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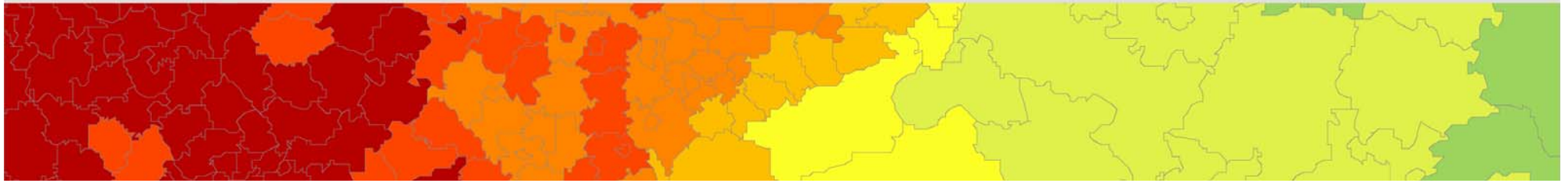

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The Development of the Islands – European Islands and Cohesion Policy (EUROISLANDS)

Targeted Analysis 2013/2/2

Atlas of the Islands

EUROPEAN UNION
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Atlas of the Islands

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Foreword

This Atlas represents an effort to scientifically document the state of European Islands and assist all parties involved (the EU, the Commission, Member States, Regional Autrhorities, stakeholders, etc.) to visualize and understand the problems and the issues that islands face today.

Insularity is the connecting link, the common characteristic of all islands regardless of their size, population and development level. Insularity expresses 'objective' and measurable characteristics, including small areal size, small population (small market), isolation and remoteness, as well as unique natural and cultural environments. However, it also involves a distinctive 'experiential identity', which is a non-measurable quality expressing the various symbols that islands are connected to.

With this Atlas, we want to illustrate that the problems of islands are not circumstantial, but at the same time they are also not 'permanent'. The goal is to use the given geographical and natural characteristics of islands as **advantages and not as disadvantages.**

We hope that you will find it useful,

Ioannis Spilanis,
Assist. Professor
Project Leader and Scientific Responsible

Introduction

The purpose of this Atlas is to present some basic and essential facts for European Islands.

The facts will be presented under two broad headings: (a) the state of the islands (sustainability indicators) and (b) the attractiveness of the islands. The former heading deals with the situation of Europe's islands within the context of sustainable development compared to the European mainland. The later heading refers to the causes of this situation and how insularity affects attractiveness.

This framework can provide useful information and highlight spatial differences on the problems that islands face today in Europe and the causes of these problems classified to internal and external factors. This approach can lead to conceptualization and implementation of policy measures to face attractiveness problems and improve the state of the islands eventually.

Different sets of indicators are developed for sustainable development and attractiveness. The most important of them make up this Atlas. The complete list of the indicators is analysed in detail in the Scientific Report of the study.

The analysis is based on information from 31 Island regions that are European statistical units (Member States, NUTS II or NUTS III). Additional information has been used from other European islands, especially smaller ones that are not covered within this analysis. We have tried to refer to islands and not regions, but, this was not possible due to the lack of consistent and reliable data for all islands as a lot of information does not exist on the island level (especially for coastal islands). Therefore, data for Regions are used in most cases. Qualitative information and results from previous studies, reports, work documents etc. are extensively used.

The data used come from available data that have been used already in previous ESPON studies and the ESPON databases for the 24 NUTS II and III island areas. Other sources include quantitative and qualitative data from European Institutions and sources (the EC, Eurostat, the Corine database, the EEA). Environmental information consist a particular problem: although vital for the special features of islands (limited area, isolation and remoteness), the existing quantitative information is extremely limited even at the NUTS II level.

In the next section, a typology of the European islands is presented to meet the reader with the diversity of the islands, from the very big to the very small. Next is a note on the methodology of composite indexes and the indicators of the Atlas follow.

1. A Typology of European Islands

The typology of the islands is based on:

1. The resident population, with three categories:
   (a) Large islands: >50,000 permanent inhabitants
   (b) Medium-sized islands: between 5,000-50,000 permanent inhabitants
   (c) Small islands: <5,000 permanent inhabitants.
2. The administrative status (or jurisdiction) as an indication of autonomy and power for the promotion of policies tailored to the islands' characteristics. At the levels of the independent state, NUTS II and NUTS III regions, data is readily available and thus an analysis is possible, as already mentioned. The problem rests on the fact that, generally, data is not available at a lower statistical level.
3. The geographical distribution and location of the islands, with a rough distinction which between the islands of the North (Baltic/ North Atlantic, with colder climate, seasonally strong domestic tourism, higher GDP per capita) and those of the South (Mediterranean, warmer climate, mass international tourism, lower GDP per capita, frontier zones with North Africa and arenas of illegal immigration into the EU).
4. The development status of the island, with the use of 4 levels, according to the EU-objectives that determine the European financial aid:
   - Convergence Regions: (NUTS 2 regions with GDP per capita of less than 75% of EU average);
   - Phasing-out Regions: (Regions which would still be eligible as Convergence regions if the threshold was estimated for EU15 and not EU25);
   - Phasing-in Regions: (Regions formerly Objective I, but presently with GDP per capita over 75% of EU15); and
   - Competitiveness and Employment Regions: (All remaining regions not covered by the three types above).

Coastal and Nuts III islands are classified with the mainland region within which they are administratively attached (for example, Orkney with the Highlands and Islands Region of Scotland; Hydra with the Attiki Region of Greece; and Ouessant with the Bretagne Region of France).

According to these criteria, the categorization of the islands with more than 50 inhabitants is summarised in Table A1 (average population counts are drawn from census data).

Table A1: Number of Islands in Each Category

	SIZE	DEVELOPMENT STATUS	STATE (0)	NUTS II (1)	NUTS III (6)	ISLANDS (224)
NORTH (231)	LARGE (2)	Convergence (0)				
		Phasing-out (0)				
		Phasing-in (0)				
		Comp. & Empl. (2)			2	
	MEDIUM (14)	Convergence (2)				2
		Phasing-out (6)			3	3
		Phasing-in (0)				
		Comp. & Empl. (6)		1	1	4
	SMALL (215)	Convergence (16)				16
		Phasing-out (56)				56
		Phasing-in (11)				11
		Comp. & Empl. (132)				132
	SIZE	DEVELOPMENT STATUS	STATE (1)	NUTS II (5)	NUTS III (8)	ISLANDS (117)
SOUTH (131)	LARGE (13)	Convergence (6)	1	2	3 (2)	1
		Phasing-out (0)				
		Phasing-in (3)	1	1		1
		Comp. & Empl. (4)		2	2	
	MEDIUM (30)	Convergence (14)			5	9
		Phasing-out (1)				1
		Phasing-in (13)				13
		Comp. & Empl. (2)				2
	SMALL (88)	Convergence (34)				34
		Phasing-out (8)				8
		Phasing-in (34)				34
		Comp. & Empl. (12)				12

LEGEND:
Convergence: Convergence Regions
Phasing-out: Phasing-out Regions
Phasing-in: Phasing-in Regions
Comp. & Empl.: Competitiveness and Employment Regions

2. A note on methodology: indexes for the state of islands, changes and their attractiveness

The attempt to facilitate comparisons between islands and highlight differences among them and between them and their national entities and the European average resulted in the creation of complex indexes with the use of the EU average as a base for the comparisons. Finaly, five different indexes were calculated:

(a) One for the state of the islands regions (NUTS 0, 2 and 3 statistical units) and the member states they are located in (State Index);

(b) One for changes that have taken place during 2000-6 (Change Index);

(c) Three for the attractiveness of the islands:

- One for attractiveness based on issues of accessibility and urban dynamism, the direct effects of insularity (Attractiveness Direct Index);
- One for attractiveness based on indicators that cover the rest of the attractiveness factors identified in the report as indirect effect of insularity (Attractiveness Indirect Index);
- One for the attractiveness based on the natural and cultural potential of the islands (Attractiveness Potential Index).

The 3 attractiveness indexes are not directly comparable and cannot be synthesized to a composite one as the availability of data is not homogeneous. For urban dynamism the Functional Urban Areas (FUA) concept was used, for which data are available only at NUTS 3 level, which is the case of the accessibility indicators as well.

Therefore, a European average is not available and the classes that were used for the calculation of the index had to be estimated with different methods (details below). Data for Attractiveness Potential Index are also available for NUTS 2/3 regions. On the contrary, indicators for other attractiveness factors (education level, R& D and ICT) are available at NUTS 0 and NUTS2 level.

For the values of all indicators 9 classes were created. These classes were constructed with the basic assumption that the European average in the particular indicator and the values around this average should form the middle class and four classes should be constructed with higher values than the middle class and four with lower values. The middle class has a width of ten values and the six subsequent classes also have a ten value width, while the two extreme classes include all the values that are lower or higher. In the two cases where the European average was not available, the range of the values of the indicator was divided by nine and nine equal classes where created. The limits of the classes are presented in Table A2.

Table A2: Limits of the classes used for the construction of the indexes

Class	Indicators of change, where EU27 change = 0%	Indicators where EU27 = 100	FUA (Max=5, min =0)	Accessibility (Max=190, min = 24)
1	<-35	< 65	0 to 0,55	24 to 42,4
2	-35 to -25	65-75	0,55 to 1,1	42,4 to 60,8
3	-25 to -15	75-85	1,1 to 1,65	60,8 to 79,2
4	-15 to -5	85-95	1,65 to 2,2	79,2 to 97,6
5	-5 to 5	95-105	2,2 to 2,75	97,6 to 116
6	5 to 15	105-115	2,75 to 3,3	116 to 134,4
7	15 to 25	115-125	3,3 to 3,85	134,4 to 152,8
8	25 to 35	125-135	3,85 to 4,4	152,8 to 171,2
9	> 35	> 135	4,4 to 5	171,2 to 190

The calculation of each index is based on the summing up of the values of the class of the individual indicators, assuming equal weight for each of the indicators that make up the index. The basic assumption is that the higher the value from the EU average the better the value of the index for the geographical areas. Therefore, when the indicator expresses a negative issue, such as the percentage of unemployment, the value of the class was inversed, i.e. if the value was 9 it becomes 1, if it was 8 it becomes 2, etc. Thus, the value of the index is always 'positive' and expresses how 'better' or 'worse' the state, the change or the attractiveness of the areas discussed are compared to the EU average and the average values of the member states with islands (except for the case of the first attractiveness index where the comparison is with the average value of the range of the values of the indicators). The geographical areas that are considered for the calculation of the indexes include all types of NUTS areas:

- EU27

NUTS 0: Member states with islands as statistical units (NUTS 2 and 3); 11 in total:

- Cyprus (CY) island state
- Denmark (DK)
- Estonia (EE)
- Spain (ES)
- Finland (FI)
- France (FR)
- Greece (GR)
- Italy (IT)
- Malta (MT) island state
- Sweden (SE)
- United Kingdom (UK)

NUTS 2: Island Regions or islands

- Corse (FR83)
- Ionian Islands (GR22)
- North Aegean (GR41)
- South Aegean (GR42)
- Crete (GR43)
- Sicily (ITG1)
- Sardegna (ITG2)
- Åland (FI20)
- Illes Balears (ES53)

NUTS 3: Island Regions or islands

- Bornhom (DK014)
- Mallorca (ES531)
- Menorca (ES532)
- Eivissa y Formentera (ES533)
- Zakinthos (GR221)
- Kerkira (GR222)
- Kefallinia (GR223)
- Lefkada (GR224)
- Lesvos (GR411)
- Chios (GR412)
- Samos (GR413)
- Kyklades (GR421)
- Dodekanisos (GR422)
- Malta (MT001)
- Gozo (MT002)
- Gotland (SE214)
- Island of Wight (UKJ34)
- Eilean Siar (Western Isles) UKM64
- Orkney Islands UKM65
- Shetland Islands UKM66

Some of the above islands are included in more than one NUTS level. Malta is such a case, which is both a Member State (along with Gozo) and a NUTS 3 area, separate from Gozo. Greek islands are another case where the NUTS 2 areas GR22, GR41 and GR42 have many islands, but are considered as a single unit, while the NUTS 3 divisions also have typically more than one island (12 for GR422, 20 for GR421, etc.). When data are available for both NUTS 2 and NUTS3 level for the same geographical area, only the NUTS3 data are included in the calculation of the index in order to avoid double counting.

Cyprus and Malta are included two times in the calculation of the indexes: within the calculation of the member-states average, but also in the calculation of the islands' average.

The variables selected for the creation of indexes come from the long lists for the state and the attractiveness of the islands, while the availability of data and the degree of correlation between them also were considered during the selection.

The **State** index is calculated with the use of five indicators:

(a) ***GDP per capita*** 2006 (EU 27=100);
(b) ***The active population / total population %*** that is first transformed with the EU27=100 and then the classes are assigned to the values;
(c) ***The unemployment rate %*** in 2008 that is first transformed with the EU27=100 and then the classes are inverted to keep the overall scale of the values of the indicator already discussed above;
(d) ***The percentage of population older than 65*** in 2007, which is first transformed with the EU27=100 and then the classes are inverted to keep the overall scale of the values of the indicator already discussed above.
(e) ***The percentage of artificial land to the total land*** from the CORINE data base in 2000, with the EU27=100 and then the classes are inverted.

The State Index is used not only to compare islands with EU average but also for the classification of islands into groups.
The **Change** index covers the period 2000 – 2006 and is calculated with the use of three indicators:

(a) ***population change 2000 - 2006*** % that is first transformed with the EU27=100 and then the classes are assigned;
(b) ***The GDP per capita with the EU27=100 change*** % 2000 – 2006, where the classes are assigned to the values;
(c) ***The active population change % 2000-2006,*** which is first transformed with the EU27=100 and then the values of the indicator are assigned.

The first **Attractiveness** index (**Attractiveness Direct Index**) is calculated with the use of two indicators:

(a) ***The average FUA*** value for which the classes are assigned;
(b) ***The ESPON multimodal accessibility indicator***;

These two indicators are selected among all attractiveness parameters as the most representative indicators of insularity influencing directly their attractiveness: the first records the differences of dynamism between cities based on their population size and their functions; the second records the difference of accessibility between the European territories, islands included.

The second **Attractiveness** index (**Attractiveness Indirect Index**) is calculated with the use of five indicators:

(a) ***The percentage of population with low education level % of the population*** in 2008 that is first transformed with the EU27=100 and then the classes are assigned and reversed;
(b) ***Research and Development % of the GDP*** in 2008 that is first transformed with the EU27=100 and then the classes are assigned (data for NUTS 2 areas refer to 2007);
(c) ***The percentage of households with broadband access % of the total number of households*** in 2008, which is first transformed with the EU27=100 and then the values of the indicator are assigned;
(d) ***The unemployment rate for the group 15 to 24 years old*** in 2008, which is first transformed with the EU27=100 and then the classes are assigned and reversed;
(e) ***The governance*** indicator is based on quantitative and qualitative data produced by the ESPON 2006, "Governance of Territorial and Urban Policies from EU to local level", as number of public employees, national governance patterns, shift from government to governance, state structure and process etc.

These five indicators are selected among the attractiveness parameters that are related to "Lisbon Strategy". Data are available typically at NUTS 2 level and therefore the Index is calculated only for this level.

The third **Attractiveness** index (**Attractiveness Assets Index**) is calculated with the use of two indicators (data from the ESPON DataBase) in order to evaluate the islands' potential:

(a) ***The share of Natura 2000 area on the total*** area of the islands region;
(b) ***The density of cultural monuments of the island regions*** as estimated by ESPON 2006, The role and the spatial effects of Cultural Heritage and Identity (Project 1.3.3).

The values of all indicators are presented and discussed in the text of the Atlas in the next section.

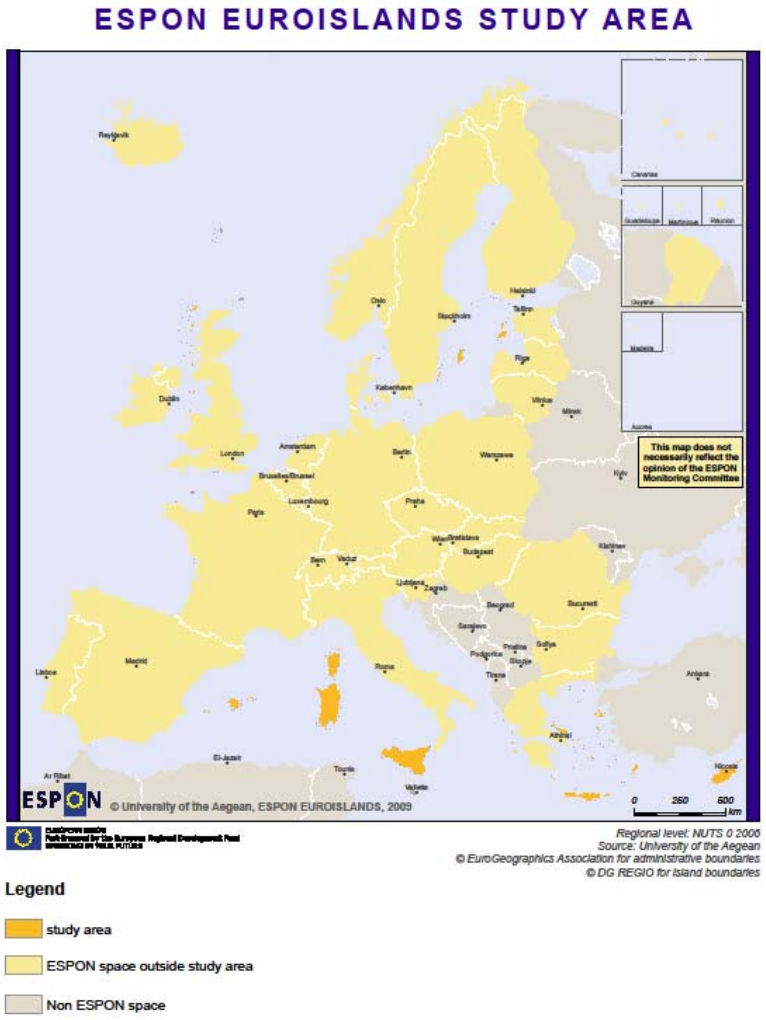
3. The Atlas

The European islands included in this study (Map 1) are very diverse in terms of the size of their population and the "importance" of this population within their national entities. A quite clear geographical distribution is evident: on the one hand, islands in north Europe are rather small, mainly close to the coast, and their population is a small part of the total national population (less than 1% except for Estonia); on the other hand, in the Mediterranean, more diverse cases are encountered: there are two island-states (Cyprus and Malta[1]), very big island-regions such as Sicilia, Sardegna, Kriti, Mallorca and Corse, as well as archipelagos and coastal islands. The ratio of these islands' population to the correspondent national total varies from 100% for the islands states to less than 2% for France. Greece and Italy are the non islands-states where islands have an important weight; 12% of their population lives on islands.

The overall analysis is influenced and limited by the available information and data that corresponds to the islands' administrative status: for islands-states such as Cyprus and Malta, all data are generally available; on the other hand, information on the islands at LAU 1 or lower level is not available at all at the European level, except for very few variables. In between, for islands that are characterized as NUTS 2 and 3 regions, the available information is not homogenous and very unequal. Therefore, different units and levels of analysis are used: for most indicators, data is available only for NUTS 0 and 2 areas, which yields 11 areas; in the cases where information for all the NUTS 3 islands areas is available, 20 more areas are added. However, some of these areas overlap: "Malta-state" data (NUTS 0 area) is the sum of "Malta-island" and "Gozo-Comino" (NUTS 3 areas); "Illes Balears" is the sum of the 3 newly created NUTS 3 areas of "Mallorca", "Menorca", "Eivissa I Formentera"; In Greece, "Notio Aigaio" (NUTS 2 area) is the sum of the 2 NUTS 3 areas "Kyklades" and "Dodecanisos"; "Voreio Aigaio" (NUTS 2 area) is divided in 3 NUTS 3 areas ("Lesvos", "Samos" and "Chios") and "Ionia Islands" (NUTS 2 area) in 4 NUTS 3 areas ("Zakynthos", "Kerkyra", "Lefkada" and "Kefallonia"). Finally, the islands of Kriti, Sicilia, Sardegna and Corse are taken into account only as entire island entities (NUTS 2 areas), even if they include NUTS 3 sub-divisions.

[1] All references to Malta concern the Malta State (NUTS 0 level); when information is provided for the island of Malta (NUTS 3 level) there is explicit reference.

Map 1: The Study Area



The data used for the analysis generally cover the period 1996-2008 and originate from the following European sources:
(a) the EUROSTAT web data base;
(b) the EUROSTAT Regional Yearbook 2009;
(c) the 4th Report on economic and social cohesion, 2007;
(d) the ESPON data base and
(e) the ESPON Altas.

3.1. The State of European Islands

The answer to the question "**what is the situation of European Islands within the context of sustainable development?"** is derived by pointing out the differences that distinguish the islands from the EU-27 as well as from their national entities. The following analysis is structured in 3 sections that correspond to the three components of sustainable development: the efficiency of islands' economy; the social equity; and the environmental conservation.

3.1.1. Efficiency of Islands' economy

The degree of the economic success of a region is usually assessed with the use of the Gross Domestic Product (GDP) that describes the value of its output and the effectiveness of its economic system. The GDP per inhabitant (in PPS) is even more helpful to compare economic growth and the effectiveness of the economy between areas, while its change rate estimates its dynamism. However, the use of this indicator is straightforward only if all the persons involved in generating GDP are also residents of the region in question which is not the case for most of the islands[2].

The majority of NUTS 2 and 3 islands (24 out of 31, island states included) have GDP per capita (in PPS) below the EU27 average (79,2 in 2006 with EU27=100), with a range of 20,3 compared to 50,0 for the EU-27 (EU, 2009, p.8-9). Only Åland, Illes Balears (NUTS 2), Shetland and Kyklades (NUTS 3) perform better than the European average (146,7, 114,1, 110,9 and 104,0 in 2006 respectively) and Åland, Illes Balears and Kyklades better than the national average (Table A3.1.1 and Map 2).

The economic convergence in terms of GDP of the examined NUTS 2/3 island regions with the EU27 average from 2000 to 2006 was positive for some of the NUTS2/3 regions with Western Islands, Shetland, Chios, Kefallinia having the best scores. On the contrary, Sardegna, Sicilia, Malta, Bornholn, Kerkyra and Dodecanisos faced a net divergence compared to EU-27. One region, Ionia Nissia, fell again below the 75% limit of the European average. Consequently, in this period, the majority of the island regions has not followed the trends of the countries and diverged from the EU average (Map 3).

Productivity level is also diverging (EU, 2007, p.178-195): in Corse, Sardegna, Sicilia, and Åland productivity is above the EU 27 average (in the 100 – 120 class) following the trend of their respective countries. Notio Aigaio and Illes Balears have better scores than the national ones (106,9 compared to 85,1 and 94,5 compared to 91,7 respectively). On the contrary, in Cyprus, Ionia Nisia, Voreio Aigaio and Malta productivity is very low.

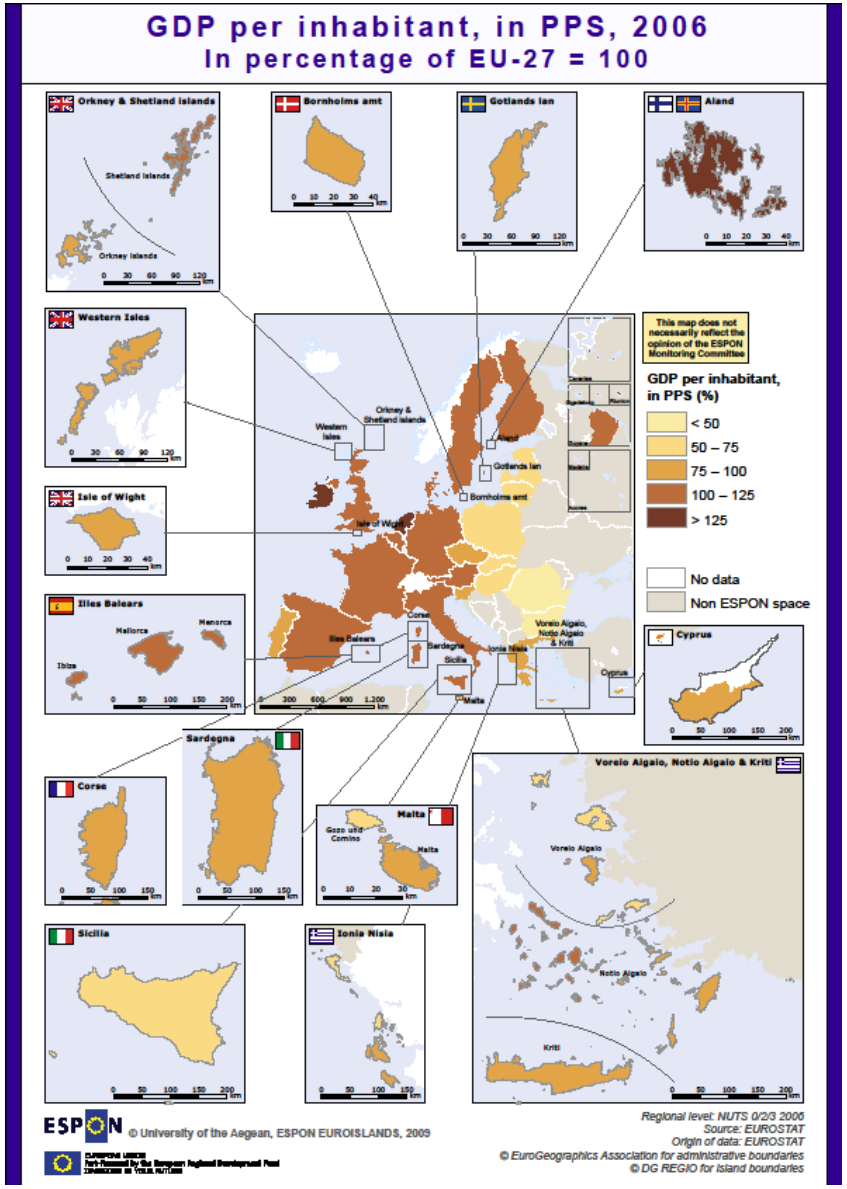
Table A3.1.1: Islands Regions, Cohesion Policy objectives and GDP (2006)

Regions	NUTS	Cohesion Policy Objective	% of EU27 average 2006	% of National average 2006
Cyprus	2	Phasing-in	90,3	100,0
Bornholm	3	Competitiveness & Employment	89,4	72,7
Illes Balears	2	Competitiveness & Employment	114,1	109,6
Eivissa y Formentera	3	Competitiveness & Employment	123,8	118,9
Mallorca	3	Competitiveness & Employment	111,5	107,1
Menorca	3	Competitiveness & Employment	124,2	119,3
Åland	2	Competitiveness & Employment	146,7	127,7
Corse	2	Competitiveness & Employment	85,8	78,4
Ionia Nisia	2	Convergence	73,9	78,5
Zakynthos	3	*Convergence*	*92,3*	*98,1*
Kerkyra	3	*Convergence*	*67,1*	*71,3*
Kefallinia	3	*Convergence*	*82*	*87,1*
Lefkada	3	*Convergence*	*64,9*	*69,0*
Voreio Aigaio	2	Convergence	67,4	71,6
Lesvos	3	*Convergence*	*64,1*	*68,1*
Samos	3	*Convergence*	*65,4*	*69,5*
Chios	3	*Convergence*	*75,9*	*80,7*
Notio Aigaio	2	Phasing-in	96,2	102,2
Dodekanisos	3	*Phasing-in*	*91,7*	*97,4*
Kyklades	3	*Phasing-in*	*104*	*110,5*
Kriti	2	Convergence	82,8	88,0
Sicilia	2	Convergence	66,9	64,6
Sardegna	2	Phasing-in	79,5	76,8
Malta	2	Convergence	76,9	100,0
Malta island	3	*Convergence*	*78,4*	*102,0*
Gozo and Comino /Ghawdex	3	*Convergence*	*59,2*	*77,0*
Gotlands län	3	Competitiveness & Employment	98,1	80,7
Isle of Wight	3	Phasing-out	81,1	67,4
Eilean Siar (Western Isles)	3	Phasing-out	77,7	64,5
Orkney Islands	3	Phasing-out	94	78,1
Shetland Islands	3	Phasing-out	110,9	92,1

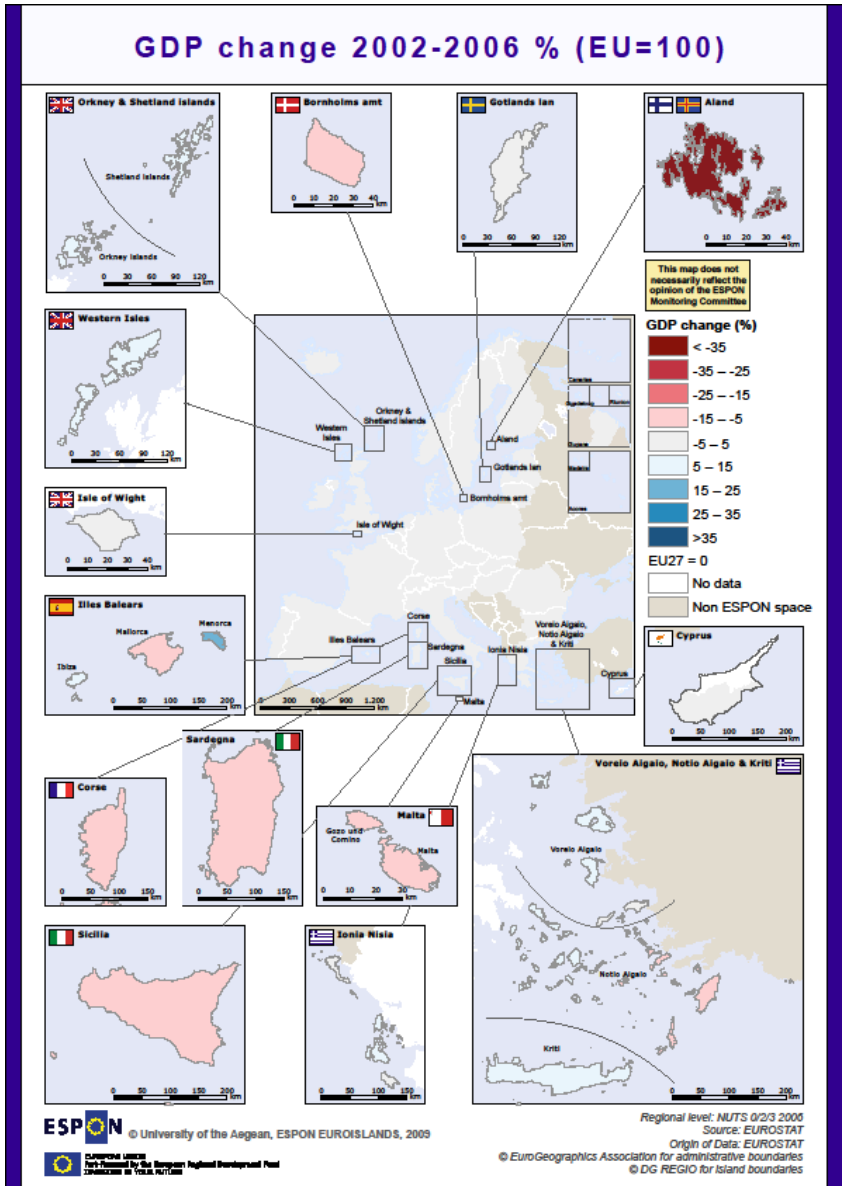
Source: EUROSTAT, TPG calculations

[2] Tourism is a typical economic activity that raises production in an area; in many cases an important part of employers and employees does not reside permanently in it. Therefore, the activity generates GDP, but part of this production 'leaks' out of the area along with the people that leave when the season ends. In parallel, the created GDP is divided by the number of the permanent inhabitants, giving a high GDP/capita indicator.

Map 2: GDP per inhabitant of Member States and island regions, in PPS, 2006



Map 3: GDP change % (2002-2006) for Islands states, NUTS 2 and NUTS 3 islands



Development of the economy and long term prospects

The structure of the economy of the island regions per sector is very diverse (Table A3.1.2): services are the most important activity, but the gross value added produced by the sector fluctuates between 65% for Orkney and Shetland Islands to 85% for Åland. This is the result of the presence of an important public sector for some of the islands, e.g. Gotland (41,2%), Western Isles (37,8%), Bornholm (37,0%) and Corse (36,2%). Menorca with 15,8% and Kyklades 16,4% and generally the Illes Balears and the Greek Islands are in the other end of the spectrum. The island states Malta and Cyprus occupy the space in the middle with 26,7% and 24,4% of their GDP coming from the public sector respectively, following the trend of many other member states (e.g. Denmark 27,0%, France 25,4%, Sweden 25,3%, Greece 23,9%).

This high presence of non commercial services in some islands **underlines the low performance of competitive sectors and demonstrates an explicit policy choice of developing public services.**

Other services, such as transport (Åland) or tourism (Illes Balears and Greek Islands) are very important in some islands with more than 40% of the GVA produced by these branches. Two Greek islands (Lesvos and Chios) and Cyprus have important financial sectors (real estate, renting and other services to companies and individuals). The construction branch is important (more than 10%) on Illes Balears and on most of the Greek islands, and is related with tourism and residential economy in general. The rest of the secondary sector (manufacture, mining, energy) is rather underrepresented in islands compared with the EU and the member-states (even though energy has to be produced locally for most of the islands). Finally, the primary sector is important compared to the EU27 average in the Scottish Islands, Kriti, Lesvos and Gozo, with more than 8% of the GVA. On the contrary, in Illes Balears, Åland and the Isle of Wight the presence of the primary sector is less than 2%, the first two performing well above the average in economic terms.

Concerning employment by sector, 7 NUTS 2 island regions plus Cyprus face high business concentration in one or few branches, with tourism being the branch with the single higher concentration, except for Åland where sea transport activities predominate (EUROSTAT, Regional Yearbook 2009). "Business services" (real estate, renting, computer activities, R&D, legal business services, accounting and management, advertising, architectural, engineering but also security and cleaning, secretarial, translation services, etc.) which are considered the most dynamic elements of a modern economy have a low presence on islands.

Table A3.1.2: Structure of the Gross Added Value (2006, %)

	Primary Sector	Secondary Sector	*Manufacture - Mining - Electricity - Water*	*Constructions*	Tertiary Sector	*Trade - Hotels - Transport*	*Financial Sector*	*Public Services*
CY Cyprus	2,4	19,0	*10,3*	*8,6*	78,6	*27,6*	*26,7*	*24,4*
DK Denmark	1,6	26,0	*20,5*	*5,5*	72,4	*21,5*	*24,0*	*27,0*
DK014 Bornholm	2,7	18,7	*11,4*	*7,3*	78,6	*22,1*	*19,5*	*37,0*
EE Estonia	3,1	29,7	*21,2*	*8,5*	67,2	*28,3*	*23,0*	*15,9*
ES Spain	2,9	29,9	*17,8*	*12,2*	67,2	*24,8*	*21,5*	*20,8*
ES53 Illes Balears	1,1	18,0	*7,0*	*11,0*	80,8	*39,3*	*22,1*	*19,4*
ES531 Eivissa y Formentera	0,8	14,9	*4,6*	*10,3*	84,3	*43,1*	*22,6*	*18,6*
ES532 Mallorca	1,1	18,3	*7,3*	*11,0*	80,6	*38,8*	*21,8*	*20,0*
ES533 Menorca	1,8	20,5	*8,4*	*12,1*	77,7	*38,2*	*23,7*	*15,8*
FI Finland	2,5	32,4	*26,4*	*6,0*	65,1	*22,1*	*21,0*	*22,0*
FI20 Åland	1,8	13,7	*8,6*	*5,2*	84,5	*46,5*	*13,0*	*25,1*
FR France	2,1	20,7	*14,5*	*6,2*	77,3	*19,0*	*32,9*	*25,4*
FR83 Corse	2,1	15,0	*5,5*	*9,5*	82,8	*22,4*	*24,2*	*36,2*
GR Greece	4,1	21,0	*13,7*	*7,3*	75,0	*31,8*	*19,3*	*23,9*
GR22 Ionia Nisia	3,8	16,7	*5,9*	*10,8*	79,4	*39,0*	*20,3*	*20,1*
GR221 Zakynthos	5,3	16,9	*4,5*	*12,4*	77,8	*43,1*	*17,8*	*16,9*
GR222 Kerkyra	2,6	13,9	*6,2*	*7,8*	83,5	*42,8*	*20,7*	*20,0*
GR223 Kefallinia	5,4	22,1	*7,2*	*14,9*	72,5	*30,2*	*21,7*	*20,6*
GR224 Lefkada	3,8	20,7	*5,5*	*15,2*	75,5	*25,9*	*21,4*	*28,2*
GR41 Voreio Aigaio	8,0	19,1	*8,8*	*10,3*	72,9	*22,2*	*26,2*	*24,5*
GR411 Lesvos	10,2	16,9	*8,9*	*7,9*	72,9	*20,8*	*26,3*	*25,9*
GR412 Samos	4,7	18,3	*8,2*	*10,1*	77,0	*28,7*	*24,1*	*24,2*
GR413 Chios	6,4	23,7	*9,0*	*14,6*	70,0	*20,0*	*27,6*	*22,4*
GR42 Notio Aigaio	3,2	17,2	*7,9*	*9,3*	79,6	*42,4*	*18,6*	*18,6*
GR421 Dodekanisos	2,9	15,0	*6,4*	*8,6*	82,1	*45,4*	*16,7*	*20,0*
GR422 Kyklades	3,7	20,6	*10,2*	*10,4*	75,7	*37,6*	*21,6*	*16,5*
GR43 Kriti	8,2	16,8	*8,3*	*8,5*	75,0	*32,8*	*18,0*	*24,2*
IT Italy	2,1	26,8	*20,7*	*6,1*	71,1	*22,8*	*27,2*	*21,1*
ITG1 Sicilia	4,0	16,7	*10,7*	*6,0*	79,3	*21,2*	*24,1*	*34,0*
ITG2 Sardegna	3,5	19,1	*13,1*	*6,0*	77,3	*23,6*	*23,3*	*30,5*
MT Malta	2,8	21,6	*17,7*	*3,9*	74,7	*27,4*	*21,6*	*26,7*
MT001 Malta	2,5	21,9	*18,0*	*3,8*	74,8	*27,6*	*21,7*	*26,5*
MT002 Gozo and Comino	7,9	18,2	*12,4*	*5,9*	71,9	*25,8*	*20,8*	*27,2*
SE Sweden	1,4	27,9	*23,2*	*4,7*	70,6	*19,9*	*25,4*	*25,3*
SE214 Gotlands län	3,4	16,8	*11,3*	*5,5*	79,8	*18,3*	*20,4*	*41,2*
UK United Kingdom	0,7	23,6	*17,3*	*6,3*	75,6	*21,3*	*31,0*	*23,4*
UKJ34 Isle of Wight	1,1	21,5	*13,8*	*7,7*	77,4	*30,7*	*14,4*	*32,3*
UKM64 Western Isles	6,7	19,6	*10,2*	*9,5*	73,6	*22,7*	*13,1*	*37,8*
UKM65 Orkney Islands	12,7	21,3	*10,1*	*11,3*	65,9	*27,4*	*9,2*	*29,3*
UKM66 Shetland Islands	10,5	23,6	*13,6*	*10,0*	65,9	*24,3*	*8,9*	*32,7*

Source: EUROSTAT

As for the profile of island specialisation within Europe, their main characteristic is the importance of market and non market personal services and construction (non competitive activities) along with tourism and/or agriculture and fisheries, two sectors characterised by low value added, excessive use of natural resources and strong competition from non European countries with low labour costs.

It seems that an important part of the activities on islands are characterized by survival strategies of subsistence, mainly on small islands. Within this context, the long-term economical perspectives seem rather fragile.

Irrespective of size, this analysis indicates that islands **with better economic performance** compared to the rest and the EU27 average can be classified in two categories:

- Islands with very clear **international specialisation in a low added value activity** such as the ***tourism sector*** (Illes Balears, Notio Aigaio, Zakynthos, Cyprus). Monoculture is the basis of their current prosperity, which has yielded good results, but at the same time they are more vulnerable than other areas during a crisis.
- Islands with a GDP "boosted" by **specific exogenous influences,** such as Åland, Shetland, Orkney and Gotland. Such influences range from are the existence of a duty free area (Åland) to oil extraction (Shetland), rather than the utilization of local comparative advantages. The presence of the State is an important reason. This public sector acts like a lever for development, creates employment and GDP, improves the attractiveness for residence (more public services), but presupposes the possibility and the policy option of transferring public resources, human capital and know-how from the national mainland. Islands with a developed and efficient public sector are in general less vulnerable and exposed to external influences; but this option is under threat within a period of bugjet restriction.

Box 1: Main issues in the analysis of islands' economy:

Islands have an average GDP/capita lower than the EU 27 average, and only few of them perform better (Åland, Illes Balears, Shetland and Kyklades). In general the process of economic convergence is slower than for the rest of the EU regions.

Islands are lagging compared to their national entities (except Åland, Kyklades and Illes Balears)

For many islands (Nordic islands, Corse, Sicilia and Sardegna) GDP level and employment are sustained by an important public sector; this is a sign of low competitiveness of the economy.

Even though services remain the most important activity, two main groups with competitive activities are found: (a) islands where tourism prevails; and (b) few islands with a significant activity in agriculture and fisheries.

Long term development perspectives seem rather fragile – even in the islands with high performance-, because of the predominance of low value added activities in an increasingly competitive international environment based on an excessive use of scarce natural resources.

3.1.2. Social equity

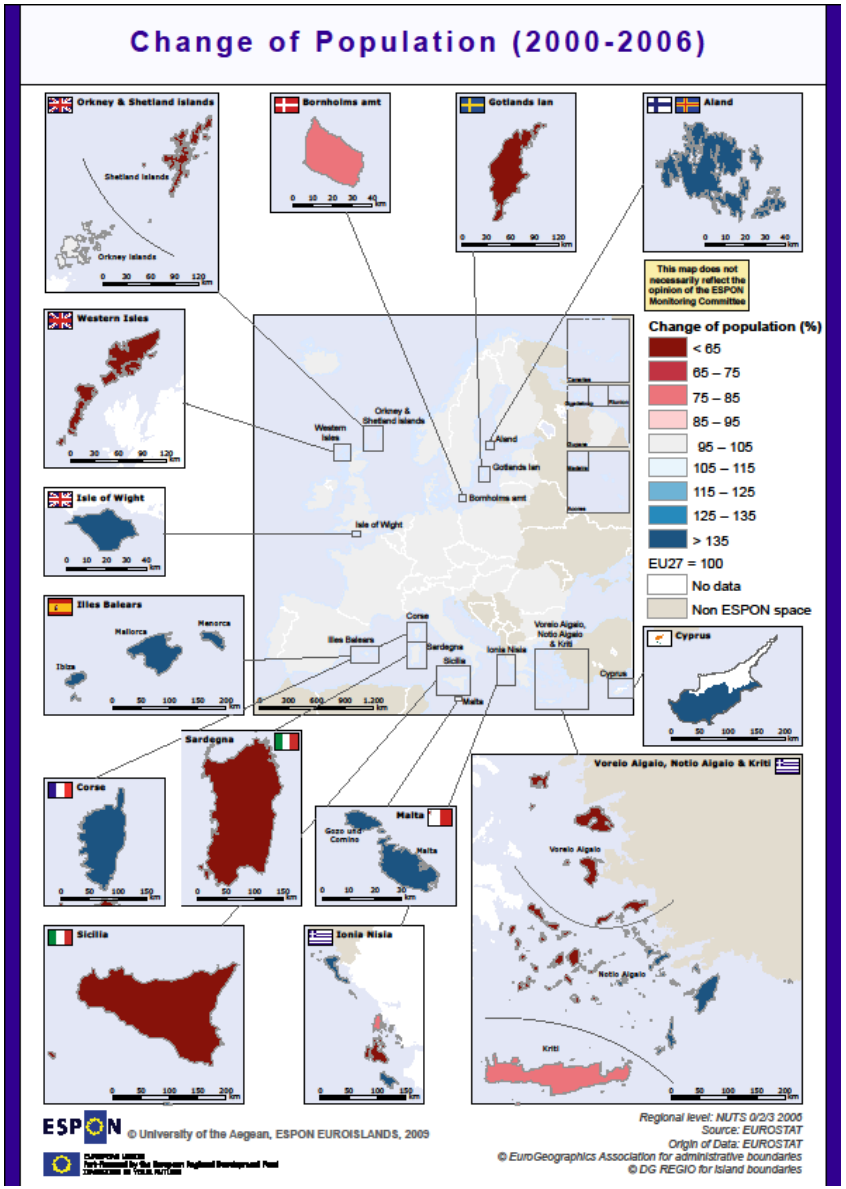
Population evolution and structure

The structure of a population and its change is affected by a number of factors, both external to the area and internal. External factors, such as economic conditions, changes in life styles, cultures and aspirations are considered as more important for shaping the demographic profile of an area. For islands, the demographic profiles have been profoundly changed during the last decades. Here, we focus on differences between islands and the European mainland and discuss some important differences between islands.

A general demographic trend of the end of the 1990s was a population decrease on a number of regions in the European periphery, but also in some of the core regions (e.g. in some regions of Germany, Italy and France). This was the result of negative natural balance or of negative migratory balance or a combination of both (ESPON Atlas, 2006, p.10). Most of the island regions considered in this study followed this trend: Sardegna, Sicilia, Voreio Aigaio recorded a significant decline of their population mainly due to a negative natural balance when Gotland, Western Isles and Shetland displayed a minor decrease. Another group of islands, including Illes Balears, Isle of Wight, Kriti, Malta, Cyprus, Notio Aigaio and Åland, recorded an increase.

During the 2000s (Map 4), population projections are in general positive for Western Europe with only a limited number of regions facing population decline (Germany, many Greek regions and some Scandinavian regions), while in Eastern Europe continuing emigration caused again negative trends. For island regions, the evolution is generally positive, with Illes Balears recording the best results (2,9% per year and 4,2% for Eivissa y Formentera) followed by Cyprus (1,6%) and Corse (1,5%). In the Scottish islands, Gotland and Bornholm in the North, Sicilia and Voreio Aigaio in the South the population seems to stabilise or decrease slowly. These positive results **seem to come from positive immigration flows and not from natural change**, as fertility rates are stable and rather low (1,3) and the replacement level is 2,1 children per woman. This positive immigration has improved the age pyramid as well, as immigrants are younger and have more children (EUROSTAT, Regional Yearbook 2009). These migrants come either from Eastern Europe or from Asia and Africa (legally or illegally) for almost all islands that are external boarders. But, recent positive developments of the population of islands (+0,85%, EU, 2009, p.8) compared to previous decades and the European average (0,37%) obscures the situation of smaller islands especially in archipelagos, which continue to lose population.

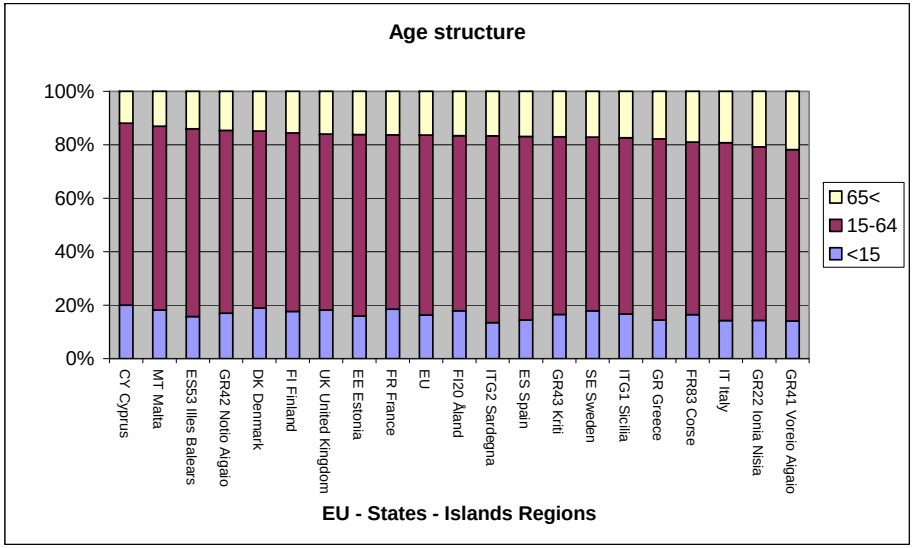
Map 4: Change of Population 2000-2006



Demographic trends have a strong impact on the societies of the European Union. The low fertility rates combined with an extended longevity result in demographic ageing of EU population and the share of the population aged over 65 is increasing. In 2007, the average population in the EU-27 at this age was 17%, which means an increase of 2% in the last 10 years especially in rural areas (EUROSTAT, Regional Yearbook, 2009).

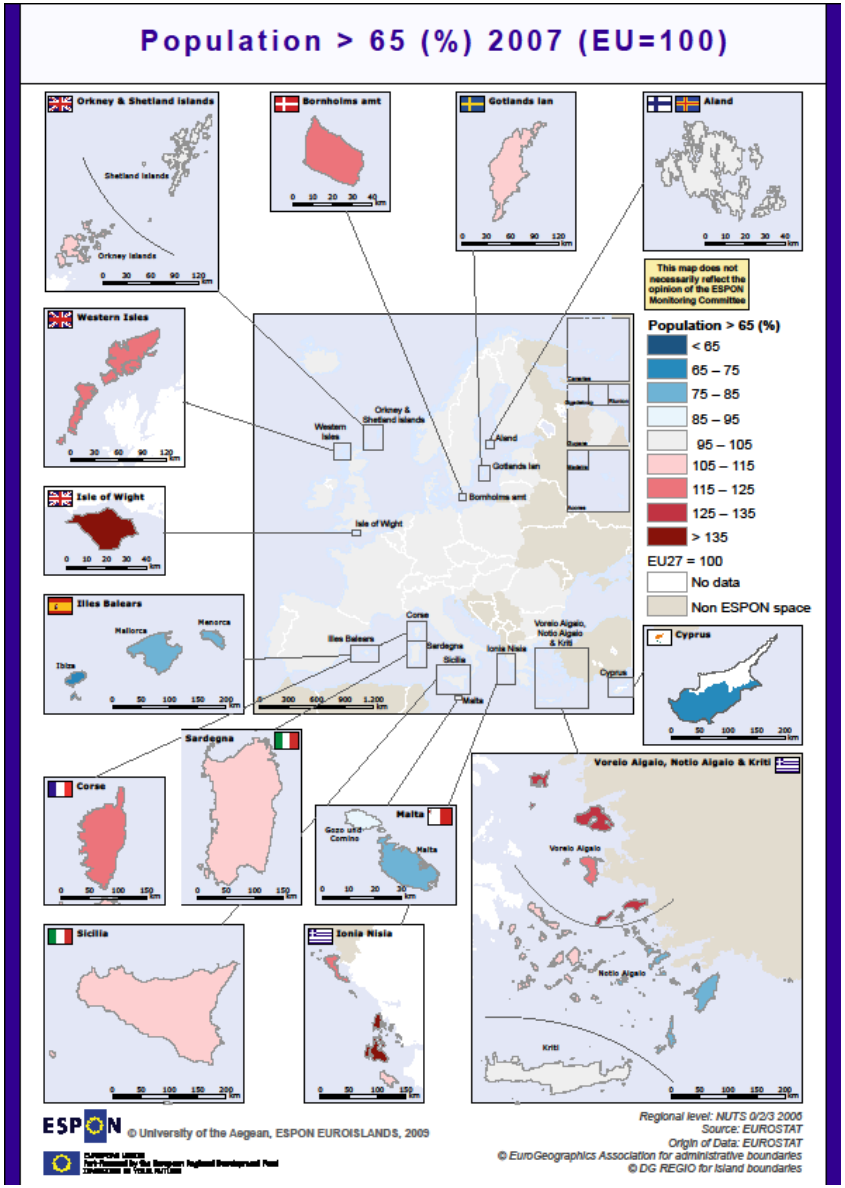
For islands, in regions such as Voreio Aigaio and Ionia Nissia the percentages are 21,8% and 20,8% respectively, while in other island regions the percentages are closer to the average or lower, with Corse at 19%, Sicilia at 17,4%, Kriti at 17%, Sardegna at 16,7%, Åland at 16,6%, Notio Aigaio at 14,6%, Illes Balears at 14%, Malta at 13% and Cyprus at 11,9% (Map S and Graph S3.1.1). On smaller islands, more extreme values are found.

Graph S3.1.1: Population Age Structure (2006) EU average, Member states, NUTS II islands

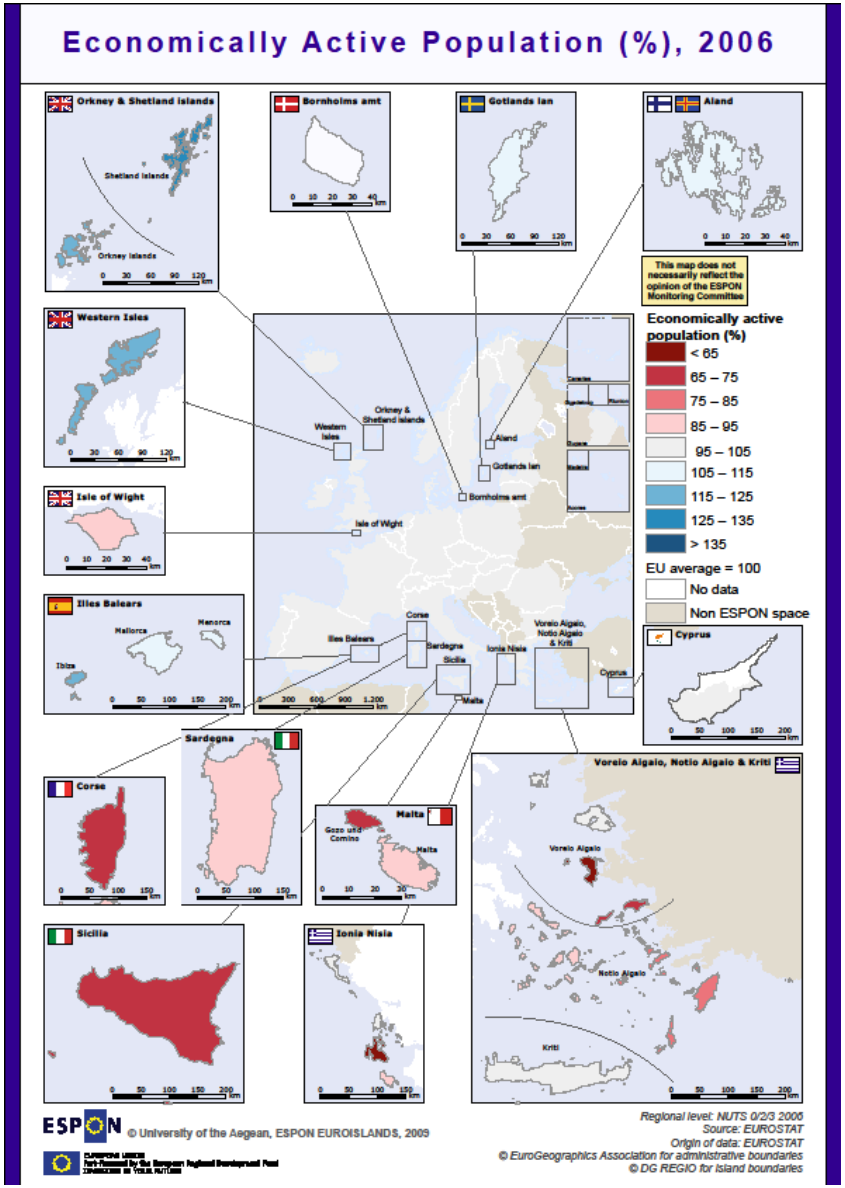


Source: EUROSTAT web database, 2009, processed by TPG

Map 5: Population ageing (>65 years old) for Island states, NUTS 2 and NUTS 3 islands



Map 6: Economically Active Population as % of the total population



Economically active Population and Employment Rate

These two indicators give an indication of the dynamism and the competitiveness of the local economy. Demography influences the supply of labour but the economic performance creates jobs opportunities and demand for labour in terms of numbers and skills. Economically active population rate is more influenced by demography as it reflects the percentage of the young (<15) and the old (>65) population of the area. Only 4 islands (Zakynthos, Eivissa I Formentera, Åland and Gotland) out of the 28 island NUTS 0, 2 and 3 areas (EUROSTAT data base, 2006) score better than the EU average 54,5% (Map 6). The same pattern is observed for female activity: with a European average at 55,9%, Åland is the leading region with 76,7% followed by Cyprus (58,4%) and Illes Balears (57,5%); while Sicilia and Malta have the lowest scores (28,1% and 32,1% respectively) (Table A3.1.4). It seems that **Åland** -following Nordic trends- and the **tourism influenced islands** (mainly Illes Balears, Cyprus and Notio Aigaio) **have employment rates higher than the EU average and the rest of the island regions**.

Unemployment

Unemployment is a very important parameter for social cohesion as it raises the risk of poverty and weakens the social fabric. It is the most visible sign of labour market imbalances, reflecting shortfall in jobs, mismatch between offered and needed skills and structural deficiencies. But, the complete picture is not always provided by the unemployment rate alone, as in areas with limited employment opportunities some choose to abandon the labour market or to emigrate. Therefore, the unemployment rate could be low, but jobs could be sparse at the same time. Such an example seems to be Malta, where the absence of job opportunities is reflected by the very low activity rate but not by the unemployment rate. Women, the young and long term unemployed provide complementary information for the labour picture of the endogenous potential of the region.

With an average EU 27 rate at 7% for 2008, East Germany, Poland, many Finish regions and a big part of the Mediterranean regions face serious unemployment problems (EUROSTAT, 2009). In 2007, this EU27 average was at 7,5% compared to 11,6% for island regions (EU, 2009, p.8). Among these regions, Sicily, Sardegna, Kerkyra, Zakynthos, the Dodecanese and Corse perform worse, while Åland and generally the Nordic islands perform better (Map 7). The changes of the unemployment rate are very diverse: e.g. in Corse it dropped from 22,2% to 8,2% from 2000 to 2007, in Voreio Aigaio from 11,5% to 4,5%, in Sardegna from 20,0% to 12,2% and in Sicilia from 24,0% to 13,8%, compared to the EU average drop of 1,7%. These changes appear to highlight ***structural employment problems in these areas, rather than indicating a sharp rise of employment*.**

Unemployment of the young in EU 27 is more than double of the overall unemployment rate (15,5% compared to 7% in 2008). The lowest rate is recorded in Cyprus with 9%, while the highest ones on Sicilia and Sardegna of 39,3% and 36,8% respectively (Table S3.1.4, Map 8). Female unemployment is higher in the 7 NUTS 2 island regions for which data are available (no data available for Åland and Voreio Aigaio) than the EU 27 (7,5% in 2008); only Cyprus (4,2%) and Malta (6,8%) have recorded better scores, while on Sicilia, Sardegna, Notio Aigaio, Ionia Nissia and Corse rates of more than 12% are recorded (Table A3.1.4, Maps 8 and 9). Long-term unemployment is very high in Corse, Sardegna, Sicilia, and Voreio Aigaio (more than 45%, with a EU 27 average at 37,2%, Table A3.1.4).

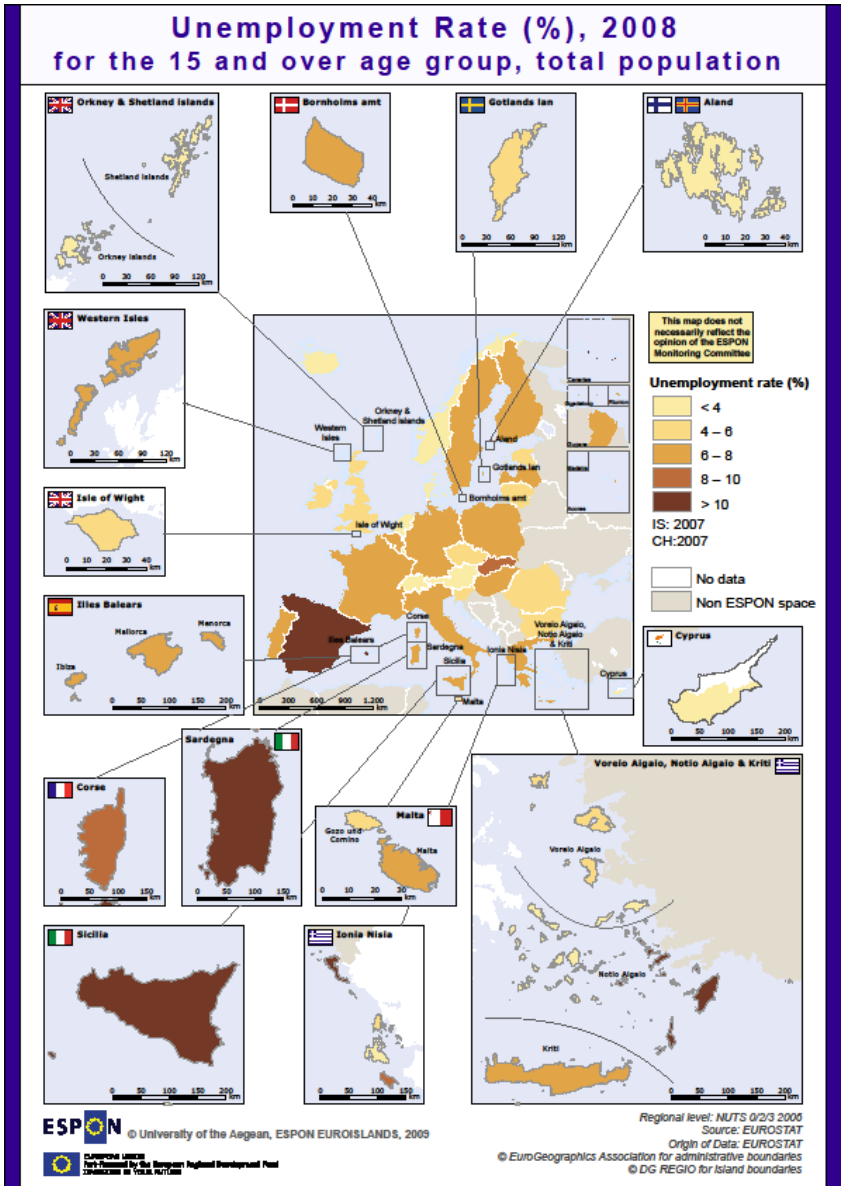
Income

As already analyzed, the Gross Domestic Product is an index for measuring the efficiency of the economy. However owing to different interregional linkages and state interventions, the GDP generated in a given region does not always correspond to the income available to the inhabitants of the region. Therefore, in order to estimate the population's welfare the knowledge of income levels (primary and disposable) per inhabitant and its trends is necessary.

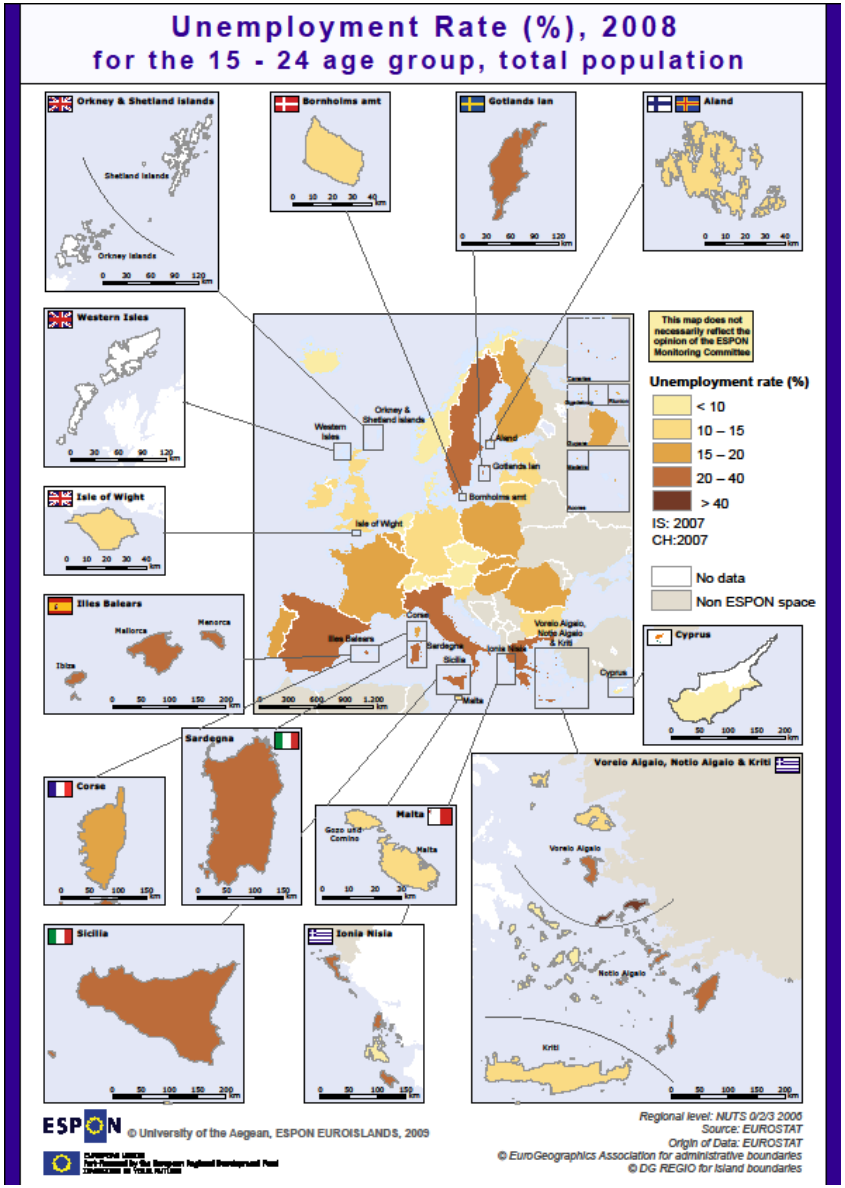
The first important issue revealed by incomes is the risk of poverty[3] for different groups of population. For islands, with an EU-27 average income of 16.200 € for 2006, (EUROSTAT, 2009) only in Åland (17.190 €) and Illes Balears (18.306 €) the incomes are higher. On the contrary, in Sicilia (11.372 €) and the Greek insular regions the average income per capita is very low (e.g. in Ionia Nissia 10.176 € and in Kriti 10.856 €) and close to 60% of the European average. Out of these regions, in Sicilia the average income is also close to the national poverty rate (average income for Italy at 17.632 €) which means that an important part of the population of the island is living in poverty. Considering that the non active (young, women and older people) and the unemployed have a higher poverty risk and having in mind the low active population percentages in most of the island regions, these seem to tend to concentrate high percentage of population at poverty risk. In combination with previous results, the main conclusion is that the size of the island does not seem to affect income, which is positively correlated with economic performance.

[3] The population, whose disposable income is below 60% of the national average level of income, as measured by the median (on the assumption that household income is distributed evenly between all members), is considered to be in a risk of being socially excluded.

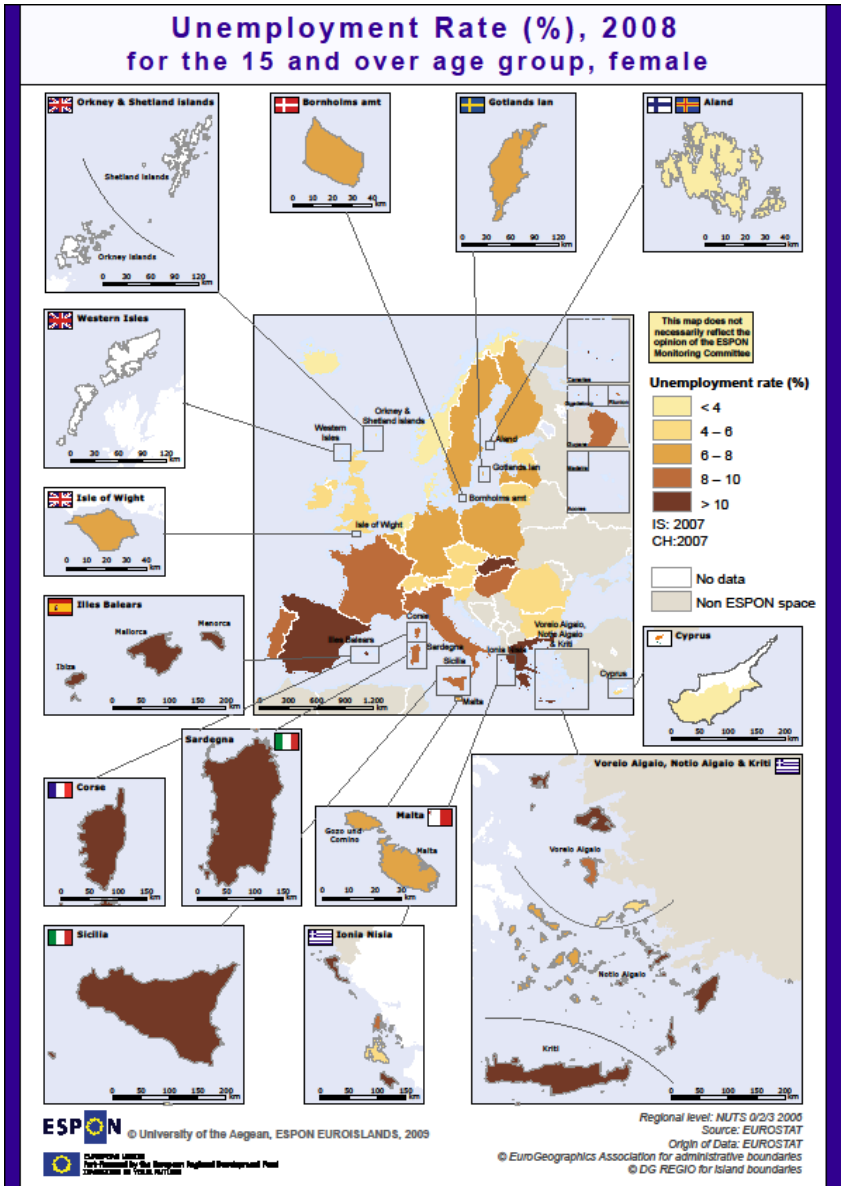
Map 7: Unemployment rate (total, 2008)



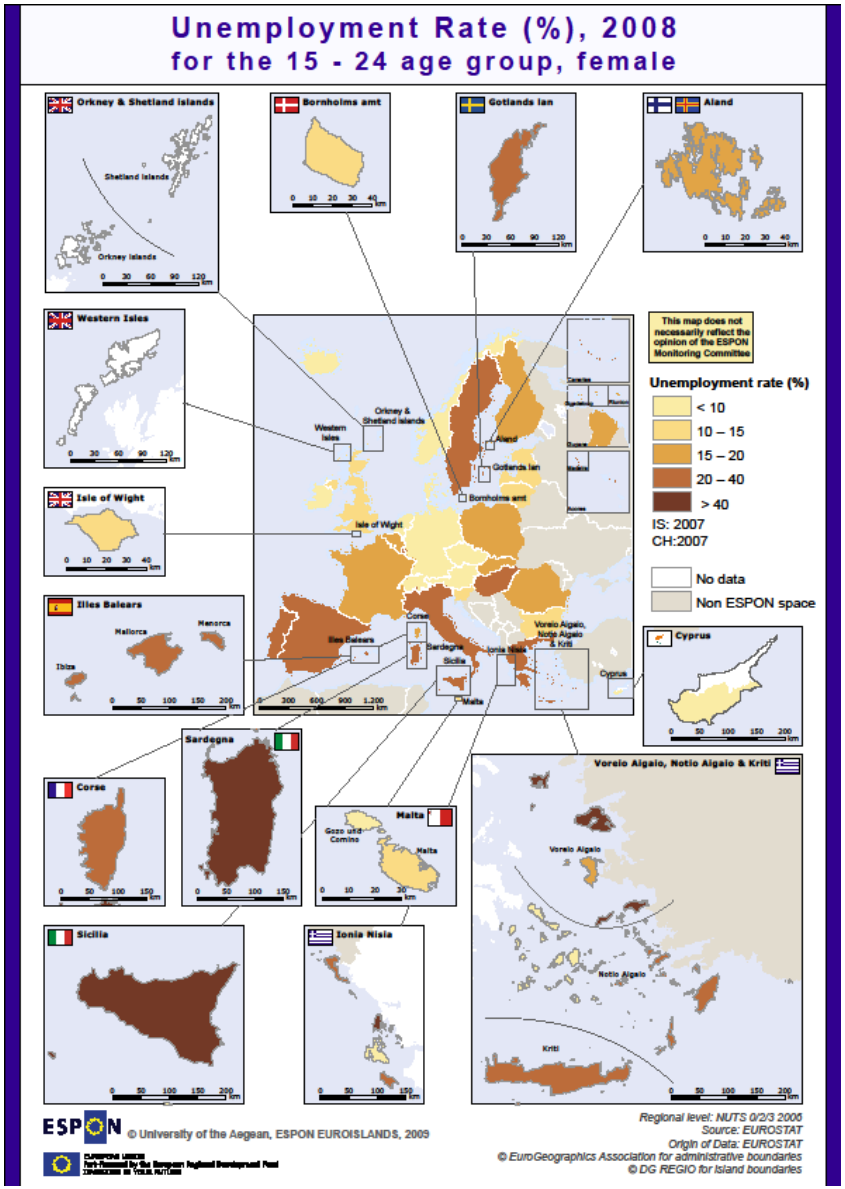
Map 8: Unemployment rate for the 15-24 age group for Member states, Island states, NUTS 2 and NUTS 3 islands



Map 9: Female employment rate % for age group >15, for Member states, Island states, NUTS 2 and NUTS 3 islands



Map 10: Female unemployment rate % (2008) for the 15-24 age group for Member states, Island states, NUTS 2 and NUTS 3 islands



Box 2: Main issues of the analysis on the social equity:

- After a general population decrease in the nineties, the trend is **rather positive** since the 2000s, mostly due to **in-migration** flows. But this is shielding an *important and persistent decrease* trend that characterises the **smaller islands**, especially in archipelagos.
- Activity rate is **significantly higher in the Nordic and the touristic islands**.
- **Unemployment**, especially of young and female, is rather **high** but there is no correlation with the level of GDP.

3.1.3. Environmental conservation

Environmental conservation concerns the capacity of the natural capital to ensure the supply of environmental goods and services to a specific community and to preserve ecosystem functions and increase the quality of life. This capacity is endangered by the pressures inflicted by human activities. For island regions, previous ESPON studies (ESPON 2006a; 2006b) will be used to assess pressures from the population and human interventions.

Population density is used as a first approach, although it does not include seasonal pressures by non permanent residents and tourists. New constructions that are added to the existing ones increase these pressures, as the residential economy has become a very important activity in the majority of the islands.

The classification of islands by their population density yields very diverse results (Map 11):

- **Very sparsely populated islands**, with less than 12,5 inhabitants per km^2 (*c.* 58.000 inhabitants). Most of these are in North Europe but there are some in the Mediterranean (Notio Aigaio). The majority (147 islands) is small islands with population less than 50 inhabitants, but there are 73 islands with population between 50 and 5895 (Uist – Western Isles).
- **Sparsely populated islands**, with density between 12,5 and 50 inhabitants per km^2, approximately 60.000 inhabitants in total. The category includes 60 very small islands, plus 123 larger ones.
- **Islands with intermediate density**, between 50 and 114 inh./ km^2 (the EU27 average). In this category, 12 small and 53 larger islands are included, with approximately 3,5 million people in total.
- **Densely populates islands**, with higher population density than the EU average (114 inhabitants/ km^2). In this category, 5 small and 58 large islands are included. From these, 35 have more than 200 inhabitants/km^2 and 15 of them over 500 (Malta, 4 Italian coastal islands from which Ischia is the most densely populated one and 10 coastal islands in northern Europe are included). In general, pressures on the resources of all these islands are very high and so is the **artificialization of the environment**. On the islands of this category live approximately 6,8 million islanders. A brief description of the state of island environment follows.

Land use and land cover

The part of the area under artificial cover is the first indication of existing pressures (Map 12). Trends are diverging: on some islands (Malta, Cyprus, Bornholm, Isle of Wight and Mallorca artificial areas cover more than the Eu average and more than 10% of the total area. On others, semi-natural or natural areas are very important and artificial areas rather limited. But even in these islands, artificial areas tend to cover the coastal strip, where pressures are more important. A more spatial approach is required (see the Scientific Report of the study for one in the case study islands).

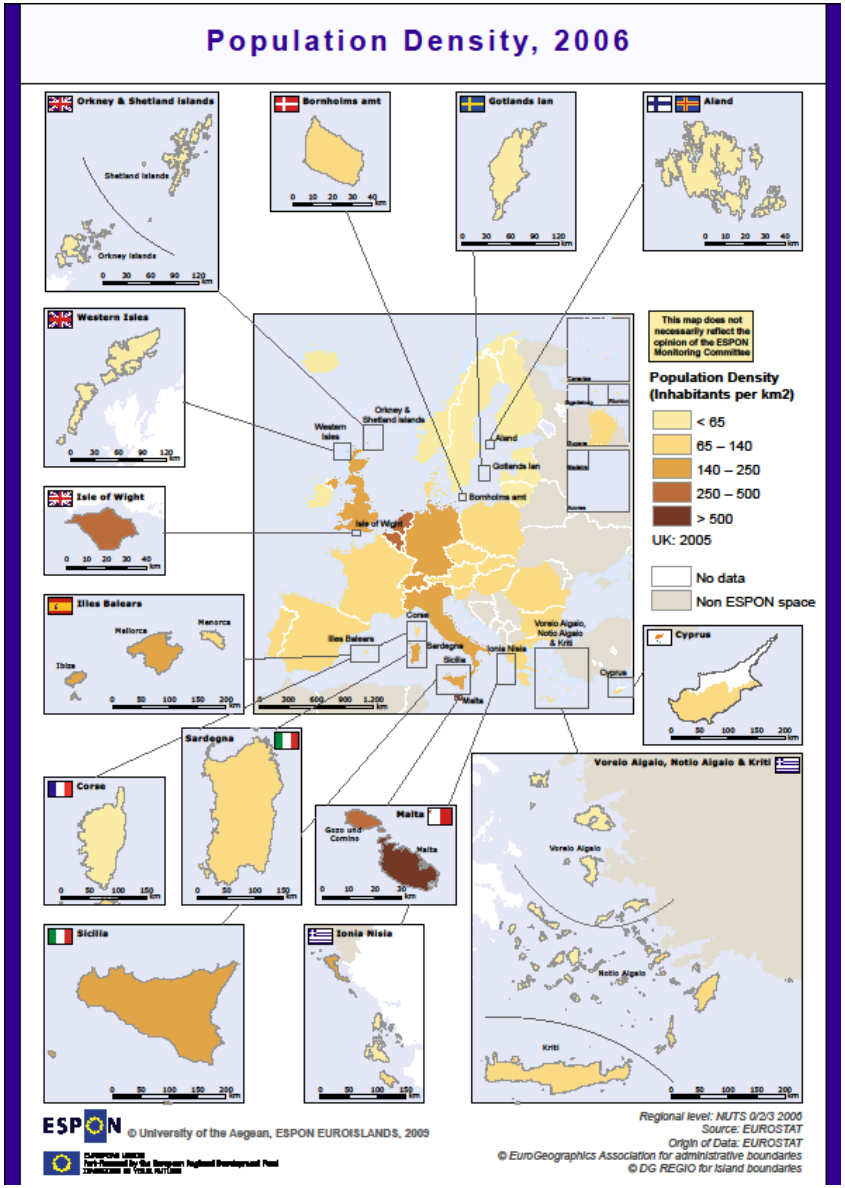
Fresh water availability

Most of the islands, regardless their size, face overexploitation issues of their underground water, a fact that has put much stress on underground aquifers (Benoit and Comeau, 2005). The construction of dams and desalination plants has been a common response, but such interventions have created secondary environmental problems the most important of which are the prevention of the normal circulation of sediments that are vital for the preservation of beaches.

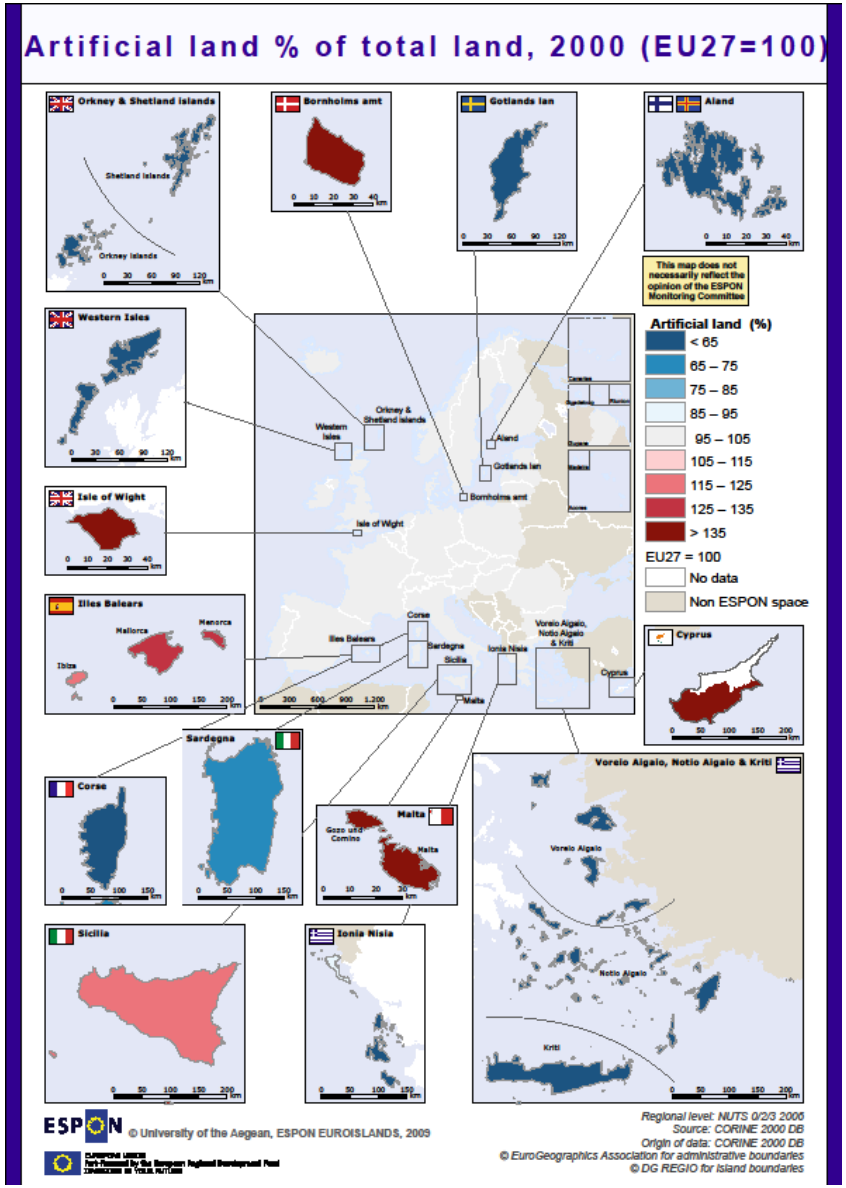
Sea and coasts

The eastern part of the Mediterranean Sea is less productive than the western part. However, over the last few decades, Mediterranean ecosystems have experienced biodiversity changes due to climatic and environmental changes or to accidental introduction of exotic species. Observed changes in nutrient concentrations and ratios in the deep waters of the Western Mediterranean suggest that shifts have occurred in the relative distribution of nutrients and therefore probably phytoplankton species in all sea waters. The most significant pollution sources are industrial emissions, municipal waste and urban waste water, responsible for up to 80% of pollution in the Mediterranean Sea. Problems of sea pollution are very important in the northern seas and especially in the Baltic Sea where eutrophication is an important problem along with the collapse of the fishing stocks. Concerning sea pollution, problems for all islands stem mainly from the European mainland and the sea transport than from the islands, as for most of them the only pressure is from household and tourism waste as sewage treatment doe not cover yet all settlements. Only in a few big islands industrial activity is found along with related problems.

Map 11: Population Density, 2006



Map 12: Artificial land % of total land



Biodiversity

The Mediterranean region is a zone of high endemism and considered as an important place for the global biodiversity (Benoit and Comeau, 2005). One of the factors behind this fact is the high fragmentation of habitats due to its relief and its many islands. Islands such as Kriti, Mallorca, Formentera, Lesvos, Corse together with Sicilia and Cyprus are considered as particularly rich in terrestrial and marine biodiversity. In general, this is reflected to the fact that on most of the islands some sort of protected areas are found, but these areas are larger in the Mediterranean covering from 20% to over 40% of the total surface and part of the NATURA 2000 network (ESPON, 2006b) On the contrary, the only insular region in North Europe with a high percentage of protected areas is Western Isles.

Today, this natural capital is under pressure from climate change, sea level rise, urbanisation, pollution, fires, agricultural practices, exotic species invasion, excessive fishing etc (UNEP/MAP-Blue Plan, 2009). An indication of this pressure is the fragmentation of the natural and semi-natural areas. The majority of the islands have low or intermediate levels of fragmentation with scores of 2 and 3 in a scale of 0-4, except Malta (ESPON Atlas 2006, p.46). The areas with the lowest level of ecological vulnerability are mostly in Europe's mountain regions.

Soil

Desertification risk is a serious problem for the Mediterranean islands, as it is an irreversible trend with severe repercussions to their capacity for food production, water retention, biodiversity and generally for the conservation of ecosystem functions and services.

Environmental problems in general seem to differ between the North and the South: urban sprawl due to tourism and holiday homes construction, coast artificialisation, water shortages, fires and high soil erosion risk are the principal problems to be addressed in the South; sea eutrophication and coastal erosion are the main problems in the North. A common problem seems to be fish stock collapse – more severe in the north- with direct repercussions on islands' economies and societies.

Box 3: Main issues of the analysis on environmental conservation:

- Population density varies from very low, especially in Northern Europe and some Notio Aigaio islands, to much higher than the EU average.
- Some islands show relatively **high rates of artificialization**, as well as a **high rate of artificial coasts**.
- Nearly *all islands face more or less serious problems of fresh water availability*
- *Sea pollution* (caused mainly by non island activities), *desertification and landscape degradation* are also serious concerns for all islands, the problems being more acute in the touristic Southern islands.
- Islands' natural environment - especially in the Mediterranean basin- is rich but *particularly vulnerable to human and other external pressures*.

3.1.4. Synthesis on the State of Islands

After presenting the available data for the variables defined in the methodology, two indexes are proposed to summarize these findings on island regions (see section 2):
(a) A "**State index**", for the situation of the islands in comparison with the member states they are located in and the EU, calculated with the use of five indicators (GDP per capita 2006, active population / total population %, unemployment rate %, population older than 65 %, artificial land to the total land %,);
(b) A "Change index", capturing changes that have taken place during 2000 – 2006, depending on the availability over time of the series of the particular indicators used, calculated with the use of three indicators for the period 2000 - 2006: population change %, GDP per capita (EU27=100), active population change%, Table A3.1.5.

A summary of descriptive statistics for the indexes is presented in Table A3.1.3.

Table A3.1.3: Descriptive statistics for the State Index, GDP/capita and Change Index

Area		GDP (EU=100) 2006	State 5	Change index
EU27	N	1	1	1
	Mean	100,0	5,0	5,0
	Median	100,0	5,0	5,0
	Min	100,0	5,0	5,0
	Max	100,0	5,0	5,0
Member States with Islands	N	11	11	11
	Mean	102,1	5,2	5,6
	Median	104,1	5,2	6,3
	Mini	65,3	4,0	2,3
	Max	122,9	6,6	8,0
Island Regions (NUTS 2 or 3)	N	26	26	26
	Mean	88,7	4,9	5,1
	Median	84,3	5,0	5,0
	Mini	59,2	2,4	2,0
	Max	146,7	7,6	8,3

The findings of the State index demonstrate clearly that the **average of the island regions is lower than that of the EU-27, but also lower than the average of the States with island regions** (Map 13). The variance within the island regions is higher than that of the Member States with islands, with some cases significantly higher (up to 7) and some as low as 2. The variance is higher also when we compare the State index with the GDP index.

The GDP/capita median for island regions is lower than EU-27 and the one of Member States with islands. These differences are smoothed out in the State index, in which the EU and the Member States values are reached. The variance of the GDP/capita values for island regions is not very high (except Åland), but increases significantly for the State index. The values of the two variables are correlated. Concerning the % of population over 65 years, the values for island regions present a significant variance, much higher than that of the Member States with islands. The same is also true for the percentage of the economically active population.

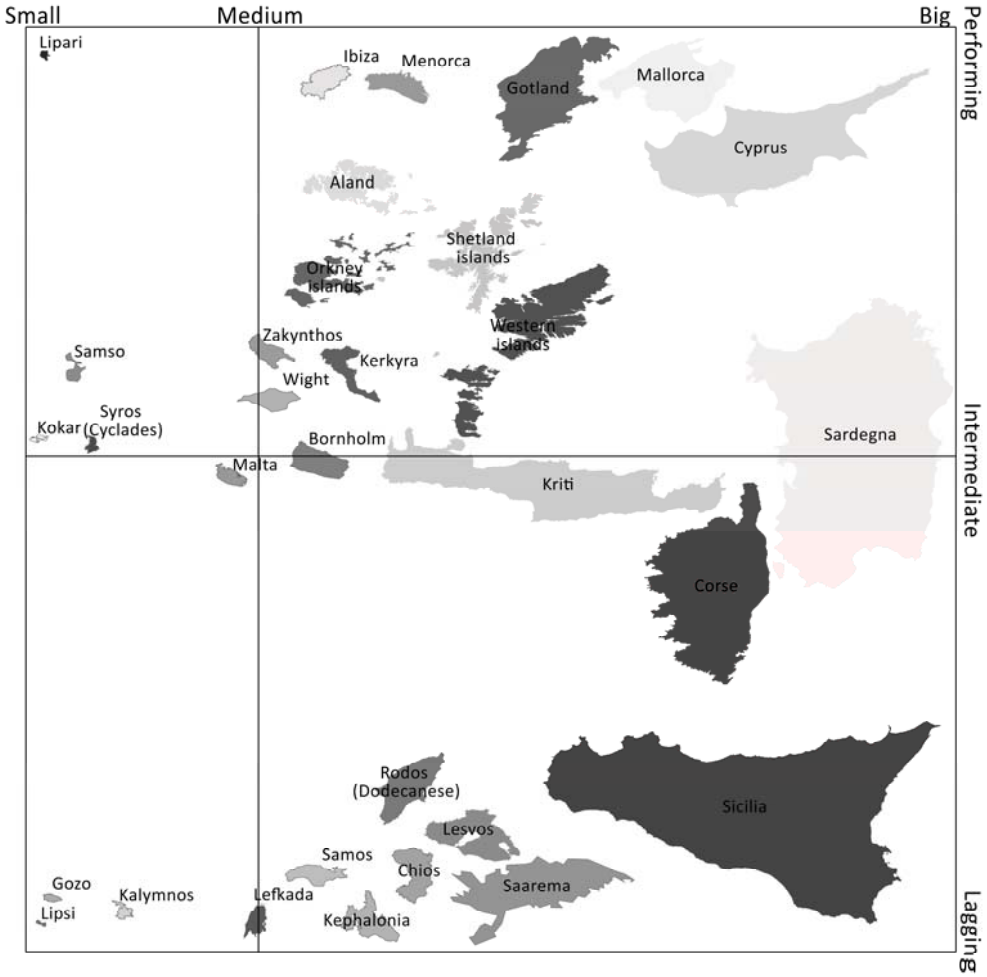
The findings for the change index **underline a recent dynamism** –a global trend for islands- as more island regions have better scores than the EU27 average but not as high as the Member States with islands. But, this performance was not **strong enough to reduce the development gap between European islands** and the European mainland (as islands started from a comparatively low level).

A classification of islands on the basis of these indicators yields three categories, with islands of all sizes (Figure 3.1.1):

- **Performing islands**: with a positive and well balanced state and a well performing but rather fragile economy, based either on tourism economic specialization (Illes Balears and Cyprus) or on external factors (Åland with a specific fiscal regime, Shetland and Orkney with oil extraction and along with Gotland on the public sector).
- **Intermediate islands**: 10 islands in total with average results. Some with tourism specialization (Zakynthos, Kyklades, Dodecanisos, Kerkyra, Isle of Wight and Kriti), others with balanced but not very well performing economy (Malta and Sardegna) and the public sector on Bornholm, Western Isles and Isle of Wight.
- **Lagging islands**: with low attractiveness and low performing economy (Chios, Lesvos, Samos, Kefalonia, Lefkada, Gozo, Corse and Sicilia).

This classification could be used to diversify the intensity of measures within an integrated insular policy.

Figure 3.1.1: Schematic presentation of the classification of European islands and island regions



Map 13: State index for Island-states, NUTS 2 and 3 islands regions

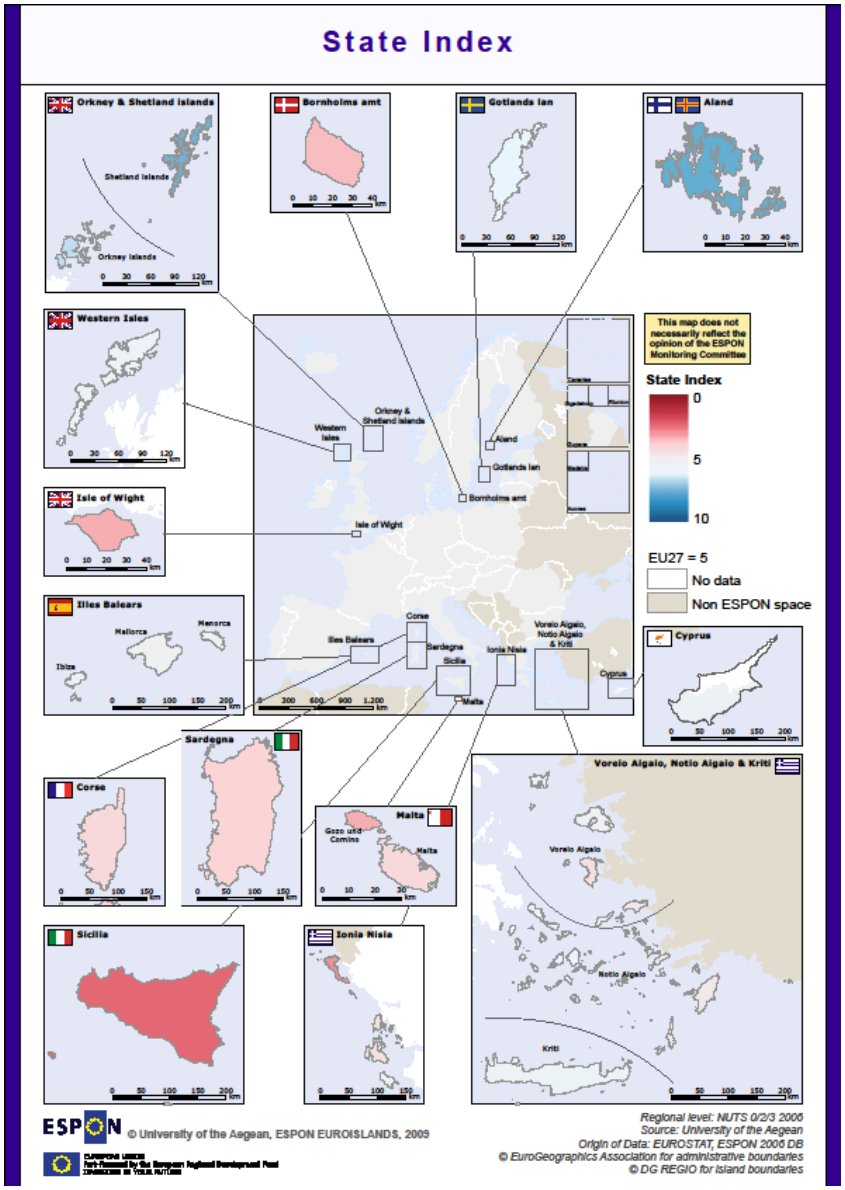


Table S3.1.4: Indicators, classes and calculation of the State Index

Geo name	GDP (EU=100) 2006	GDP (EU=100) 2006 classes	economically active % of population 2006	economically active % of population 2006 (EU27=100)	economically active % of population 2006 (EU27=100) classes	Population > 65% 2007	Population > 65% 2007 (EU=100)	Population > 65% 2007 (EU=100) classes	Population > 65% 2007 (EU=100) inverse classes
CY Cyprus	90,3	4	48,5	101,9	5	11,9	70,7	2	8
DK Denmark	122,9	7	53,7	112,9	6	16,5	97,9	5	5
DK014 Bornholm	89,4	4	49,3	103,7	5	19,8	117,7	7	3
EE Estonia	65,3	2	51,1	107,5	6	17,1	101,5	5	5
ES Spain	104,1	5	48,9	102,9	5	16,7	99,0	5	5
ES53 Illes Balears	114,4	6	53,0	111,5	6	13,7	81,5	3	7
ES531 Eivissa y Formentera	123,8	7	56,3	118,5	7	11,2	66,6	2	8
ES532 Mallorca	111,5	6	52,4	110,2	6	14,1	84,0	3	7
ES533 Menorca	124,2	7	54,2	114,0	6	13,4	79,7	3	7
FI Finland	114,9	6	50,3	105,7	6	16,5	97,9	5	5
FI20 Åland	146,7	9	54,1	113,8	6	16,9	100,8	5	5
FR France	109,5	6	44,6	93,8	4	16,3	96,6	5	5
FR83 Corse	85,8	4	32,3	67,8	2	19,9	118,2	7	3
GR Greece	94,1	4	43,8	92,2	4	18,6	110,4	6	4
GR22 Ionia Nisia	73,9	2	43,1	90,7	4	21,1	125,6	8	2
GR221 Zakynthos	92,3	4	55,0	115,6	7	17,8	105,6	6	4
GR222 Kerkyra	67,1	2	46,0	96,8	5	20,5	122,0	7	3
GR223 Kefallinia	82	3	19,5	40,9	1	24,1	143,5	9	1
GR224 Lefkada	64,9	1	45,7	96,2	5	25,3	150,2	9	1
GR41 Voreio Aigaio	67,4	2	38,6	81,2	3	21,9	130,4	8	2
GR411 Lesvos	64,1	1	45,6	95,9	5	22,1	131,7	8	2
GR412 Samos	65,4	2	32,2	67,8	2	22,6	134,5	8	2
GR413 Chios	75,9	3	29,6	62,2	1	20,9	124,5	7	3
GR42 Notio Aigaio	96,2	5	41,5	87,3	4	15,3	90,8	4	6
GR421 Dodekanisos	91,7	4	40,2	84,5	3	13,1	78,1	3	7
GR422 Kyklades	104	5	43,9	92,4	4	19,0	112,8	6	4
GR43 Kriti	82,8	3	45,9	96,6	5	17,3	103,0	5	5
IT Italy	103,5	5	41,8	88,0	4	19,9	118,6	6	4
ITG1 Sicilia	66,9	2	34,6	72,8	2	18,2	107,9	6	4
ITG2 Sardegna	79,5	3	41,1	86,4	4	18,0	106,8	6	4
MT Malta	76,9	3	40,3	84,7	3	13,8	82,3	3	7
MT001 Malta	78,4	3	40,8	85,7	4	13,8	81,9	3	7
MT002 Gozo and Comino	59,2	1	35,0	73,6	2	14,6	86,6	4	6
SE Sweden	121,5	7	52,5	110,4	6	17,4	103,2	5	5
SE214 Gotlands län	98,1	5	53,8	113,2	6	18,9	112,3	6	4
UK United Kingdom	120,4	7	50,5	106,1	6	16,0	95,4	5	5
UK134 Isle of Wight	81,1	3	43,5	91,5	4	22,8	135,5	9	1
UKM64 Eilean Siar (Western Isles)	77,7	3	56,0	117,7	7	20,9	124,2	7	3
UKM65 Orkney Islands	94	4	56,6	119,1	7	18,8	111,9	6	4
UKM66 Shetland Islands	110,9	6	64,1	134,8	8	16,2	96,4	5	5
European Union (27 countries)	100	5	47,6	100,0	5	16,8	100,0	5	5

Table S3.1.4: Indicators, classes and calculation of the State Index

Geo name	GDP (EU=100) 2006	GDP (EU=100) 2006 classes	economically active % of population 2006	economically active % of population 2006 (EU27=100)	economically active % of population 2006 (EU27=100) classes	Population > 65% 2007	Population > 65% 2007 (EU=100)	Population > 65% 2007 (EU=100) classes	Population > 65% 2007 (EU=100) inverse classes
CY Cyprus	90,3	4	48,5	101,9	5	11,9	70,7	2	8
DK Denmark	122,9	7	53,7	112,9	6	16,5	97,9	5	5
DK014 Bornholm	89,4	4	49,3	103,7	5	19,8	117,7	7	3
EE Estonia	65,3	2	51,1	107,5	6	17,1	101,5	5	5
ES Spain	104,1	5	48,9	102,9	5	16,7	99,0	5	5
ES53 Illes Balears	114,4	6	53,0	111,5	6	13,7	81,5	3	7
ES531 Eivissa y Formentera	123,8	7	56,3	118,5	7	11,2	66,6	2	8
ES532 Mallorca	111,5	6	52,4	110,2	6	14,1	84,0	3	7
ES533 Menorca	124,2	7	54,2	114,0	6	13,4	79,7	3	7
FI Finland	114,9	6	50,3	105,7	6	16,5	97,9	5	5
FI20 Åland	146,7	9	54,1	113,8	6	16,9	100,8	5	5
FR France	109,5	6	44,6	93,8	4	16,3	96,6	5	5
FR83 Corse	85,8	4	32,3	67,8	2	19,9	118,2	7	3
GR Greece	94,1	4	43,8	92,2	4	18,6	110,4	6	4
GR22 Ionia Nisia	73,9	2	43,1	90,7	4	21,1	125,6	8	2
GR221 Zakynthos	92,3	4	55,0	115,6	7	17,8	105,6	6	4
GR222 Kerkyra	67,1	2	46,0	96,8	5	20,5	122,0	7	3
GR223 Kefallinia	82	3	19,5	40,9	1	24,1	143,5	9	1
GR224 Lefkada	64,9	1	45,7	96,2	5	25,3	150,2	9	1
GR41 Voreio Aigaio	67,4	2	38,6	81,2	3	21,9	130,4	8	2
GR411 Lesvos	64,1	1	45,6	95,9	5	22,1	131,7	8	2
GR412 Samos	65,4	2	32,2	67,8	2	22,6	134,5	8	2
GR413 Chios	75,9	3	29,6	62,2	1	20,9	124,5	7	3
GR42 Notio Aigaio	96,2	5	41,5	87,3	4	15,3	90,8	4	6
GR421 Dodekanisos	91,7	4	40,2	84,5	3	13,1	78,1	3	7
GR422 Kyklades	104	5	43,9	92,4	4	19,0	112,8	6	4
GR43 Kriti	82,8	3	45,9	96,6	5	17,3	103,0	5	5
IT Italy	103,5	5	41,8	88,0	4	19,9	118,6	6	4
ITG1 Sicilia	66,9	2	34,6	72,8	2	18,2	107,9	6	4
ITG2 Sardegna	79,5	3	41,1	86,4	4	18,0	106,8	6	4
MT Malta	76,9	3	40,3	84,7	3	13,8	82,3	3	7
MT001 Malta	78,4	3	40,8	85,7	4	13,8	81,9	3	7
MT002 Gozo and Comino	59,2	1	35,0	73,6	2	14,6	86,6	4	6
SE Sweden	121,5	7	52,5	110,4	6	17,4	103,2	5	5
SE214 Gotlands län	98,1	5	53,8	113,2	6	18,9	112,3	6	4
UK United Kingdom	120,4	7	50,5	106,1	6	16,0	95,4	5	5
UKJ34 Isle of Wight	81,1	3	43,5	91,5	4	22,8	135,5	9	1
UKM64 Eilean Siar (Western Isles)	77,7	3	56,0	117,7	7	20,9	124,2	7	3
UKM65 Orkney Islands	94	4	56,6	119,1	7	18,8	111,9	6	4
UKM66 Shetland Islands	110,9	6	64,1	134,8	8	16,2	96,4	5	5
European Union (27 countries)	100	5	47,6	100,0	5	16,8	100,0	5	5

Table S3.1.5: Indicators, classes and calculation of the Change Index

Geo name	Population change rate 2000-06%	Population change rate 2000-06% (EU27=100)	Population change rate 2000-06% (EU27=100) classes	Active change 2000-6%	Economically active 2000-6 change rate %	Economically active 2000-6 change rate % (EU27=100)	Economically active 2000-6 change rate % (EU27=100) classes	GDP/capita 2000 (EU27=100)	GDP/capita 2006 (EU27=100)	GDP/capita change 2000-6 % (EU27=0)	GDP/capita change 2000-6 % (EU27=0) classes	Change index
CY Cyprus	1,4	496,1	9	21,1	3,0	406,7	9	88,5	90,3	1,8	5	7,7
DK Denmark	0,2	82,2	3	2,6	0,4	50,4	1	131,4	123,3	-8,1	4	2,7
DK014 Bornholm	0,2	82,8	3	0,9	0,1	18,3	1	99,7	89,5	-10,3	4	2,7
EE Estonia	-0,2	-83,3	1	3,6	0,5	70,1	2	23,6	41,5	76,2	9	4
ES Spain	1,2	419,7	9	19,8	2,8	382,4	9	96,9	104,2	7,4	6	8,0
ES53 Illes Balears	2,4	859,1	9	29,9	4,3	575,6	9	119,4	114,4	-5,0	5	7,7
ES531 Eivissa y Formentera	3,5	1227,5	9	26,6	3,8	512,3	9	112,8	124,2	11,4	6	8,0
ES532 Mallorca	2,4	827,3	9	30,2	4,3	581,3	9	120,7	111,4	-9,3	4	7,3
ES533 Menorca	2,0	686,0	9	32,1	4,6	618,1	9	118,5	124,2	5,6	7	8,3
FI Finland	0,2	76,3	3	2,3	0,3	43,7	1	116,8	114,8	-1,9	5	3,0
FI20 Åland	0,5	187,7	9	4,3	0,6	83,2	3	145,5	147,0	1,5	5	5,7
FR France	0,5	192,6	9	9,9	1,4	190,6	9	115,2	109,7	-5,4	4	7,3
FR83 Corse	1,5	536,6	9	37,0	5,3	712,6	9	86,9	86,0	-0,9	5	7,7
GR Greece	0,3	92,8	4	6,0	0,9	114,9	6	83,8	94,1	10,3	6	5,3
GR22 Ionia Nisia	0,9	323,0	9	3,9	0,6	74,5	2	74,9	74,2	-0,7	5	5,3
GR221 Zakynthos	0,5	181,8	9	25,6	3,7	492,9	9	93,2	92,4	-0,8	5	7,7
GR222 Kerkyra	1,5	518,1	9	-0,2	0,0	-3,4	1	72,3	67,4	-4,9	5	5,0
GR223 Kefallinia	0,1	34,9	1	-41,3	-5,9	-795,6	1	71,2	82,2	11,0	6	2,7
GR224 Lefkada	0,2	80,1	3	72,9	10,4	1405,1	9	59,2	64,8	5,7	6	6,0
GR41 Voreio Aigaio	-0,2	-79,1	1	10,2	1,5	196,6	9	59,2	67,4	8,2	6	5,3
GR411 Lesvos	-0,2	-64,9	1	14,6	2,1	281,9	9	56,5	64,0	7,4	6	5,3
GR412 Samos	-0,3	-100,1	1	20,0	2,9	385,6	9	60,7	65,3	4,5	5	5,0
GR413 Chios	-0,3	-90,7	1	-7,8	-1,1	-150,1	1	62,8	75,8	13,0	6	2,7
GR42 Notio Aigaio	0,3	110,8	6	1,3	0,2	24,7	1	97,4	96,2	-1,2	5	4,0
GR421 Dodekanisos	0,4	147,3	9	-0,4	-0,1	-7,4	1	97,9	91,9	-6,0	4	4,7
GR422 Kyklades	0,1	48,1	1	3,8	0,5	74,1	2	96,3	104,2	7,9	6	3,0
GR43 Kriti	0,2	82,9	3	1,1	0,2	20,4	1	77,5	83,1	5,6	6	3,3
IT Italy	0,4	153,5	9	4,6	0,7	88,9	4	116,8	103,8	-12,9	4	5,7
ITG1 Sicilia	0,1	26,4	1	-2,2	-0,3	-42,5	1	73,6	66,9	-6,7	4	2,0
ITG2 Sardegna	0,2	56,3	1	4,9	0,7	95,0	5	88,0	79,7	-8,3	4	3,3
MT Malta	0,5	162,0	9	6,6	0,9	127,4	8	83,2	77,1	-6,1	4	7,0
MT001 Malta	0,4	150,0	9	6,5	0,9	126,0	8	84,8	78,4	-6,4	4	7,0
MT002 Gozo and Comino	0,9	305,0	9	7,6	1,1	146,9	9	64,9	59,3	-5,6	4	7,3
SE Sweden	0,3	103,0	5	9,2	1,3	177,7	9	126,2	121,6	-4,6	5	6,3
SE214 Gotlands län	0,0	0,0	1	12,0	1,7	230,5	9	98,4	98,3	-0,1	5	5,0
UK United Kingdom	0,4	146,0	9	6,2	0,9	119,9	7	118,8	120,3	1,5	5	7,0
UKJ34 Isle of Wight	0,7	240,3	9	6,3	0,9	122,4	7	79,6	81,4	1,8	5	7,0
UKM64 Western Isles	-0,2	-81,8	1	-18,8	-2,7	-362,2	1	67,5	78,0	10,4	6	2,7
UKM65 Orkney Islands	0,3	101,8	5	-2,5	-0,4	-47,7	1	85,9	94,1	8,2	6	4,0
UKM66 Shetland Islands	-0,2	-66,7	1	1,8	0,3	34,7	1	96,9	111,0	14,2	6	2,7
EU (27 countries)	0,3	100,0	5	5,2	0,7	100,0	5	100	100,0	0,0	5	5,0

3.2. Analysis of Attractiveness parameters

The second question of the analysis concerns **"the causes which have led to the current situation."** The overall context links the existing situation of the area (representing the "effect") with its level of attractiveness (representing the "cause"). The content of this link is examined in this section. More specifically, the impact of insularity to several attractiveness parameters is approached by distinguishing between attractiveness for businesses and attractiveness for population. Since regional attractiveness has been explored in previous EU studies a lot of parameters have already been identified (Table A3.2.1).

In the following paragraphs:
The values of attractiveness variables are presented;
The perception of the islanders about the relative importance of the different parameters of attractiveness is examined;
Finally, three attractiveness indexes are presented.

Table A3.2.1: Attractiveness parameters and influence of insularity

	Attractiveness Parameters	Direct influence by insularity
1	*Accessibility*	---
2	*Public and Private services to business and population*	--
3	*Agglomeration economies*	---
4	*Environmental and cultural heritage*	+++
5	*Feeling of safety – Security*	++
6	*Natural and technical hazards*	+/0
7	*Labour qualification*	No direct influence
8	*Information society*	No direct influence
9	*Research and Innovation*	No direct influence
10	*Social capital*	No direct influence
11	*Governance Quality*	No direct influence
12	*Employment opportunities*	No direct influence

Source: TPG

3.2.1. Measurement of attractiveness parameters

3.2.1.1. Accessibility

According to the ESPON Atlas (ESPON Atlas, 2006, p. 34), "the 'core' of the European territory and the 'periphery' are concepts based on the idea of "accessibility". Under this perspective, geography and physical distance are very crucial parameters when referring to accessibility in terms of infrastructure and transport services. This means that distance from the European Pentagon (London-Paris-Milano-München-Hamburg) makes accessibility rather problematic for a European peripheral area. Only accessibility by air can improve this situation as an airport -and particularly an international one- improves access possibilities. But in general, the accessibility of a peripheral area cannot be improved rapidly, as geographical distance and frequency of scheduled trips are also very significant parameters. Therefore, "peripherality" is considered as a permanent geographical feature and the fact that some of these peripheral regions are islands should be taken into account. Considering islands, since most of them are located in the geographical periphery of Europe (Map 1) and that entails long trip durations, the lowest level of accessibility is expected for almost all of them within Europe. Additionally, on most of them and particularly on the smaller ones, airports do not exist, so they can only be accessed by sea which makes the accessibility of these islands even more problematic.

In the Atlas we use the multimodal accessibility index developed by ESPON (ESPON 2006 "Transport services and networks", where more details on the calculation are available) and data from the ESPON DataBase. This approach has a number of very important shortcomings for islands:

- Only Island NUTS 2 & 3 regions are considered for the calculation of the index and not separate islands, fact that shades the problems smaller islands face (more on the issue follow);
- Potential accessibility by road and by rail is calculated for islands as in continental areas, a fact that clearly ignores reality. Neither the additional time needed to go to an island by ferry is taken into account (e.g. Gotland Island and Gavleborgs Lan region on the Swedish mainland have the same accessibility by road, as they are equally distant from Stockholm), nor the fact that islands do not have railway networks and access to rail stations requires long trips (e.g. Satakunta in West Finland with a dense railway network has the same value of accessibility by rail as the archipelago of Åland with no rail network at all) are taken into account.
- Potential accessibility by air overestimates the existence of a local airport in a NUTS 3 area, while ignoring the proximity of an area to an international airport (e.g. Zakynthos (Ionia Nissia) with 2 domestic flights per day during winter has a score of 76 and Voiotia –one hour distance by car from the international airport of Athens- has 55). In general, the values of the index are 90% dependent on the air accessibility indicator.
- The transport of goods is not taken into account.

- Daily accessibility is given too much weight in the approach and this is not always the main concern of the residents or visitors of islands, with factors such as frequency, trip duration and cost, are at least equally important.

Despite the above shortcomings and the subsequent fact that the multimodal accessibility index overestimates the accessibility of islands, the values demonstrate that **all islands are below the European average (100)**; only two of them - Illes Balears and Isle of Wight – are very close to the European average (Table A3.2.2, Map 14).

As already noted this analysis considers at most NUTS 3 level islands and does not reflect the reality of archipelagos and smaller islands. It is true that on bigger islands with large populations, many vital services (health, education, administration etc.) are offered and "overseas" travel is less necessary and frequent. In a few cases –for islands located very close to another big island or to the mainland- the population can commute daily (e.g. in the Archipelagos of Stockholm and Uppsala Counties), but this is clearly an exception. Much more common are cases of "double insularity" –with smaller islands in Archipelagos- that create handicaps not comparable to any situation on the mainland as access to transport services is not related only to geographical distance but also to trip schedules of a public service. A characteristic example is offered in Box 4.

A different approach (Figure A3.2.1) is provided by the EURISLES project and is muchcloser to the reality of islands (EURISLES, 1996 and 2002). The assumption made was that most of the passengers and goods are transferred by sea and the real time required to reach the island regions from the European centre (symbolised by Maastricht) was calculated accordingly (travel time by road, crossing time by ferry, waiting time and a frequency coefficient). This approach has to be enriched with air transport.

Moreover, transport to/from the islands is still divided in national blocks, which impedes even more the full participation of islands in the internal market. The fragmentation of the internal market in the case of islands distorts competition at EU level. Therefore, islands are less favoured in terms of accessibility, compared to the continental mainland, for transport choice, travel time and costs. The situation ***is even worse for small islands***: **more complex** (need to use many different means of transport to travel out of the island); more **costly**; **lengthier**. The conclusion reached is that **insularity affects accessibility negatively for both islanders and visitors**.

Table A3.2.2: Comparison of the ESPON multimodal accessibility index between island NUTS 2 & 3 regions and selected European mainland regions

NUTS 3 area	By Road	By Rail	By Air	Multi-modal Index
Gavleborgs Lan (SE)	12	15	47	44
Satakunta (FI)	11	11	50	46
Cyprus	**5**	**4**	**56**	**51**
Indre (F)	98	102	35	53
Gotland (SE)	**12**	**12**	**77**	**70**
Gozo and Comino (MT)	**11**	**10**	**77**	**71**
Irakleio (GR)	**5**	**4**	**78**	**71**
Corse-du-Sud (F)	**24**	**22**	**79**	**73**
Královehradecký (CZ)	94	82	73	73
Lungau (DE)	103	73	72	74
Åland (FI)	**12**	**12**	**82**	**76**
Perugia (IT)	91	65	75	76
Ille-et-Vilaine (FR)	85	100	74	77
Messina (IT)	**34**	**29**	**82**	**77**
Dodekanisos (GR)	**4**	**4**	**87**	**79**
Kerkyra (GR)	**22**	**20**	**86**	**80**
Bolzano-Bozen (IT)	129	113	71	80
Oost-Groningen (NL)	134	134	67	80
Cagliari (IT)	**10**	**9**	**91**	**83**
Malta Island (MT)	**10**	**9**	**91**	**83**
Elbe-Elster (DE)	127	114	82	86
Bornholm (DK)	**32**	**47**	**102**	**94**
Ardennes (FR)	164	145	83	94
Oostende (BE)	158	156	89	98
Islas Baleares (ES)	**19**	**17**	**108**	**99**

Source: ESPON Database
In Bold type: Island NUTS 2 & 3 Regions;
Regular type: mainland regions

Map 14: Accessibility of European Islands (ESPON Multimodal Accessibility index - 2001)

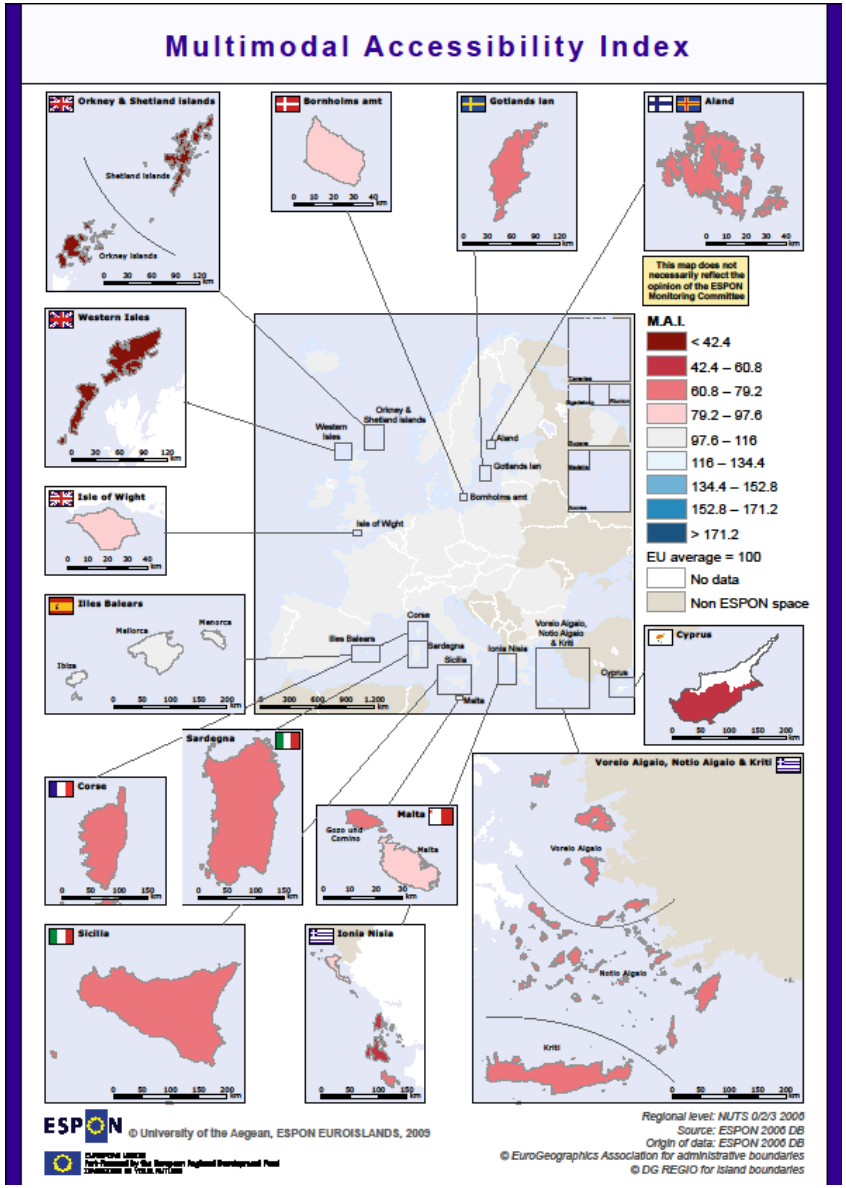


Figure S3.2.1: Accessibility of European Islands (EURISLES) – virtual distances of the islands from the centre of the EU

Source: EURISLES

Table S3.2.3: Accessibility of selected islands of the Dodecanisos (GR) 2009

Destination port	Departure port	Distance (km)	Travel time (h)	Number of connections	Total time (h)	Travel speed (km/h)	Virtual distance	Accessibility index
Pireas	Rodos	439	14,8	10	25,2	29,7	748,44	1,70
	Kos	346	11,6	10	22,0	29,7	653,40	1,89
	Kalimnos	315	11,8	4	34,8	26,9	936,12	2,97
	Leros	298	10,0	4	33,0	26,9	888,61	2,98
	Lipsi	283	10,5	2	54,5	26,9	1466,05	5,18
Rodos	Kalimnos	121	4	17	7,5	26,9	200,96	1,66
	Lipsi	160	5,4	8	16,9	26,9	454,61	2,84
Kos	Kalimnos	26	0,5	60	1,3	26,9	33,68	1,30
	Lipsi	66	2,5	14	6,0	26,9	161,40	2,45
Leros	Lipsi	20	0,8	14	4,3	26,9	115,67	5,78

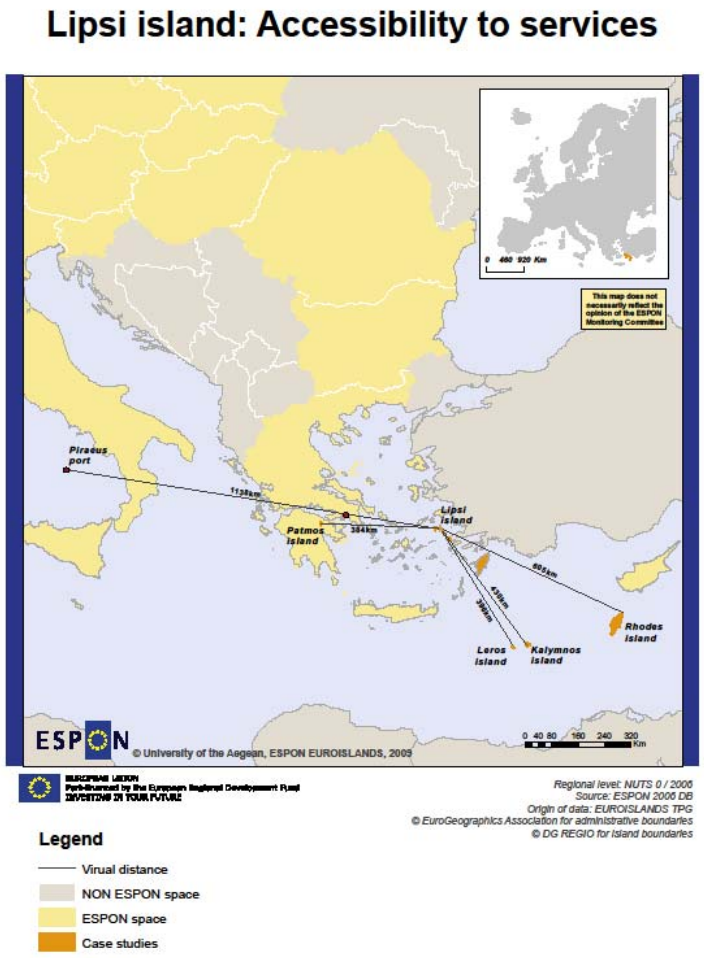
The calculation of virtual distance is performed with the formula:
VD= (RT + BT+ WT + (P * 168/N)) * TS, where:
- VD stands for the Virtual Distance in Km;
- RT stands for the Real Travel Time between the port and the destination in hr including all possible stops;
- BT stands for Boarding Time in hr (i.e. the time required to be in the port in order to get on the ferry, typically 2hr for major ports and 1hr for smaller ones);
- WT stands for possible waiting time the total trip includes a change of ferries in a port in hr;
- P stands for the probability to catch the ferry: If there is one daily connection then there is a possibility of having to spend 12 hours ashore on average and p= 12/24= 0.5, for 2 daily connections p= 6/24=0.25, for 3 daily connections p=4/24=0.17, and for 4, p=2/24=0.08;
- N stands for the frequency of weekly connections between the departure and the destination port;
- TS stands for the travel speed of the ferry in Km/hr, here taken as constant at 20 knots or 29,7 km/hr.-

Box 4: An example of 'double insularity': the island of Lipsi, Dodekanisos, Greece

The island of Lipsi is located in the Dodekanisos Archipelago in Greece (Map 15) with 687 inhabitants. The inhabitants are offered a limited number of services locally and have to travel very often out of the island and to different destinations for different purposes (Table A3.2.3). Complex combinations may have to be made: if for example the mayor of Lipsi wants to travel to Brussels for a meeting of European mayors the shorter route involves ferry to Kos, flight to Athens and flight to Brussels and needs more than a day, even without considering the possibility of an interruption of the service due to bad weather. A visualization of the virtual distances that inhabitants of Lipsi have to travel in order to acquire different Public Interest Services is presented in Map 15.

Concerning the travel cost, a passenger ticket from Lipsi to Pireas (by ferry) costs (in 2009 for conventional and not high-speed ferries) 53€ and the car ticket costs 111€, total 164€. For 4 persons and a car the total cost is 323€, or 80,75 €/person. The cost for covering the same distance of 283km on the European mainland by car reaches 28€ assuming that the car consumes 0,10 lit/km of gas. Adding a cost of 6€ for the tolls, makes a total of 34€ or 8,5 €/person. The comparison raises the cost for one person by ferry to **4,8 times** the cost of travelling by car, while for four persons it is approximately **10 times higher**. In terms of the time required, the time of travelling by ferry is **54,5 hours** (table A3.2.2), while by car it is **4 hours** (with an average speed of 70 km/hour).

Map 15: Virtual distance for the accessibility of Lipsi island to different Public Interest Services



3.2.1.2. Public, Private and Networking services to business and population

The existence and quality of services available to population and businesses of an island is an important attractiveness issue (confirmed by the questionnaires to residents that follow). These services are linked with accessibility as already mentioned. Accessibility to appropriate public interest services like health, education, social security, administration, energy, water, telecommunications, culture, transport, etc, for the whole of the European population was underlined by the European Spatial Development Perspective as a mater of social justice and as a *sine qua non* condition in order to stop the concentration of population within the Pentagon. Access to banks, accounting, marketing and engineering services has equal importance for economic activities.

Previous studies (EURISLES, 2002 and PLANISTAT, 2002) have insisted on the fact that population size determines to a great extent the availability of services on an island. According to the PLANISTAT study, a population of 4 to 5 thousand consists a key threshold for the provision of an important part of services locally, but there are "superior services" (e.g. hospitals, tertiary education, cinemas, laboratories for medical analysis among others) that are located only in a big regional city or in the capital.

In the case of small islands, some examples are very revealing and demonstrate the differences of the services located on them and the extremely important role of accessibility for each island (Table A3.2.4).

As shown in the paper "Territories with specific geographical features" (EU, 2009), the problem of islanders' accessibility to some key services such as hospital and university is particularly acute: for 27,8% of them a hospital is located at more than 30' from their home when the European average is only 10,4%. Moreover, for 36,8% of the islanders tertiary education is located at more than 90' distance compared with the European average that is 7,4%. The particular situation of islanders compared to "european mainlanders" is that *if a service is not provided **ON** an island*, the cost in money and in time to access it is so disproportionally high compared to the cost on the european mainland that makes islanders to migrate to the european mainland, or to live on the island accepting a lower quality of life.

This problem is particularly important in archipelagos and small coastal islands as the existence of a service on an island has almost no effect to nearby islands as inter-island accessibility is generally low. At the same time, the existence of a service on an island does not necessarily entail the provision of good and complete services.

Table A3.2.4: Existence of Public and Private Services on selected small islands

	Pharmacy	Hospital	Bank	Tax service/ Social Security	Tertiary Education
Kokar	No	Only a Clinic. Need to travel to Mariehamn or Turku-Upsala	yes	No / Internet services	No. In Mariehamn-college Turku - Stockholm
Lipsi	No	Doctor + nurse. Need to travel to Rodos or Athens.	no	No / In Kalymnos	No, in other areas of Greece
Samso	Yes	Small, threatened with closure. Need to travel to Aarhus	yes	Yes	No. Aarhus
Kalymnos	Yes	Yes	yes	Yes	No, in other areas of Greece

Source: EUROISLANDS data

On the other hand the cost for the state to provide infrastructures and public interest services to all the islands of an archipelago, such as Notio Aigaio is very high. With a population of 305,500 dispersed in 48 inhabited islands, the need for infrastructure and the operational cost per capita is extremely high; if all the population was concentrated in one island, the needs should decrease spectacularly (Table A3.2.5).

Concluding, in terms of access to services, *islands are less favoured compared to the continental mainland* as far as the **distance from public and private services is concerned.** The size of the permanent population matters for the provision of services (reduces the per capita cost); it is much higher for small islands. The same is true for networks. The problem is more acute for the archipelagos islands since ***the presence of a service on an island does not have necessarily direct positive effects for nearby ones***. Consequently, the public investments needed are huge, leaving little room for other type of investments.

Table A3.2.5: Need in Basic Infrastructures in Notio Aigaio (2002)

Type of infrastructure	Hypothesis of one island	Actual situation
Transport infrastructure		
Ports	3	50
Marinas	4	12
Fishing Ports	8	15
Airports	1	14
Heliport	4	23
Education infrastructure		
Primary schools	90	211
Secondary schools	58	83
Health infrastructure		
Hospitals	1	5
Health centers	10	11
Local Dispensary	0	37
Environment Infrastructure		
Waste Water Treatment Installations	8	35
Installations for Solid Waste Treatment	4	18
Energy Infrastructure		
Energy Production Factories	1	21

Source: National Statistical Office of Greece, Rotas 2006

3.2.1.3. Agglomeration economies / Size of the market

Dynamic cities and urban regions are recognised as vital assets in regional development. A total of 1595 Functional Urban Areas (FUAs) with more than 20.000 inhabitants have been identified across Europe on the basis of commuter relations and employment areas. Some of them are of trans-national importance, the Metropolitan European Growth Areas (MEGAs, more than 70 in Europe, 47 of them with more than one million people); others have a trans-national, national, regional or local importance (ESPON, 2006, Potentials for polycentric development in Europe).

The importance of towns and cities lies in the agglomeration economies and economies of scale that develop due to the concentration of different activities and population, as well as in the competition between companies that helps to innovate and to keep prices low. The attraction of diversified activities and services for enterprises and population and dynamism related to cultural and social life are other important aspects of towns as well.

On islands, La Valetta and Palma are the only two MEGAs (Table A3.2.5). They are considered as "weak" MEGAs, since they have limited functions and lower competitiveness especially in the fields of knowledge and innovation. 15 more FUAs of trans-national or national importance are located on 9 more islands. Their importance in population, in tourism, as transport nodes, in manufacturing, in knowledge process, and in decision making (both private and public) at the European level is presented in the Map 16. The island FUAs are mostly renowned for tourism: only Valletta is an important centre for transport, knowledge and public decision making, while Calgiari and Catania are considered as important knowledge centres for their universities.

Concluding, ***islands are lagging behind compared to European mainland cities in terms of agglomeration economies***, since due to the population size and the small size of the market, economies of scale cannot be developed, diversification of activities and services is low, cultural and social life remains limited and therefore, urban dynamism conditions that enable the creation of FUAs and MEGAs cannot be met.

3.2.1.4. Environmental and cultural heritage

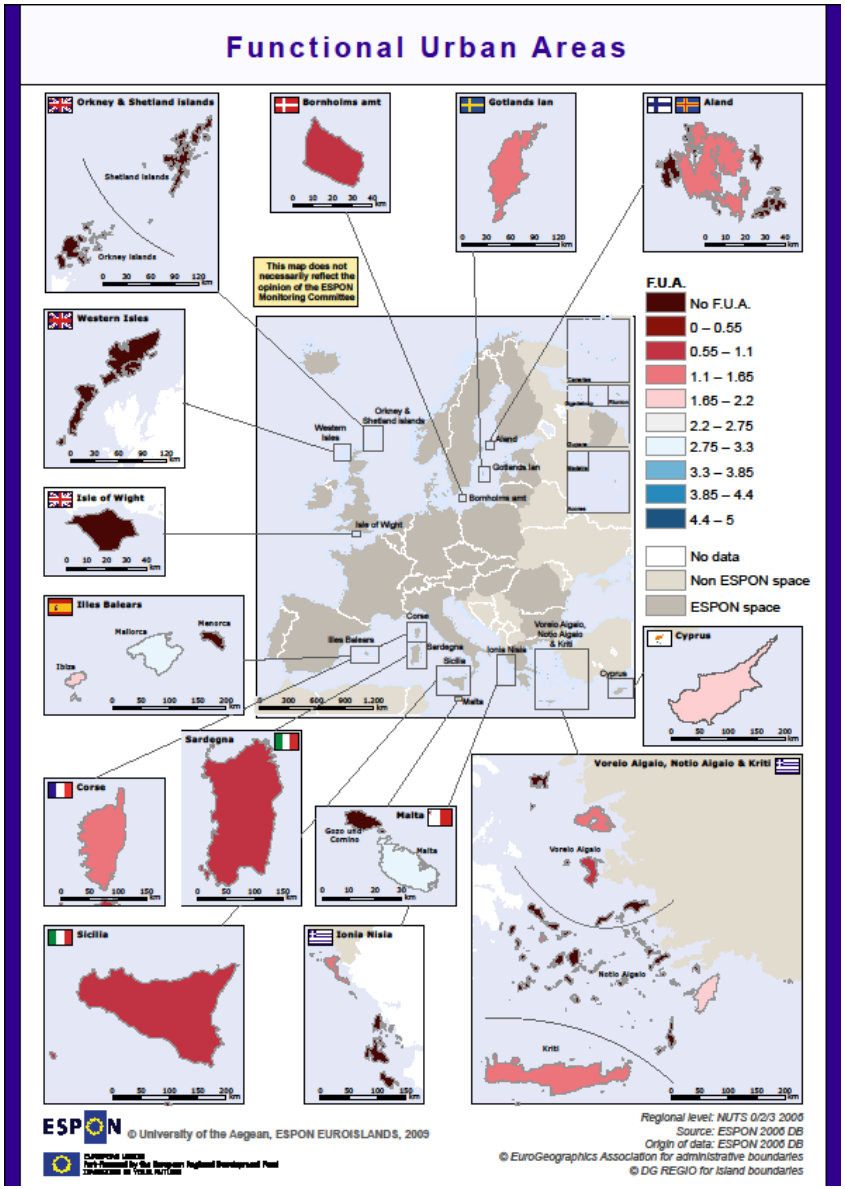
Environmental and cultural heritage are analysed as capital assets that can help the development of islands and enhance quality of life. It is a fact that many of the activities on islands rely on these resources (activities such as tourism, farming, fisheries, quarrying etc.) and often constitute a monoculture without alternatives. This results in high economic, social and environmental vulnerability.

Table A3.2.5: Classification of Islands' Functional Urban Areas based on importance of their functions (2001)

REGION	NUTS3 CODE	FUA popu-lation	FUA dem	FUA tra	FUA uni	FUA dec	FUA adm	FUA tou	FUA man	FUA ave
NICOSIA	CY	250633	3	0	1	3	4	1	1	1,9
LARNACA	CY	160733	2	3	0	2	2	2	1	1,7
LIMASSOL	CY	71740	2	0	0	3	2	4	1	1,7
PAPHOS	CY	47198	1	3	0	2	2	3	1	1,7
ROENNE	DK007	35481	1	0	0	1	2	2	1	1
IBIZA	ES53	73724	2	2	0	0	2	4	2	1,7
PALMA DE MALLORCA	ES53	432113	3	3	3	2	2	5	2	2,9
MARIEHAMN	FI2	25776	1	1	1	1	2	3	1	1,4
AJACCIO	FR831	77287	2	1	0	0	2	4		1,5
BASTIA	FR832	76439	2	1	0	0	2	2		1,2
CORFU	GR222	39487	1	0	0	0	2	4	1	1,1
MITILINI	GR411	36196	1	0	1	1	2	2	1	1,1
KHIOS	GR413	23779	1	0	0	0	2	2	1	0,9
RODHOS	GR421	53709	2	3	1	1	2	4	1	2
ERMOUPOLIS	GR422	13400	1	0	0	0	2	4	1	1,1
IRAKLION	GR431	154801	2	3	3	1	2	4	1	2,3
IERAPETRA	GR432	23707	1	0	0	0	1	4	1	1
RETHIMNON	GR433	31687	1	0	2	1	2	2	1	1,3
KHANIA	GR434	53373	2	2	1	1	2	3	1	1,7
BARCELLONA POZZO DI	ITA03	51945	2	0	0	0	1	1	1	0,7
MESSINA	ITA03	236183	2	0	3	0	1	3	2	1,4
MILAZZO	ITA03	52817	2	0	0	0	1	1	1	0,7
AGRIGENTO	ITA04	177245	2	0	0	0	1	2	1	0,9
SCIACCA	ITA04	63363	2	0	0	0	1	1	1	0,7
CALTANISSETTA	ITA05	154547	2	0	0	0	1	1	1	0,7
GELA	ITA05	159012	2	0	0	0	1	1	1	0,7
ENNA	ITA06	93963	2	0	0	0	1	1	1	0,7
ADRANO	ITA07	62039	2	0	0	0	1	1	1	0,7
CALTAGIRONE	ITA07	51098	2	0	0	0	1	1	1	0,7
CATANIA	ITA07	608249	3	0	4	0	1	2	2	1,6
GIARRE	ITA07	86130	2	0	0	0	1	1	1	0,7
MODICA	ITA08	107589	2	0	0	0	1	2	1	0,9
RAGUSA	ITA08	90318	2	0	0	0	1	1	1	0,7
VITTORIA	ITA08	91826	2	0	0	0	1	1	1	0,7
LENTINI	ITA09	59525	2	0	0	0	1	1	1	0,7
SIRACUSA	ITA09	258332	3	0	0	1	1	2	2	1,3
ALGHERO	ITB01	45127	1	1	0	0	1	1	1	0,7
OLBIA	ITB01	49671	1	0	0	1	1	1	1	0,7
SASSARI	ITB01	204440	2	0	3	1	1	3	2	1,4
NUORO	ITB02	80080	2	0	0	0	1	1	1	0,7
MACOMER	ITB02	22921	1	0	0	0	1	3	1	0,9
ORISTANO	ITB03	77149	2	0	0	0	1	1	1	0,7
CAGLIARI	ITB04	460774	3	0	4	1	2	3	2	1,9
IGLESIAS	ITB04	129103	2	0	0	1	1	2	2	1,1
VALLETTA	MT	388594	3	4	2	3	4	3	1	2,9
VISBY	SE094	57313	2	1	1	1	2	2	1	1,4

Source: ESPON 2006 Data Base, TPG calculations
FUApop: FUA population
FUAdem: FUA demography function
FUAtra: FUA transport function
FUAuni :FUA Knowledge function
FUAdec: FUA Decision making for the private sector function
FUAadm: FUA Decision making for the public sector function
FUAtou: FUA Tourism function
FUAman: FUA Manufacturing function
FUAave: Averege of FUA's performance

Map 16: Urban Dynamics: MEGA & FUA functions' importance (2001)



As already discussed in the state of the islands, the environmental capital of the islands is particularly rich, especially that of Mediterranean islands. The analysis focuses also on **cultural heritage** (ESPON 2006c). Its measurement or estimation is not easy and existing approaches place emphasis on the presence and density of cultural heritage (monuments, sites, events, landscapes etc.), **cultural infrastructures** (museums, theatres, galleries etc.), to the intellectual capital and the professionals of culture that can valorise the existing capital and produce new. Concerning the number of monuments and sites registered on islands, Gotland in the North, Sicilia, Sardegna, Illes Balears and the Greek islands in the South, have the highest numbers.

Culture employment is very low to all NUTS 2 Mediterranean islands, except Cyprus. Åland, following the trend of most of the Scandinavian regions have a high level of employment in **cultural professions**. Although cultural heritage is richer in the Mediterranean islands, cultural professions are more developed in the Nordic islands and in Nordic countries in general. The ESPON approach detected a positive exception of Illes Balears.

Concluding, the presence of important ***cultural and natural assets, especially in the Mediterranean islands, can be a very important advantage*** when an appropriate framework for their sustainable use is developed, including the right human and social capital.

3.2.1.5. Feeling of safety – Security

The social capital pan-European research (more below) concluded with the feeling of safety of the population (e.g. in relation to crime) measured on a 4 point scale question with the highest scores indicating lower levels of safety. Illes Balears, Scotland and Sicily have the lowest levels (2.77, 2.27 and 2.24 respectively). The highest levels of safety were presented in North Aegean and Bornholms Amt (1.35 and 1.43 respectively). Regarding differences between North and South Europe no statistically significant differences were observed.

3.2.1.6. Natural and technical hazards

The risk for natural and technical hazards was estimated during the ESPON 2006 program (ESPON 2006d) with 15 parameters (avalanches, drought, earthquakes, extreme temperatures, floods, forest fires, landslides, storm surges, tsunamis, volcanic eruptions, winter and tropical storms, air traffic hazards, major accident hazards, nuclear power plants and oil production, storage and transportation) that were weighted using the Delphi method.
The aggregate hazard typology gave a good score for islands compared to the European mainland as Corse, Cyprus, South East Sicilia and all the Greek island regions face a medium risk (25-75 percentiles) and the rest of the

islands face lower risks. Important risks for these islands are emanating from droughts, forest fire, earthquakes, landslides, tsunamis, volcanic eruptions and oil transportation and storage.

3.2.1.7. Labour qualifications

Education, vocational training and lifelong learning play a vital role in the economic and social strategy of the European Union within the Lisbon process. Securing education and lifelong learning opportunities in every region and for all inhabitants has to be the cornerstone for national strategies.

The percentage of the total **population within the education system** in all levels of education is a key indicator. Many regions with higher scores than the European average (21,5% in 2007) are classified as less developed, e.g. Andalusia in Spain, Latvia, different Polish regions, French outer most regions, north Ireland as well as Sicilia, Kriti and Alland. The rest of the Greek islands as well as Cyprus, Malta and Sardegna have a student population between 18-21,5% but Corse and Balearics as well as Denmark have an even smaller percentage (lower than 18%, EUROSTAT Regional Yearbook, 2009, p. 114-123).

The proportion of the population aged 25-64 years who has successfully completed **tertiary level education** is diverse across Europe, with the EU27 average at 22,4% (Graph 6): in the south, island regions score less than 20% except Cyprus (28,5%), while Sardegna, Sicilia, Notio Aigaio, Ionia Nissia, Corse and Malta have less than 12,5%. In the north, most of the Nordic countries and island regions score more than 25% (on Åland 25,4%) of the population with a such a diploma.

This proportion unsurprisingly correlates negatively with the share of the **population with low educational level** (with an EU27 average at 29,1%) that is high for almost all Mediterranean regions. In Malta the ratio is extremely high at 74,7%, where the other insular regions (Kriti and Illes Balears included) have a ratio between 45% and 60%, only Cyprus scores close to the EU average (32,6%, Graph A3.2.1).

Finally, concerning **lifelong learning,** northern countries and island regions present higher scores than the EU average (9,3% of the population continue to refresh their skills); on Aland this percentage is up 24,8%! On the contrary, most of the southern countries and island regions have less than 7% of their population within lifelong learning processes (in Greek islands less than 2%) with the exception of Illes Balears (8,6%) and Cyprus (8,5%) (EUROSTAT, 2009 and EU 2010).

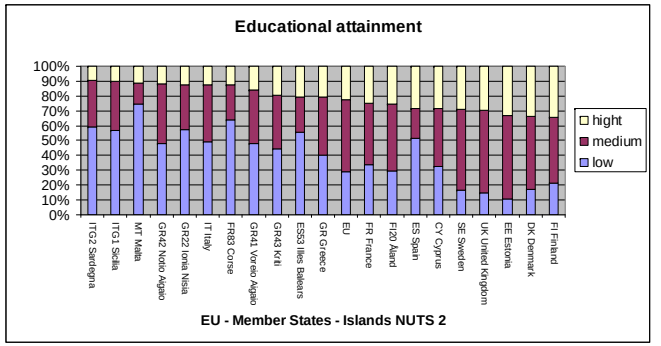
It appears therefore that there is a **shortage in the human capital of the islands** mainly in the Mediterranean ones: the educational attainment level is particularly low even on islands with high levels of GDP per capita and despite the presence of a University (e.g. on Sicilia, Sardegna, Malta and Mallorca). Low trends of lifelong learning make the situation worse, undermining their competitiveness. On Nordic islands, human capital is better prepared to face new challenges.

3.2.1.8. Information society

Information society has a double role on islands: first, it contributes directly to GDP as a productive sector and second, affects indirectly local productivity and ameliorates the accessibility of the population and of local businesses to different key services.

The penetration of **Information and Communication Technologies** (ICT) has two different components: access to the Internet (related to the existing infrastructures) and the capacity to use it (expressing the digital divide). The level of penetration of ICTs on islands varies significantly and is directly related to the corresponding national performance. At the European level, the use of ITC is higher in denser populated areas such as capital regions. Islands in north Europe have high percentage of households with broadband connections and their population uses the internet very often. On the contrary, Cyprus, Greek and Italian islands have very low penetration of ITC's. Malta, Illes Balears and Corse are situated in between.

Graph A3.2.1: Proportion of the population aged 25-64 years by educational level (2005)



Source: EUROSTAT web database, 2009; Tertiary level education is considered as "High educational attainment", upper secondary qualification is considered as "Medium educational attainment" and up to lower secondary qualification is considered as "Low educational attainment"

The same pattern is observed for **e-commerce**: more than 55% of the population in Åland use internet for shopping while people in Corse and the Balears use it as much as the European average. Malta has the lowest score while the rest of the Mediterranean islands are classified among the European regions with the lowest use of this facility (lower than the EU average 15%) (EUROSTAT, 2009).

The findings on ITC penetration follow a similar pattern as the labour qualification results, with the **Nordic islands performing better that the Mediterranean ones**. The "technology" gap causes lack of information and knowledge, factors that are necessary to achieve social equity and economic competitiveness.

3.2.1.9. Research and Innovation

Knowledge and innovation constitute one of the three main areas of action in the new Lisbon partnership for growth and jobs. The performance of the different areas is assessed through R&D expenditure, patents, employment in Science and Technology and in the medium and high tech manufacture. On islands, R&D is particularly important as it has to address the characteristics of insularity (small scale, environmental vulnerability and remoteness) and therefore the penetration of technology in low skilled societies as well as its adaptation to insularity is necessary.

The EU as a whole dedicates 1,9% of its GDP and 1,11% of the employment to R&D. In all islands, very low expenditure and human capital dedicated to R&D are recorded in comparison with EU average (Eurostat webdata base, 2009) and only in one case (Kriti) R&D performances are better than the national ones: 0,94 % of the GDP and 0,84% of the human capital compared to 0,59% and 0,77% (2005); from the other regions Sicilia (0,8% and 0,6% respectively 2005), Malta (0,54% and 0,56% - 2008), Voreio Aigaio (0,48% and 0,39% 2005) and Sardegna (0,58% and 0,47% - 2005) have the highest involvement. On the contrary, Åland (0,16% - 0,21% -2007) and Illes Balears (0,33% – 0,31% -2007) have particularly low involvement in R&D. Considering that the part of the private sector resources dedicated to R&D is lower than 0,2% (except in Malta where it is 0,4%) the assumption that research is concentrated in the Universities and in public research institutes is unavoidable. This is typical for Sicilia and Sardegna that are considered as knowledge nodes of European significance (ESPON Atlas, 2006, p.25 – EUROSTAT, 2009).

The high performing regions of competitiveness and innovation present the same concentration for the Information Society Index as well. Illes Balears, Åland and Cyprus plus Kriti are performing better than other Mediterranean islands but are below European average (ESPON Atlas, 2006, Table S3.2.13). According to the Regional Innovation Performance Index for 2002-3 (EU 4th Report on Economic & Social Cohesion, 2007, p. 79) all Mediterranean islands performed below the EU average (Illes Balears, Notio Aigaio and Voreio Aigaio recorded the poorest performance) where the Nordic Islands (or the european mainland region to which these islands are attached) performed above the average.

All islands perform very poorly in R&D. This is due to (a) the lack of significant Research Institutions located on the islands (lack of infrastructure) and (b) the low attractiveness of islands for highly educated and skilled people. Among the Mediterranean islands, all of which are far below European average, Kriti, Sicilia, Malta and Sardegna perform relatively better than the rest since these islands have Universities and research institutes, which are the incubators for R&D Development.

3.2.1.10. Social capital

For assessing social capital on islands, the results of the European Social Survey have been used[4] (2003), with the main outcomes being:

[4] This Survey was not organised on a NUTS level and didn't cover all island regions or Member States such as Malta.

Social trust

Three questions measuring social trust were combined in one quantitative variable. According to the results of the analysis differences of social trust between regions are statistically significant. In particular, several South European regions record the lowest, including Ionian Islands (mean score: -1.30), South Aegean (-0.87), Sicily (-0.69), Cyprus (-0.48) and Crete (-0.41). The highest levels of social trust are observed in Southern Finland and Åland (0.61), Bornholms Amt (0.59) and Illes Balears (0.42). Statistically significant differences of averages were also observed between South and North regions of the study. Northern regions present an average score of 0.54 whereas Southern regions have significantly lower levels of social trust (-0.43).

Institutional trust

Trust in institutions was investigated for three entities (Parliament, European Parliament, and Legal System) and was measured in one variable. One-way ANOVA tests recorded several statistically significant differences of means between regions. Differences are significant between north and south European regions, with Southern areas having higher scores (South: 0.08, North: -0.10). Mean scores for each region reveal the highest levels in the Ionian Islands (0.53) followed by South Aegean and Cyprus (0.32 and 0.25 respectively). On the other hand, Scotland (-0.65), Mediterranee (-0.47) and Illes Balears

(-0.25) have significantly lower levels of institutional trust.

Social networks
Social networks measurements were based on the number of organizations in which individuals are members or volunteers. One-way ANOVA tests reveal several statistical differences between regions regarding the density of these networks. The highest mean score is presented in the area of Bornholms Amt (2.14) followed by Scotland (1.60) and Southern Finland (1.58). The majority of South European regions have significantly lower levels (Illes Balears: 0.05, Ionian Islands: 0.18, North Aegean: 0.41, Sardegna: 0.50, Sicily: 0.57, Crete: 0.59). Similar results are observed for volunteerism, with lower scores on Balears and Ionian Islands where no respondents declared positive answers. The highest scores were noticed in Bornholms Amt (0.79).

Interest in politics
Regarding the level of interest in politics, the least concerned citizens are those in Greece, Spain and Italy. The most interested ones are those of Scotland and Southern Finland and Åland. This is reflected in the average values of all South (2.85) and North regions (2.61).

Level of satisfaction with public issues
The level of satisfaction was measured for several public issues including the national government, democracy, health services, the economy and education, all included in one factor. The results indicate significant disparity between the level of satisfaction among Southern and Northern regions (average of Northern areas 0.25 whereas for Southern regions -0.20).

Nordic islands present higher scores in social capital than the southern ones: higher levels of social trust and civic participation indicate more "connected" areas, therefore more enhanced productivity and level of cohesion.

3.2.1.11. Governance Quality

Governance quality influences public policy and is linked to effective development. Here, it refers to the effectiveness of local authorities and the procedures used in order to involve the participation of stakeholders in planning and decision making processes- these parameters make an area more attractive than another.

Different national traditions of governance across European space exist and that these differences still influence practices (ESPON Atlas, 2006, p.60). A categorisation of countries in terms of their "shift towards governance" shows that countries such as France, Spain, UK, Sweden, Denmark and Finland are leaders at this process. On the other hand in Malta, Cyprus, Esthonia and particularly in Greece, traditional patterns of government are still dominant.

3.2.1.12. Employment opportunities

The particular indicator can be approached indirectly by the percentage of the economically active population, the evolution of the employed and unemployment (total, women, young) that were presented earlier in this report (previous section).

3.2.2. Classification of Attractiveness factors by islanders

The perception that islanders have about the importance of the attractiveness parameters is very important as it can influence (among other issues) **policy priorities**. It has to be underlined here that "scientific objectivity" is necessary but not critical to persuade businessmen and population about islands' attractiveness and to influence their decision for location. The findings come from field research to local populations, stakeholders and businesses in the case study (for detailed analysis see the Scientific Report of the study). For population attractiveness, respondents were asked to rate twenty four different factors that could define islands' attractiveness for permanent residence on a scale from 1 to 5 (1 was the first most important factor of attractiveness, 2 the second most important factor and so on).

3.2.2.1. Islands' attractiveness for living (Local Authorities' Responses)

Classification of Factors
In Table A3.2.6 the hierarchy of attractiveness factors based on their importance is presented. Values closer to 1 denote higher importance while those closer to 5 signify lower importance. Factors not rated by the respondents are excluded. Parameters are classified in four classes according to the frequency of the values:
High priority factors (up to 3.5).
Intermediate priority factors (from 3.51 to 4.00).
Low priority factors (4.01 to 4.85).
Insignificant factors (from 4.86 to 5.00).

The five most important factors are (Table A3.2.6):

Quality of health care system,
Trip frequency,
Regularity of water supply,
Job Opportunities,
Quality of life.

Table A3.2.6: Classification of factors influencing the attractiveness of islands for living

High priority factors (1.00-3.50)
Quality of health care system
Trip frequency
Regularity water supply
Job Opportunities
Medial priority factors (3.51-4.00)
Quality of life
Quality of education services.
Regularity of energy supply
Low priority factors (4.01-4.85)
Cost of travel
Cost of living
Quality of nature
Quality of transport

Career opportunities
Cost of Land
Connection to the water waste system
Insignificant- complementary factors (4.86-5.00)
Effectiveness of solid waste collection
Linguistic, religious, racial or ethnic diversity in society
Opportunities to attend cultural events
Quality of public transport system
Quality of built environment
Networks of trust and social capital
Training opportunities
Participation in non-government collective activities

3.2.2.2. Islands' attractiveness for economic activities (Chambers and Local Authorities Responses)

The second type of questionnaire was addressed to chambers and local authorities (municipalities, prefectures, universities) in order to investigate and define the factors that make an island attractive for setting up local economic activities. In total 55 responses were gathered, 40 of which were valid. Participants were asked: a) to prioritize the five most important factors from a list of 24 and b) to rate all factors on a scale from "very important" to "insignificant". As before, values closer to 1 indicate the most important factors and those closer to 5 are the least important ones.

The first six factors are (Table A3.2.7):

The Frequency of scheduled trips,
Economic Incentives,
Regularity of water supply,
The vision of local authorities,
Regularity of energy supply,
Travel cost.

Table A3.2.7: Classification of factors influencing islands attractiveness for business according to their average score

High priority factors (1.00-3.50)
Trip frequency
Economic incentives
Regularity of water supply
Development vision of local authorities
Regularity of energy supply
Travel cost
Medial priority factors (3.51-4.00)
Effectiveness of public administration
Labour costs
Land and construction cost
Quality of transport services
Supply of trained/ qualified human capital
Competence of local authorities to solve problem
Low priority factors (4.01-4.3)
Quality of local public transport
Broadband connection
Possibility to support innovation
Degree of stakeholder involvement in decision making
Support by other business
Business support agencies
Insignificant- complementary factors (4.31-4.40)
Security
Effectiveness of solid waste collection
Connection to the waste water system
Cooperation with other business
Threat of natural hazards
Threat of technological hazards.

Common factors

From the listed factors, ten are common (table A3.2.8). In most of them, the hierarchy ranking has small differences.

Table A3.2.8: Commons Factors of the attractiveness of islands for living and business ranked in decreasing priority

Factor	Business hierarchy	Population hierarchy
Trip frequency	1	2
Regularity of water supply	3	3
Regularity of energy supply	5	7
Travel cost	6	8
Land cost	9	13
Quality of transport services	10	11
Broadband connection	14	-
Effectiveness of solid waste collection	20	15
Connection to the waste water system	21	14
Quality of public transport system	13	18

3.2.3. The results of the Delphi workshop

The Delhi workshop included two different rounds for factors of attractiveness for both residence and economic activities. The second round of the evaluation between experts produced some differences compared to that of locals (Table A3.2.9).

From the classification of attractiveness parameters, some remarks can be made:

- both stakeholders and experts place high importance to the main characteristics of attractiveness influenced negatively by insularity: accessibility and services of public interest (energy, water, healthcare, education); preservation of quality of life and quality of nature are seen as an asset by both the stakeholders and the experts;
- governance is considered as an important factor influencing local development
- economic incentives are important for local entrepreneurs

The differences in the classification between local stakeholders and experts could be attributed to the more technocratic view of the experts that express the broader (global) view concerning attractiveness and the islands development perspective based on parameters such as the human capital, ITC, innovation. The locals have a less broad view since they focus on the everyday problems and can see the solutions to the "classical" hard infrastructure and activities.

Table A3.2.9: Factors of attractiveness at the 2nd round of Delphi

Factor of attractiveness for business	Average	Factor of attractiveness for living	Average
Regularity of energy supply	5.765	Job Opportunities	6.00
Frequency of scheduled trips	5.706	Quality of life	5.824
Supply of trained human capital	5.294	Frequency of scheduled trips	5.412
Effectiveness of public administration	5.176	Quality of nature	5.353
Broadband connection	5.176	Quality of health care and services	4.882
Competence of local authorities to solve problems	5.176	Regularity of water supply	4.824
Regularity of water supply	4.824	Career opportunities	4.353

3.2.4. Attractiveness indexes

Three indexes for the attractiveness of islands are proposed:

(a) A first based on issues influenced directly by insularity (***Attractiveness Direct***);

(b) A second based on issues that are indirectly influenced by insularity (***Attractiveness Indirect***)

(c) A third based on the natural and cultural assets of the islands (***Attractiveness Assets***) as an indication for quality of life and a potential for development.

For the construction of the **Attractiveness Direct Index** two indicators are used (Table A3.2.12): for accessibility, ESPON's Multimodal Accessibility Index; and for urban dynamism the Functional Urban Areas (FUA) concept was used, where data are available only at NUTS 3 level. A European average is not available and the classes used for the calculation of the index had to be estimated with the normalisation method using the maximum and the minimum values from all European regions (see section 2). As already explained above, islands **score particularly low for both these variables (the median value is 3 with the EU27 average at 5)** except only two islands overpass the average of European NUTS3: Malta and Mallorca (Graph A3.2.2A).

The **Attractiveness Indirect Index** is calculated with the use of the following indicators (Table A3.2.13): The population with low educational level of the total population (% for 2007) covering labour qualification; Research and Development expenditure % of GDP (2008); households with broadband access % for ITC evolvement; unemployment % of young people (15-24 years old) for jobs opportunities the Governance indicator (qualitative approach from ESPON 2006f).

These variables are considered as key ones in the Lisbon Strategy as they are driving forces for a competitive economy in a long term perspective. The results for islands are particularly alarming with **all island regions situated at a significant distance from the European and the member states average** (Graph A3.2.2).

The **Attractiveness Assets Index** is calculated with the use of the following indicators (Table A3.2.14): for natural assets, NATURA 2000 areas %; for cultural assets, the concentration of monuments in an area is estimated.

Finally, a high positive correlation (Pearson's rh0=,668, S=0,25, N=11) is detected between a composite direct and indirect attractiveness index and the state of the islands only for the 11 NUTS 0/2 island regions. In order to be confident that there is a causal link between attractiveness and state further statistical analysis with more data (mainly more areas) is necessary.

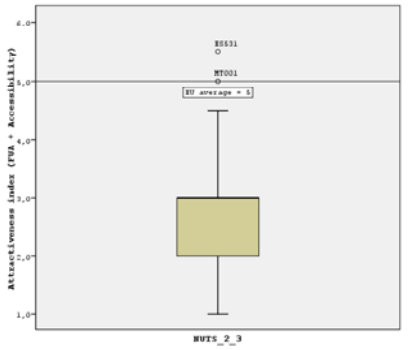
Table A3.2.12: Indicators, classes and calculation of the Attractiveness Direct Index

Geo name	Agglomeration Economies (FUA)	FUAave classes	Multimodal Accessibility	Access multimodal classes	Attractiveness Direct
CY Cyprus	1,75	4	51	2	3
DK014 Bornholm	1	2	94	4	3
ES53 Illes Balears	*		99	5	2,5
ES532 Mallorca	2,9	6	**	5	5,5
ES533 Menorca	1,7	4	**	5	4,5
FI20 Åland	1,4	3	76	3	3
FR83 Corse	1,35	3	76	3	3
GR221 Zakynthos	No FUA	0	70	3	1,5
GR222 Kerkyra	1,1	3	80	4	3,5
GR223 Kefallinia	No FUA	0	48	2	1
GR224 Lefkada	No FUA	0	58	2	1
GR411 Lesvos	1,1	3	72	3	3
GR412 Samos	No FUA	0	68	3	1,5
GR413 Chios	0,9	2	65	3	2,5
GR421 Dodekanisos	2	4	79	3	3,5
GR422 Kyklades	1,1	3	67	3	3
GR43 Kriti	1,6	3	61	3	3
ITG1 Sicilia	0,9	2	65	3	2,5
ITG2 Sardegna	1	2	65	3	2,5
MT001 Malta	2,9	6	83	4	5
MT002 Gozo and Comino	No FUA	0	71	3	1,5
SE214 Gotlands län	1,4	3	70	3	3
UKJ34 Isle of Wight	No FUA	0	96	4	2
UKM64 Western Isles	No FUA	0	24	1	0,5
UKM65 Orkney Islands	No FUA	0	29	1	0,5
UKM66 Shetland Islands	No FUA	0	24	1	0,5

* Calculation of "regional" FUA is irrelevant as the cites are on different islands

** As Accessibility has been estimated only for Illes Balears, the same value is used for both Mallorca and Menorca

Graph A3.2.2: Box-plots of the Direct and Indirect Attractiveness indexes for islands NUTS 3 island regions (A) and for national values and NUTS 2- 3 island regions (B)



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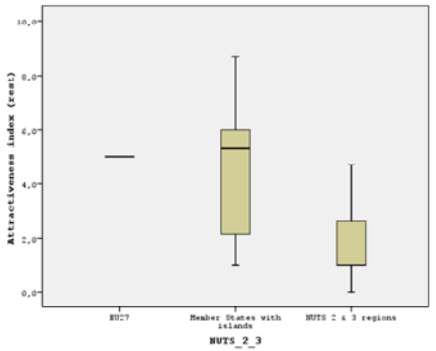

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Table A3.2.13: Indicators, classes and calculation of the Indirect Attractiveness Index

Geo name	low educa-tional level	low educat-ional level (EU27 =100)	low educa-tional level inverse classes	R&D expen-diture %GDP 2008 (NUTS 2 different years)	R&D expen-diture %GDP 2008 (EU27 =100) (NUTS 2 different years)	R&D expen-diture %GDP 2008 classes (NUTS 2 different years) classes	House-holds with broad-band access % 2008	House-holds with broad-band access % 2008 (EU=100)	House-holds with broad-band access % 2008 (EU=100) classes
CY Cyprus	32,6	112,0	4	0,46	24,2	1	33	67,3	2
DK Denmark	17,3	59,5	9	2,72	143,2	9	74	151,0	9
EE Estonia	10,9	37,5	9	1,29	67,9	2	54	110,2	6
ES Spain	51,2	175,9	1	1,35	71,1	2	45	91,8	4
ES53 Illes Balears	55,6	191,1	4	0,33	17,4	1	50	102,0	5
FI Finland	21,2	72,9	8	3,73	196,3	9	66	134,7	8
FI20 Åland	29,5	101,4	5	0,16	8,4	1	64	130,6	8
FR France	33,6	115,5	3	2,2	115,8	7	57	116,3	7
FR83 Corse	64,2	220,6	1	0,22	11,6	1	57	116,3	7
GR Greece	40	137,5	1	0,58	30,5	1	22	44,9	1
GR22 Ionia Nisia	57,2	196,6	1	0,16	8,4	1	18	36,7	1
GR41 Voreio Aigaio	47,7	163,9	1	0,48	25,3	1	18	36,7	1
GR42 Notio Aigaio	48,1	165,3	1	0,15	7,9	1	18	36,7	1
GR43 Kriti	44,6	153,3	1				18	36,7	1
IT Italy	49,3	169,4	1	1,18	62,1	1	31	63,3	1
ITG1 Sicilia	56,7	194,8	1	0,8	42,1	1	22	44,9	1
ITG2 Sardegna	58,9	202,4	1	0,58	30,5	1	27	55,1	1
MT Malta	74,7	256,7	1	0,54	28,4	1	55	112,2	6
SE Sweden	16,5	56,7	8	3,75	197,4	9	71	144,9	9
UK United Kingdom	14,8	50,9	9	1,88	98,9	5	62	126,5	8
EU (27 countries)	29,1	100,0	5	1,9	100,0	5	49	100	5

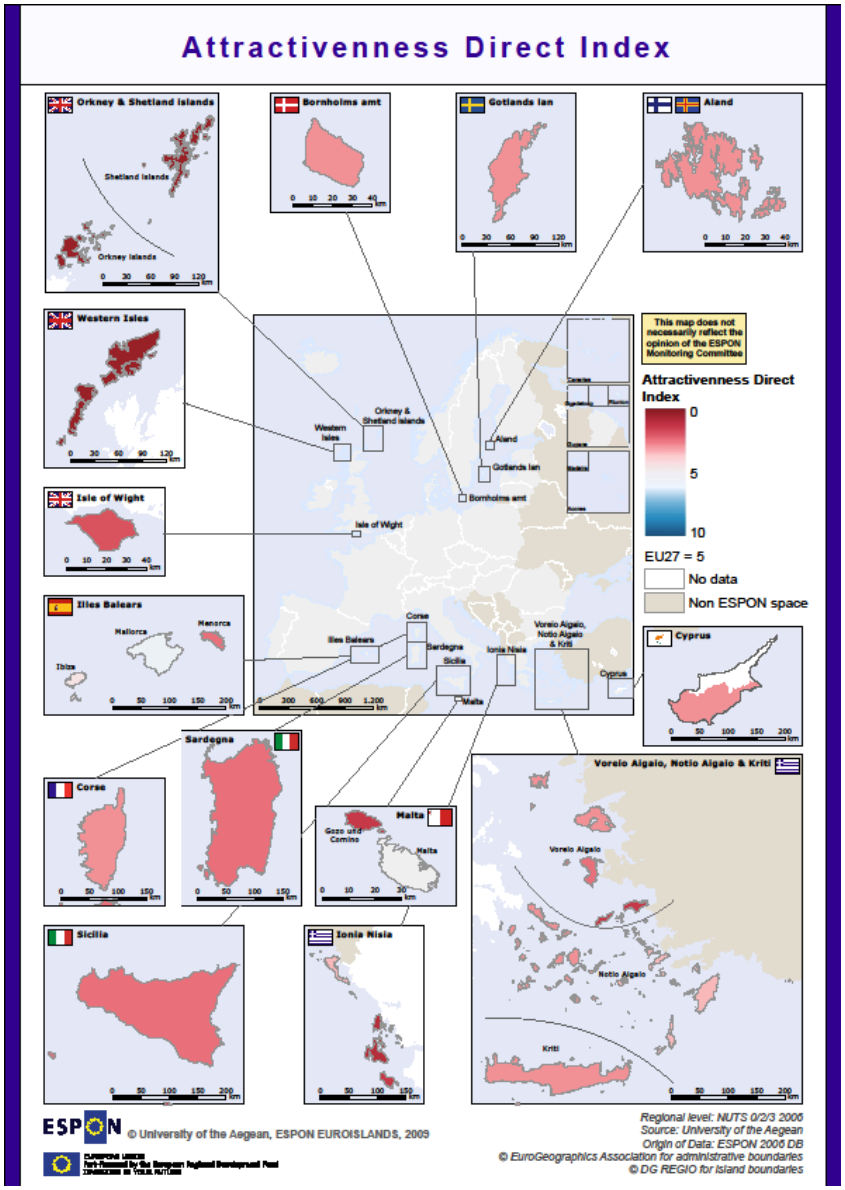
Table A3.2.13 (continued): Indicators, classes and calculation of the Indirect Attractiveness Index

Geo name	Unemplo-yment rate total 15-24 2008	Unemplo-yment rate total 15-24 2008 (EU27 =100)	Unemplo-yment rate total 15-24 2008 (EU27 =100) inverse classes	Gover-nance	Attracti-veness Indirect
CY Cyprus	9	57,7	9	6	4,4
DK Denmark	7,6	48,7	9		9,0
EE Estonia	12	76,9	7		6,0
ES Spain	24,6	157,7	1		2,0
ES53 Illes Balears	24,3	155,8	1	8	3,8
FI Finland	16,5	105,8	4		7,3
FI20 Åland	10,6	67,9	8	8	6,0
FR France	19	121,8	3		5,0
FR83 Corse	18	115,4	3	5	3,4
GR Greece	22,1	141,7	1		1,0
GR22 Ionia Nisia	26,7	171,2	1	4	1,6
GR41 Voreio Aigaio	20,2	129,5	2	4	1,8
GR42 Notio Aigaio	14,9	95,5	5	4	2,4
GR43 Kriti	13,9	89,1	6	3	2,2
IT Italy	21,3	136,5	1		
ITG1 Sicilia	39,3	251,9	1	2	1,2
ITG2 Sardegna	36,8	235,9	1	2	1,2
MT Malta	12,2	78,2	7	4	3,8
SE Sweden	20,2	129,5	2		7,0
UK United Kingdom	15	96,2	5		6,8
European Union (27 countries)	15,6	100,0	5		5,0

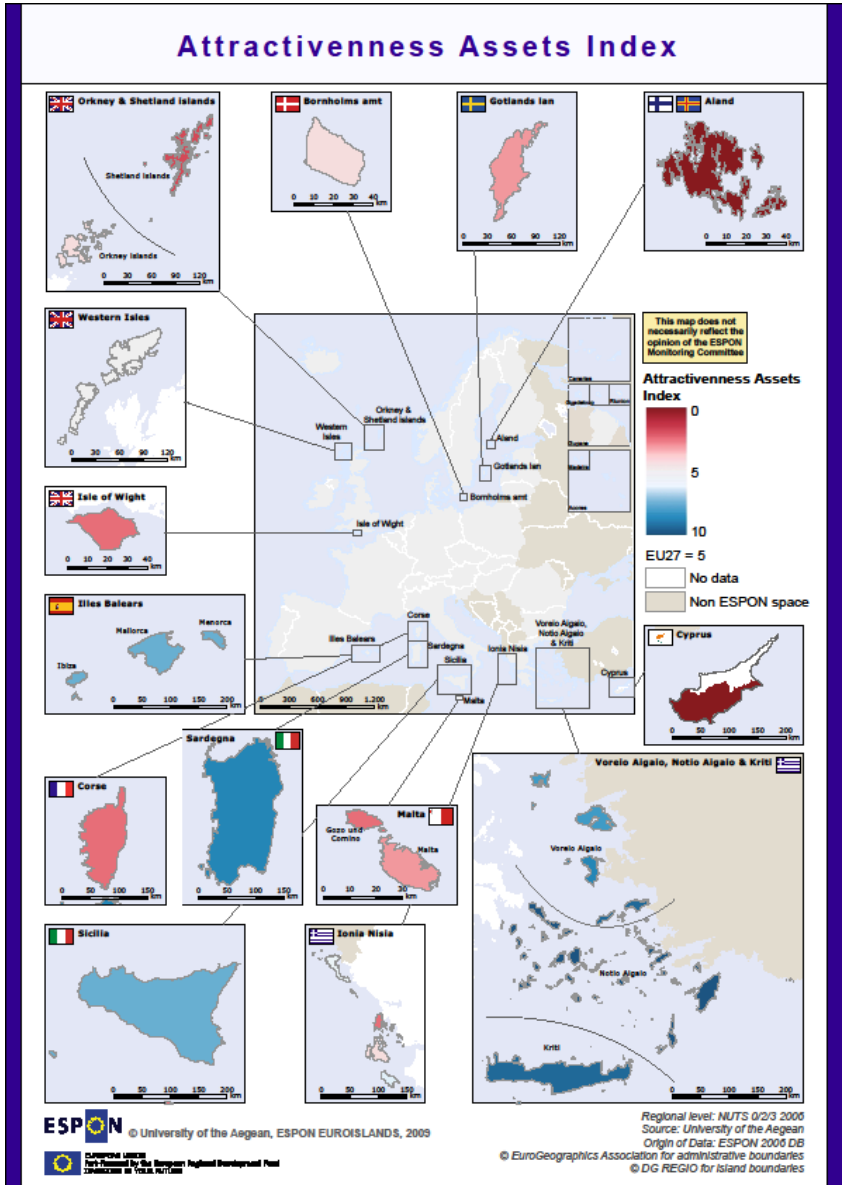
Table A3.2.14: Indicators, classes and calculation of the Attractiveness Assets Index

Geo name	Land under NATURA 2000 (km2)	Land under NATURA 2000 % of total	Land under NATURA 2000 % of total (EU27=100)	Land under NATURA 2000 % of total (EU27=100) classes	Density of monuments	Cultural indicator	Assets indicator
CY Cyprus	74276	8,7	61,3	1	0,0023	1	1
DK Denmark	423639	9,9	69,7	2			
DK014 Bornholm	8034	13,5	95,1	5	0,2396	4	4,5
EE Estonia	794721	18,3	128,8	8			
ES Spain	13880379	27,4	193,2	9			
ES53 Illes Balears	111051	21,8	153,5	9	0,5668	5	7
ES531 Eivissa y Formentera							
ES532 Mallorca							
ES533 Menorca							
FI Finland	4959995	14,7	103,5	5			
FI20 Åland	2942	1,9	13,4	1	0,0026	1	1
FR France	4972249	9,1	63,8	1			
FR83 Corse	114727	13,2	92,7	4	0,0306	2	3
GR Greece	2595058	19,8	139,1	9			
GR221 Zakynthos	5176	12,7	89,4	4	2,3124	8	6
GR222 Kerkyra	5875	9,6	67,6	2	4,3881	9	5,5
GR223 Kefallinia	9477	10,5	73,9	2	2,0741	7	4,5
GR224 Lefkada	5434	13,6	95,8	5	0,0000	1	3
GR411 Lesvos	45372	21,5	151,4	9	1,3064	6	7,5
GR412 Samos	27446	27	190,1	9	2,4110	8	8,5
GR413 Chios	32265	35,1	247,2	9	2,0745	7	8
GR421 Dodekanisos	92107	28,9	203,5	9	3,1097	9	9
GR422 Kyklades	70878	21,6	152,1	9	5,4702	9	9
GR43 Kriti	272314	32,8	230,8	9	1,6877	8	8,5
IT Italy	5064396	16,8	118,4	7			
ITG1 Sicilia	407861	15,9	111,7	6	1,3136	8	7
ITG2 Sardegna	385255	20,0	141,1	9	0,5840	7	8
MT Malta	5066	14,5	102,1	5			
MT001 Malta	4086	14,9	104,9	5	0,0400	2	3,5
MT002 Gozo and Comino	980	13,2	93,0	4	0,0403	2	3
SE Sweden	7670683	17,1	120,2	7			
SE214 Gotlands län	16020	4,8	33,8	1	1,1947	6	3,5
UK United Kingdom	1880238	7,7	54,2	1			
UKJ34 Isle of Wight	3344	6,5	45,8	1	0,3013	5	3
UKM64 Western Isles	99765	18,3	128,9	8	0,0670	2	5
UKM65 Orkney Islands	21849	12,1	85,2	4	0,3681	5	4,5
UKM66 Shetland Islands	22651	8,5	59,9	1	0,2531	4	2,5
European Union (27 countries)	61090938	14,2	100,0	5			

Map 17: Attractiveness Direct Index for Island-states, NUTS 2 and NUTS 3 islands concerning accessibility and urban dynamism



Map 18: Attractiveness Assets Index for Island-states, NUTS 2 and NUTS 3 islands



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