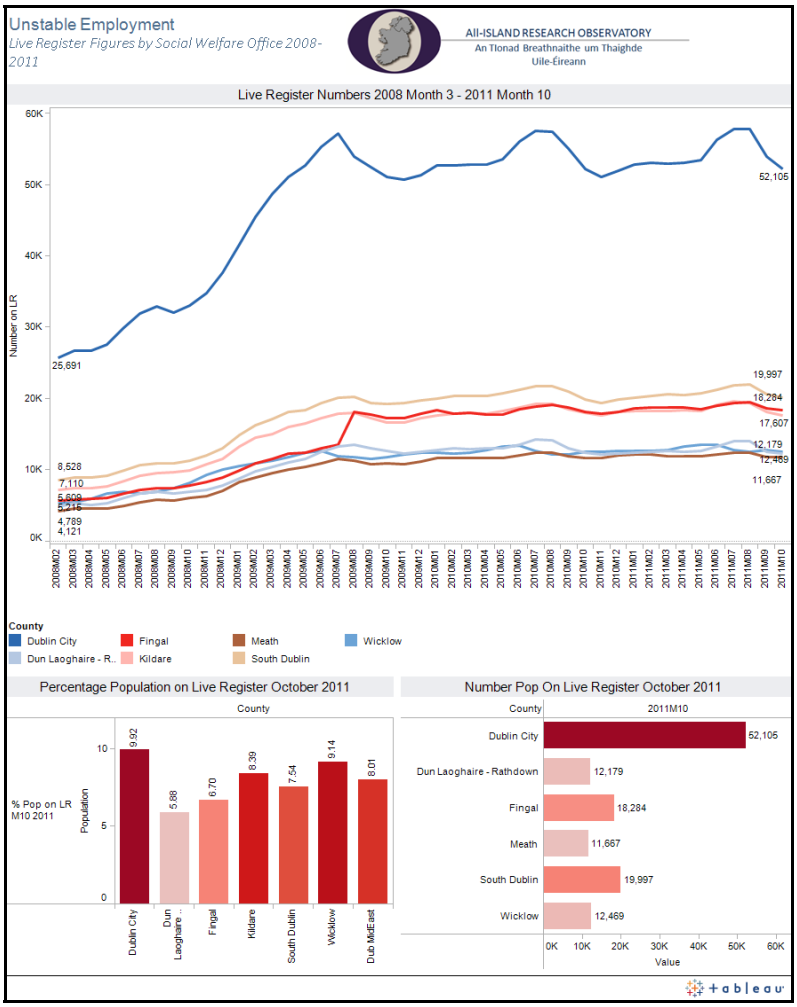


Figure 13: NIRSA/DRA Web-portal Indicator Toolkit Example 2 - E2.0 Water Leakage

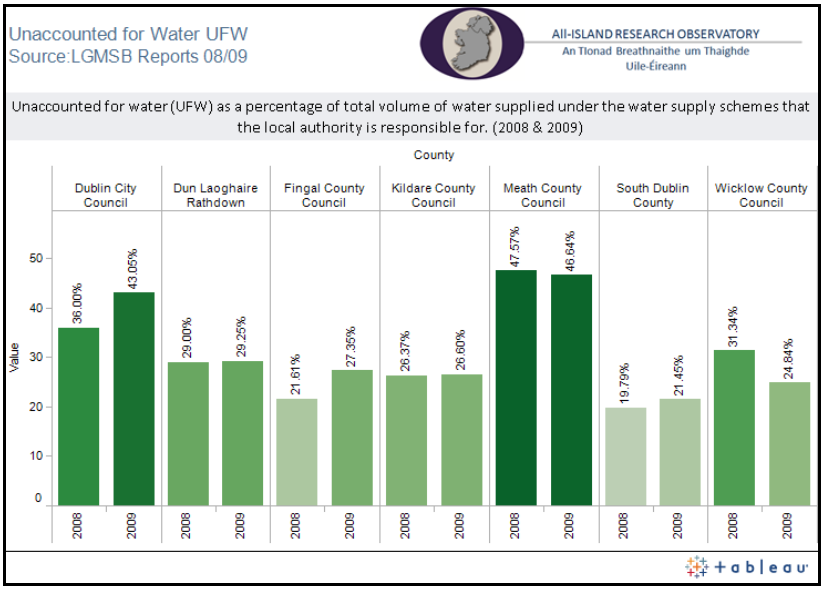
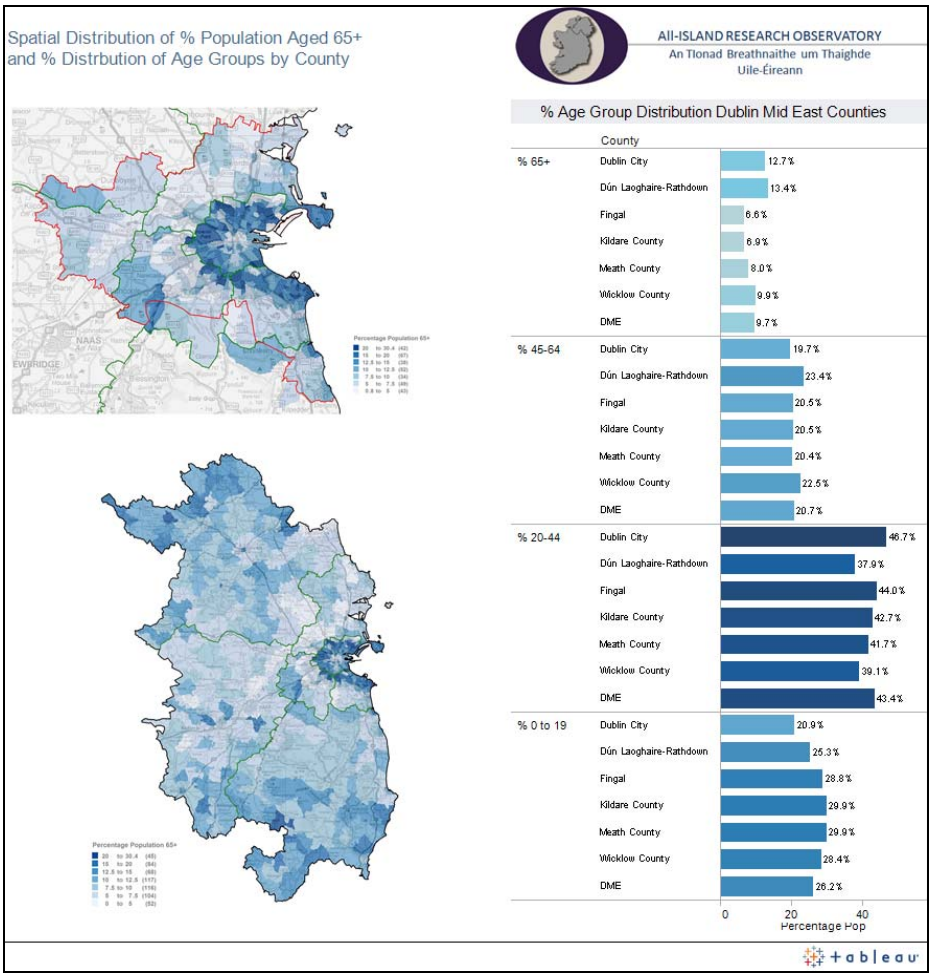


Figure 14: NIRSA/DRA Web-portal Indicator Toolkit Example 3 - D4.0 Percentage Population Aged 65+



4.2 Harvesting Expert Opinion

Following the revision of the Mind-Map, the collation of available indicators into the various test qualitative toolkits it was decided that the research team would try and harvest additional indicators through a series of qualitative studies. This process would provide the stakeholder with key indicators on macro challenges where no information was currently available. It would also provide the stakeholder with a template to be used for future qualitative research and a starting point for an annual survey.

Two main areas of interest were proposed as part of the research; (1) Demography: the harvesting of information on the quantity and quality of service infrastructure within the GDA, and (2) Climate Change: the harvesting of information on the status of sub-national climate change policies at local authorities in Ireland and the GDA.

(1) Following on from a decade of high levels of residential development and population growth - both natural increase and migration - the GDA now also faces a number of service specific related challenges to provide and improve the overall quality of life for its population. Data on the quantity and quality of service infrastructure within the GDA is not readily available and therefore the stakeholder was interested in developing a survey as a

means of capturing both quantitative and qualitative information on specific services. The proposed results from such survey would provide key sets of information that would feed into the annual reports that the DRA are required to produce as part of the monitoring process of the implementation of the RPGs. The development of this survey would also provide the stakeholder with the necessary information required to develop a Services Index, a key indicator outlined as necessary within the RPGs.

(2) As highlighted in the Threats and Opportunities section of the initial qualitative research, the lack of clear national legislation on climate change mitigation and adaptation measures to ensure implementation of policy at local level is a potential threat for successfully addressing climate change challenges. To date there is no national requirement to integrate climate change into general policy or to prepare local climate change strategies – this is done on an ad-hoc and voluntary basis. The development of a survey or other qualitative research to review the status of climate change policies within Ireland and the GDA would provide a useful set of indicators on the variation and standard of policies currently in place.

4.2.1 Harvesting Expert Opinion: Surveys

Following discussion with the stakeholder on the requirements of this survey it was decided to develop a detailed questionnaire on the service infrastructure in key settlements across the GDA. The survey focused on five categories and can be linked to the main challenges set out within the Demography section of this research. In total, twenty settlements were targeted from the GDA settlement typology and hierarchy; Metropolitan Consolidated Towns, Large Growth Towns I and Large Growth Towns II. It was initially envisioned that the survey would be completed by either Senior or Executive Planners within each local authority. The five categories set out within the survey are as follows;

- Retail, Employment and Business
- Health and Wellbeing
- Education and Access to Information
- Transport
- Water and Waste Water Infrastructure

Following a process of consultation with the stakeholder a final list of survey questions, 89 it total, were decided upon. The survey, an attempt at capturing both quantitative information about the services within each settlement and also qualitative information on the quality of each service and potential threats to future service provision, was a valuable exercise for the stakeholder and allowed the development of a template that could be used on an on-going basis. Unfortunately, the timing of this project and recent staffing reductions within local authorities resulted in a very poor response rate to the survey. Reduced staffing resources and the lack of readily available information due to its non-strategic nature for statutory land use planning requirements were the main reasons for local authorities opting out of the survey. The survey and template is available in Appendix 1 and also available at the following link: https://www.surveymonkey.com/s/GDASettlement_Maynooth

As a result of the poor return rate of this survey the research team were unable to integrate the results into the monitoring system that had been developed for the stakeholder. The following section does however detail some examples of questions and answered that were returned for the Maynooth settlement:

Survey Example: GDA Settlement Survey Infrastructure - Maynooth Retail, Employment and Business

1. **Supermarkets: How many supermarkets are within the settlement area?**

Vertically Integrated Stores (Tesco, Dunnes, M&S etc): 2
Affiliated Stores (SuperValu, Centra, Spar etc): 4
Discounted Stores (Lidl, Aldi etc): 2

2. **Supermarkets: How many supermarkets are located within the town centre and how many are located outside the core?**

Town Centre: (if considered as town centre zoning, there are 4, otherwise if town centre is defined as Main Street there is just one.
Outside Town Centre: 4

3. **Supermarkets: How would you rate the level of service provision within the settlement?**

Good ■
Adequate □
Poor □
Bad □

4. **Supermarkets: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g Decline of population in urban core, shift in development to outskirts of settlement, poor levels of public transport accessibility.**

Answer: If new residential development is likely to occur in the peripheral parts of the town, there is more likely need for small supermarkets. Otherwise the retail planning guidelines guide retail services to the town centre over other out of town locations.

5. **Retail: How many retail centres are located within the settlement?**

In Town: 4
Outside Town Centre: 4

6. **Retail: How would you rate the level of service provision within the settlement?**

Good ■
Adequate □
Poor □
Bad □

7. **Retail: Is there any data available on the level of retail vacancy within the settlement area?**

Yes ■
No □

8. **Retail: If yes to Q8, please provide the following: current vacancy rate if available? has there been an increase or decrease in levels of vacancy?**

Answer:
This information is currently being collated by KCC. Data is based on vacancy rates in the town centre and does not break down into the type of use e.g. retail/office etc. These figures will be available for Maynooth by end Jan 2012.

9. **Retail: Expert Opinion. What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g Decline of population in urban core, shift in development to outskirts of settlement, poor levels of public transport accessibility.**

Answer:
If there is a decline in population in the town there is likely to be less need for retailing services and the existing ones will become affected. Large retail development out of town or in surrounding towns may also impact retail provision in Maynooth. (E.g. Collinstown Local Area Plan, Leixlip identifies lands for major town centre status.) It is not known if retail expenditure in Maynooth comes from outside the town therefore it is unknown if public transport provision would effect service provision.

4.2.2 Existing Surveys / surveys that provide information

In the absence of readily available quantitative datasets the research team and stakeholder were also interested in making best use of existing research and surveys that have been carried out within the region. Following discussions with sectoral experts in the qualitative phase of the project the research team were made aware of detailed research project that had been carried out on the status of sub-national climate change policies in place in Ireland. At the time of writing the results of this research had just been published[43]. The challenge for the research team was therefore to work with the results of the survey and integrate into the monitoring system that had been developed for the stakeholder.

The study, carried out by researchers at ICARUS, NUI Maynooth, included a survey of city and county local planning offices and a complete document review of all city and county development plans. The survey was based on a set of fifteen questions that gathered the views of local planners on climate change impacts and related municipal responses. Some of the key results from the research relate to; (1) anticipated impacts due to projected climate change by 2050, (2) the number of sub-national climate change strategies published to date, (3) the scope and scale of sub-national climate change strategies, and (4) barriers to local authorities addressing climate change.

The results of the study suggest that the main impact of climate change on local authorities will be linked to flooding and coastal erosion with less impact related to landslides, agriculture and higher temperatures. At the time the research was carried out (2010), six leading local authorities had published climate change strategies with the remainder at development stage and seeking guidance and assistance from local energy agencies. The focus of strategies primarily being on energy issues with less of an approach to both climate mitigation and adaptation. The survey also found that all local authorities had addressed there statutory requirements with many going beyond the minimum (based on Development Plans in effect as of June 2010), as an example Dublin City Council include a full chapter on climate change and includes categories such as residential density, transport, flooding, energy renewable, climate and other (bio-diversity, coastal issues, and miscellaneous policies such as Green Roads). In contrast to this, Kildare only had a climate change policies relating to flooding. The results also provide an insight into challenges that may hinder the development of climate change measures at local authority level. The challenges of funding and staffing resources are cited as the main current barriers and are also expected to remain as the prominent barriers in the future. Other current barriers such as climate change not being a top priority, lack of champion or leadership on climate change in local authorities, lack of awareness or interest of staff are seen as barriers that

[43] This research was carried out at the ICARUS research centre, Department of Geography at NUI Maynooth. "Multi-level climate policies in Ireland" by Jackie S. McGloughlin and Professor John Sweeney

will lessen in the future – according to the authors this suggests an anticipated improvement in central government drivers and public support.
Following a review and analysis of the ICARUS research it was possible for the research partner to extract the results from the survey and embed within the monitoring tool that has been developed for the stakeholder. New indicators are now available on the following (see Figure 15 and 16 below);

- C7.1 Anticipated Impacts as a Result of Climate Change 2050
- C7.2 Overview of Sub-National Climate Change Strategies, 2010
- C7.3 Development Plan Related Climate Policies
- C7.4 Barriers to Local Authorities addressing climate change

Figure 15: C7.1 Anticipated Impacts as a Result of Climate Change by 2050

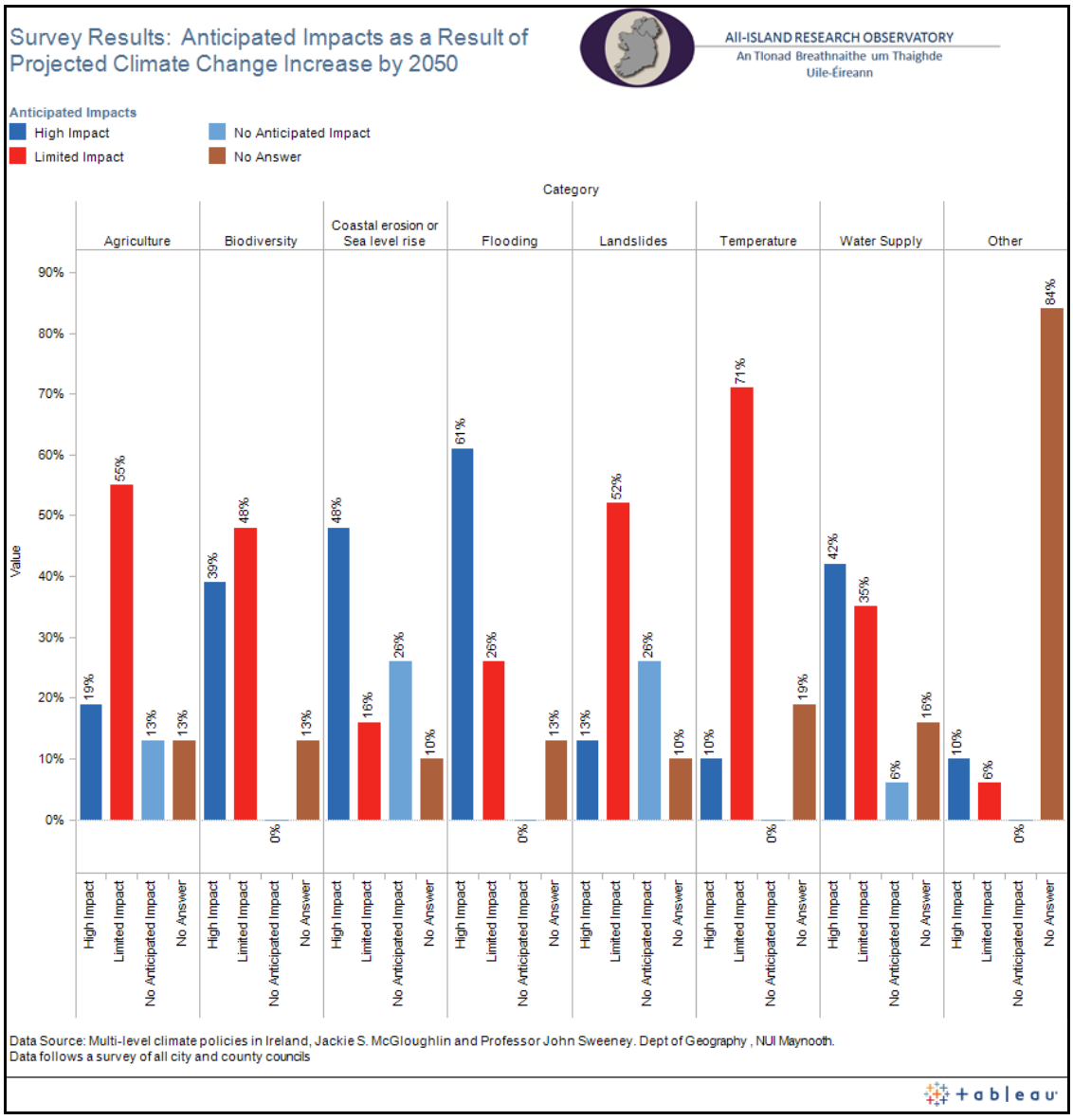
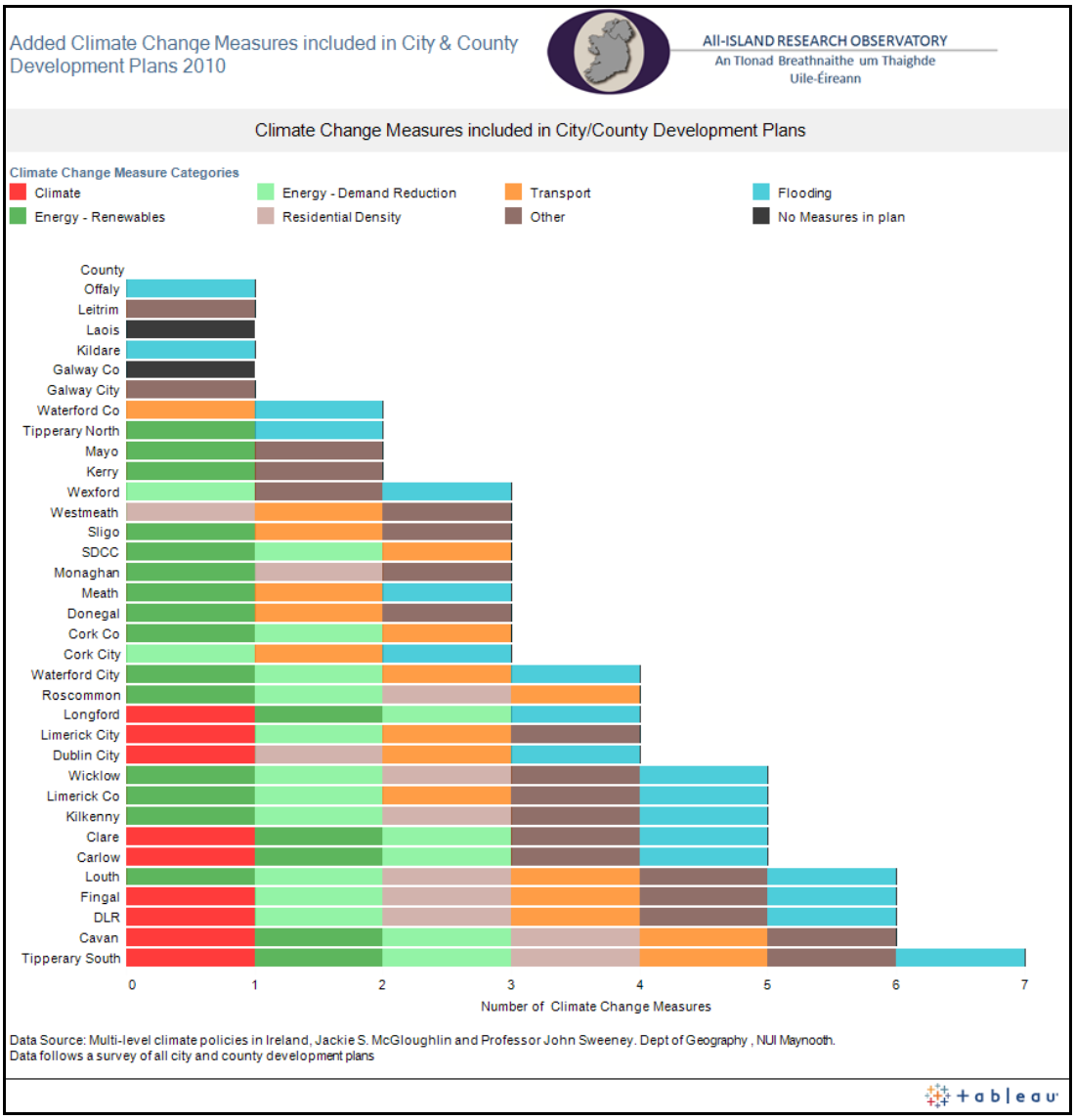


Figure 16: C7.3 Development Plan Related Climate Policies



5. Usefulness of toolkit for policy making and monitoring

The RPGs for the Greater Dublin Area aim to direct the future growth of the GDA in the medium to long term through the implementation of the strategic planning framework set out in the National Spatial Strategy (NSS). This is done by informing and directing the City and County Development Plans (CDPs) of each of the councils in the region and providing a clear link between local planning policies and decisions and national planning policies. As part of this process, the regional authorities (including the project stakeholder) are required to monitor

the delivery of the RPGs through their lifetime by developing a series of policy relevant indicators and topical update reports.[44]

As previously outlined, there is currently no specific monitoring system in place that can be used for the monitoring and evaluation of the successful implementation of the GDA RPGs. The research carried out through the ESPON TPM project has therefore been extremely useful for the stakeholder and allowed the development of a 'beta', yet functional performance monitoring system. According to the stakeholder, the creation of the indicator system is a useful means of informing the development of the RPG update reports which are required on an annual basis. The data provided through the monitoring tool will prove to be useful in informing elected members on various topics at council and spatial planning meetings throughout the lifetime of the RPGs, and provide key background information for future reviews of the RPGs.

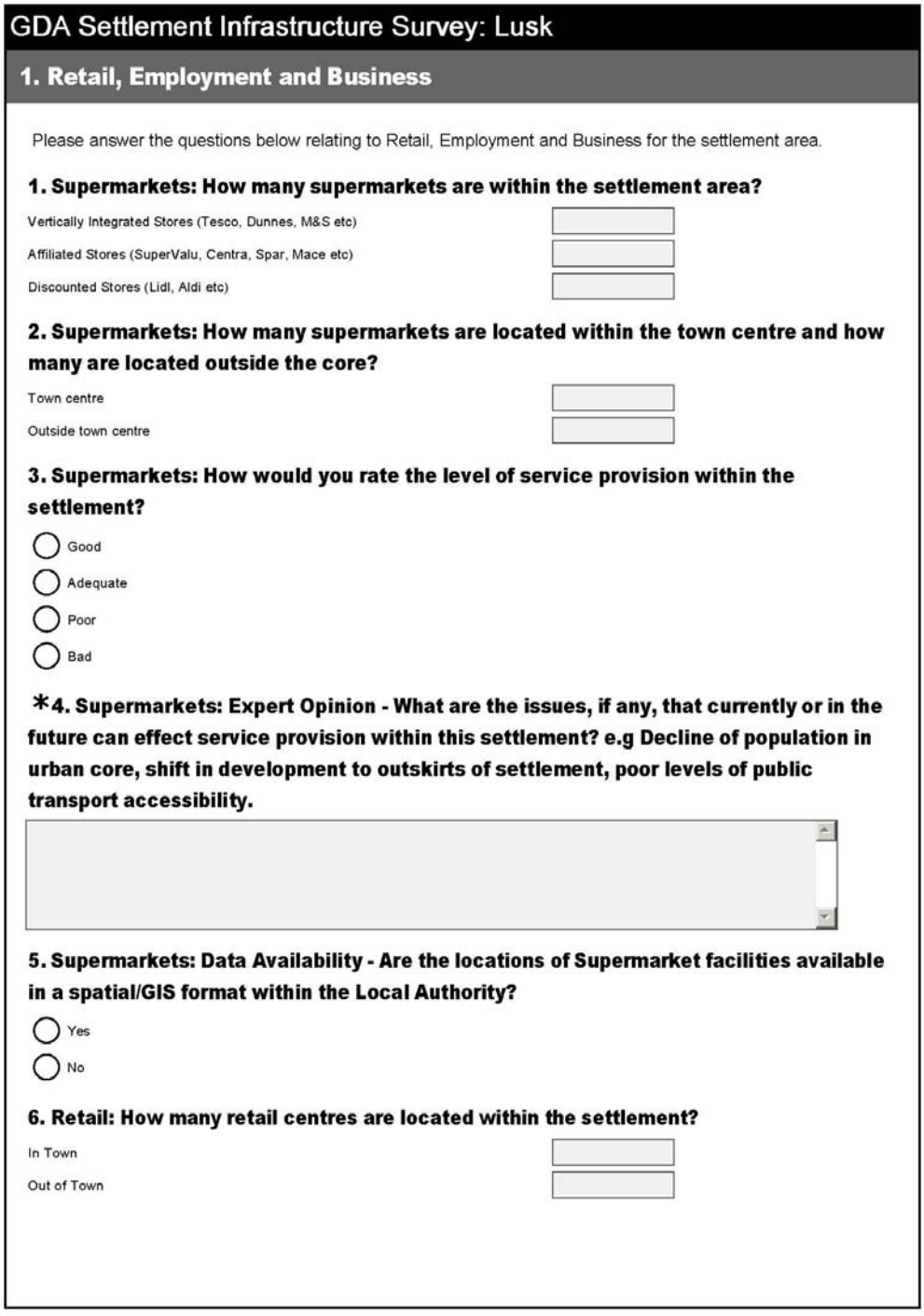
The integration of qualitative research techniques to the monitoring system by developing indicators where no data was currently available has also been a useful process for the stakeholder. The creation of a survey template for the capture of qualitative information on the quantity and quality of service infrastructure across the region has also provided a solid platform for the start of a bi-annual regional survey. Although the survey did not have a good response rate it is hoped that this will be carried out over the coming year when a suitable time can be identified, a follow on survey would also be likely in 2014/15.

For the stakeholder, it is hoped that in the future local authorities would be tasked with monitoring and measuring a specific list of indicators that would provide an overall picture of how the region is performing, this would in turn enable planners to become involved in an increasingly data driven process of evidence informed planning. Information gathered through this process would feed directly into the monitoring system.

The stakeholder has proposed that the AIRO website, including the integration of the ESPON TPM indicators set on the four macro challenges, will be used in their monitoring process insofar as possible and is envisaged as being a centralised and valuable tool to spatial planners in the region as it is grown and developed. The success of this monitoring system will be evaluated over the coming year as the stakeholder works on the development of its regional update reports. Depending on feedback from the stakeholder and the RPG Technical Working Group and Steering Committee, the monitoring system will be adjusted to suit requirements. As part of this evaluation and testing process the research team presented the monitoring toolkit to all members of the Dublin Regional Authority and Operational Committee on the 17th of April 2012.

[44] Regional Planning Guidelines for the Greater Dublin Area 2010-2022, pg 7

Appendix
GDA Settlement Infrastructure Survey



GDA Settlement Infrastructure Survey: Lusk

1. Retail, Employment and Business

Please answer the questions below relating to Retail, Employment and Business for the settlement area.

1. Supermarkets: How many supermarkets are within the settlement area?

Vertically Integrated Stores (Tesco, Dunnes, M&S etc)

Affiliated Stores (SuperValu, Centra, Spar, Mace etc)

Discounted Stores (Lidl, Aldi etc)

2. Supermarkets: How many supermarkets are located within the town centre and how many are located outside the core?

Town centre

Outside town centre

3. Supermarkets: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***4. Supermarkets: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g Decline of population in urban core, shift in development to outskirts of settlement, poor levels of public transport accessibility.**

5. Supermarkets: Data Availability - Are the locations of Supermarket facilities available in a spatial/GIS format within the Local Authority?

- ◯ Yes
- ◯ No

6. Retail: How many retail centres are located within the settlement?

In Town

Out of Town

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GDA Settlement Infrastructure Survey: Lusk

7. Retail: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

8. Retail: Is there any data available on the level of retail vacancy within the settlement area?

- ◯ Yes
- ◯ No

9. Retail: If yes to Q8, please provide the following: current vacancy rate if available? has there been an increase or decrease in levels of vacancy?

***10. Retail: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g Decline of population in urban core, shift in development to outskirts of settlement, poor levels of public transport accessibility.**

11. Retail: Data Availability - Are the locations of Retail facilities available in a spatial/GIS format within the Local Authority?

- ◯ Yes
- ◯ No

12. Employment: Who are the top employers within the settlement? Please list with largest employers first.

GDA Settlement Infrastructure Survey: Lusk

13. Employment: Is there an IDA Business Park within the settlement area and environs?

- ◯ Yes
- ◯ No

14. Employment: If yes to Q13, please complete the following:

How many IDA Business Parks are located within the settlement?	
How many IDA Companies are within the Parks?	
Who are the major employers? e.g Microsoft, Intel etc	

15. Employment: Does the IDA own land within the settlement and environs that has yet to be developed?

- ◯ Yes
- ◯ No

16. Employment: If yes to Q15, are you aware of any reasons why this land has not been developed by the IDA to date?

17. Employment: How would you rate the level of out-bound work based commuting from the settlement area? (Analysis can be based on POWCAR 2006)

- ◯ Very High (>50%)
- ◯ High (25 - 50%)
- ◯ Average (10 - 25%)
- ◯ Low (<10%)

18. Employment: What are the main work destinations for out-bound commuters? Please list with top destinations first

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GDA Settlement Infrastructure Survey: Lusk

19. Employment: Please rank in order the main mode of transport for out-bound commuters where 1 is the highest and 4 the lowest?

	1	2	3	4
Car	○	○	○	○
Train	○	○	○	○
Bus	○	○	○	○
Walk/Bicycle	○	○	○	○

***20. Employment: Expert Opinion: Are there any factors that inhibit the use of public transport as a means of travel for out-bound commuters?**

21. Unemployment: Is there a Social Welfare Office within this settlement?

○ Yes

○ No

22.

○ Head Office

○ Local Office

23. Unemployment: If no to Q21, what Social Welfare office do Live Register recipients register at?

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GDA Settlement Infrastructure Survey: Lusk

2. Health and Wellbeing

Please answer the questions below relating to Health and Wellbeing for the settlement area.

1. Hospitals: Is there a hospital within the settlement area?

- ◯ Yes
- ◯ No

2. Hospitals: If yes to Q1, what type of hospital is it?

- ☐ Regional Hospital
- ☐ District Hospital
- ☐ Primary Care Centre

3. Hospitals: If no to Q1, what is the nearest Hospital to the settlement?

4. Hospitals: What are the most recent waiting list/patients on trolly figures for local hospitals?

5. Hospitals: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***6. Hospitals: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g changing demographic structure, proposed change to HSE services?**

7. GPs: How many GPs are within the settlement area?

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GDA Settlement Infrastructure Survey: Lusk

8. GPs: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***9. GPs: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g changing demographic structure, proposed change to HSE services?**

10. Pharmacies: How many Pharmacies are within this settlement area?

11. Pharmacies: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***12. Pharmacies: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement?**

13. Dentists: How many Dentists are within the settlement area?

14. Dentists: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

GDA Settlement Infrastructure Survey: Lusk

***15. Dentists: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement?**

16. Ambulance Service: Is there an ambulance service available within the settlement?

- ◯ Yes
- ◯ No

17. Ambulance Service: If yes, what type of service is available?

- ☐ Public
- ☐ Private
- ☐ Volunteer

18. Ambulance Service: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***19. Ambulance Service: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement?**

20. How many elderly nursing homes/assisted living units are within the settlement area? Is this adequate for the settlement?

21. Health and Wellbeing: Data Availability - Are the locations of Health facilities available in a spatial/GIS format within the Local Authority?

- ☐ Yes
- ☐ No

GDA Settlement Infrastructure Survey: Lusk

3. Education and Access to Information

Please complete the questions below relating to Education and Access to Information for the settlement area.

1. Preschool: How many creches/pre-schools/montessori are within the settlement area?

2. Preschool: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***3. Preschool: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g high birth rate, new housing developments?**

4. Primary Schools: How many Primary Schools are within the settlement area?

5. Primary Schools: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***6. Primary Schools: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g changing demographic structure, poor service on periphery of settlement?**

7. Secondary Schools: How many Secondary Schools are within the settlement area?

GDA Settlement Infrastructure Survey: Lusk

8. Secondary Schools: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***9. Secondary Schools: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g changing demographic structure, poor service on periphery of settlement?**

10. School Accessibility: How would you rate the level of public transport accessibility to schools within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

11. Third Level/ Further Education: Is there a 3rd Level Institute or Further Education facilities within the settlement?

- ☐ Yes
- ☐ No

12. Third Level/Further Education: If yes to Q11, please list below

13. Education: Data Availability - Are the locations of Education facilities available in a spatial/GIS format within the Local Authority?

- ☐ Yes
- ☐ No

14. Internet: How many internet Café's are located within the settlement area?

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GDA Settlement Infrastructure Survey: Lusk

15. Internet: What is the average broadband speed in the settlement?

16. Internet: How would you rate internet/broadband accessibility within the settlement area?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

17. Library: Is there a library within the settlement area?

- ☐ Yes
- ☐ No

18. Library: If yes, what type of Library?

- ☐ National or Third Level Institute Library
- ☐ County Library
- ☐ Branch Library

GDA Settlement Infrastructure Survey: Lusk

4. Transport

Please complete the questions below relating to Transport for the settlement area.

1. Trains: What train services are located within the settlement area?

- ☐ Commuter Train
- ☐ DART
- ☐ LUAS
- ☐ No Train Service

2. Trains: If a train service is available please provide details on the service - destinations, number of daily trains etc

3. Trains: Are daily passenger numbers available?

- ◯ Yes
- ◯ No

4. Trains: If yes to Q3, please detail below

5. Bus: Is there a Bus Station within the settlement area?

- ◯ Yes
- ◯ No

6. Bus: Is there a Bus Stop within the settlement area?

- ◯ Yes
- ◯ No

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GDA Settlement Infrastructure Survey: Lusk

7. Public Transport: How would you rate the level of service provision within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

***8. Public Transport: Expert Opinion - What are the issues, if any, that currently or in the future can effect service provision within this settlement? e.g reduction of services, poor public transport in new housing areas**

9. School Accessibility: How would you rate the level of public transport accessibility to schools within the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

10. Transport Facilities: Data Availability - Are the locations of Transport facilities available in a spatial/GIS format within the Local Authority?

- ◯ Yes
- ◯ No

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GDA Settlement Infrastructure Survey: Lusk

5. Water and Waste-Water Infrastructure

Please answer the questions below relating to Water and Waste-Water for the settlement area.

1. Water Supply: Is there additional capacity in the water supply infrastructure to accommodate the future expansion of the settlement?

- ◯ Yes
- ◯ No

2. Water Supply: If no to Q1, please provide details on water supply infrastructure probelms within the settlement

3. Water Supply: Have there been any recent upgrades to the water supply infrastructure in the town?

- ◯ Yes
- ◯ No

4. Water Supply: If yes to Q3, please provide details

5. Water Supply: Has there been any instances where the water supply has had to be curtailed/turned off in recent years?

- ◯ Yes
- ◯ No

6. Water Supply: If yes to Q5, please provide details

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GDA Settlement Infrastructure Survey: Lusk

7. Water Supply: Have there been any issues with the quality of the drinking water in recent years i.e. have there been any instances where the parameters as set out by the EPA have not been met?

8. Water Supply: What is the current status of the water bodies in the vicinity of treatment plants serving the settlement?

9. Water Supply: How would you rate the level of water supply provision in the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

10. Wastewater: Is there additional capacity in the wastewater infrastructure to accommodate the future expansion of the settlement?

- ◯ Yes
- ◯ No

11. Wastewater: If no to Q10, please provide details on wastewater infrastructure probelms within the settlement

12. Wastewater: Have there been any recent upgrades to the wastewater infrastructure in the town?

- ◯ Yes
- ◯ No

GDA Settlement Infrastructure Survey: Lusk

13. Wastewater: If yes to Q12, please provide details

14. Wastewater: How would you rate the level of wastewater infrastructure provision in the settlement?

- ◯ Good
- ◯ Adequate
- ◯ Poor
- ◯ Bad

15. Flooding: Is there a problem with flooding in the settlement?

- ◯ Yes
- ◯ No

16. Flooding: If yes to Q14, please provide details on recent flooding events

17. Flooding: Have structural works been undertaken to prevent future flooding? Please provide details on recent and proposed developments

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