

Annex III: Reports of Case studies

Island Case Study Report: Kökar, Åland Islands	2
Island case study report : Mallorca, Illes Balears	26
Island Case Study report: Saaremaa, Estonia.....	42
Island Case Study Report: Kalymnos & Lipsi, Dodecanese, Greece	72
Island Case Study report: Samsø, Denmark.....	103
Island Case Study Report: Malta	121
Island Case Study Report: Lipari, Aeolian Islands, Italy	143
Island Case Study Report: Cyprus	164
Island Case Study report: Sardegna, Italy	181

Island Case Study Report: Kökar, Åland Islands

Introduction

"The archipelago is a world of contradictions: it is calm and wild, large and little, rich and poor, all at the same time, and this has had an effect on the traditions and the lifestyle of people living on the islands."¹

The Åland archipelago is a home-ruled, demilitarized and Swedish-speaking jurisdiction located in the northern Baltic Sea, enjoying political autonomy within the realm of the state of Finland, thanks to an international treaty brokered by the League of Nations in 1920. This autonomous status has allowed Åland to ensure that its Swedish language and culture remain privileged. Åland had its own Annex to Finland's Treaty of Accession to the European Union in 1995. In particular, this annex endorses Åland's status as a duty free zone within the EU. Åland received its own flag in 1954, its own stamps in 1984, and now has its own high-level internet domain (.ax). Since 1970, Åland has its own representation on the Nordic Council. Åland also obtains funding for its own EU programmes: that applies to the Objective 2 and Objective 3 Programmes, the Rural Development Programme and the Structural Programme for the Fisheries Industry.

Åland consists of a main island surrounded by some 6,500 smaller islands, of which around 60 are inhabited. The population is around 27,000: some 40% of this lives in the capital city, Mariehamn; and a further 50% live in the countryside on the main island, which is within commuting distance by car from Mariehamn.

Åland's GDP per capita ranks amongst the highest in the Finnish regions, and surpasses the Finnish average. The Åland national income is about 25% higher than the Finnish average. Åland also has the highest GDP per capita of the Nordic countries, measured in purchasing power parity².

Åland has sixteen municipalities. Six of these – Brändö, Föglö, Kökar, Kumlinge, Sottunga and Vårdö - are situated in the archipelago region and are not connected to the main island by road

¹ <http://www.kokarkultur.com/>

² Åland in *Journal of NordRegio*, special issue dedicated to insular employment, Vol. 6(1), 2006, pp. 14-15.

or bridge. These six municipalities now contain less than 10% of the Åland population. They depend on their links with the main island and the capital city on a network of car ferries³. Out of the 10 'mainland' municipalities, only the one furthest from Mariehamn (Geta) has registered a population decline since 1980; however, of the six 'archipelago' municipalities, all six have registered a dramatic decline from 1950-1980, and all six except one have seen a more moderate slide (but still a decline) since 1980. The proportion of city dwellers has actually fallen slightly from 41.9% in 1980 to 40.1% in 2007. The proportion of archipelago dwellers has fallen from 10.8% in 1980 to 8.6% in 2006, and 8.3% in 2007. It is the exurb on the main island that has seen a population increase: from 47.3% in 1980 to 51.6% in 2007. Jomala, just outside Mariehamn, is showing the fastest growth of all. Most of these demographic changes are however not dramatic, and an equitable gender balance has been maintained throughout the territory. Only one out of the six archipelago municipalities (Vårdö) has actually registered consistent population increases throughout this time: probably thanks to a 'fixed link' to mainland Åland built in the 1980s – and via a 5-8 minute cable ferry crossing via Prästö, operating 24 hours a day. With just 115 residents, Sottunga must be seriously threatened by the sustainability of its settlement. Meanwhile, the only significant population slide is at Kumlinge: it lost 10% of its population from 1980 to 2000, and has lost another 11% between 2000 and 2006. Nevertheless, the archipelago population has been halved since 1950. For population trends in the 6 archipelago municipalities (1950-2007), see Figure 2.

Table 1: - Åland Population by Municipality: various end-of-year figures and estimates for 30 June 2009. (The Six 'Archipelago' municipalities are highlighted with a light blue background).⁴

	1950	1980	2000	2006	2007	End June 2009
Brändö	927	550	514	520	518	515

³ Inter-island ferry web-site is at: <http://www.alandstrafiken.ax/eng/prislistor.htm>.

⁴ Data from: *Åland in Figures* (2007), 21pp, published in Mariehamn by ÅSUB (the Åland Islands Statistical Agency) and from *Åland in Figures* (2009) available from the ÅSUB web-site at: <http://www.asub.ax/files/Isiff09En.pdf>. End June 2009 estimates taken from: [http://www.vrk.fi/vrk/files.nsf/files/AE1290D892E86719C22575EB002B065C/\\$file/090630.html](http://www.vrk.fi/vrk/files.nsf/files/AE1290D892E86719C22575EB002B065C/$file/090630.html). Most of the data reported in this case study is to be credited to ÅSUB as well as to Christian Pleijel, Kökar archipelago representative on Standing Committee of Åland Government, and to Kurt Forsman, Mayor of Kökar. The assistance of Bjarne Lindström, Director of ÅSUB, is also gratefully acknowledged.

Eckerö	942	685	830	929	921	943
Finström	2,089	2,052	2,299	2,464	2,483	2,496
Föglö	1,188	608	595	583	576	568
Geta	775	471	478	448	456	458
Hammarland	1,454	1,196	1,351	1,423	1,440	1,457
Jomala	3,413	2,615	3,328	3,664	3,917	3,959
Kumlinge	788	454	405	359	360	367
Kökar	683	304	296	298	262	263
Lemland	1,342	954	1,585	1,731	1,783	1,782
Lumparland	448	302	377	387	387	383
Saltvik	2,041	1,564	1,679	1,706	1,753	1,756
Sottunga	299	149	129	120	115	118
Sund	1,382	939	1,013	1,033	1,031	1,035
Vårdö	646	387	409	434	449	453
Mariehamn	3,273	9,553	10,488	10,824	11,005	11,155
Rural Districts	18,417	10,778	12,940	13,785	14,171	14,269
Archipelago	4,531	2,452	2,348	2,314	2,280	2,284
Åland (total)	21,690	22,783	25,776	26,923	27,456	27,708
Females		11,509	13,076	13,571	13,815	
Males		11,274	12,700	13,352	13,641	

The Åland archipelago is part of a cross-national Baltic Sea region that stretches from Stockholm to Åbo/Turku and which has had a particular economic history. It also boasts the region with the world's largest density of islands.⁵ Given the increasing attraction of such islanded places for place-based tourism, summer residences and pleasure travel, While the shipping industry cluster – with its duty free exemptions – remains important for Åland, the territory has seen its major economic efforts shift from resource-based activity (such as farming, cattle raising and milking, herring fishing, forestry, hunting) to service sector activities like tourism, construction, hospitality, bouquet manufacturing, yacht and

⁵ Depraetere, Christian (2007) 'Island Locations and Classifications' in G. Baldacchino (ed.) *A World of Islands: An Island Studies Reader*, Malta and Canada, Agenda Academic and Institute of Social Studies, pp. 75-76.

pleasure craft maintenance⁶. This sprawling Suedo-Finnish archipelago is now the target of some 3 million visitors annually. Some interesting recent initiatives geared to promote Åland as a more attractive region for visitors include: (1) 'Skärgårdssmak': a branding exercise to promote local food and craft products⁷; as well as (2) the 'archipedalo' trans-national project to create a biking trail between Åland and South-West Finland⁸.

Introducing Kökar

"Reached by ferry from Korpo (74km/46 miles south-west of Turku) or Långnäs (28km/ 17 miles east of Mariehamn) is the sailing enthusiasts' paradise of Kökar (population: 300; Sandvik and Hellsö boating harbours), far out in the skerries. It has a fine church of grey stone, built on the ruins of a Franciscan friary. Hotel, restaurant, camping site"⁹

"On a sunny summer's day, this island group is three-coloured: blue skies and waters, nearly black rock, lush green juniper and grass. A short ferry ride from Korpo or main Åland takes you there, and today you can find good accommodation - but be sure to book in advance if you plan to go in July or August!"¹⁰

Kökar (land area: 58 km²) is Åland's second smallest municipality by population size, and the one furthest away from the jurisdictional hub of Mariehamn (see Figure 1). Its landscape contrasts sharply from that of mainland Åland, since it is dominated by naked grey bedrock of gneiss, covered in small brushwood, with alder, birch and juniper trees, and surrounded by the open sea with thousands of treeless islands and skerries. The first inhabitants were probably sealers who settled at the Otterböte site, around 100 BC. During the 15th century, a Franciscan monastery was founded on Hamnö. This place became a spiritual and cultural centre of the entire archipelago¹¹.

⁶ For example, Skärgårdscentrum Korpoström (2006) *Anchorage*, publication supported by the European Union and the State Provincial Office of South-West Finland.

⁷ <http://www.skargardssmak.com/start.con?iLan=3>

⁸ http://www.ls.aland.fi/.composer/upload//Bilaga_2_Archipedalo.pdf

⁹ PlanetWare: <http://www.planetware.com/aland-islands/kokar-sf-ahv-kok.htm>

¹⁰ Per from Finland, 2008. Blog site at:

<http://www.tripsay.com/destination/K%C3%B6kar>.

¹¹ Information from the Kökar commune web-site at:

<http://www.kokar.aland.fi/> and from the Archipelago cruise at:

In the past, Kökar's economy was largely based on fishing and hunting. Most important of all was the seasonal fishing for Baltic herring that took place from the outmost skerries of Ören and Mörskär. Today, the Kökar economy is dominated by tourism, transport and tourism-related industries, and employment with the municipality, combined with some farming¹².

Kökar's total population (as at the end of 2007) was 262, or just about 140 households: what is left today in the wake of a fairly erratic population decline. This trend has not been consistent over the various decades: a major loss of over 200 residents occurred in the 1960-1970 period; but there was a stable population count between 1990 and 2000. The population reached its maximum around 1920, when some 1,000 people lived in five villages. By 1950, the population had been almost halved, but was still more than twice the current level (see Table 2).

Table 2: - Change of Kökar Population: 1950-2007

Year	1950	1960	1970	1980	1990	2000	2007	End 2007
Population	683	561	369	304	296	296	284	262

The distribution of the population of Kökar is decidedly older on average – just under a quarter of the Kökar population is 65 years of age or older (compared to just over a sixth for Åland as a whole) – (see Table 3).

Table 3: - Comparing Population Distributions in Åland and Kökar (end 2007)

Age Group	Kökar (Numbers)	Kökar (by %)	Åland (Numbers)	Åland (by %)
0 - 14	39	14.9	4,625	16.8
15 - 64	158	60.3	18,052	65.7
65 +	65	24.8	4,779	17.4

<http://www.guildtravel.com/tourscruises/the-archipelago-sea-aland-archipelago-cruise/#>.

¹² Information from: <http://www.kokarkultur.com/>.

Total	262	100	27,456	100
-------	-----	-----	--------	-----

These demographic characteristics are typical of very small and remote, mainly island, populations facing population decline. Research suggests that opportunities for employment and self-employment, along with the provision of basic and affordable infrastructural services – not just water and electricity, but health care, basic education, inexpensive and efficient transportation to/from the mainland, broadband ... - will be crucial to stem population decline, or even contribute to population increase¹³. Kökar may be fortunate than most in still having a significant population of children under the age of 15, a proportion only slightly lower than that for Åland as a whole. This is further borne out by an analysis of the demographic changes on Kökar over a 10-year span (1997-2006). While deaths have exceeded births, the shortfall has not been that dramatic; and migration to the municipality has been almost as large as out-migration (see Table 4):

Table 4: - Net Population Changes on Kökar: 1997-2006

Births	Deaths	In-Migration	Out-Migration	Change in Population	Correction	Actual Change
31	40	165	176	-20	-2	-22

The reasons for the population decline on Kökar however do not appear to be primarily related to economic issues, even though the perception of deprivation can be driven by relative (rather than absolute) assessments. Unemployment figures can be useful indirect indicators of opportunities for employment and self-employment. Even after the latest global financial crisis, unemployment levels on Kökar have only budged slightly, and only to reach the same levels as 2007: from a mean of 2.4% in August 2008 to 3.2% in August 2009. (Of course, with such a small labour

¹³ For example, Royle, Stephen A. 'Islands off the Irish Coast and the 'Bridging Effect'', and Barthon, Céline, 'Bridge Impacts on Islands off the Cast of France', both in G. Baldacchino (ed.) *Bridging Islands: The Impact of Fixed Links*, Charlottetown, Canada, Acorn Press, 2007, pp. 203-218 and 219-237 respectively.

force, this actually means that the number of registered unemployed on Kökar has changed from 4 to 5 persons!) These are percentage figures that most countries would be very envious of – though they are, and have been consistently, still slightly higher than those for Åland as a whole (see Table 5):

Table 5: - Unemployment rates for both Kökar and Åland as a Whole (2003-2009)

Year	2003	2004	2005	2006	2007	2008	Aug-08	Aug-09
Kökar	3.1	4.0	3.1	2.7	3.1	2.3	2.4	3.2
Åland	1.9	2.6	2.3	2.2	2.1	2.0	2.0	2.9

Some (again indirect) indication of economic activity on the Åland archipelago can be gleaned from data pertaining to the use of ferries. Larger volume of passengers and vehicles – in spite of overall population decline – may be indicative of greater volume of visitors, or of residents being able to afford/ needing to depend on more trips to/from Mariehamn (see Table 6):

Table 6: - Number of Passengers & Vehicles on Archipelago Ferries (1990-2007)

Year	1990	2000	2006	2007
Passengers	929,659	1,048,933	1,057,516	1,155,113
Vehicles	441,376	525,070	554,681	612,450

The introduction of regular, all-year-round ferry services (capable of vehicle transportation) in the early 1970s – and offered free of charge to residents of the archipelago – has coincided with a significant 'brake' in the rate of population out-migration from the archipelago.

1. The frequency, cost and transfer time of trips between the island we are analysing and its main destinations (national capital, capital of the region etc). Please note that the timetables of the local ferries divide the year into three seasons: winter, shoulder (autumn/spring) and summer. The latest timetables can be downloaded from the ferry website at: <http://www.alandstrafiken.ax/eng/index.htm>.

There are 24 trips per week (from a minimum of 3 per day to a maximum of 4 per day) to and from Kökar to Åland mainland in the

winter season; going up to 28 trips (4 per day) in the shoulder season; to 32 trips in high summer (minimum of 3 trips per day on Saturday and Sunday; 6 trips on Friday and 5 trips on each of the rest of the week).

Cost: Depends on form of transportation: return fares from Långnäs (on the mainland of Åland) to Kökar are: 12,00 € (motorcycle); 23,00 € (car or trailer); € 55,00 (caravan/recreational vehicle); € 65,00 (car with trailer); and € 110,00 (coach/bus).

Travel time takes from 2h 30 minutes to 2h 55 minutes each way, the latter being longer because of more ferry stops on other islands on the way to/from Kökar.

Cruise ships going from Sweden to Finland put in at many times every day to benefit from the tax-free status of the Åland islands. Tickets are cheap since the revenue of the shipping companies mainly derives from sales and gaming on board. (E.g.: Helsinki-Mariehamn = € 26; Stockholm-Mariehamn = €11 per passenger.) See http://www.visitaland.com/en/travel/list_of_excursions, which also includes air flights.

Travelling from Kökar to Stockholm

There is NO direct link from Kökar to Stockholm, or vice versa. This is how to go: from Kökar, one takes the small ferry to Långnäs, transfer time 2h 30 min - 2h 55 min.. In winter, there are 2-3 trips/day, in summer (which is just six weeks long) 5-6 trips/day. Once in Långnäs, one continues the journey by car or by bus (every second trip has a corresponding bus) travelling 30 km to Mariehamn. From the port of Mariehamn, one then takes a large ferry, either directly to Stockholm (5.5 hours) or to Kapellskär (2 hours + 1.5 hours car/bus transport). The timetables of the large ferries are not synchronized in any way with the Kökar ferries. Waiting time at the Mariehamn ferry terminal could, at worst, be from 2 to 8 hours.

The trip between Kökar and mainland Åland is free for passengers but not for vehicles. Residents of Kökar pay 45€/year/car - this is subsidized and cost financed with Åland tax revenue. Visitors pay per trip; cars have one set price, caravans another, lorries yet another.

2. the localisation of hospital and pharmacy services. There is a small clinic on Kökar, manned with three nurses who work on a shift basis. A doctor visits Kökar once a month. There is also a small

pharmacy, located in the Post Office building. The cost for transferring clients to the hospital in Mariehamn, alternatively Turku or Uppsala, depends on the season and the degree of emergency:

- when it is night (low visibility), in winter and in difficult weather conditions, a Eurocopter Super Puma helicopter is needed from Åbo at a cost of 1,000€/15 minutes. Transfer time from Åbo to Kökar is about 10 minutes. If it is difficult to land on Kökar, it may take some time for the patient to reach a spot where the helicopter can land.

- in better weather and visibility, there is a smaller helicopter in Mariehamn which costs 500€/hour. Transfer time Kökar-Mariehamn 15-20 minutes.

- the Coast Guard can transport clients by boat, if necessary. Transfer time is 50 minutes to Långnäs port (in Åland mainland) where an ambulance will pick up the patient and drive 20 minutes to the local hospital.

- when not acute, clients can take the normal 2.5 -2.9 hour ferry to Mariehamn.

There is a small pharmacy on Kökar equipped with basic medication and light drugs for such common ailments as headache, snake bites, stomach problems, etc. The local nurses have a small deposit of stronger drugs for acute situations. For example, a fisherman accidentally chopped off his thumb with an axe in mid-winter (minus 10 degrees Celsius). The nurse on duty had to locate him, sedate him, call in the heavy helicopter, find the thumb in the snow, tape it to the fisherman's hand and drive him five kilometres in her car to the spot where the helicopter could land 20 minutes later. And by the way, they managed to put the thumb back!

Blood samples are taken on Kökar but they are sent by ferry to the Åland mainland for analysis. No cardiology, radiology or ultrasound equipment. The client pays his/her own travel if using regular ferry transport.

3. the localisation of tertiary education. There is a College or University College on mainland Åland, which offers degrees in a few subjects: maritime trade, shipping and seamanship. Universities in Turku and Helsinki are mainly Finnish-speaking, while Åland Islanders are mainly Swedish-speaking. The nearest Swedish speaking universities are found in Stockholm. Transfer time from Stockholm to Kökar about 10 hours. There is a Swedish speaking University at Åbo/Turku, on the Finnish mainland. Transfer time from Turku to Kökar is about 6 hours. Students from Kökar studying at tertiary level can come home once a week at best. But, since they are accustomed to live away from home since high school, this is not seen to be a problem.

4. the localisation of banking. There is one bank outlet in Kökar, open every Monday and Thursday 12.00-16.30 and Tuesday and Friday 10.00-14.00. There is full banking service available on the archipelago. This includes such services as taking up a loan, exchange of foreign currency, financial consulting and other advice about savings, etc

<http://www.alandsbanken.fi/info/content/sv/about/office/aland/offices.html> There is no automatic teller machine, though.

5. the localisation of tax and social security offices. Assuming that one needs to visit a tax office and or a social security office, these would be both on Åland mainland, and so 2.5-2.9 hours away by ferry to Långnäs, plus 20 minutes by car to 'downtown Mariehamn'.

Responses to ESPON Survey Questionnaires

Two ESPON survey questionnaires were administered to Kökar respondents during September and October 2009: one for local residents and the other for local business operators and/or owners. In all, 13 Business representatives (4 females and 9 males) and 17 residents (9 females and 8 males) responded: an excellent response rate of over 11% of the total population of Kökar.

In response to a battery of 28 'quality of life' indicators, the business respondents were very strongly appreciative of only one: that of "the cost of air/sea travel to the mainland". Commercial air services to Kökar are not available; but the ferry service is free to the residents¹⁴. The only other two variables that secured a fairly strong positive response were about the regularity of the water supply and the general feeling of safety and security on Kökar. Meanwhile, there was only one variable on which Kökar business respondents were in strong disagreement: that "there were sufficient opportunities for training of employees on their municipality". The overall tone, however, is decidedly negative:

¹⁴ Business Respondents were asked to choose one out of six options for each of 28 'quality of life' statements: for example "The frequency of scheduled trips (by ferry, ship, plane, ...) is adequate". If they agreed totally, their reply was assigned +2 points; if they agreed, +1 point; if they disagreed, -1 point; and if they disagreed totally, -2 points. No score was assigned to "neither agree nor disagree", don't know and non-responses. The same approach was used with the Resident Respondents, but on a slightly different and shorter battery of 25 'quality of life' statements.

business respondents scored mean negative scores on 19 out of the 28 variables listed. Nevertheless, and in spite of the overall negative assessment, the business respondents feel that they have considerable mutual trust and that their outlook for the future of their business remains mildly optimistic. Business respondents also reported that they do not have broadband access to the internet on Kökar (see Table 7).

Table 7: - Business Responses to a Battery of 28 Quality of Life Indicators (N= 13) (see pages 19-20)

In the opinion of the sampled businesspersons, the most important factors that make the island attractive for setting up of local economic activities are: the beauty of the natural surroundings, which in turn lend themselves to various kind of mass and niche tourism; the transportation services available; the entrepreneurial drive; the connection that such activities have to the island's core features and characteristics; in-migration; start-up help and support; networking; sound planning; and schools.

In contrast, the conditions which could lead these same businesspersons to close down or terminate their business activity include: lack of tourists; decline of the local population; higher taxes; changes in ferry schedule; insufficient business revenue and their ill-health/sickness or that of close family members.

When asked to volunteer additional information, these business respondents suggested: more EU funding to support small business and facilitate investment on Kökar; an airfield and air services for improved access; faster broadband availability; the repatriation of the powers of taxation by Åland from Helsinki; more attention to pollution and eutrophication in the Baltic sea¹⁵; and, of course, that a population increase would be more than welcome.

None of the commercial operations of these business respondents had a franchise; and only one was a subsidiary of a larger company (with operations in other parts of Åland). Many of these businesses have been in operation for many years. This suggests small family-owned operations servicing local markets and clients, including visitors¹⁶.

¹⁵ Eutrophication results from excessive amounts of nutrients building up in aquatic ecosystems, leading to faster growth of algae and plants, eventually resulting in fish kills.

¹⁶ Of course, for the sake of perspective, Åland as a whole had only 65 private companies employing more than 20 workers each in 2008.

Turning now to the sampled Kökar residents, they are significantly much more optimistic than the sampled business persons: their scores on 17 out of 25 'quality of life' variables are positive; on 11 of these, emphatically so. The sampled residents share with the business respondents an appreciation for the low cost (actually no cost) of ferry travel to the mainland; and an appreciation for safety and security. But they then go along to express generally positive opinions about: the quality of transport services to the mainland, the regularity of energy and water supplies, the short daily commutes, low noises, clean air, the quality of the built environment, the degree of civic involvement in decision making, and trust in both fellow residents and local authorities. They leave the highest appreciation of all to the beauty of their natural surroundings. Their lowest score by far is for the declaration that "there are sufficient job opportunities" on Kökar, followed closely by a low score on the statements that "the cost of living is satisfactory" and "there are sufficient opportunities for training" (see Table 8):

Table 8: - Resident Responses to a Battery of 25 Quality of Life Indicators (N= 17) (see page 21)

Clearly, the absence of training opportunities for employees on Kökar is seen as a most serious concern by both resident and business respondents: only 3 out of 30 respondents believe that training opportunities for employees on Kökar are "satisfactory".

The resident respondents were also asked to indicate since when they have lived permanently in Kökar. Interestingly, only 5 out of 17 resident respondents have lived on Kökar for all their life. This suggests a fair degree of rotation of residents. The remaining 12 have moved to Kökar from either 'metropolitan Åland' (especially Mariehamn, but also Finström), the rest of Finland (e.g. Åbo/Turku) or parts of Sweden. Those coming to live on Kökar are presumably doing so on the basis of a well-thought out decision: they are trading the little luxuries of metropolitan life for a peaceful, safe and beautiful - but also more expensive¹⁷, more isolated and logistically much more challenging - haven. The residents now have "quality" health services on Kökar - as one respondent, a professional nurse, suggested; and education can be pursued in Kökar for the first nine years of compulsory schooling (ages 7-16), and so there are no "early school leaves".

¹⁷ For example, if an electrician is needed to do a job that takes 2 hours, s/he will also charge for the 5-6 hours of travelling time to/from Kökar, inclusive of fuel. Food is some 15-20% higher than in Mariehamn; petrol was 40% more expensive on Kökar than in Mariehamn in summer 2009 (Christian Pleijel, personal communication, October 25, 2009).

Government Stakeholder Responses

The above opinions from resident and business respondents tend to complement and match fairly well the opinions expressed by Christian Pleijel, Archipelago Developer of the Åland Government and Vice-Chair of the Municipal Executive Board of the Kökar Municipality. Such opinions were being expressed in relation to two survey questionnaires crafted so as to be complimentary to the previous two, soliciting opinions about Kökar's attractiveness to: (a) residents and (b) economic activities.

The top priority for attracting (and keeping) residents is claimed to be the availability of jobs: presumably, not just seasonal jobs in summer (around the tourist industry) but also all-the-year-round jobs. This reason is followed by networks of trust and of rich social capital, quality of transport services, quality of life (short daily commutes, low noise, clean air) and the beauty/quality of nature. These variables are seen to be the main magnets for luring people to Kökar, and keeping them there. These four policy areas are seen to be the most important ones to be addressed.

When it comes to the attraction of businesses, the top priority is felt to be the need to provide trained and qualified human resources. With a population of 262 – of whom just 158 are of working age – it will be a major challenge for any potential business to source labour market needs from the Kökar labour pool. There is simply no way that employees can shuttle to/from work from anywhere else with any regularity: the ferry trip to/from mainland Åland takes almost 2.5 hours each way. Any recruits to businesses who are not from, or already on, Kökar will simply have to relocate there. The commune website reports that “there is room for a painter, hairdresser, masseur, bakers, vegetable growers, fishermen, auto mechanic” but only as self-employed¹⁸.

Discussion

A: What is happening to the Kökar Archipelago?

Overall, Kökar is maintaining an almost balanced exchange of human resources. In-migration is almost as high as out-migration, and births are only just trailing behind deaths. Moreover, only 5 out of the 150 economically active are reported as unemployed: people

¹⁸ <http://www.kokar.aland.fi/jobba.html>.

keep busy and earn a living by exploiting the short but busy tourist, second home and pleasure craft season, and engaging in other activities for the rest of the year. Indeed, there are 254 weekend cottages for about 500 summer residents, so the resident population triples in the busy summer season. There are also some 45,000 tourist visitations annually – one fourth of whom come with their own pleasure craft – almost equally divided between Sweden/Åland and Finland. The Kökar commune is also a major year-round (and the largest) employer – providing community work for 23 employees who in turn provide a basic but decent suite of social services: a library with 8,800 volumes, daycare (20 places), school (with 6 teachers for 31 students from grades 1-9, aged 7 to 15)¹⁹, senior care²⁰, a health care clinics with a full-time nurse, and a physician who visits once a month²¹. Private sector economic activities include shipping, a bank branch, and the provision of supplies. Most economic activity is locality based. The Kökar commune web-site mentions that there are some 30 businesses, most of which wholeheartedly practise ‘portfolio diversification’, providing more than one key activity/service. These businesses include: a hotel-and-restaurant²², grocery, supermarket, museum²³, bicycle rental, kayak rental, room rental, camping-ground²⁴, tour guides, and an apple orchard/ farm shop²⁵. The ‘core’ (full-time and part-time) economically active population is around 100 persons (see Table 9); with some 40-50 others added on during the peak summer months, taking care of the needs of thousands of hotel guests, guest-house residents, cottage renters, campers and hikers.

Table 9 – All-year-round workers on Kökar (full and part-time), 2009.

Jobs provided by the Coast Guard and Government of Åland	13
--	----

¹⁹ <http://www.kokar.aland.fi/skola.html>.

²⁰ A new ‘senior home’ facility is being planned with 11 rooms and 14-16 places: <http://www.kokar.aland.fi/sommarangen.html>.

²¹ <http://www.kokar.aland.fi/halsovard.html>. A dentist visits Kökar once a year.

²² <http://www.brudhall.com/english.php>. Brudhall is also the largest employer on Kökar, with 4 employees (who are also the owners). There is also Havspaviljongen, a restaurant with cottage rentals:

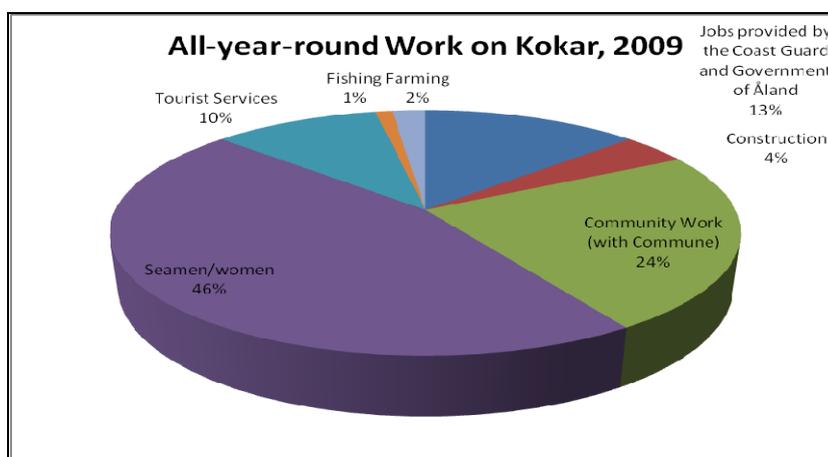
<http://www.havspaviljongen.com/> and Klobbars, a hostel with cottages and a restaurant: <http://www.klobbars.fi/>.

²³ <http://www.kokarmuseum.fi/>.

²⁴ Sandvik Marina and Campground: http://www.sandvik.ax/index_en.php.

²⁵ <http://www.kokar.aland.fi/foretag.html>. Peder Blomsterlund runs a successful operation with a 1,000-tree apple orchard on Kökar. His products include cider, salsa and chutney.

Construction	4
Community Work (with Commune)	23
Seamen/women	45
Tourist Services	10
Fishing	1
Farming	2
<i>Total</i>	<i>98</i>



B: Why is this happening?

But the exodus of the young is not likely to be stopped. The school population, currently 31, is projected to drop to just 20 students in 3-4 years. And, as the population balance tilts increasingly towards the older age groups, deaths will increase further relative to births. As the number of residents drops, the tax base of the municipality drops also, challenging its ability to continue offering basic services; let alone consider expanding them. The informal economy is strong and vibrant – the locals fish and hunt birds and moose; they practise reciprocity and cooperation; while those employed as seamen/women bring back home many useful goods with them from their working trips. Both residents and business persons (who after all, are also residents) are wise in identifying the absence of “training opportunities” on the island as the most serious disadvantage. Can this deficit be remedied? Although so many of the current residents are ‘immigrants’ to Kökar, there do not appear to be any deep and damaging political splits and divisions within the

population and most appear keen on facing the challenges of the livability of their island home.

C: What to do?

The island already hosts an 'Artist Residence' facility²⁶; one wonders to what extent could a fully-fledged art school develop on the island, connected to its core natural attractions? Perhaps a public-private partnership could be developed into a year-round educational activity. The link with local artistic talent could then help 'brand' the island for the purpose of attracting niche tourism, as well as possible summer 'second homers' or longer-term new residents. There is a 'goodness of fit' between such an activity and the beauty, tranquillity and security of the place, its "Garden of Eden" feel²⁷, as well as with its artistic connections²⁸. Almost everybody on Kökar has been reported as 'doing music' in some form²⁹. The artist-in-residence facility already welcomes some 20 artists a year; and some 20,000 students have visited the facility over the last decade³⁰. Such a strategy has been tried elsewhere and it has avoided population declines in other small islands: a good example is Yeu, the only one out of 14 islands on the West coast of France not to have suffered any population decline during the past 130 years³¹.

Intimately connected to this idea is the historical relationship of Kökar as place of religious inspiration, spirituality, prayer and retreat. The island has a very long connection to the Franciscan order. A Franciscan monastery, now in ruins, was founded in Hamnö in around 1472 AD. It appears to be the place from where "one of

²⁶ <http://www.ateljeesaatio.fi/english/ateljeeluuttelo.html#kokar>. For a glimpse of how some visiting artists have experienced this facility see: <http://www.meganandmurray.com/2008/06/land-archipel-1.html#>. There is actually another facility, on Källskär.

²⁷ As exemplified by the story of Baron Göran Åkerhielm and his connection with the isle of Källskär: <http://www.koivurinta.com/kaellskaer.html>.

²⁸ Kökar has a vibrant culture. Apart from 5 resident, landscape-inspired artists, there are various musicians (old and young, folk music, a choir and rock bands). Artist Satu Kiljunen has her web-presence at: <http://www.arts.ax/eng/Arts.html>. The Skrå band has a short video-clip at: <http://www.youtube.com/watch?v=tfDbL0BnQ3A&feature=related>

²⁹ Karlsson, M. (2007) 'Vad behövs i musiklivet?' [What is needed in the music scene?], Finland, Åbo Akademi: http://web.abo.fi/meddelanden/forskning/2007_13_musik.sht.

³⁰ <http://www.kokarkultur.com/>

³¹ Péron, Françoise (2004) 'the Contemporary Lure of the Island', *Tijdschrift voor Economische en Sociale Geografie*, Vol. 95, No. 3, pp. 326-339.

the Western World's first organised measures for providing succour to the shipwrecked was initiated"³². A Franciscan festival is held every summer, in early July, with some 300 to 500 visitors coming from Finland, Sweden and other parts of Europe. This activity forms part of a semi-religious, semi-spiritual network of which Kökar is the hub. The event has an ecumenical, ecological and cultural appeal. Of course, islands and pilgrimages go together very nicely: not only in the explicit sense³³; but also in the way in which so much of tourism is conceived as a pilgrimage of sorts.

The feasibility of developing more local, natural products should also be explored. The apple orchard and its output is one excellent idea of locally sourced and processed 'gourmet' products that are likely to appeal to visitors interested in the experience economy – much like the Älvados from the Tjudö Vineyard on mainland Åland (which also has apples as its basic ingredient)³⁴. These products/souvenirs are not price sensitive, can contribute to considerable local added value, and can be branded in consolidation with the island's own image³⁵. Moreover, they can be easily combined with site visits, sampling sessions, and other events that combine production with consumption and a more memorable 360° experience³⁶.

There are considerable synergies to be explored between art, religion and local food in an isolated environment. Kökar could further develop itself as a site for 'pilgrimages' (today, we call them retreats, or team building exercises) by company managers and other groups, sampling local wholesome produce, and indulging in art therapy or art creativity exercises. This is a tourism niche which can appeal to relatively more affluent visitors. Better connectivities to mainland Åland as well as other locations would help make such an experience more accessible to such potential clients of the Kökar experience.

³² Evans, Clayton (2003) *Rescue at Sea: An International History of Lifesaving, Coastal Rescue Craft & Organisations*, UK, Conway Maritime Press, p. 193.

³³ Islands like Lindisfarne (England), Iona (Scotland) and Skellig Michael (Ireland) are world renowned as sites of pilgrimage, and attract considerable niche tourism today.

³⁴ <http://www.visitaland.com/en/tjudovingard>.

³⁵ For example, Baldacchino, Godfrey (2005) - 'Successful Small Scale Manufacturing from Small Islands: Comparing Firms benefiting from Local Raw Material Input', *Journal of Small Business & Entrepreneurship*, Vol. 18, No. 1, pp. 21-38.

³⁶ Peder Blomsterlund has done a great job, not just in processing his apples but also in luring thousands of visitors to his farm: over 5,000 customers/tourists in summer 2009.

From an environmental perspective, a recent assessment reveals that the overall status of the Baltic Sea remains “unacceptable” and “in bad shape”, although there are some encouraging signs of improvement. Excessive pollution loads of nitrogen and phosphorus from the catchment area to the Baltic are still driving overgrowth of algae and plants in most of the Baltic Sea. This phenomenon – also known as eutrophication – is prevalent in all parts of the Baltic Sea except for certain places in the Gulf of Bothnia and the Kattegat. But there is also a decreasing trend in the pollution loads, and at least part of this decrease is probably an outcome of management measures taken by Baltic Sea countries.³⁷

The Åland Government has not been idle. There is a special committee of cabinet that includes 6 Ministers plus a representative of each of the 6 archipelago municipalities. In February 2009, they launched a series of workshops to critically discuss four possible future scenarios for the archipelago: slowly forward; full steam ahead; ‘disneyland’ and backwater. For each of these, a series of measures was considered, including a different transport infrastructure whose rationale departs from the thinking of the 1970s, when the current fleet of sea ferries (large and slow) was conceived³⁸. Faster catamarans, for example, linking the archipelago at least to mainland Åland, but possibly also to South-west Finland, could make life on Kökar much more bearable, especially for potential new settlers.

As far as transport to and from the mainland is concerned, the four key issues to be considered in island connectivity are: choice, frequency, time and price³⁹. For Kökar, there is very limited choice: the ferry is the only means of public transportation to Åland⁴⁰. Frequency is limited, since there are only from three to five ferry trips per day, depending on the season⁴¹. Time can also be improved: the current 2.5-hour journey each way can be cut

³⁷ Baltic Marine Environment Protection Commission: March 3, 2009: http://www.helcom.fi/press_office/news_helcom/en_GB/EUTRO_assessment/.

³⁸ Ålands Skärgårdsnämnd (2009) Skärgårdstrafiken 2020: Rapport från ett öppet och kreativt seminarium den 4 februari 2009 om vår framtida skärgårdstrafik.

³⁹ CPMR (2002) *Off the Coast of Europe: European Construction and the Problem of the Islands*, Eurisles on the initiative of the Islands Commission, Conference of Peripheral Maritime Regions, especially pp. 25-28.

⁴⁰ The only other option is a (longer) ferry trip to Korpo.

⁴¹ There are 24 trips/week during winter; 27 trips/weeks in spring and autumn and 32 trips per week in summer. See: <http://www.alandstrafiken.ax/pdf/skargardsguide09.pdf> - especially page 10.

shorter with faster vessels. The only consolation is price which, for the Kökar residents, is the most advantageous possible, since it is free. One therefore wonders whether there is scope for at least a seasonal service by helicopter or seaplane from Mariehamn direct to Kökar and back⁴². A 150-minute journey either way, with a choice of very few departure times – and this, just to get to Långnäs – can be challenging, and especially so when and if time is at a premium (as in a health emergency or business deal). Any such service could also operate as a sight-seeing operation. A helicopter or seaplane service would of course require no paved runway. A service could also be considered to/from Korppoo or Åbo/Turku.

Internet connectivity is also being improved. An underwater cable should make broadband available to the islanders once this is completed – with high access speeds of 2MB/second. Currently, internet surfers have to make do with ADSL connections (typically 256KB/sec) or connect via GSM-enabled mobile phones and devices.

Finally, so much depends and revolves on the ability to maintain or even grow the resident population. Some of the young people of Kökar – once they leave to go to college, university or to secure employment – could come back, often married and with children. There *are* jobs available on Kökar, but these have to do with maintaining the community, or servicing the hospitality sector and the 'experience economy'. If not employed by the municipality, these jobs invariably depend on self-employment, hard work and initiative. A broadband connection to the world-wide-web could also encourage new residents and new entrepreneurs whose work is not dependent on being physically in a specific place.

Conclusion

The key magnets to attracting and maintaining a population on Kökar are also likely to depend on the ability of the island to maintain its major 'appeal': peace and quiet, security, the art scene, all surrounded by an almost spiritual natural beauty and tranquility – while at the same strategically improving its links with mainland Åland and the rest of the world. A 'Coney Island' scenario – where Kökar becomes a magnet for thousands more tourists and possible cruise visitors – may appear attractive, but this would only hasten the demise of the community and its cherished way of life, succumbing to Disneyfication. There is a growing segment of the

⁴² A helicopter can already be called in to airlift patients in emergencies, but then only when the weather permits.

urban population that is tired of stressful city life, daily commuting to get to work, pollution, crime, consumerism ... these "urban refugees" – like architects Jens Karmert and Marina Karlman and their two children⁴³ – could be tempted to settle on a place like Kökar, restoring its empty old houses for resettlement. But, realistically, these individuals also wish to have a connection to the metropole – for shopping, opera, higher education, art galleries. They would like to have the best of both worlds. Kökar today cannot offer this. But it could, with some intelligent long-term plans for its transportation infrastructure. The advantage of Kökar, and of Åland generally, is that it is not a peripheral backwater in the middle of nowhere – but, rather, bang in the middle of the narrowest part of the Baltic Sea, in between the two major and bustling urban hubs of Stockholm and Åbo/Turku.

The situation is far from hopeless.

⁴³ As reported in the daily newspaper *Ålandstidningen*, No. 238, October 17, 2009.

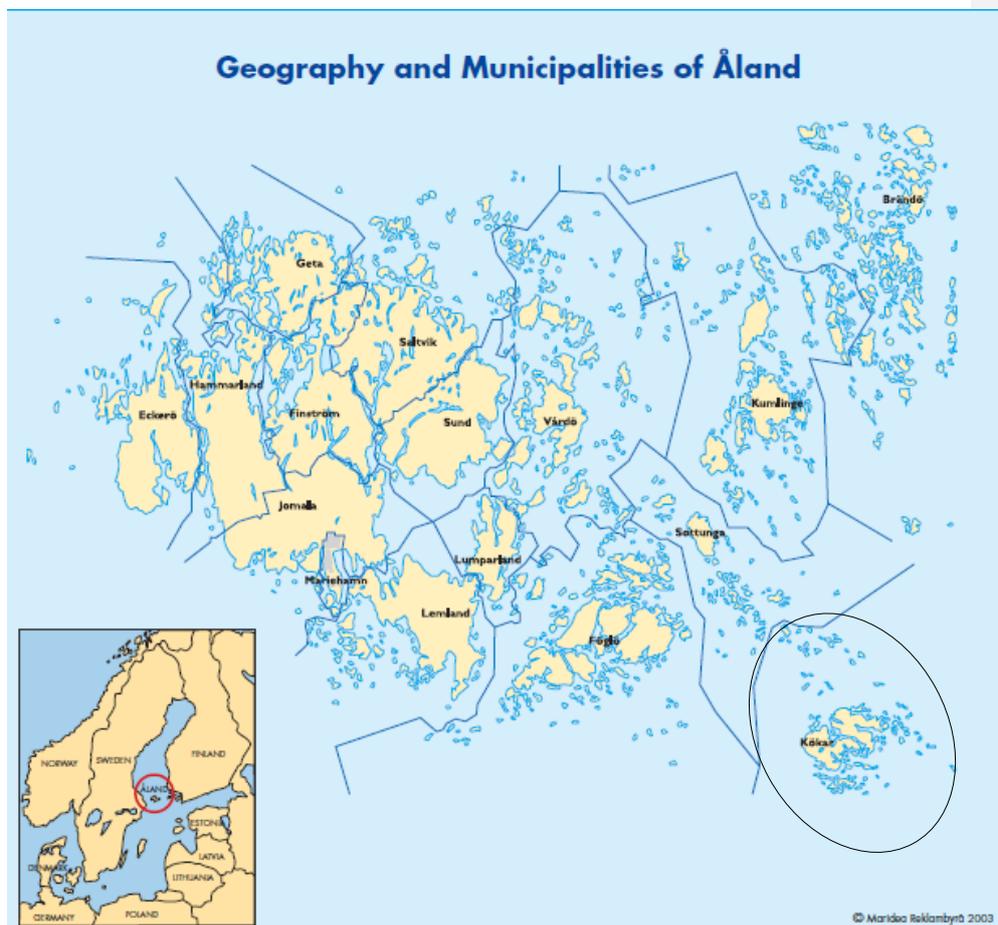


Figure 1: - Reproduced from *Åland in Figures* (2009), Mariehamn, ÅSUB, pp. 12-13. Kökar municipality circled in bottom right.

Table 7 - Business Responses to a Battery of 28 Quality of Life Indicators (N= 13)

Business Responses (N=13)	I Agree Totally (+2)	I Agree (+1)	Neither Agree nor Disagree (0)	I Disagree (-1)	I Disagree Totally (-2)	Don't Know / No Answer (0)	Total	Mean Score
1.Frequency of scheduled trips (by ferry, ship, plane) is adequate	2	5	1	2	2	1	13	3
2. The cost of air or sea travel to mainland is praiseworthy	6	5	2	0	0	0	13	17
3. Cost of transport of goods from/to island is praiseworthy	1	5	1	0	6	0	13	-5
4. Quality of transport services to mainland is satisfactory	1	7	2	2	1	0	13	-5
5. The broadband connection is satisfactory	2	1	3	2	4	1	13	-5
6. The regularity of energy supply is sufficient	1	7	1	2	1	1	13	5

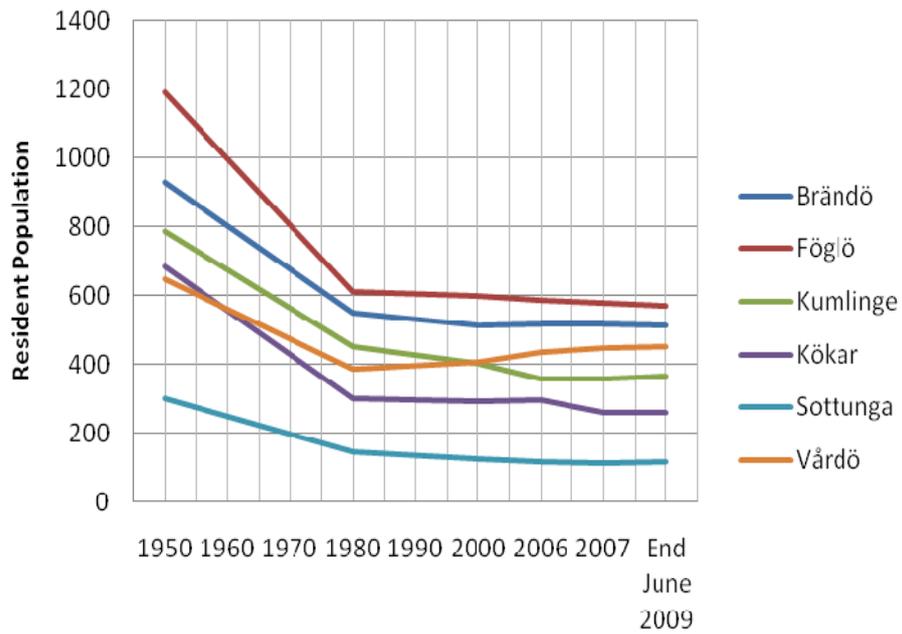
7. The regularity of water supply is sufficient	5	6	1	0	1	0	13	14
8. Waste water collection & treatment system is adequate	0	5	1	5	2	0	13	-4
9. The quality of local public transportation network covers the local needs	2	2	3	4	2	0	13	-2
10. There is sufficient and available trained/qualified human capital in the area/island	1	2	2	3	4	1	13	-7
11. There are sufficient opportunities for training of the employees in the area/island	1	0	1	4	7	0	13	-16
12. The land and construction cost of commercial property is praiseworthy	1	2	2	4	3	1	13	-6
13. The cost of life is satisfactory	0	3	1	6	3	0	13	-9
14. The local Public Administration is effective	1	4	2	3	3	0	13	-3
15. The labour cost is satisfactory	1	4	3	2	2	1	13	0
16. The business support agencies (such as business development corporations) are adequate	0	4	2	2	5	0	13	-8
17. There is sufficient support by other businesses (goods and services of local market)	0	4	2	2	5	0	13	-8
18. The Economic incentives to businesses (subsidies, tax incentives) are sufficient	0	3	1	4	4	1	13	-9
19. The possibility to support innovations in the production process is sufficient	0	2	4	4	2	1	13	-6
20. There is the possibility to develop cooperation with other businesses for information and know-how exchange	1	7	2	0	3	0	13	3
21. Local authorities show sufficient competence to solve problems	1	4	1	2	5	0	13	-6
22. The local authorities have an adequate development vision (strategy, plan, activation)	1	2	2	3	5	0	13	-9
23. The degree of stakeholders' involvement in the decision making process is sufficient	1	3	4	2	2	1	13	-1
24. I generally feel security (from criminal activities)	5	6	0	2	0	0	13	14
25. My trust to the local authorities (municipality) is high	1	3	4	2	3	0	13	-3
26. Generally the locals are trustworthy	2	7	2	1	1	0	13	8
27. My interest for the local politics is high	1	2	5	2	3	0	13	-4
28. Perspective of my business on the island is positive	2	5	4	1	1	0	13	6

Table 8: - Resident Responses to a Battery of 25 Quality of Life Indicators (N= 17)

Resident Respondents (N = 17)	I agree totally (+2)	I agree (+1)	I neither agree nor disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't Know / No Answer (0)	Total	Mean score
1. Frequency of scheduled trips (by ferry, ship, plane) is adequate	0	13	1	2	1	0	17	9
2. The cost of air or sea travel to mainland is praiseworthy	9	4	1	2	0	1	17	20
3. Quality of transport services to mainland is satisfactory	6	6	1	3	1	0	17	13
4. The broadband connection is satisfactory	0	3	2	9	1	2	17	-8
5. The regularity of energy supply is sufficient	6	5	1	4	1	0	17	11
6. The regularity of water supply is sufficient	10	5	1	0	0	1	17	25
7. Waste water collection & treatment system is adequate	3	5	3	3	3	0	17	2
8. Quality of local public transportation network covers local needs	3	5	4	4	1	0	17	5
9. There are sufficient job opportunities	0	3	1	7	6	0	17	-16
10. There are sufficient opportunities for training	0	2	6	4	4	1	17	-10
11. There are adequate opportunities to attend cultural events	0	6	3	6	2	0	17	-4
12. There are adequate opportunities to attend sports events	0	3	5	3	3	3	17	-6
13. Quality of Health Care and services covers my needs	7	4	0	3	3	0	17	9
14. The quality of Education services covers my needs	4	3	2	4	3	1	17	1
15. Land and construction cost of domestic homes is praiseworthy	1	5	2	6	2	1	17	-3
16. The cost of living is satisfactory	0	1	3	10	2	1	17	-13
17. Quality of life (short daily distances, low noise, clean air) is satisfactory	9	7	0	0	0	1	17	23
18. The quality of Nature is satisfactory	13	3	0	1	0	0	17	28
19. The quality of the built environment is satisfactory	5	8	4	0	0	0	17	18
20. The local Public Administration is effective	2	5	3	4	1	2	17	7
21. Degree of involvement of citizens in decision making process is sufficient	4	8	2	1	1	1	17	13
22. I generally feel security (from criminal activities)	10	3	3	0	1	0	17	21
23. I trust the local authorities (municipality)	6	8	2	1	0	0	17	19
24. Generally the locals are trustworthy	6	7	4	0	0	0	17	19
25. My interest for the local politics is high	2	1	6	7	1	0	17	-4

Figure 2 - Population Changes in the Six Archipelago Municipalities of Åland: 1950-2009.

Population Changes in Archipelago: 1950-2009



Island case study report: Mallorca, Illes Balears

Introduction

Mallorca is the largest island of the Illes Balears Region (NUTS 2) that constitutes an external border of EU in the S.E of Spain within the West Mediterranean Sea. The rest of the islands are Minorca, Eivissa (Ibiza) and Formentera. Recently Illes Balears have been divided into three NUTS 3 zones and Mallorca is one of them.

Mallorca

Mallorca lies in the south western Mediterranean Sea at the center of the Illes Balears, closer to Menorca (26 nautical miles) and with a distance of about 115 nautical miles from the coast of Spain.

It is one of the largest islands of the Mediterranean with an area of 3.624 sq. Km and a population (2008) of 846,210 people in 53 municipalities (roughly 80% of the population of the region with 120,000 residing on Ibiza and 92,000 on Menorca). The island has two mountain ranges – on the North West and the North East occupying one third of it; a central plateau links the large bays on the northern and southern shores.

1.1. Efficiency of economy

1.1.1. *Economic effectiveness*

The Gross Regional Product (GRP) of the Region is high compared to the average of the EU. The sectoral breakdown of the GRP reveals an economy based heavily on services, as more than 80% of the total GRP is produced by services, only 1.6% by agriculture and the rest by manufacture (7,3%) and constructions (11%). A closer analysis of the breakdown of GRP demonstrates the influence of tourism, with roughly 9% being produced by catering and 7% by accommodation services. The analysis of the employment breakdown per sector follows the same outlines: of the 360,000 of employed people (in 2008) or 42% of the total population roughly 2% are occupied in agriculture and forestry, 20% in the secondary sector (13% in constructions) and the rest in services, with tourism services being very important for providing occupation (15% is for hotels alone). The number of employed has increased by 15% during the last 9 years with few changes, the most important of which is the decrease of the employed in constructions from 15% in 2000 to 13% in 2008, indicating the decrease of constructions that the international crisis had brought forward and the crisis of Spanish construction companies. This crisis is apparent also from the economic recession of 2008 with -2.3% of GRP change, compared to an annual average increase of 2.8% from 2000 to 2007.

1.1.2 Economic development and fragility

Weight of competitive economic branches

The importance of tourism therefore can not be underestimated as it appears to be the main driving force of the economy of the island and the region in general. The rest of the economic branches refer either to activities related with tourism (such as construction, transport, etc.) or to the urban sector of the permanent inhabitants and tourists (such as retail and wholesale services that make up more than 15% of the total employed people on the island. It is striking that other branches and sectors such as agriculture are very much un-developed and shrinking.

Degree of dependence on main activity(ies)-monoculture

What stems from the above data is that the degree of dependence of the island from tourism is very high, as it dominates the local economy. This degree is even higher when the type of tourism that is offered is considered: tourism on Mallorca is typically mass tourism, operated by big tour-operators that bring in charter flights or by low-fare carriers and the supply consists of big hotels that can serve the vast numbers of these charter tourists and depend very much on their arrival. This constraint creates significant barriers to a balanced development and employment, as most of the employees in tourism are dependent on these big hotels to provide jobs; these jobs are low skilled and seasonal. Moreover, these big units (partially obsolete) operate on a low-cost basis but have to face fierce competition from new competitive destinations that can offer similar 'products' and services for a lower price in countries of the eastern Europe, in the south Mediterranean, in Asia etc where sun and beach can be also offered. Therefore, the whole system of supply and demand of tourism on the island is very fragile.

Economic leakages

The size and structure of the local economy is such that it allows the local production of some products and services of the main economic activity, tourism. What seems also certain however is the lack of a strong local basis of agricultural products that could serve tourists. The insufficient products have to be imported along with many of the products that tourists consume. Therefore, economic leakages are found of the island, but their degree is unknown and almost impossible to estimate with the existing information.

Residential economy

Residential economy is very important to the island, as besides tourism professional accommodation there is a lot of private houses and apartments used by people who don't work locally as first or secondary houses. There is an important transfer of money that creates, keeps open and increases the rent ability of many different enterprises and public services; secondary houses of non-residents help to reduce the seasonality of receipts.

1.2 Social justice/equity

1.2.1 Population Structure and development

Population and population change

The Illes Balears are amongst the European regions with positive population developments, due to the presence and dynamism of economic activities on the islands. They present a remarkable growth rate of 41% for the period 1996- 2008 that is 39% for Mallorca and 71% for Formentera. This growth is attributed to: (a) a positive natural growth of 3,381 births more than deaths in 2007 or 4 per 1000 inhabitants (5.7 for Ibiza and 4.4 for Menorca) and (b) a positive in migration balance of 35 in-migrants per 1000 inhabitants in 2007 (that is higher only in Ibiza with 57 in-migrants per 1000 inhabitants).

Table 1. Population evolution 1996-2008

Islands	Renewed Census 1996	Updated Census 2008			Population change 1996-2002 %
		Total	Men	Women	
Illes Balears	760.379	1.072.844	540.395	532.449	41,09
Mallorca	609.150	846.210	424.176	422.034	38,92
Menorca	67.009	92.434	46.463	45.971	37,94
Eivissa (Ibiza)	78.867	125.053	64.913	60.140	58,56
Formentera	5.353	9.147	4.843	4.304	70,88

* Renewal date 1996: 1st of May

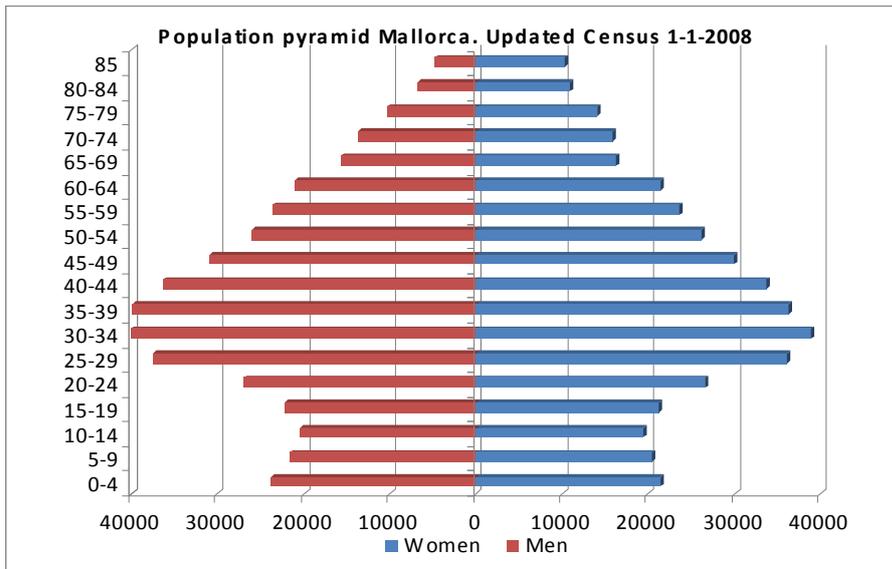
* Dates of Census' updates: 1st of January of each year

* Source: Statistics Institute of the Illes Balears (General Directorate for Economy, Illes Balears' Government)

This remarkable positive population developments lead to a relatively balanced population pyramid: the ageing indicator is 93 inhabitants over 65 for 100 inhabitants under 15 and reveals a healthy base of the pyramid. The percentage of people over 65 in the total population is only 14%. The fact that the actual pyramid appears to have more people (men and women) in the active and young to middle ages can be attributed to the solid economic base

of the island and the Region in general that keeps locals on the island and brings other newcomers there as well. Life expectancy is high at 77.4 years for men (in 2004) and 83.5 for women.

Figure 1. Population pyramid 2008 for Mallorca



Source: Statistics Institute of the Illes Balears (General Directorate for Economy, Illes Balears' Government)

The overall picture is that of a well balanced population that keeps on reproducing, while the developed economy and the type of economic activities (tourism) attracts other immigrants as well, both for low and high specialized jobs that tourists and the local residential economy require. In 2008, approximately 80% of the total population of the island declares that they are born in Spain. A high percentage of the in-migrants are from the EU, with approximately 30,000 people being from Germany and 15,000 from the UK, where more than the 25,000 of immigrants are from nearby Africa.

Active population

The active population of Mallorca is roughly 40%⁴⁴ of the total population of the island, a percentage that once again reveals the developed economy of the island. The total unemployment rate used to be around the EU average but lower from the Spanish one;

⁴⁴ It is 76% when the calculation of active people is done upon the population between 15-65 years old

for 2008 unemployment has risen up to 10,2% compared to 7,0% and 11,3% for the EU and the Spain's average. Women and young unemployment is much higher over 20% (22,7% for the women and 24,6% for young people – 2008).

Table 2: Unemployment evolution in EU, Spain and Illes Balears

	2000	2001	2002	2003	2004	2005	2006	2007	2008
European Union (27)	:	:	:	9,1	9,2	8,9	8,2	7,2	7,0
Spain	13,9	10,5	11,5	11,5	11,0	9,2	8,5	8,3	11,3
Illes Balears	6,8	5,9	7,6	9,7	9,1	7,2	6,5	7,0	10,2
Eivissa y Formentera	:	:	:	:	:	6,8	6,7	8,0	:
Mallorca	:	:	:	:	:	7,4	6,4	6,8	:
Menorca	:	:	:	:	:	6,1	6,5	7,3	:

Social cohesion

Educational level

Data from the population census are showing the educational level for the Illes Balears where Mallorca presents a slightly better situation compared to the other islands. But when Illes Balears are compared either to Spain or to EU, their performance is low showing that the easiness to find a job within the tourism sector has dissuaded young people from studies.

Table 3 Education status of Mallorca inhabitants (2010)

		Total	Don't know reading or writing	Obligatory education	High school	Technical Education I	Technical Education II	University 1st cycle	Master / Doctors
ILLES BALEARS	Total	742162	126766	296119	108229	62833	41794	55501	50921
	%	100	17,08	39,9	14,58	8,47	5,63	7,48	6,86
Mallorca	Total	588052	107491	232950	82613	52308	29459	43976	39256
	%	100	18,28	39,61	14,05	8,9	5,01	7,48	6,68
Menorca	Total	61046	3539	29372	10301	3075	7096	4492	3170
	%	100	5,8	48,11	16,87	5,04	11,62	7,36	5,19
Eivissa-Formentera	Total	93064	15736	33797	15315	7450	5239	7033	8495
	%	100	16,91	36,32	16,46	8,01	5,63	7,56	9,13

Source: IBESTAT

Ethnic minorities, multicultural societies

Overall, people from more than 30 different Nationalities are living on Mallorca, most, as already mentioned from Europe, followed by South America and then Africa. The image of the region as an

attractive tourist destination brings in many people from developed countries that buy houses and/or come to work in the tourism sector; while at the same time the availability of jobs brings in also people from less developed countries with a low-level of education that use to work in low skilled jobs. With 20% of the inhabitants not being Spanish in origin, the society is multicultural.

1.3. Environmental conservation

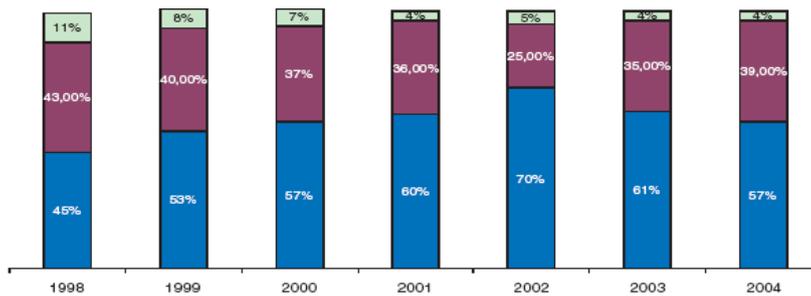
Environmental Preservation

Tourism development and the high population density of the island create a number of environmental pressures, especially regarding land use change towards build environments in coastal areas. Tourism infrastructure and second homes are both responsible for these types of pressures.

Availability and quality of water resources

“The peculiar hydrology of Balearic Islands, with its sparse and vulnerable water resources and irregular rainfall, results in frequent water shortage”. Not all the water is of good quality and the extractions cannot therefore be considered sustainable; salinization problems are reported. During the period 1995-9 Mallorca was supplied with water transported by tanker from Ebro delta and since 1995 the building of several desalination plants (EURISLES, 2002, p.22)⁴⁵. Drinking water supply cuts, although possible, are infrequent.

Figure 2. Evolution of the quality of drinking water (1998-2004)



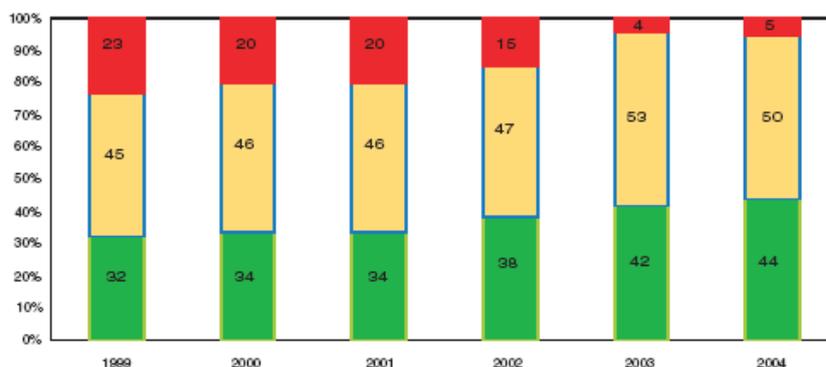
Coasts and seas

The bathing waters that are in compliance with the standards laid down in the Bathing Waters Directive (76/160/EEC (CSI 022) is growing during the period 1998-2004 for Spain. More specifically

⁴⁵ EURISLES, 2002, Of the coast of Europe. European construction and the problem of the islands

the part of the stations giving a non admissible quality of water has diminished from 23 to 5%.

Figure 3. Evolution of the quality of bathing water (1998-2004)



Biodiversity

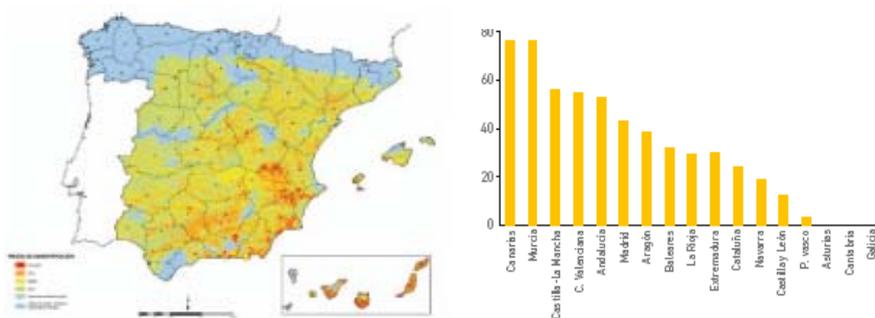
With respect to the coverage of protected areas (share of Natura 2000 area in %), 21,3% of the surface of Illes Balears are protected areas. Menorca is declared as a Biosphere Reserve by Unesco in 1993.

Terrestrial biodiversity is threatened from fragmentation created by urbanization, and tourism infrastructure. The fragmentation index calculated on the NUTS 3 level⁴⁶ has an intermediate score (3 in a scale of 1-5) and a rather high level of land consumption from transport infrastructure, the higher at the evaluation scale, even if most of the human pressures are low considering land cover.

Biodiversity is also threatened by the risk of desertification; the map 1 and the figure 4 shows that compared with the situation in the whole country the Illes Balears have an intermediate risk as about 35% of their territory is under high and very high risk.

Map 1 – Figure 4: Classification of the Spanish regions in connection with the risk of desertification

⁴⁶ ESPON 2006, Feasibility study on monitoring territorial development based on ESPON key indicators, p.78



Land use

Based on Corine database, the artificialised land is 5,5% of the total area, 59,7% of the area is agricultural land (50% are dedicated for the production of annual crops) and 34,1% forest and semi-natural lands (where coniferous forest, sclerophyllous vegetation and transitional woodland-shrub are dominating).

Concerning the coast utilization 35,5% is artificial; beaches, dunes and sands are representing 4,4% of the coastal zone.

Urban environment

The size of the population of the island and its density create some big urban centres and many urban or urbanizing coastal areas. This creates some typical environmental pressures, including travel congestion, local air pollution and the management of waste and liquid waste.

Air quality/ pollution

Based on the Reports of the Environmental European Agency, and with respect to the Exposure of the ecosystems to acidification (CSI 005), there is no excess of the critical loads of acidity (with respect to the average accumulated excesses for the year 2000).

2. Issues of Attractiveness

2.1. Issues that affect the Attractiveness of Mallorca for Enterprises

Accessibility

The accessibility of the island can be regarded as satisfactory. Besides the frequent air connections to various airports of the Spanish mainland, there are daily regular flights to different European airports, especially in summer and many charter flights. Ferry connections that are more important for the transportation of

goods, are also frequent and daily to four different ports of the mainland (besides the connection with Menorca and Eivissa), Alicante (187 n.miles) Valencia (161 n.miles), Barcelona (132n.miles) and Denia (145 n.miles) with fast and new ferries and travel time of 5 to 7 hours, depending on the connection. In 2008, 1,007,963 passengers arrived in the two ports of the island via ferries and 1,129,498 passengers with tourist cruises. In the same year (2008) 11,392,381 passengers arrived on the island via air.

According to ESPON Project on Transport (2004)⁴⁷, for Mallorca as for all Illes Balears the Potential Accessibility, Multimodal is –as for the majority of Mediterranean islands very low when it is compared with all the European areas. The approach used nevertheless does not include maritime transport that is critical for islands. The analysis effectuated at the NUTS 3 level, it's not reflecting the reality of archipelagos as the index concerns only the main island where the airport and the main port are located; for instance the situation is not the same in Mallorca and Formentera. The situation of "double insularity" creates handicaps that are not comparable to any situation on the mainland as the access to transport services is not related only to physical distance but also to the trip schedule. Variables used to measure accessibility as "number of passenger flights available within a 90-minute journey by road" (EU, 2009, p.8) are irrelevant for archipelagos.

Another problem related to sea transport is the lack of competition especially when it comes to connection between the smaller islands with less traffic as Eivissa and Formentera. The lack of direct connexions with ports of other member states (France and Italy) is an additional problem.

Labor qualifications and cost

The share of population aged 15 years and above with a post secondary level education for Mallorca in 2001 was 25.5% (table 3), something which shows a medium quality of human capital.

With respect to the labor cost, and given that many of the jobs available are low expertise jobs in the tourism sector, it is generally low. Moreover, since Mallorca is a big and rather attractive island with all types of services available for residents, it could attract specialized human capital; the fact that the development model was

⁴⁷ ESPON 2004, Transport services and networks: territorial trends and supply

till now oriented towards mass 3S tourism, there is no demand for this kind of jobs.

Services & infrastructure in support of entrepreneurship/ Reception facilities - Incentives for companies

Local government has tried to provide direct and indirect incentives in order to attract new investments: reduction of bureaucratic procedures, stability of economic and political system, provision of general infrastructure (mainly for tourism and ICT), venture financing etc

Agglomeration economies/Size of market

With a population of about 850 thousand people on the island, the capital Palma is considered as one of the European MEGAs, one out two islands' metropolitan areas (La Valletta is the second one); it is considered as a weak MEGA with 3 main functions: tourism, university and transport.

Value of land for enterprises

There is no information on the value of land for enterprises, but the value of land for houses is considered expensive by locals (see below).

Research and innovation

The amount of expense on R + D for Mallorca in 2009 was 0.4% of the total (Gross Regional Product) GRP of the island (regional data). There are in total approximately 400 enterprises in R + D on the island (in 2009) that represent 0.1% of the total number of enterprises on the island.

Illes Balears have a very low performance to all the related indices as Information Society Index and Regional Innovation Performance Index.

Hazards

Based on the ESPON 1.3.1 project "The Spatial Effects and Management of Natural and Technological Hazards in Europe", the Illes Balears Region is classified on the 10-25 percentile type of aggregated hazard, for the 15 natural and technological hazard indicators that was studied. In detail: 1) there are no avalanches, 2) there is a high precipitation deficit as a potential drought indication, 3) there is a high potential for earthquakes, 4) there is a low hazard from extreme temperatures, 5) there is a very low hazard for flood

recurrence, 6) there is a high risk for forest fire hazard, 7) there is a low hazard for areas with landslide, 8) There are no hazards from storm surge, 9) it's a region that lies in vicinity to tectonically active zones and have experienced earthquake/ volcano/ landslide associated tsunami, 10) it's a region with particularly hazardous volcanoes, 11) there is a very low probability for winter or tropical storms, 12) there is a very low probability of airplane accident hazard, 13) there is a very low density of chemical plants and thus very low probability of such a hazard, 14) there is a very low potential of radioactive contamination since the region is outside the 300 km radius of any nuclear plant and 15) there is a low potential of oil spill hazard based on the volume of oil production and transport related activities in the region.

The Integrated Vulnerability Index (based on GDP per capita, population density, national GDP (inverse) and proportion of fragmented natural areas to all natural areas (weighted 30:30:30:10)) for Illes Balears is of the medium class (ESPON 2006, The Spatial Effects and Management of Natural and Technological Hazards in Europe, p.13).

There is a very high risk from the illegal immigration since geographically Mallorca and the whole Region are on one of the main destinations of illegal immigration from Africa to Europe and Latin America.

ITC facilities and use

Even if the use of ITC facilities is lower in Illes Balears than in Spain concerning the population, the penetration in the business sector seems to be higher for most of the parameters (Table...)

Table.. Survey on the use of ICTs and e-commerce in Companies 2008-2009

	Total Companies	
	National total	Balears
% of companies that had computers	98,6	99,7
% of companies that had a Local Area Network (LAN)	83	88,6
% of companies that had a wireless Local Area Network	34,7	38
% of companies that had an Internet connection	96,2	99
% companies that had Mobile telephony	90,9	92,5
% of companies that had email	94,7	98,1
% personnel that uses computers at least once a week	51	44,9
% personnel that uses Internet-connected computers at least once a week	41,5	39,1

% companies that had web page of Internal use (Intranet)	23,1	22,3
% of companies that interacted with P.A.s online in 2008(1)	67,8	58,5
% of companies with an Internet connection and website/page(1)	58,9	57,1
% of companies which used a digital signature in correspondence sent by the company (1)	52,8	42,4
% of companies that have had some kind of security problem in the last twelve months(1)	12,6	13,1
% of companies carrying out automated data exchange	36,7	38,5
% of companies which shared information electronically with their supply-chain suppliers or customers:	14,2	13,3
% of companies that had some type of computer application for managing client information (CRM tools)	24,9	22,4
ICT training in 2008: % of companies that provided training activities to develop or improve the ICT knowledge of their employees	13,4	7,8
ICT training in 2008: % employees who received ICT training	26,7	16,5

Networking services

Mallorca has electricity, water and telecommunication networks, as well as a local transportation system.

2.2. Issues that affect the Attractiveness of Mallorca for the Population

Accessibility

As already mentioned above, the accessibility of the island can be regarded as satisfactory, with frequent air connections to airports of the Spanish mainland and Europe. In the case of sea transport however, there are only direct connections with the Spanish mainland and no direct link with Marseille and/or Genova.

According to ESPON Project on Transport (2004)⁴⁸, for Mallorca as for all Illes Balears the Potential Accessibility, Multimodal is –as for the majority of Mediterranean islands very low when it is compared with all the European areas. The approach used nevertheless does not include maritime transport that is critical for islands.

Access at and quality of public interest and economic services

In a big island as Mallorca, all services are available locally. There are 18 hospitals and private clinics operating on the island, 13 of which are general hospitals.

⁴⁸ ESPON 2004, Transport services and networks: territorial trends and supply

Mallorca has also University and all the other public interest services.

Employment and career opportunities

As the data on migration, the population pyramid and unemployment indicate, Mallorca is attractive for finding employment; this employment is concentrated to unskilled jobs in low added value sectors as tourism, commerce, construction, personal services etc.

Security

Data from the European Social Survey give rather a low level of safety feeling in Illes Balears.

Urban dynamism (cultural and social life)

Palma de Mallorca is a weak MEGA according to the typology of the EU. As already mentioned, its size allows the development of all types of services for residents and tourists, including cultural and sports events.

Value of land / housing

The value of land and housing is similar to that for the enterprises; it is considered expensive by the locals as the questionnaires in part 3 below demonstrate. This founding coming from the questionnaires confirm the conclusion of EURISLES Study (EURISLES, 2002⁴⁹, p.19)

The analysis for the other topics as Social capital, Governance quality, Environmental and cultural heritage, Hazards and ITC facilities and use is the same as for the enterprises.

Conclusion remarks.

The development pattern of Illes Balears and specifically of Mallorca launched during the 60s based on mass 3S tourism has positive impacts concerning the main quantitative indicators as GDP per capita and the demographic evolution; their performance is higher compared to Spain's and EU's average.

⁴⁹ EURISLES 2002, Off the cost of Europe. European construction and the problem of the islands

This development model have shown it's limits and there is a significant number of indicators underlining this evolution: the fragility of an economy based on a low added value activity as mass tourism with strong links with the construction sector; the use of low skilled workers and the pressures on the environment are some important direct impact. The sustainability of the system is not met.

As competition is growing from low cost countries, tourism sector has difficulties to adapt into the new situation and to valorized the natural and cultural assets of the area; the lack of R&D and innovation, the low skilled labor force does not create favorable conditions for a differentiate development model.

The size of Mallorca (area and population) gives the possibility for some economies of scale and of agglomeration; networks and services for the business sector and the households provided are at a satisfactory level. These are necessary but not sufficient conditions in order to secure attractiveness for Mallorca within the European and global system.

3. What do the locals think about the attractiveness of their island – Data and qualitative information collection from stakeholders and local surveys

Overall, 25 of the local councils of the Illes Balears have responded to the attractiveness and satisfaction from various aspects of the quality of life on the islands. The price of land is the issue that has received the most negative views, followed also by other type of costs, such as the cost of living and the cost for tickets. Other negative issues refer to different aspects of the quality of diverse services such as transport quality, education quality, internet services quality and health services quality. This reflects the fact that the simple presence of a service in an area may not be enough for its quality, even in the Illes Balears and big islands such as Mallorca. On the other hand, the abundance of diverse types of services that may not be vital for living in a place but are important parts of its attractiveness such as sports and cultural services are available and get positive mentions. Also, issues of environmental management get positive mentions, but this could be attributed to the fact that local councils are responsible for this management. The cultural capital of the Islands seems also positive and the involvement in local politics, although here as well the fact that the respondents are administrative bodies already involved in local politics could also be responsible for this positive mention.

Table XX. satisfaction of representatives of local councils of the Illes Balears with various aspects of the attractiveness of life on their islands

	Agree completely %	Agree %	Neither agree nor disagree %	Dis-agree %	Dis-agree completely %	Don't know-not answer %	Total % (N=25)	Value	Value % of N
the cost for building-buying a house is satisfactory			8	36	52	4	100	-35	-140
the cost of living is satisfactory			20	36	36	8	100	-27	-108
ticket cost is satisfactory		8	16	44	32		100	-25	-100
transport quality is satisfactory		24	16	32	28		100	-16	-64
involvement in local decisions is satisfactory		12	32	32	16	8	100	-13	-52
the built environment is satisfactory		24	20	28	20	8	100	-11	-44
internet services are satisfactory		24	28	32	16		100	-10	-40
education services cover my needs		32	20	24	24		100	-10	-40
the quality of life is satisfactory		8	64	8	20		100	-10	-40
Technical education is available		20	28	40	8	4	100	-9	-36
health services cover my needs		40	12	32	16		100	-6	-24
the frequency of scheduled connections is satisfactory	4	28	32	16	20		100	-5	-20
cultural events are available locally		36	28	16	20		100	-5	-20
The cost of transporting goods is satisfactory		44	16	24	16		100	-3	-12
electric power services are satisfactory	4	32	24	36	4		100	-1	-4
waste collection and treatment services are satisfactory	8	44	12	28	8		100	4	16
Employment opportunities are available	4	28	52	12	4		100	4	16
public services are satisfactory		40	40	12	4	4	100	5	20
sport events are available locally		44	40	12	4		100	6	24
I trust local administration	4	52	20	16	4	4	100	9	36
I feel secure	16	52	8	16	4	4	100	15	60
satisfactory and continuous water supply	8	64	16	12			100	17	68
the quality of nature is satisfactory	12	64	12		8	4	100	18	72
generally most of the people can be trusted	12	68	8	4	4	4	100	20	80
I am interested in local politics	20	56	16		4	4	100	22	88

In general, the Illes Balears seem attractive islands, with negative issues that are mostly related to their economic development and the type of tourism that supports this development, tourism, which influences prices for many things for locals as well.

Island Case Study report: Saaremaa, Estonia

Background

Estonia has a total of 1520 islands,⁵⁰ which generally lie quite close to the mainland. However, the vast majority of these islands are tiny (under 100 km²) with a negligible population size and only two of these, Saaremaa and Hiiumaa, exceed 900 km². A total of 99% of Estonia's island population lives on just three islands: Saaremaa, Hiiumaa, and Muhu.⁵¹ Boasting an area of 2668 km², Saaremaa itself is the largest Estonian island, and the second largest island in the Baltic.⁵² It lies only eight kilometers from the mainland harbour of Virtsu.

Together with Muhu and a collection of other much smaller islands Saaremaa forms Saare County.⁵³ The island lies in West Estonia (Lääne-Eesti), one of Estonia's five NUTS-3 level regions. Administratively, the whole of Saare County is divided into 16 municipalities, 14 of which are located on Saaremaa; the small islands of Muhu and Ruhnu are the other two municipalities. There is just one urban municipality, on Saaremaa itself, namely Kuressaare, accounting for around 40% of the population. The rest of the municipalities are considered rural, with an extremely low population density of only about 6-7 persons per km².

It is important to note that Estonia's second largest island Hiiumaa lies just 6 km away from Saaremaa and yet the two islands' development trajectories have historically been markedly separate. A major reason for this is that Hiiumaa and Saaremaa have never co-existed in the same administrative unit. Moreover, despite the small distance separating them, the two islands have until recently been isolated from each other, since no regular ferry service existed between the two; it is only in the last few years that

⁵⁰ Information concerning the exact number of islands in Estonia was obtained from The CIA World Factbook (2009) <https://www.cia.gov/library/publications/the-world-factbook/geos/en.html> and generally corresponds with data derived from other resources about this country.

⁵¹ Aado Keskaik (2006): 'Manufacturing on the Estonian islands: Trends and prospects.' *Journal of Small Business and Entrepreneurship*, 19(4): 409-418

⁵² Information regarding the area of Saaremaa derived from the B7 Baltic Islands Network. <http://www.b7.org>

⁵³ Statistics concerning Saaremaa actually are derived from national statistics referring to the whole county of Saare, which encompasses several additional small islands, including the two municipalities of Muhu and Ruhnu. Few up-to-date statistics exist at the level of the municipalities. Given that the overwhelming majority of Saare county's businesses and people are on Saaremaa itself, we have presumed that the county statistics provide a fairly accurate picture of what occurs on Saaremaa.

a regular service has been established between Saaremaa and Hiiumaa.⁵⁴

Saaremaa is relatively flat consisting of low lying plains with an average elevation of just 15 metres above sea level. Among major mineral resources found on the island are limestone, dolomite, peat, and ceramic clay. More than half of the island is covered by forest, which is home to a rich variety of vegetative and animal species. A significant and unique natural attribute of Saaremaa are the 9000 hectares of juniper groves. The migratory birds flying through Saaremaa⁵⁵ have led to the creation of a national park – Vilsandi National Park – which had originally been established as a bird sanctuary as early as 1910.

Saaremaa's strategic location at the entrance to the Gulf of Riga has contributed to it having had different rulers over the centuries, including the Germans, Danes, Swedes, and Russians. Because of this, the island has a rich heritage in the form of old forts, churches, and manor houses which, together with its abundant natural resources, form the underpinnings of a burgeoning heritage tourism industry.

In the discussion that follows, Saaremaa's demographic profile is examined, before focusing on the island's state of the economy. In particular, we examine how economic restructuring following Estonia's independence has affected Saaremaa and we briefly look at the role of tourism and also certain other key specialized sectors (especially boat-building) in inducing economic diversification. Later, a brief analysis of questionnaires that were distributed to a handful of island inhabitants and businesses is presented and an analysis ensues on possible avenues to explore for enhancing this island's attractiveness.

⁵⁴ Aado Keskpaik, *ibid*

⁵⁵ The migratory birds include the barnacle goose and the mute swan. See <http://visitestonia.com/en/destinations/>



Figure 1: Saaremaa (reproduced from EE Saaremaa.PNG⁵⁶ at <http://images.google.se>)

Demographics

Like many islands throughout Europe, Saaremaa has witnessed chronic population decline. At the beginning of the 20th Century as many as 60000 people lived on the island, 4000 of whom inhabited the only major settlement, Kuressaare. However, following Estonia's annexation by the Soviet Union in 1940 and the events of the Second World War, the population drastically fell to 40000 by 1945, to a large extent because of forced emigration. In particular, over the decades, the island witnessed a major decline of its young population and it was not until the 1980s that the sharp fall of the population halted.⁵⁷

⁵⁶ Maps on this site are in the public domain and copyright has been released by the holder allowing the user to copy, distribute and/or modify these.

⁵⁷Information regarding historical and population background obtained from the Saaremaa: island of the Baltic Sea official website:
http://www.saaremaa.ee/index.php?option=com_content&view=article&id=195&Itemid=261&lang=en

Currently the population of Saare County stands at approximately 34750, amounting to roughly 2,6% of the national total. Although Estonia as a whole has a substantial number of people who are ethnically not Estonians (e.g., almost 343000 Russians) in Saaremaa 99% of the population are counted as Estonians, revealing this region's limited diversity. Despite the fact that the population had stabilized somewhat in the 1980s, since 1990 there has been a slow decrease reflecting a broader decline that has taken place in the national population (Table 1). As in so many other island regions, part of the reason for the population decline is the exodus of younger people (ages 15-19) who go to the mainland to pursue higher education.⁵⁸ However, it mostly appears that the main explanation for the depopulation since 1990 has been the substantial reduction of children in the age groups 0-14, mirroring a national trend towards smaller families. During the period 1989-2008, live births nationally declined from about 24000 to 16000 annually, while on Saaremaa births fell from approximately 750 to 350 annually.

Table 1: Population change in Estonia and Saare County 1990-2009⁵⁹

	1990	1995	2000	2005	2009
Estonia	1570599	1448075	1372071	1347510	1340415
% Decline		-7,8%	-5,2%	-1,8%	-0,5%
Saare County	39890	38233	36010	35208	34723
% Decline		-4,1%	-5,8%	-2,2%	-1,3%

Table 2: Population distribution by age and sex for Saare County 1990-2009⁶⁰

	0-14	15-64	65+	Total
1990	9525	24980	5385	39890
2000	7443	22729	5838	36010
2009	4989	23387	6347	34723

Net migration data, comparing Saare County to the national scene for 2000, 2004, and 2008 demonstrate the number of emigrants from this region has only slightly exceeded that of immigrants. The largest loss occurred in 2004 when a net 177

⁵⁸ Information provided in the Development Strategy for Saaremaa University Centre

⁵⁹ Statistics Estonia: <http://pub.stat.ee/px-web.2001/Dialog/statfile1.asp>

⁶⁰ Statistics Estonia: <http://pub.stat.ee/px-web.2001/Dialog/statfile1.asp>

Formatted: Italian (Italy)

Field Code Changed

Formatted: Italian (Italy)

Formatted: Italian (Italy)

people migrated internally from Saaremaa to other parts of the country, and a further net eighteen persons emigrated abroad (Table 3). We must point out however, that Saaremaa mirrors what has been happening nationally, since overall for the last decade emigration has exceeded immigration.

Table 3: Migration Trends on Saaremaa and Estonia 2000 and 2008⁶¹

Year		Immigration		Emigration		Net migration	
		Internal Migration	External Migration	Internal Migration	External Migration	Internal Migration	External Migration
2000	Estonia	16001	35	16001	1784	0	-1749
	Saare	361	0	275	6	86	-6
2004	Estonia	39383	1097	39383	2927	0	-1830
	Saare	513	13	690	31	-177	-18
2008	Estonia	31563	3801	31563	4598	0	-797
	Saare	544	28	547	57	-3	-29

The fact that Saaremaa's population has either been stagnant or slowly declining over the last two decades does little to dispel the image of this being similar to that of many other islands as peripheral regions. Nevertheless, because the overall national population of Estonia has also declined throughout this period – to an extent because of the exodus of persons of non-Estonian ethnic background - the negative growth on Saaremaa since Estonia's independence could well be a reflection of overall national trends rather than internal dynamics alone.

Though it now seems that the population decline of Saaremaa has begun to slow down, it is yet not clear that all is well with the island's economy. Overall, despite the appearance of new economic activities on the island (including tourism and specialized boatbuilding), evidently there are not enough jobs for all the economically active population. In fact, as many as 2000 people commute to Tallinn from Saaremaa for work purposes on a weekly basis. It would be interesting to see if connections with the mainland improve through a fixed link (see below) and whether this would induce more of the island's inhabitants to choose to continue living there while working in other parts of the country.⁶²

⁶¹ Statistics Estonia: <http://pub.stat.ee/px-web.2001/Dialog/statfile1.asp>

⁶² Aado Keskpaik, *ibid*

Economic Conditions

Not surprisingly, like many island regions throughout Europe, the Estonian islands, including Saaremaa have long depended on agricultural production and fisheries, though sectors like timber or food processing have also been important. The 2000 Census⁶³ indicated that as late as 1998, 10% of the island's population worked in agriculture. A further 21% were employed in manufacturing, mainly food processing, and to a lesser extent the timber and textile sectors.⁶⁴ Nevertheless, during the early part of the 20th Century, Saaremaa had begun to show promise as a centre for shipping and tourism, sectors which were all but annihilated after Estonia's annexation by the Soviet Union in 1940. Like other rural regions, during the Soviet era an emphasis was placed on an economy solely based on agricultural production and food processing through the establishment of state-owned farms and agricultural cooperative enterprises. The fisheries' sector was similarly controlled by one cooperative company. The significance of the agricultural and fisheries sectors to Saaremaa's economy was highly evident in the late 1980s when they accounted for 70% of the county's total manufacturing production and 80% of the island's manufacturing employees (just under 4000 at that time). In addition to dairy, meat and fish processing, the island was known for its brewing industry and its bakeries. At that time the largest manufacturing plant with 500 workers was a meat and dairy factory. Other manufacturing sectors, which existed on Saaremaa 20 years ago, were light industry (sewing) and timber processing

After Estonia's independence, Saaremaa's economy witnessed a devastating collapse. During the 1990s, approximately 9000 jobs disappeared and only 2000 new positions were created. In fact, in one decade from 1989, a total of 40% of the jobs on the island had disappeared. Overall, both the agricultural and fisheries' sectors have suffered devastating blows. With limited subsidies, for instance, it is no longer possible to maintain much of the land in agricultural production given the poor fertility of the soils. Moreover, the fisheries sector has all but collapsed given the combination of strict commercial fishing quotas and the low-prices for locally-caught species.

Despite the drastic fall in significance of agricultural production over the years, today the largest sector continues to be

⁶³ The 2000 Census for Estonia appears at:

http://pub.stat.ee/px-web.2001/I_Databas/Population_Census_regional/databasetree.asp

⁶⁴The present economic situation appears at: <http://www.saaremaa.ee>

meat and dairy processing. Since 2007 the major plant in this sector was divided into two parts and the dairy production continues to be operated by a cooperative of dairy producers. Importantly, the plants have been entirely transformed and efficiency has improved dramatically. Most of what is produced, especially cheese, is exported. Meanwhile, fish processing still exists on the island, although production is far more modest than it was two decades ago.

Though undoubtedly the economic picture on Saaremaa has transformed considerably over the last 15-20 years, it is hard to gain an accurate picture of the labour force at the local level. This is because the Estonian statistical service does not disaggregate on an annual basis employment or occupational data by sector at the county level. The best up-to-date data breaking down the employment force by sector refers to whether the place of employment is rural versus urban. Thus, the most reliable source relating to economic activities at the county level remains the now dated 2000 Census. This reveals that, in that particular year, there were 13239 workers on Saaremaa. Roughly half lived in Kuressaare, while the others resided in the surrounding countryside. The division between male and female workers was also roughly 50-50. Representing the largest employment group on the island were the workers in crafts and related trades, while another significant occupational group included service workers. In 2000, some 750 residents were engaged in fishing and farming (Table 4).

Table 4: Occupations in Saaremaa by key sectors, 2000

	Total	Skilled agric. /fish.	Services /shops	Legislators/ senior officials	Professionals	Crafts	Plant /machine operators
Estonia	544650	14356	66964	67446	70096	85129	64783
Saaremaa	13239	761	1788	1440	1397	2480	1455

The latest data relating to unemployment for Saaremaa compared to the country as a whole demonstrate that between 1997 and 2004 (the latest year that data is available for at the county level) the rate gradually declined. In 1999, unemployment peaked at 16,2%, a rate reflecting the outcome of the major upheaval resulting from industrial restructuring at the time. However, by 2004, unemployment stood at 4,1%, well below the national average of 9,7% (Table 5). The low unemployment is surprising compared to statistics on various other islands (e.g.,

Bornholm). However, the lower rate also reflects that a certain level of stability had returned to the island by the mid part of this decade (through a combination of factors such as islanders working elsewhere in the country, the appearance of opportunities through the establishment of new enterprises, and the slight population decline).

Table 5: Unemployment rates for Saaremaa 1997-2004

	97	98	99	00	01	02	03	04	05	06	07	08
Estonia	9,6	9,8	12,2	13,6	12,6	10,3	10,0	9,7	7,9	5,9	4,7	5,5
Saaremaa	11,1	9,5	16,2	12,0	9,4	7,4	6,5	4,1	n/a	n/a	n/a	n/a

Table 6 compares Saare County's GDP per capita with the country as a whole for the period 2000-2005. Despite an obvious rise in Saaremaa's GDP, this has remained well below the national average. However, it is worth mentioning that most counties in Estonia have a GDP per capita below the national average, since this is highly skewed due to one county's (Harju, which includes the capital Tallinn) impressively high GDP per capita (199642 EEK for 2005).

Table 6: GDP per capita in Saaremaa 2000-2005⁶⁵ (in Estonian Kroons, EEK) (1 Euro = 15.6 EEK)

	2000	2001	2002	2003	2004	2005
Estonia	69726	79333	89333	100484	111113	130297
Saaremaa	46900	54020	59736	64819	70729	86114

The average monthly gross income per employee (males and females combined) on Saaremaa is below that for the country as a whole (Table 7) though in Kuressaare it is only marginally lower. Significantly, there is a discrepancy between the earnings of males and females, with men earning more than the national average for both sexes. The gross income growth rates both in Estonia and Saaremaa have been quite high and mostly comparable.

⁶⁵ Tiiu Paas and Liis Lill: 'Regional income disparities and growth: Towards convergence or divergence (report funded by Estonian Science Foundation (grant 6475)).

Table 7: Average monthly gross income per employee⁶⁶ (in EEK)

	Estonia (total)	Growth (Estonia)	Saaremaa (total)	Growth	Saaremaa (males)	Growth	Saaremaa (females)	Growth
2003	6373		5859		6691		5093	
2004	6933	8,7%	6519	11,2%	7551	10,8%	5580	9,5%
2005	7851	13,2%	7372	13,0%	8644	14,4%	6178	10,7%
2006	9108	16,0%	8656	17,4%	10405	20,3%	6976	12,9%
2007	11027	21,0%	10439	20,5%	12427	19,4%	8547	22,5%
2008	12605	14,3%	11749	12,5%	13722	10,4%	9908	15,9%

While it is hard to precisely put a finger on how many people currently work in each sector on Saaremaa, the major industries are retail trade, manufacturing (especially food processing), construction, and tourism. There are about 3000 enterprises on the island, of which roughly a third represent registered self-employed people in various professions. The other 1850 to 2000 enterprises reflect registered businesses.⁶⁷ A regional plan for the county, currently in the stage of preparation, lists as part of its long-term vision the emphasis on the creation of knowledge-based enterprises and the enhancement of support for locally-produced goods and services.

New manufacturing activities on Saaremaa include plants specializing in timber processing, though it must be stressed that this sector is far less significant here than on neighbouring Hiiumaa. Although Saaremaa has had a long history of timber production, previously the wood that was exported was mostly unprocessed; the majority was exported to Finland and Sweden as pulpwood. Conversely, today a number of small companies have been established, specializing in the production of log cabins, furniture, and doors and windows. Much of this has to do with a broader national attention in boosting industrial activities with a link to raw material processing, often based on investment from the neighbouring Scandinavian countries. In addition to the timber sector some of the island's peat swamps have been placed into industrial operation in order to provide alternative heating fuel.

Additional notable manufacturing sectors that have emerged in Saaremaa over the last few years have been the electronics industry as well as specialist boatyards. In combination, these sectors have contributed to manufacturing diversification of the island. The electronics industry which originally dates back to the 1980s began life as a small sub-contracting business for a larger entity in Russia. After 1990, the early know-how created in this

⁶⁶ Statistics Estonia.

⁶⁷ See the Development Strategy for Saaremaa University Centre.

business led to the establishment of a number of enterprises acting as subcontractors for Scandinavian companies. By 2005, in Kuressaare alone there were three such companies providing 400 jobs. The nascent electronics sector provided the impetus to spawn off additional similar businesses, since it inspired local educational institutions (including the Kuressaare College of Tallinn University of Technology) to train electronics engineers.

Another manufacturing sector, which appears to be doing very well, is that of specialized boat-building, reviving one of the island's traditional crafts that had all but disappeared after the arrival of the Soviets in 1940. Presently, several notable boat yards exist on the island. One makes custom-built wooden pleasure craft and plastic boats, the other designs and produces mainly plastic and aluminum boats (see Box 1) and the third luxurious yachts.

Box 1: Glimpsing Success: Baltic Workboats Shipyard and Saare Paat⁶⁸

Presently, two notable specialist boatyards exist on Saaremaa, offering a ray of hope for the island's future. The first constructs aluminum boats, mainly for marine protection services (e.g., border patrol, customs, coast guard) while the second specializes in wooden boats.

The first company was the brainchild of a local entrepreneur. Using his know-how as a boat builder in combination with his wife's skills as an economist, this individual created a partnership with other boat builders and, in 2002 established a shipyard in Nasva Harbour. Initially working as subcontractors for Finnish boat-builders Marine Alutech OY, the Saaremaa-based shipyard began building specialized small-sized aluminum boats, especially for customs and border guard services. Most of the raw materials for the boat construction come from abroad and the competitive advantage of this island-based company rests on combining low wage costs with superior-quality construction.

Most of what is produced at the Baltic Workboats Shipyard is exported, mainly to other Baltic states. Notable orders to the

⁶⁸ Information relating to these two boat-building operations on Saaremaa was obtained from <http://www.islandstudies.ca/iis/system/files/u2/MANUAL-Baltic-WorkBoats-Final.pdf> and <http://www.islandstudies.ca/iis/system/files/u2/MANUAL-Saare-Paat-Final.pdf>

boatyard include one that came from a German company seeking cooperation in building a modern, fast patrol boat.

While Baltic Workboats still cooperate with other shipyards, including Marine Alutech, it now builds everything under its own brand and no longer acts as a subcontractor.

Today, the company employs 30 highly skilled professionals most of whom were trained in Finland. However, nowadays training takes place in-house.

The second boat-building firm is Saare Paat, established in 1993 initially with the help of Swedish capital. It was the outcome of restructuring a collective fish farm. In this case the purpose was to revive traditional wooden boat building on the island, a craft that had all but disappeared during the Soviet era. Unfortunately, initially the company did not do as well as had been hoped for and so it switched to furniture-making. A few years later the company had been reorganized and bought out the Swedish investors. Boat-building became the focus once more and the company has done well due to the lower labour costs in Estonia compared to those in Scandinavian countries. Today, in addition to the wooden boats the company makes specialized fibre-glass yachts and speedboats. Almost every product that is made at this boat yard is exported, mostly to northern European countries.

One of the major outcomes of Saare Paat is that it has spawned off a revival of wooden boat building throughout Saaremaa; the vocational school on the island offers a specialization in carpentry, a necessary skill in this company.

Both Baltic Workboats and Saare Paat provide examples of small albeit successful island-based ventures that have used as a foundation a traditional activity (in this case boat building) to generate an image of competitive advantage for Saaremaa.

A word about tourism

Characteristic to the West-Estonian islands is also the rise in the tourism industry, which has partly compensated for the loss of jobs in agriculture and fisheries. Western Estonia, together with the islands, has become the second most attractive tourism region in Estonia after the capital Tallinn. New jobs are being created in the hotel and restaurant sector, particularly in Kuressaare where several modern spas were opened. Many farmers have also started small tourism

businesses. The records of visitors and nights spent in the hotels on the islands increase every year--and tourism capacity continues to grow.⁶⁹

Like so many other islands around Europe, Saaremaa has also turned to tourism in recent years as a means of engendering economic diversification. We have already highlighted the island's rich tourism resource base, including a national park, substantial forests, and a built environment that includes many historic structures (Table 8). The Estonian heritage board currently lists 1225 cultural heritage resources on Saaremaa, including 94 historic sites, 561 archaeological sites, 346 listed buildings, and 242 objects of art.⁷⁰ Unfortunately, the vast majority of these sites are privately owned and not yet used as tourism sites but it is nevertheless obvious that there exists a significant potential for future development.⁷¹ There is also a meteorite impact site on the island (Kaali meteorite crater field), purported to be the most impressive such feature in the whole of Eurasia. Recommendations have been made to place this site on the UNESCO list of Geoparks, an action which could result in even more visitors to the island.⁷²

Spa activities are also an attraction for the island. Indeed, Kuressaare had a long history as a spa town dating back to the 1800s when the first health resort was established. This was due to the existence of curative sea mud, which was discovered as early as the 1820s.⁷³ Even though Saaremaa lost its luster as a spa tourism destination in the aftermath of World War II, over the last few years its reputation as a health resort appears to have been revived. In 1998, the city was awarded the status of Health City, the first place in the country to be honoured in this manner. Presently, there are seven spa hotels, all of which are open year-round.⁷⁴

Table 8: A list of things to see and do on Saaremaa⁷⁵

The old town of Kuressaare
Kuressaare Castle
The Maasilinn Order Castle

⁶⁹ Aado Keskpaik (2006). 'Manufacturing on the Estonian Islands: Trends and Prospects.' *Journal of Small Business and Entrepreneurship* 19(4): 409-418

⁷⁰ <http://www.muinas.ee/2073>

⁷¹ <http://www.mattimar.ee/sisukord/2007/05.pdf>

⁷² Krista Täht (nd) Island Saaremaa (Estonia) – Worthy candidate of the UNESCO list of Geoparks. Volume of Abstracts for International Conference 'Geoheritage for Sustainable Development'

⁷³ Unwin, Tim (1996) 'Tourist development in Estonia.' *Tourism Management* 17(4): 265-276.

⁷⁴ <http://www.kuressaare.ee/uus/index.php?id=13252>

⁷⁵ Information provided from Visit Estonia:

<http://visitestonia.com/en/desinations/the-islands/saaremaa>

Koguva Village
Medieval fortified churches of Muhu, etc.
Vilsandi national park
Windmills at Angla
Kaali Meteorite craters
Panga Cliff
Sörve Peninsula
Järve beach and sand dunes
Jööri Village Museum
Kubassaare broadleaf forest
Golf course in Kuressaare

Over the last few years the number of arrivals has been quite impressive. In 2002 only 35250 officially accommodated tourists were recorded on Saaremaa, the vast majority of whom arrived from Estonia and Finland. Lithuanians and Latvians also come to Saaremaa, which features as the second most popular destination in Estonia after Tallinn for both nationalities.⁷⁶ By 2008, the number of arrivals had swelled to more than 144000; again, with most being domestic tourists and Finns. Seasonality is quite extreme since roughly half of all annual tourists arrived during the three summer months of June, July, and August.

Parallel to the rise in demand for tourism on Saaremaa we have seen a healthy increase in accommodations. Between 2002 and 2009 the number of establishments in peak season (namely July) rose from 59 in 2002 to 146 in 2009, while actual bed spaces rose from 1189 to 4330. It also appears that the average establishment size increased slightly from 20 bed spaces per unit in 2002 to 29,6 bed spaces in 2009. Regardless of the increase in accommodation supply, the peak occupancy rate (even during the summer months) has remained relatively flat at around 50%-60% while during the low season the average occupancy rates are below 20%.

Naturally, like so many other destinations in the Baltic, the weather variations mean that seasonality cannot be easily overcome and it is thus hard to provide year round employment for most people in the tourism sector. However, tourism does provide the opportunity to diversify the economy, allowing small-scale entrepreneurs, including farmers who participate part-time in the sector, the opportunity to add to their incomes.

⁷⁶ Information from Visit Estonia:
<http://public.visitestonia.com/files/statistika/Tourism-in-Estonia2008.pdf>

Responses to ESPON Survey Questionnaires

During October 2009 two surveys were distributed to persons on Saaremaa. One was a survey addressed to business owners and/or managers, while the second targeted local inhabitants. A total of 13 businesses and 24 inhabitants completed the respective surveys. Naturally, the sample sizes are too small to derive any meaningful statistical interpretations. Nevertheless, the answers to both surveys offer a most interesting glimpse of how a small number of Saaremaa's residents (inhabitants and entrepreneurs) view their life on the island and what they consider as its most attractive features.

The 13 business respondents who were interviewed included 7 males and 6 females. All but two were between the ages of 40 and 60. They all reported they were heads or managers of each company that was surveyed. The businesses included in the survey included one farm, two tourism companies, a boat building company, and a number of services. The majority were headquartered in Saare County (5 of them specifically in Kuressaare). Only three respondents indicated that their companies carry out activities outside Estonia. The largest company (an electronics firm) included in the survey had 165 workers and the boat company had 43 workers. The remaining companies had fewer than 20 employees; seven of these had ten or fewer workers. Only two firms were set up as franchises and three were affiliated with a larger company elsewhere. Mirroring the effects of social and economic restructuring in Estonia following the country's independence, all but one of the companies, were created after 1990 and the newest was set up in 2008.

The business respondents were given 28 questions relating to 'quality of life'. Ten of these had an overall negative score. The two 'worst' scores were given for the quality of local public transportation service and the fact that the cost of flying to and from the island or the cost of the ferry is far from acceptable. Nor are the transportation costs for goods to and from the island considered an attractiveness feature. As for the statement regarding the adequacy of the frequency of scheduled trips, even though the score was marginally negative it was obvious that opinions were divided evenly between those who feel that services are sufficient and those who disagree. Despite the negative tone towards the cost and frequency of transport services, overall there was agreement that service quality was high.

Table 8: Business Responses to a battery of 28 quality of life indicators (N=13)

Resident Respondents (N=24)	I agree totally (+2)	I agree (+1)	I neither agree or disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't know/No answer (0)	Total 13	Weighted Score
1 Frequency of scheduled trips (by ferry, ship, plane) is adequate	0	6	2	5	1	0	14*	-1
2 Cost of air or sea travel to the mainland is praiseworthy	1	2	1	7	3	0	14*	-9
3 Cost of transport of goods from/to island is praiseworthy	0	2	2	4	2	3	13	-6
4 Quality of transport services to mainland is praiseworthy	1	7	2	2	1	0	13	5
5 Broadband connection is satisfactory	3	10	0	1	0	0	14*	15
6 Regularity of energy is sufficient	3	8	1	1	0	0	13	13
7 Regularity of water supply is sufficient	5	5	3	0	0	0	13	15
8 Waste water collection & treatment system is adequate	1	6	5	1	0	0	13	7
9 Quality of local public transportation covers local needs	0	2	1	3	5	2	13	-11
10 Sufficient and available trained/qualified human capital on the island	0	2	7	3	1	0	13	-3
11 Sufficient opportunities for training	0	8	2	2	1	0	13	4
12 Land and construction costs of commercial property are praiseworthy	0	4	4	4	1	0	13	-2
13 Cost of life is satisfactory	0	9	1	2	1	0	13	5
14 the local public administration is effective	2	2	7	3	0	0	13	3
15 Labour cost is satisfactory	0	12	0	1	0	0	13	11
16 The business support agencies (such as business development corporations) are adequate	0	3	5	5	0	0	13	-2
17 There is sufficient support by other businesses (goods and services of local market)	1	3	6	1	1	1	13	2
18 the economic incentives to businesses (subsidies, tax incentives) are sufficient	0	2	1	2	4	4	13	-8
19 Possibility to support innovation in the production process is sufficient	1	5	3	3	0	1	13	4

20 There is the possibility to develop cooperation with other businesses for information and know-how exchange	1	10	2	0	0	0	13	12
21 Local authorities show sufficient competence to solve problems	0	5	5	4	0	0	14*	1
22 Local authorities have an adequate development vision (strategy, plan, activation)	0	3	5	6	0	0	14*	-3
23 Degree of stakeholders' involvement in the decision-making process is sufficient	0	3	5	4	1	0	13	-3
24 I generally feel secure (from crime)	3	8	2	0	0	0	13	14
25 My trust in the local authorities (municipality) is high	1	4	6	2	0	0	13	4
26 Generally, the locals are trustworthy	2	10	0	0	0	1	13	14
27 My interest in local politics is high	1	6	4	2	0	0	13	6
28 Perspective of my business on the island is positive	2	10	1	0	0	0	13	14

- One respondent gave more than one answer for the same indicator according to whether or not it referred to a rural versus an urban area.

Other statements earning a negative score included the one about the sufficiency of economic subsidies/incentives to businesses. Respondents were also mainly critical of the business support agencies (like the business development corporation) and of the ability of the local authorities to come up with an effective development vision. Finally there was a division in opinions as to whether stakeholders have ample opportunity to participate in decision-making.

On the plus side, high scores were respectively given for services like broadband connection and water supply. The regularity of energy supply was also seen in positive terms. Other positive scores were given for the amount of opportunity existing on Saaremaa to collaborate with other businesses and exchange know-how. There was also a mostly positive impression of the opportunities found on Saaremaa for supporting innovative activities.

Among other largely positive attributes that the business respondents gave for Saaremaa were the low cost of living and the fact that labour costs are satisfactory, though there was a realization that perhaps the quality of the labour force may not be the best.

Attitudes having to do with the characteristics of the island and its people in general were largely positive. For example, respondents believed Saaremaa to be a safe place, where the local residents are trustworthy, and where their overall trust in local authorities is relatively high. They also felt that their business prospects on the island were positive.

Asked to offer additional comments about their island's attractiveness business respondents indicated that despite some shortcomings in the labour force there are good opportunities for training through the local vocational school and the College of Tallinn University of Technology. They are also happy that the wage costs and the quality of the labour force are largely in balance at the moment. They feel many people are happy to stay on Saaremaa because of many positive attributes and, because of this they are willing to do so for low salaries.

However, there was some concern expressed that the island's low unemployment rates (pointed out earlier in this report) are a disadvantage from the point of view of productivity and raising the island's competitiveness. With such a low unemployment rate there is a danger that as some sectors grow they could run into a situation where labour shortages could arise, leading to wage-pull inflation. Further, there is concern that the reliance of the growing tourism sector on seasonal labour can have a negative effect on other sectors, causing widespread job turnover.

One of the most negative types of comment made by the business respondents was that if the transportation system becomes worse (presumably from the point of cost but also service frequency) they could consider closing down and/or leaving the island. There is also a general feeling that the air connections to the mainland are poor, making travel to and from the capital time-consuming. Respondents pointed out that although there are two flights per day (which are actually not too expensive), these rarely stick to the schedule, making service unreliable.

What about the island's residents? Of the 24 respondents, eleven were females and 13 males. Most of them (15) were between 41 and 65 years old and over half had 5 years of university education or more. Nineteen respondents indicated they are professional white collar workers, while three persons said they were labourers. Only two respondents pointed out that they worked for the tourism sector. Seven persons mentioned they had lived on Saaremaa since birth, though some of them had left for their studies before coming back. Another six people said they had moved into Saaremaa, either from Tallinn or Tartu. They had lived

on the island for more than 15 years. A further seven respondents said they had moved to Saaremaa during the last 15 years.

Table 9: Resident responses to a battery of 25 quality of life indicators (N=24)

Resident Respondents (N=24)	I agree totally (+2)	I agree (+1)	I neither agree or disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't know/No answer (0)	Total	Weighted score
1 Frequency of scheduled trips (by ferry, ship, plane) is adequate	1	8	1	11	1	0	24	-5
2 Cost of air or sea travel to the mainland is praiseworthy	0	3	3	13	5	0	24	-20
3 Quality of transport services to the mainland is satisfactory	0	16	1	6	1	0	24	8
4 Broadband connection is satisfactory	3	16	0	2	3	0	24	14
5 Regularity of energy is sufficient	5	14	2	3	0	0	24	21
6 Regularity of water supply is sufficient	7	14	2	0	0	1	24	28
7 Waste water collection & treatment system is adequate	2	10	3	4	1	4	24	8
8 Quality of local public transportation covers local needs	0	1	4	12	3	4	24	-17
9 Sufficient job opportunities	0	0	1	7	16	0	24	-39
10 Sufficient opportunities for training	1	5	7	9	2	0	24	-6
11 Adequate opportunities to attend cultural events	0	13	3	7	0	1	24	6
12 Adequate opportunities to attend sports events	2	17	4	0	0	1	24	21
13 Quality of health care and services covers my needs	1	10	8	2	3	0	24	4
14 Quality of education services covers my needs	0	19	3	1	0	1	24	18
15 Land and construction cost of domestic homes is praiseworthy	0	3	4	13	2	2	24	-14
16 Cost of living is satisfactory	0	13	1	8	2	0	24	1
17 Quality of life (short daily distances, low noise, clean air) is satisfactory	8	15	1	0	0	0	24	31
18 Quality of nature is satisfactory	16	8	0	0	0	0	24	40
19 Quality of the built environment is satisfactory	0	18	5	0	0	1	24	36
20 Local public	0	3	9	8	2	2	24	-9

administration is effective								
21 Degree of involvement of citizens in decision making process of sufficient	0	3	10	11	0	0	24	-8
22 I generally feel security (from criminal activities)	4	18	2	0	0	0	24	26
23 I trust the local authorities (municipality)	0	10	10	4	0	0	24	6
24 Generally the locals are trustworthy	6	16	2	0	0	0	24	28
25 My interest for local politics is high	1	9	7	6	0	1	24	5

Given questions relating to 25 quality of life indicators, the resident respondents indicated negative feelings with respect to 8 of these. Poor scores were given for the cost of transportation to and from the island, while the quality of the island's local transportation system was also heavily criticized. A negative, albeit not so harsh, score was given for the frequency of scheduled services to and from the island.

The worst score was given for the lack of availability of job opportunities. All respondents were in agreement that there are simply not enough job openings. The fact that many people have to commute on a weekly basis to other parts of Estonia for work (as indicated earlier in this report) seems to provide ammunition for this feeling. In addition to the frustration expressed about work opportunities, most of the inhabitants interviewed mentioned that they felt that access to suitable training was far from sufficient; a point which disagrees with the findings from the business survey .

Another negative feeling was expressed about the land and construction cost for housing. Meanwhile, there was disagreement concerning the overall cost of living on the island with 13 respondents mentioning the costs are adequate; while, in contrast, ten persons mentioned that costs were not acceptable. Overall, respondents also felt they did not have ample opportunity to participate in decision-making.

Despite the negative feelings regarding several factors relating to life on Saaremaa, it is obvious that the inhabitants who were interviewed are also quite happy about a number of indicators. They are, like the business respondents, generally satisfied about the quality of transport service to and from the island and feel that the provision of internet access, fresh water, and energy is satisfactory. They are also very happy about their access to educational services, though the jury seems to still be out as to whether the medical services cover all their needs.

The most positive opinions, however, are reserved for indicators having to do with their surroundings in what is mostly a rural or small town setting. They are very impressed by the local nature, the quality of the built environment, the absence of noise and clean air and the small distances within the island between various activity nodes. They also expressed a high level of trust in their fellow citizens and feel that the overall environment is safe from crime. Finally, most respondents believe that access to cultural and especially sporting events is extremely good.

Answers to other questions targeting the inhabitants reveal that they have a fairly high level of involvement in non-governmental organizations. Fifteen respondents mentioned they were members of an NGO, while twenty respondents indicated they had in the past done volunteer work for an NGO. This situation could indicate that, on an island like Saaremaa, there are fairly close ties between the local inhabitants, with high levels of bonding social capital, translating into several opportunities for volunteerism.

Overall, the inhabitants who answered the survey expressed strong positive feelings about living on the island, stressing that they were mostly happy that this was a great place to raise children. They enjoy not having to spend much time traveling and think that the natural wealth is very striking. However, the local residents included in the survey also revealed that they can be quite conservative given that many of them mentioned they were happy with the current situation on Saaremaa where there is very limited linguistic, ethnic, and religious diversity.

Asked what factors would force them to leave the island, the younger respondents mentioned they could be pushed to do so if job and income opportunities failed to improve. Some respondents mentioned that changes in their family circumstances and/or the possibilities for less leisure time could motivate them to move away from Saaremaa.

A final comment made by most of the respondents revealed the overwhelming feeling of frustration about their opportunities to travel to and from the mainland in a timely and affordable manner. Particular criticism was leveled against the air services. Some respondents mentioned they would like to see better connections by air or ferry to western Baltic States, including Finland. Support for building a bridge to the mainland appeared to be high.

Stakeholder Surveys

Policymakers and other stakeholders (e.g., NGOs) were presented with surveys regarding their opinions about the island's attractiveness for businesses and residents. Further, they were also asked to provide examples of best policy practices. Below, are the results that emerged following a meeting between all these key stakeholders where the surveys were discussed.

In terms of the businesses, the stakeholders responded that the most important factor of attractiveness relates to the connections to the mainland. They indicated that in the long-term a fixed link to the mainland would be a good solution (see discussion on this issue later). By contrast, they indicated that there is actually a major advantage of maintaining Saaremaa's insularity since this characteristic adds to its competitive advantage as a tourist destination, given that many people are irresistibly drawn to island environments for their holidays. The stakeholders added that the attractiveness of the island as a destination would certainly be enhanced through the addition of tourist activities for the low season.

One interesting point included in the stakeholders' response was that the island's workers are not very mobile – if they have a job locally – and this means that entrepreneurs who invest on Saaremaa can count on having a fairly stable workforce once they set up their business.

The stakeholders stressed that one way to enhance Saaremaa's competitive advantage is to tailor-make business policy and shape state bureaucracy in a manner that recognizes the particular contingencies of the island. For example, policies relating to companies must take into account the handicap imposed by the limited accessibility options to the island.

Asked what is needed in terms of a European insular policy that aims at improving islands' attractiveness, the stakeholders mentioned that this should support the principle of 'road lengthening.' Effectively, this means that the cost of travelling to and from the island should be the same as travelling the same distance on the mainland. Such a policy should also favour, in their opinion the provision of fare concessions to the island's permanent residents. Where possible, they added, policy should also promote the establishment of permanent connections (bridges or tunnels) to the mainland.

Ultimately, the stakeholders feel that a European-wide island policy should transform islands into places with attractive and innovative business environments where islanders have plenty of work possibilities. They also believe that entrepreneurs on the islands be on the same level as their counterparts on the mainland when it comes to logistical possibilities for improving their competitiveness.

Concerning Saaremaa as a place to live, the stakeholders mentioned that inhabitants also require good transport connections to the mainland. In their opinion, Saaremaa does provide a safe environment and possesses a unique natural and cultural heritage. It is a place with many traditions and people have a stronger identity than their counterparts on the mainland.

Nevertheless, despite the island's many positive characteristics for local residents, they do have to face a number of obstacles, which hinder their ability for socio-economic development. Overall, when it comes to the goals of a EU-wide island policy from the point of view of the residents, the stakeholders believe that such a policy should aim at turning islands into developing communities, where the population is growing and, concurrently, the opportunities for education and the acquisition of skills is enhanced. They added that it is necessary on an island like Saaremaa to have optimal health insurance and services.

The stakeholders described several best policy practices on Saaremaa. They pointed out that in Estonia regional policies dealing with issues like communications, transport, the environment, and fisheries, actually do take into account the nature of islands. For instance, the Public Transport Act allows for ferry lines and regional air carriers to be subsidized by the state budget. Also, the purchase or rebuilding of ships and ferries is supported. The 'Transport Development Plan 2006-2013' supports among others the concept that island connections must be improved. For example, it calls for an improvement of Kuressaare airport to meet international standards.

The Nature Conservation Act allows islands to have a broader building exclusion zone along their coastlines (200 metres from the limit of repeatedly flooded areas), whereas in other coastal areas on the mainland exclusion zone is only 100 metres. Meanwhile, the Fishing Act provides certain advantages to the inhabitants of small islands. For instance, a commercial fishing permit can be obtained even if the fishermen have a smaller amount of nets than normally required.

In terms of regional policy, the special nature of islands is also taken into account to an extent. For example, the 'Estonian Strategy for Regional Development 2000-2015' has provisions that focus specifically on areas on islands outside the main centres. So for example, on Saaremaa all areas outside Kuressaare, which is among the top twelve growth areas in Estonia, are taken into account by the policy.

One additional important law for small islands, according to the stakeholders, is the 'Act on Permanently Inhabited Small Islands' enacted in 2004. This allows for the differences arising from the special conditions of inhabited islands (isolation, limits in territory and population), which are not necessarily accounted for in other laws. For example, the Act makes provisions for differences in local government organization, the securing of services and infrastructure, and for the economy and nature preservation.

Asked why they believe these aforementioned steps are examples of 'best practice' the stakeholders responded that these have allowed the socio-economic level of inhabitants to be enhanced and thus have stemmed the exodus from Saaremaa. For instance, after the Soviets left, many islands were left with poor infrastructure, including insufficient electricity and bad communication and transportation systems. Especially the island programme has enabled these services to be improved substantially. The stakeholders expressed the firm opinion that the policies adopted in Estonia with regards to the islands could certainly be applied to other island regions throughout Europe. This is because policies such as these lift the playing field for disadvantaged areas like the islands and bring them onto a more equitable level with other regions.

Saaremaa's stakeholders indicated at the European level, the Natura 2000 policy has both positive effects and negative on the island. After all Saare County's coastline and bordering sea has been designated a Natura 2000 area. On the plus-side, not only does this particular policy protect vital resources but it also makes provisions for compensating landowners who may lose profits from using their land because of the preservation measures. On the downside, however, the stakeholders feel that several areas that are in line for development (e.g., for new residences but also for improving the transportation network) have been designated protection zones without much thought. As a result, it becomes extremely complicated to make any improvements due to excessive bureaucracy associated with pinpointing appropriate sites for development.

The stakeholders insisted that any future European-wide policy must make provisions for distinguishing between large and small islands. For instance, islands with very small populations (under 5000 inhabitants) are especially in trouble. They argued that the Amsterdam Treaty does have a provision for differentiating the islands but this has never been enforced. Overall, the point was made that while all principles espoused in European policies must be common, the measures for achieving these in various areas (including islands) must vary. Furthermore, the EU must have a mechanism to ensure that its policies are actually implemented in member states.

Discussion

Undoubtedly Saaremaa displays several characteristics of insularity and peripherality associated with numerous island regions worldwide and throughout Europe. It also has the added 'handicap' of being a peripheral region in what can be described as the periphery of the European Union.⁷⁷ And yet, this analysis reveals that there are several positives that can also be associated with Saaremaa.

Even though the population size has continued to stagger along, it appears that for the most part this decline may be leveling out as a balance appears to have been reached between the opportunities for work (on the island and elsewhere) and the population of working age. The island certainly has a number of key 'quality of life' attributes which the respondents of both surveys feel are important measures of attractiveness (e.g., opportunity for slower pace of life, good natural environment, and an attractive and safe place to raise a family). To be sure, there are also a number of negative factors that stand out, including issues like the limited opportunities for work, the extreme seasonality associated with the tourism industry, the cost and frequency of transportation to and from the island, or the ability of the local authority to come up with suitable development plans.

⁷⁷ Paas and Lill, *ibid*, describe Estonia as being on the periphery of the EU, albeit it is a country that has had one of the highest growth rates over the last few years. They also recognize that there is a core-periphery within Estonia itself, with the capital region (Harju County) very much being the centre. These authors point out that regional disparities in the country have actually been enhanced over the last decade. Though they do not talk specifically about Saaremaa, the findings of the paper demonstrate that this island is, in relatively terms, not as worse off as some other mainland counties, such as Jogeve and Ida-Viru.

On an optimistic note, Saaremaa has certain characteristics and possesses a fairly rich abundance of resources that could provide opportunities for a more positive future. Perhaps most importantly this island is located very close to the mainland meaning that crossing times are not as time-consuming as those in plenty of other islands around the European Union. In fact, even though a certain amount of inconvenience exists for people wishing to enter or leave Saaremaa, it must be stressed that it takes only 35 minutes one-way to cross from Virtsu on the mainland to Kuivastu on the island of Muhu; Muhu and Saaremaa itself are connected through a dam that was completed in 1896. Between 06:00 and 21:00 there is a departure on the hour every hour from Kuivastu to Virtsu and back. For a car the price for crossing one way is 100 EEK, although if one books online it is actually more expensive due to a service fee. For commercial trucks the crossing fee is considerably more (750 EEK). For a foot passenger the regular charge is 35 EEK, while students and school children are eligible for a discounted rate.⁷⁸ In the final analysis, this situation reveals that, compared to many other populated islands, Saaremaa is actually fairly well connected to the mainland. Of course, matters could be improved through the introduction of free or significantly subsidized prices for registered residents of Saaremaa; a system such as the one existing on Åland (see relevant case study in this report) or even in Sweden where the residents of islands located on many of the country's lakes can take a ferry for free (the ferries are operated by the national road administration).

Another possibility that has already been discussed and clearly is something that at least some of the residents interviewed of Saaremaa clearly wish for is to provide a fixed link connection to the mainland. In fact, it is estimated that almost 80% of Saaremaa-based persons who use the ferry on a regular basis⁷⁹ would like to see such a project completed in the near future. Since 1997 the county government has created a committee responsible for determining the feasibility of creating such a project.⁸⁰ ⁸¹ A subsequent pre-feasibility study completed in 2000 demonstrated that it was viable to construct either a bridge or tunnel across the Suur Strait that separates the mainland from Muhu. A later report by an international consortium indicated that on economic grounds it makes sense to construct such a fixed connection, although the consultants recommended that a social and environmental impact

⁷⁸ Information obtained from the Tyyle Laevad ferry company website: <http://www.laevakompanii.ee/index.php>

⁷⁹ Persons from Saaremaa who use the ferry on a regular basis for work or to visit relatives make up half of the users of the ferry.

⁸⁰ Estonian Road Administration (2007): 'Saaremaa Fixed Link.'

⁸¹ Hillar Varik (nd) 'Fixed Link to Saaremaa.'

analysis must be undertaken first. An environmental impact assessment was initiated in 2006. That study explored the potential outcome of three alternative scenarios: (a) a bridge that more or less follows the route of the current ferry; (b) a bridge to the north of the existing ferry line; (c) a tunnel to the south of the current ferry line.

The EIA determined that, if a toll was initially charged for use of the fixed link, the cost of the project could be paid off by 2030. In the long term, this would be more cost effective than continuing a subsidized ferry service whose running costs are likely to continue to rise over the coming years.⁸²

On the environmental side, it was revealed that the geology in the Suur Sound can support a fixed link between the islands and the mainland. However, concerns were raised about the potential impacts of a fixed link including the effects on birds and nature reserves, the impact on marine life (including seals), and the effects on the shore. It was determined that a tunnel would be the least destructive on the environment but analysts also indicated that there is need for further studies before reaching a final decision. The following table indicates the perceived pros and cons as expressed by current users of the ferry.

Table 10: Fixed Link versus ferry⁸³

Pros & Cons as expressed by people	
Related to Fixed Link	Related to Ferry
Pro	Pro
Rapid increase in traffic	Enjoyable ride on the ferry
No waiting at the port/no need to schedule trip	
Time savings	
Improved safety as drivers do not have to rush to the ferry	
Economic activities could be boosted	
Cons	Cons
Possible threat to security	Long queues in the summer
Will the islands lose their uniqueness?	The connection to the mainland can be disrupted due to poor weather conditions
Questionable environmental impacts	Business development can be delayed
	Pollution from ferries can be worse than that of the crossing cars and trucks

⁸² Hillar Varik, *ibid.*

⁸³ Estonian Road Administration, *ibid.*

Little doubt exists that constructing a fixed connection between Saaremaa and the mainland would add convenience to frequent travelers and could possibly lead to the potential for new economic opportunities (business investments). However, beyond the possible environmental effects arising both during the construction phase but also long-term, one has to consider what the bridge or tunnel would mean for the island's identity. Despite its proximity to the mainland, Saaremaa has always been an island, with its own unique 'personality.' While it currently possesses several traits that could be considered low on the attractiveness scale, and effectively act as handicaps, the question emerges as to whether or not 'ceasing to be an island' (an inevitable outcome of constructing a bridge or tunnel) would mean that Saaremaa may lose certain other unique qualities it possesses precisely because of its 'islandness.' Clearly, making the ultimate decision as to whether or not to construct a fixed link should not be an action which is taken lightly.

Even more importantly, it is essential that, in the event that the decision to build a fixed link is taken, the authorities should consider the cumulative effects of such a project in a comprehensive manner. We have seen all too often what can result from a monosectoral decision to introduce new infrastructure without considering the ramifications for a whole range of other sectors. Among the questions to be asked are: what are the implications of constructing a fixed link to Saaremaa in terms of the area's carrying capacity; to what extent would the convenience of accessing the island through a fixed link lead to a situation of overcrowding (for example during the summer months); how would long-term residents react to the potential 'loss' of their island identity resulting from a fixed link; to what extent would Saaremaa lose its appeal (or gain in appeal) as a result of losing its island status?

To address these and many other issues, it is necessary to develop and implement a clear strategic plan before any action relating to the construction of a tunnel or bridge is finally made. In other words, the possibility of the fixed link should be assessed on the grounds that this piece of infrastructure is but one part of a very complex system, whose delicate balance can shift dangerously, if a careful management plan is not put into action first.

The environment in brief

The whole discussion about the fixed link and the possible threat this may hold for Saaremaa for its wealth of natural resources

raises important overall questions about how this area's environment should be managed in the immediate future. The island's substantial amount of forested land, not to mention the additional unique flora and fauna found throughout are important enough to have earned the island a national park. Indeed, these natural resources are a tremendous resource both for the residents and the visitors. Thus, it is imperative to consider how any possible development that takes place on the island must meet the tenets of sustainable development.

Unfortunately, there is a risk that, due to the current low levels of development and population, any potential dangers to the natural but also socio-cultural environment could be underplayed. This risk is especially high in regions just like Saaremaa where local authorities are often concerned above all with securing possibilities for economic growth, regardless of the associated costs.

An approach that should be adopted for the island's future should be one premised on the realization that there must be solutions based on sustainable options. Already we have discussed the option that the peat deposits offer for providing energy for heating. Moreover, the possibility of wind power should be explored, though it is imperative not to rush into the implementation of a major wind park without first undertaking a detailed impact assessment. In realistic terms, if wind power is introduced as an option, this should be done on a small scale basis (e.g., encouraging farmers to install windmills to be tied into the main grid).

Concluding Remarks

Saaremaa is clearly an island in transition. On the surface, it appears that it faces several handicaps, which are associated with its status as an island on Europe's periphery. To be sure it has faced chronic population loss, industrial restructuring, and various other problems associated with limited accessibility to the mainland. And yet this is a place that has a lot going for it.

The argument could be made that the population is now at a level where the island can meet employment requirements. After all, unemployment has fallen dramatically. Moreover, even though the traditional sectors like agriculture, fisheries, and food processing have suffered a major decline, there have been many rays of hope in the appearance of new sectors and activities. Local entrepreneurs have capitalized on Saaremaa's past history as a centre of boat-building and they have set up two obviously successful businesses

specializing in sea-going vessels. The high value added in terms of knowledge-creation in this sector as well as the small but equally successful electronics industry has meant that the possibility of a larger cluster of like-activities could emerge in years to come.

Additionally, the island could explore the possibility of specializing in locally produced natural products but also arts and crafts in a similar manner to what has happened on islands like Bornholm. The fact that there is a tourism sector already means there is a perfect audience (albeit on a seasonal basis) to test and refine such products before releasing them to the outside world. Then, the possibilities of further developing tourism itself should be examined. In particular one sector that already exists on the island, namely spa tourism, certainly has a potential for even further development.⁸⁴ Internationally, there has been enormous growth in attention to so-called wellness tourism and many spa resorts have been developed throughout Europe and worldwide. Currently, Saaremaa has the advantage that it is a much cheaper spa destination than many other places in Europe and this is something that could be to its competitive advantage. However, competing on prices alone is not an effective long-term strategy. The way for Saaremaa to maintain its competitive edge as a spa tourism destination would be to attempt to constantly innovate its product, for example by creating packages for business and incentive tourists that include a wellness treatment. Additionally, the island's spas could collaborate with other tourist businesses to create products for long-term visitors (e.g., cycling holidays and spa treatment or bird-watching and spa-treatment). Of course, any type of development relating to tourism must be done in a manner, which meets the tenets of sustainable development; in other words, it must ensure the sector does not ruin the very resources that bring the visitors in the first place.

Despite a number of traits that give Saaremaa a low score on the attractiveness scale, it is obvious that some of these issues can be overcome through steps such as policy reorientation. Improving the provision of local health services or the quality of public transportation on the island is not an impossible task if there is a will (and the financial resources) to rectify matters. As for the connections to the mainland, to be sure they are not the most convenient; yet, they are also far better than in many other island regions around Europe. For the short term connections could possibly become even better, for example if policymakers decide to provide free ferry service to the island's residents while for the long term the possibility of providing a fixed link connection to the

⁸⁴ <http://www.tourism-review.com/article/808-future-trends-in-spa-business>

mainland will continue to be explored. However, the ultimate decision as to whether Saaremaa is linked to the mainland via a tunnel or bridge must first be based on a careful consideration of all the potential impacts (environmental, social and economic). It is also important to point out that it would be impossible to know if a fixed link would actually significantly reduce the island's peripherality given the considerable distance that separate Saaremaa from the capital region but also the fact that the main concentration of population (Kuressaare) is actually on the other side of the island from where the fixed link would be .

This leads to an important question. Must an island like Saaremaa – whose name means, literally, island in the sea - lose its islandness (effectively by being connected to the mainland) for it to have any realistic possibility of a brighter economic future? Alternatively, should steps be taken to ensure that Saaremaa can develop in a sustainable manner, while continuing to hold on to its label as an island? We suspect that, at least for some island residents (including those choosing to make a life at this pace, regardless of the problems they may face), the latter constitutes a more preferable development path.

Island Case Study Report: Kalymnos & Lipsi, Dodecanese, Greece

Introduction

Kalymnos and Lipsi are two islands of the Department of Dodecanese (NUTS 3) that constitutes an external border of EU in the S.E of the Aegean Sea within the East Mediterranean Sea.

Kalymnos

Kalymnos lies in the south eastern Aegean Sea at the center of Dodecanese between the islands of Kos (6 nautical miles), Leros (1.5 nautical miles) and the coast of Turkey, Asia Minor (14 nautical miles). The port of Kalymnos has a distance of 183 nautical miles from the port of Piraeus, and 83 nautical miles from the port of Rhodes (Capital of Dodecanese Prefecture).

It is the 4th largest of the Dodecanese Islands with an area of 109.67 sq. Km, a coastline of 96 km and the 3rd largest population in the Prefecture.

Under the Municipality of Kalymnos are included the small inhabited islands of Telendos, Pserimos and Kalolimnos.

The island of Kalymnos is also the chair of one of the three Provinces of the Dodecanese Prefecture, which includes the Communities of Agathonisi, Astipalaia, Kalymnos, Leros, Lipsi and Patmos situated on the homonymous islands.

The land mass of the island is largely rocky and mountainous with sparse valleys and agricultural land.

Kalymnos and the Kalymnians are world wide known for harvesting sponges from the sea bed, a very dangerous occupation which made the Kalymnian sponge divers famous for their legendary courage and recklessness.

Lipsi

Lipsi lies at the northern part of the Dodecanese, at the center between the islands of Patmos (5 nautical miles), Leros (4,4 nautical miles) Arkios (2,2 nautical miles), Agathonisi (11,2 nautical miles), Farmakonisi (13,7 nautical miles) and the coast of Turkey (19,4 nautical miles). The port of Lipsi has a distance of 169,9 nautical miles from the port of Piraeus, and 108,5 nautical miles from the port of Rhodes. Is one of the smaller islands of Dodecanese with an area of 15,98 sq. Km and a coastline of 36 km.

The island has a natural big harbor and many small bays with beautiful beaches with few small valleys and hills.

1.1. Efficiency of economy

1.1.1. Economic effectiveness

As there are no data of GDP at the level below NUTS 3 area, employment and the rate of change of employment are proposed as proxy variables.

Table 1. Employment as % of the population and growth rate (1991-2001)

	Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece
% of employed population (1991)	(173) 28,9%	(4209) 26,1%	(56.994) 35,2%	(87.191) 34,2%	(3.571.957) 34,8%
% of employed population (2001)	(205) 29,8%	(4681) 28,2%	(66.997) 35,5%	(106.845) 35,8%	(4.102.107) 37,6%
Growth rate (1991-2001)	(+32) 15,6%	(+472) 10,0%	(+10.003) 14,9%	(+19.654) 18,4%	(+530.150) +12,9%

Source: ESYE, Population Census

During the previous decade employment has increased and the two islands have improved slightly the rate of employed people within the population. But this is not enough in order to cover up the delay their economies are performing compared to both regional and national economy; this concerns mostly Kalymnos that records a score worst than the regional and the national average -although scores 10% of employment growth rate- implying an increase of lagging behind of the performance of its economy.

Table 2. Active population per sector and unemployment (2001)

	Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece
Active population	(231) 100%	(5.841) 100%	(81.513) 100%	(125.793) 100%	(4.615.470) 100%
Employed	88,7%	80,1%	82,2%	84,9%	88,9%
Primary sector (fisheries)	20,0% (10,2%)	15,3% (10,9%)	6,5% (1,8%)	8,7% (1,9%)	16,1% (0,3%)
Secondary sector (manufacture)	31,2% (2,9%)	22,4% (6,1%)	18,4% (5,8%)	22,0% (6,1%)	23,0% (14,1%)
(construction)	(26,3%)	(13,7%)	(11,2%)	(13,9%)	(7,5%)
Tertiary sector (hotels and restaurants)	43,4% (8,8%)	56,2% (8,2%)	69,5% (19,4%)	63,9% (16,7%)	60,9% (6,6%)
Not specify their sector	5,4%	6,1%	5,6%	5,4%	5,3%
Unemployed	11,3%	19,9%	17,8%	15,1%	11,1%

Source: ESYE, Population Census

The structure of the economy is totally different not only compared with the national one, but also with the other islands' economy. Fishery is very important activity within the two islands (five times

more than in Dodecanese and 34 times than the national average!); the contrary is happening for the agriculture. Kalymnos used to have one of the most important world-widely fleets for harvesting sponges. In Darwin in Australia and Tarpon Spring in Florida (USA) there are "colonies" from Kalymnos people who migrate there in order to "export" their know-how and their work force as Kalymnos was able to sustain them. The collapse of the activity – as it has happened with fisheries in the Baltic Sea – has created very important economic and social problems to the island as meanwhile no other activity has been developed. Within the secondary sector, manufacture is practically inexistent (especially on Lipsi) but the construction sector shows the opposite performance. Tourism (HORECA) in these two islands occupies more people than the Greek economy (8,8 for Lipsi and 8,2 for Kalymnos compared to 6,6) but clearly less than for the whole Dodecanese (19,4).

1.1.2 Economic development and fragility

Weight of competitive economic branches

The employment into the competitive sectors (Agriculture and Fisheries, Manufacture and Tourism) is lower than the national economy which is not considered as a very competitive one on the European level; the 3 branches are employing 28,8% in Lipsi, 25,9% in Kalymnos and 36,8% in Greece while for Dodecanese and South Aegean Region the rate is around 31,5%.

Qualitative characteristics of the main branches

In Lipsi, there is an effort guided by the municipality to upgrade the products of the primary sector and mainly the wine and cheese production in order to increase the value added on to the primary production and to gain a place in the regional market by their quality. It is the reason why there is an increase of employment in farming and of cultivated land contrary to what is happening in the majority of islands. In Kalymnos, it seems that only one manufacturing company working on artificial sponges is oriented to the global market; natural sponges are also exported. Aquaculture has a significant development.

Tourism is a small scale activity in comparison to what is happening in Rhodes and Cos with a low penetration of Tour-Operators. It is oriented to the classical Mediterranean model (3S) even if in Kalymnos "climbing tourism" is developing recently.

Generally, the activities on the two islands are "traditional", without incorporation of innovations and turned towards the satisfaction of the local demand (commerce, construction, services to the population).

Degree of dependence on main activity(ies)-monoculture

Kalymnos used to be dependent on harvesting sponges; when this natural product was attacked by a disease the people working on this (with no other qualifications) had to face a very important crisis from which Kalymnos has not recovered yet. Lipsi in the other hand used to be based on the primary sector (as all islands); as it was less competitive than equivalent productions on mainland and importations . Tourism is a growing activity but till now is not dominating the local economy as it happens to other islands of the area.

Economic leakages

The structure of local economy is very narrow, so most of the commodities consumed locally are imported.

Residential economy

Neither Lipsi, nor Kalymnos have an important tourist economy as they have limited number of small scaled tourism accommodations. But they have a growing economy of secondary houses: half of the existing houses in Lipsi are secondary houses or they are for rent; in Kalymnos about 44% of the houses' stock is not occupied permanently. The number of these houses corresponds to the new houses built after the 80s. The corresponding percentage for Dodecanese is about 38%, 48% for the South Aegean Region and 36% at the national level.

1.2 Social justice/equity

1.2.1 Population's Structure and development

Population and population change

The Municipality of Kalymnos had a population increase of 2,93% within the '90s after a high increase during the previous one. The Municipality of Lipsi had the inverse evolution: an increase of 14,88% within the 90s but a slow increase during the '80s; during the same period there was an increase of 16,46% in the prefecture of Dodecanese and 6,95% in the country.

Kalymnos population was fluctuating after 1951 till 1981 and it has increased afterwards; in the other hand population in Lipsi has followed the common pattern of the majority of greek islands: decrease of population between 1951 (885 inhabitants) and 1981 (574) and stabilization or slow increase afterwards without reaching

the initial population. Only 12 from 83 inhabited greek islands had a positive evolution during the same period; Rodos is one of them with a continuous population growth since 1951 (from 58.946 up to 117.009) representing 61,5% of the hole Department's population compared to 48,5% in 1951.

Table 3. Population evolution 1951-2001

Active population	Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece
1951	885	13.378	121.394	240.207	7.632.801
1961	724	14.017	123.021	222.980	8.388.553
1971	597	13.097	121.017	207.357	8.768.641
1981	574	14.295	145.071	233.597	9.740.417
1991	598	16.104	161.870	255.192	10.223.392
2001	687	16.576	188.506	298.462	10.934.097

Source: ESYE, Population Census

The deaths and births and the increase of the population for every 1000 citizens for the islands of Kalymnos and Lipsi for the period 1996-2001 is shown in the following Table.

Table 4. Natural increase of the population (1996-2001).

Year	KALYMNOS			LIPSI		
	Deaths	Births	Natural increase of the population /every 1000 people *	Deaths	Births	Natural increase of the population/ /every 1000 people *
1996	122	225	6,2*	0	7	10,2
1997	135	226	5,5*	10	2	-11,6
1998	150	244	5,7*	1	8	10,2
1999	151	233	4,9*	7	9	2,9
2000	143	227	5,1*	7	7	0,0
2001	158	256	5,9	1	6	7,3
Mean for 1996-2001	143	235	5,6	26	39	3,2

*These numbers are calculated considering that the population of Kalymnos and Lipsi for these years was that of 2001 (16.576 citizens and 687 respectively) since there are no validated data for the population of these years. It is expected that since there was an increase of the population throughout these years, that these numbers would have been slightly higher somewhere between 0,05 and 0,5.

The Prefecture of Dodecanese has the highest natural increase of the population in the country for the last two decades ranging between 4 and 5, with Kalymnos to be one of the islands with the

highest and the most stable increase the last two decades at approximately 5,5. In the case of the island of Lipsi there is also a significant natural increase of the population at 3,2, which shows fluctuations in time due to the small population which can be influenced very easily even by one death or one birth.

The Region of the South Aegean for the last few years also shows one of the highest natural increases of the population of the country ranging from 2,5 to 3,5, something very important if we take under consideration the natural increase of the population for the country which ranges from -0,2 to 0,6.

Active population

The active population of Kalymnos and Lipsi is in 2001 significantly lower than within the other areas: the active population of Lipsi was representing the 33,6% of the population of the island and 35,2% in Kalymnos when in the other areas it was over 42%.

Table 5 Active population (2001)

Active population		Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece
Total	Number of People	231	5.841	81.513	125.793	4.615.470
	% of total population	33,6%	35,2%	43,2%	42,1%	42,2%
Women	Number of women	48	1.547	28480	42687	1.738.040
	% of active population	20,8%	26,5%	34,9%	33,9%	37,7%
Men	Number of men	183	4.288	53033	83.096	2.877.430
	% of active population	79,2%	73,5%	65,1%	66,1%	62,3%

Source: ESYE, Population Census

As we can see from the above data, the participation of women in active life is limited in islands as Lipsi and Kalymnos where from the description of the economic structure is obvious there are not job opportunities. In the other hand in the Department of Dodecanese and South Aegean Region, women are more active than at the national average, as tourism is an important activity with a high demand for women workforce.

Dependent population

Table 6 Dependent population (1991 and 2001)

Dependent population		Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece
1991	Number of People	248	6.419	54.767	88618	3.374.462
	% of population	41,3%	39,9%	33,8%	34,7%	33%
2001	Number of People	240	5.474	56.539	94.257	3.488.132

% of population 34,9% 33% 30% 31,6% 31,9%

Source: ESYE, Population Census

A big improvement at the ratio between active and dependent population is ascertained in Lipsi and Kalymnos even if the two islands are lagging behind the other areas.

Table 7 Aged population (1991 and 2001)

Aged population	Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece	
1991	Men	51	681	9.957	19.857	817.501
	Women	59	1.104	12.125	22.014	1.009.732
	Total	110	1.785	22.082	41.871	1.827.233
	% of the population	18,4%	11,1%	11,7%	14%	16,7%
2001	Men	49	864	8.080	16.108	824.642
	Women	60	1.226	10.350	18.363	1.048.601
	Total	109	2.090	18.430	34.471	1.873.243
	% of the population	15,9%	12,6%	11,4%	13,5%	17,1%

Source: ESYE, Population Census

The aged population share in the total population of the South Aegean Region islands' is lower (13,5%) than in country (17,1%). Even in a small island as Lipsi there is an improvement.

From the above data we can understand that within the South Aegean Region as a whole there is a population dynamism; it is due to a very high birthrate that gives a very important young population: 28,9% of Kalymnos population is under 19 years old, when for Lipsi is 25,2%, for Dodecanese is 25,8%, for South Aegean 24,2% and the national average is only 21,8%. In Kalymnos this situation is explained by the important family links between local population and emigrants and the important transfer of money that occurs.

Social cohesion

Unemployment

Table 8 Unemployment (1991 and 2001)

UNEMPLOYED	Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece	
1991	Men	12	331	1.915	2.981	-
	Women	1	148	1.299	2.254	-
	Total	13	479	3.214	5.235	311.424
	% of active population	7%	10,2%	5,3%	5,7%	8,1%
	% of the total	2,3%	3%	2%	2,1%	3%

	population								
	> 25 years old	5	239	-	-	-			
	> 25 years old as a %	34,5%	49,9%	-	-	-			
	Long term	10	238	1.723	2.605	-			
	Men	20	806	7.961	10.231	280.409			
	Women	6	354	6.541	8.696	232.970			
	Total	26	1160	14.502	18.927	513.379			
	% of active population	11,5%	19,9%	17,8%	15,1%	11,1%			
2001	% of the total population	3,8%	7%	7,7%	6,3	4,7%			
	> 25 years old	9	509	-	-	-			
	> 25 years old as a %	34,6%	43,9%	-	-	-			
	Long term	16	572	10.555	13.516	-			

Source: ESYE, Population Census

Unemployment rates seems to be higher in the islands than in the country. An explanation to this phenomenon is the fact that census is taking place out of the tourism season where an important part of the population is employed. In Kalymnos the problem is more complicated; the crisis in sponge and general in fishing sector has not been absorbed yet, but people don't migrate (any more) to other places as happens generally to other greek islands. Women unemployment was higher in Kalymnos and Dodecanese (22,9%) and lower in Lipsi (12,5%) when the national average was 13,4%. Young people and long term unemployment is also very high in both islands; this fact underlines the lack of jobs' creation.

Income per capita

Table 9 Mean income per capita (in thousand euros).

	Lipsi*		Kalymnos		Dodecanese		Region of South Aegean		Greece
	income	% that of Greece	income	% that of Greece	income	% that of Greece	Income	% that of Greece	income
2001	5,12	46,1	8,4	75,6	10,46	94,1	10,35	93,2	11,11
2002	5,42	45,8	9,17	77,4	11,16	94,3	11,01	93,0	11,84
2003	5,96	47,6	9,52	76,0	11,65	93,0	11,53	92,0	12,53
2004	5,91	44,9	9,07	68,9	11,77	89,4	11,79	89,5	13,17
2005	-	-	-	-	12,00	87,3	12,18	88,6	13,74
2006	-	-	-	-	13,09	89,0	13,30	90,5	14,70
2007	-	-	-	-	13,89	79,6	14,08	80,6	17,46

Source: ESYE, No data for Kalymnos and Lipsi for the years 2005, 2006 and 2007. *it includes also data from the small islands of Agathonissi, Marathos and Arki.

Based on the income declaration, the population of Lipsi is living under the poverty level as their mean revenue is lower than 60% of the mean national revenue; for Kalimnos the situation is better but

it is worsening. This evolution is observed for Dodecanese and South Aegean average income for almost all the period. Compared with GDP evolution during the same period we can record a co-evolution.

Distribution of income seems to be very unequal in Lipsi as half of the population has declared a mean income of 769 euros but more than 15% has a mean income more than the national average!! An equivalent situation stands also per Kalymnos.

Early school leavers

Table 10 *Early school leavers (2001)*

Early school leavers and their Education level	Education	Lipsi	Kalymnos	Dodecanese	Region of South Aegean	Greece
Only Primary education	No. of people	252	5767	56016	94255	3139907
	%	43,0	40,1	33,8	35,8	31,8
Left primary education know reading and writing	No. of people	76	1319	9585	17749	643997
	%	13,0	9,2	5,8	6,7	6,5
Left primary education don't know reading and writing	No. of people	43	600	6095	9734	371452
	%	7,3	4,2	3,7	3,7	3,8
Total	No. of people	371	7686	71696	121738	4155356
	%	63,3	53,4	43,3	46,2	42,1

Source: ESYE, Population Census

Data from the census are showing a low level of education in the islands and more specifically a high percentage of people that has not finished the obligatory level of education (which was the primary school till the '80s).

A local study from 2003 showed that for the period 1990-2000 22,5% of the students, one out of four) was deserting the lower secondary education in Kalymnos, which was compulsory at the time, despite the fact that it is considered as an illegal act. The number of students deserting the lower secondary education for the same period for the Prefecture of Dodecanese was 15%, while for Greece was estimated to be around 11%.

Ethnic minorities, multicultural societies

At the census of 2001 in Kalymnos were found to be living people from 32 different Nationalities, in total 1.298 people equal to 7,8% of the population. 80% of these people, 1049 of them are coming from Australia, USA, Canada and South Africa, and are Greek that have taken new nationality, or Greek origin of second-third generation Greek economic emigrants that have return to Greece. A significant percentage of the remaining nationalities are North Europeans, 138 of them 10,5%, and the rest are economic immigrants, with half of them (4,3%) being Albanians

Very similar to Kalymnos was the case with Lipsi (29 people equal to 4,2% of the population are foreigners) as the majority of the people were coming from Australia, USA and Canada were Greek or Greek origin (18 of them equal to 62,1%), the remaining 11 (37,9%) were North Europeans who loved the island or somebody from the island and decide to stay there. There were no economic immigrants in Lipsi.

In the Prefecture of Dodecanese the situation is different as there were 98 Nationalities, 17.251 people equal to 9,2% of the population; 7.049 of those (40,9%) were Albanians. The national is more similar to the prefecture of Dodecanese; there were 215 Nationalities, 761.813 people (6,9% of the population), with a majority of economic immigrants of which 438.036 were Albanians (57,5%).

We can resume that Lipsi and Kalymnos are not facing the same situation as the rest of Greece of a growing multicultural society; this can be due to the low availability of jobs.

1.3. Environmental conservation

Environmental Preservation

A very general approximation of environmental pressures within an area can be found by its population density and economic activities. In the islands, number on existing tourism beds and secondary houses can complete the information.

Population density of Kalymnos (excluding the small inhabited islands of Telendos, Pserimos and Kalolimnos) was 149,5 inhabitants per km² (2001), and for the island of Lipsi (excluding the small uninhabited islands) was 42,43 inhabitants per km²; for the Prefecture of Dodecanese it was 69,4 inhabitants per km², for the South Aegean Region was 56 inhabitants per km², and for the Greece was 82,8 inhabitants per km². It is expected that environmental pressure is more important in Kalymnos, particularly if we consider that a large part of the island is a rocky mountain, so the population is concentrated in a rather restricted area.

Tourism is not an important activity, but the number of residential houses is increasing. Agriculture is neither an important nor an intensive activity but this is not the case for animal husbandry, especially in Lipsi where livestock capital is increasing.

Availability and quality of water resources

There are no official data with respect to the use of water resources on these two islands, such as annual drawing of freshwater, total renewable freshwater resources, total consumption etc.

From gathered information, we can affirm that there are serious problems with the quality and the availability of water on the island of Kalymnos. There are numerous bores for water on the island, where only two of them can supply with good, drinking quality, water. At the remaining bores the saltwater intrusion is way over the legal limits, and as a result, the majority of the locals consume bottled water for drinking and cooking. It is estimated that there is a negative balance between the water needed for household and business consumption (irrigation included) and the groundwater drawn from the bores/springs which during the summer months can reach that of 20% on average on the island with some areas exceeding that of 50%; this causes more problems with respect to storage, pressure on the existing resources and increase of salinity, disruptions of the supply on the water network, etc.

On the island of Lipsi, the problems are similar, although there is a small artificial lake for the collection of rain water. The demands for irrigation are not covered and the use of the water from bores is necessary. The policy of the Municipality for many years now, with respect to the demand for drinking water, is to import water with tankers and to store it in big tanks, in order to avoid opening many new bores and damage the quality of water with saltwater intrusion. Despite this, the quality of drinking water is not so good and as a result the majority of the locals consume bottled water for drinking and cooking.

Both islands are planning to invest in Desalination Plants to cover their needs.

Coasts and seas

The bathing waters at Kalymnos and Lipsi are in compliance with the standards laid down in the Bathing Waters Directive 76/160/EEC (CSI 022) according to information from the Ministry of Environment.

The sea surface temperature (SST) changes in the Mediterranean Sea (1982–2003), based on European Commission, DG Joint Research Centre, IES (2006), show an increase of approximately 2 °C for the area around the island of Kalymnos and Lipsi, while the average increase in SST for the Mediterranean Sea has been 2.2–2.6 °C.

Based on the Study of Guinehut and Larnicol (2008), the average sea-level rise of the Mediterranean (through satellite observations, October 1992 – May 2007) was 1.5 mm/year, where for the area of

Kalymnos and Lipsi is estimated around 2 mm/year. Taking into account the relief of the islands, the estimated sea-level rise is not going to affect significant parts of the islands' coastline.

Based on the Report of Status of the fish stocks in ICES and GFCM fishing regions of Europe in 2006 (Ver. 8.00), out of the 99 ktonnes of the register catch for the Aegean in 2006, 2/5 of the main stocks has been assessed (11 species) and from those, 8 are overfished and only 3 are within safe biological limits.

Regarding fisheries in general. a recent study (Kokkoris et al., in preparation) shows that there has been a decrease in the Marine Trophic Index of the Greek Seas. Marine trophic index is the mean trophic level of fisheries landings [and one primary marine biodiversity indicator]

The whole island of Lipsi and the adjacent islets are a Natura 2000 site. Actually there is a Site of Community Importance (SCI) GR4210010 with an area of 12.407,03 ha and a Special Protection Area (SPA) GR4210016 covering an area of 876 ha. In the island of Kalymnos there are no Natura 2000 sites. On the contrary, the majority of the small islets and skerries around Kalymnos including Telendos are as a whole, sites of Natura 2000, putting the Prefecture of Dodecanese in the category of ">30% of costal zone covered by Natura 2000 sites". No specific measures have been adopted for an effective protection.

Biodiversity

With respect to the coverage of protected areas (share of Natura 2000 area in %), as it has already been mentioned, there are no protected areas on the island of Kalymnos; in contrast the entire island of Lipsi plus the islets around it is under the protection scheme. According to the information of NATURA 2000 database, there are more than a hundred species recorder in the two zones; some of the species are important and the have lead to classify the zones as Sites of community Importance (SCI).

Terrestrial biodiversity is threatened from fragmentation created by urbanization, infrastructure and agriculture. The fragmentation index calculated on the NUTS 3 (Dodecanese) level⁸⁵ scores 5, the higher at the evaluation scale, even if most of the human pressures are low considering land cover.

⁸⁵ ESPON 2006, Feasibility study on monitoring territorial development based on ESPON key indicators, p.78

The proportion of fragmentation of the natural and seminatural areas vs. the extent of the NATURA 2000 Network areas for the region of the South Aegean scores 2 at a scale between 0 to 4. This means that there is generally high fragmentation in a Region with high percentage of NATURA 2000 areas.

Land use/ quality & Landscape quality - Soil quantity and quality

Based on Corine database, the largest area of the two islands is classified within the sub-category of "scrub and/or herbaceous vegetation associations". In Kalymnos it is 86,2% (41,4% is natural grasslands, 32,6% of the territory has Sclerophyllous vegetation and 12,4% sparsely vegetated areas), while 10,2% different types of agricultural area and only 3% artificial surfaces; in Lipsi about 71% of the lands are characterised as such and 29% as agriculture areas. In Lipsi the artificial surfaces are so limited (1,2% of the area (data from National Statistical Service) that are not presented in the Corine database. Artificial areas have unquestionably increased since 2000 as construction is continuing in both islands.

Based on the same data, Lipsi has not at all artificial coastal line (from a more detailed image only the port may be considered as such), while in Kalymnos 8,7% of the coastal line is artificial.

The data related to land cover may also give information about soil quality; as cultivated areas and forests are considered having rich soil; semi natural areas used as pasture are degraded and open spaces with little or no vegetation have almost no soil. So, it is not surprising that these islands as almost all of the Aegean islands are classified as areas under or with high risk of desertification.

g. Urban environment

The population density in combination with the town extent [τι θέλεις να πεις εδώ;], the quality of atmosphere, the existence of green (or natural or semi-natural areas) and other public areas⁸⁶ (as % of the total urban area), the quality of public transport, the extent of walkable areas, the existence of traffic congestion, the level of noise, the quality of urban design and planning are some of the commonly used parameters in order to evaluate urban environment's quality⁸⁷.

In Lipsi we cannot even speak for a urban environment as there is a small number of houses within a semi-natural area; population density is low even during summer period – when population is

⁸⁶ The possibility to access to the sea front that is not totally artificialized and commercialized is important for coastal urban areas.

⁸⁷ EEA, 2009, Ensuring quality life in Europe's cities and towns

more than doubled. In order to diminish pressures from traffic, the local authority has developed a very effective public transport linking the port to the different beaches of the island.

In Kalymnos the situation is different as the density is very high and the population is concentrated in a small part of the territory; In addition, there is lack of public spaces, of walkable areas and there is no real urban design.

Air quality/ pollution

Based on the Reports of the Environmental European Agency, and with respect to the Exposure of the ecosystems to acidification (CSI 005), there is no excess of the critical loads of acidity (with respect to the average accumulated excesses for the year 2000) at the region of the southeast Aegean.

At the same time there are no units of renewable energy production on the islands of Kalymnos and Lipsi for the time being. It has been estimated that the majority of the energy demanded on these two islands, approximately 95,5%, comes from the power stations, one of which is based on the Island of Kalymnos using diesel fuel, while the remaining 4,5% is estimated to be the use of solar powered heaters in the households, for heating the water, and in very rare cases for heating the houses.

2. Issues of Attractiveness

2.1. Issues that affect the Attractiveness of Kalymnos & Lipsi for the Enterprises

Accessibility

According to ESPON Project on Transport (2004)⁸⁸, for the prefecture of Dodecanese the Potential Accessibility, Multimodal is about half the average accessibility of the ESPON space (at the 40<60). The used approach has two deficiencies: (a) maritime transport - critical for islands – is not included in the system and (b) it ignores the realities of archipelagic areas. On the top of these seasonal fluctuations of transport frequency and weather conditions are more important for islands than for mainland are not considered.

Accessibility for business and local population has to do first of all with the facility they have accessing to services that cannot have locally; this can concern administrative services, financial and health services, education and training services, cultural services

⁸⁸ ESPON 2004, Transport services and networks: territorial trends and supply

etc. In an archipelago as Dodecanese these services can be offered on different islands or on the the mainland.

The following table has the average time of all the trips that took place within a middle week in August of 2009 from Kalymnos and Lipsi to Kos, Rhodes and Piraeus, the three higher hierarchical cities, where local people use to go.

Table 11. Average time and number of connections

ISLAND	KOS		RHODES		PIRAEUS/ATHENS	
	Average time	Weekly connections	Average time	Weekly connections	Average time	Weekly connections
KALYMNOS	00:32h	60	04:00h	17	11:50h	4
LIPSI	2:30h	14	05:38h	8	10:35h	2

The accessibility indexes and the virtual distance that is calculated according to the methodology already laid down in the Annex of the Inception Report, demonstrate clearly three different issues for the inhabitants of the case study islands:

(a) Despite the satisfactory frequency of connections between the smaller islands and between these islands and the island of Kos, the virtual distance and the accessibility index remains relatively high, even without including the days when there are no connections due to bad weather;

(b) The reality of the islanders is very complex, especially for Lipsi. They have to move to different islands for different services and always with different schedules, ferries and combinations of ferries. For example, a trip from Lispi to Kos may have to include going to Leros first and then changing ferries to get to Kos. If the fact that the service may not be immediately available during the time of the visit due to reasons related with the service itself (e.g. absence of the persons responsible or inability to complete in one visit the required task), then the difficulties can be accessed on their real basis.

(c) Apart from the virtual distance, another factor that should be included in the analysis is that of the possibility to return to the island on the same day after the completion of the task that for which they have traveled for. Only for the pairs Lispi- Leros (due to the provision of the local administration) and Kalymnos – Kos this possibility exists and this burdens the inhabitants significantly, as they may have to spend a night on the islands to relatives or hotels.

Table 12 Accessibility from Kalymnos and Lipsi (end of the text p. 95)

Note: during the calculation of the accessibility indexes, the probability for missing the ferry has been calculated according to the number of daily connections available and the waiting time for small ports has been reduced to half an hour. The Travel speed used is the one of the slowest ferry.

At this point we have approached accessibility only as cost on time that of course provokes indirectly monetary costs for people and businesses as it takes more time (frequently one or more days) to do things that on the mainland could be done within a few hours or a day. On the top of this there is the direct monetary cost related to the travel cost as ticket, accommodation, different expenditures.

Labour qualifications and cost

The share of population aged 15 years and above with tertiary level education for the island of Kalymnos in 2001 was 12,3%, and for Lipsi was 8,3%, while for the prefecture of Dodecanese was 15,5%, for the South Aegean Region was 14,2% and for the Country was 17,6, including all technical degrees above High Secondary Education, something which shows a low quality of human capital in these two islands, especially the small island of Lipsi.

With respect to the labour cost and based on the interviews with the local businesses and employees, it turned out that the cost for labour work is generally lower with respect to the capital centers, such as Rhodes and Athens, while the cost for educated high trained employees is much higher than the centers, since these people are scarce to find and when they come to work to the islands they charge more to compensate for their isolation and loss of opportunities.

Services & infrastructure in support of entrepreneurship/ Reception facilities

There are no facilities/ infrastructures to support the local operating businesses in Lipsi, while in Kalymnos there is a representing office of the Commercial Chamber of Dodecanese and an office of the Center for Business & Technological Development of the South Aegean unfortunately with no representative or any employee. The lack of public structures is not completed by private services to enterprises.

Incentives for companies

There is a subsidy policy applied to all islands for new investments, for the introduction of innovation but also for renovation of existing companies; recently all services as commerce, private services are also covered by this kind of measures. Other provisions or direct and direct cost reduction policies are also applied in the two islands and the region as is a reduction of 30% of VAT and a higher non imposable income in small islands (with population less than 3100 people). All these programs are co-financed by greek government and EU by the structural funds. The Region is classified as a phasing-in one as PIB per capita is over 75% of the European mean; this will has as result that European financing is going to be reduced after 2010 and there will be clearly less possibilities for state aids within the existing regulations.

In contrary the cost of transportation of goods for the local businesses is considerably high and there is no for example the cost of transportation for a standard container from the main port of Piraeus to Kalymnos was equal to the cost of transporting the same container from USA, Japan, China to Piraeus.

Local businessmen complain that the state aids are not enough to overcome the higher production cost occurred by the transport and the existence of different monopolies. The application of the principle of "territorial continuity" is a request of the local authorities; they demand the alignment of sea transport charges to those applied in terrestrial transport.

Agglomeration economies/Size of market

As the size of the market is small and the competition between providers within the different branches -as transport- is very low, prices for different commodities and services are very high compared to prices in Athens or Rhodes.

Value of land for enterprises

Due to the development of the tourist industry and the demand of land for second houses in the islands the value of buying land for enterprises, touristic or not, is very high in both Kalymnos and Lipsi as well as for the Prefecture of Dodecanese with respect to that of the country. The values of the market vary significantly from place to place according to its accessibility and distance from the coast and there are no stable mean rates to be able to give some comparable values.

Also the cost of construction is also higher in the islands of Lipsi and Kalymnos since the majority of the constructing materials are

imported adding up their values with the value of transportation cost, with a mean estimate ranging from 15% to 30% higher.

Research and innovation

There are no research facilities such as research institutions and universities in either Kalymnos or Lipsi.

Natural and cultural heritage

There is a very rich cultural heritage in both Kalymnos and Lipsi, with many cultural sites (archaeological and religious ones), traditional settlements and activities related with local cultural events (celebrations, festivals etc.) that have shaped the whole landscape. Even if there are no internationally recognized sites on the islands, they have as most of other places a capital to exploit either for new activities' development or for amelioration of quality of life..

With respect to the natural capital, Kalymnos the recent years has become one of the most important world wide destinations for climbing, with more than 600 climbing routes. The wild mountainous rocky scenery of the island is a big attraction for many tourists every year, creating new opportunities in the alternative tourism industry and increasing the touristic season.

Lipsi due to its relative small size and the amazing scenery attracts many tourists that enjoy the combination of hiking with a visit to a beautiful beach. As a Natura 2000 site Lipsi and the surrounding small islands could be a destination for tourists with specific interests in the whole marine area of north Dodecanese. Unfortunately there is not yet management authority for the protected area, which could create a better infrastructure and facilities in order to ameliorate both the protection and the attractiveness of the natural area.

Hazards

Based on the ESPON 1.3.1 project "The Spatial Effects and Management of Natural and Technological Hazards in Europe", the Prefecture of Dodecanese is classified on the 25-75 percentile type of aggregated hazard, for the 15 natural and technological hazard indicators that was studied. Analytically: 1) there are no avalanches, 2) there is a high precipitation deficit as a potential drought indication, 3) there is a high potential for earthquakes, 4) there is a low hazard from extreme temperatures, 5) there is a very low hazard for flood recurrence (although urban floods do occur very often in the streets of the city of Kalymnos (Pothia), of short

time), 6) there is a high risk for forest fire hazard, 7) there is a low hazard for areas with landslide, 8) There are no hazards from storm surge, 9) it's a region that lies in vicinity to tectonically active zones and have experienced earthquake/ volcano/ landslide associated tsunami, 10) it's a region with particularly hazardous volcanoes, 11) there is a very low probability for winter or tropical storms, 12) there is a very low probability of airplane accident hazard, 13) there is a very low density of chemical plants and thus very low probability of such a hazard, 14) there is a very low potential of radioactive contamination since the region is outside the 300 km radius of any nuclear plant and 15) there is a low potential of oil spill hazard based on the volume of oil production and transport related activities in the region.

The Integrated Vulnerability Index (based on GDP per capita, population density, national GDP (inverse) and proportion of fragmented natural areas to all natural areas (weighted 30:30:30:10)) for the Prefecture of Dodecanese is of the medium class.

Based on the integrated risk analysis which takes under consideration the degree of vulnerability and the intensity of hazards the prefecture is again at the medium risk class.

There is a very high risk from the illegal migration since geographically both islands and the whole Prefecture are on one of the main roots of illegal migration from the countries of Asia and Africa to Europe.

ITC facilities and use

There are no Broadband networks on the two islands except from the ones that the phone companies are provide, "internet on the go" which doesn't have a good cover, or high speeds. There are no official data on the use of internet networks in the enterprises and the households. The public services in both islands have a network from only one company, the de-nationalised phone company and its new internet network service, which is a kind of monopoly on the two islands for the time being.

Generally in Greece the penetration of ICT for business purposes is considered as very low. Only the tourism sector (accommodation sector, local authorities, NGOs, private persons) has a good utilization.

Networking services

Both islands have electricity, water and telecommunication networks, as well as a local transportation system. There are problems with power cuts especially during the summer months in

both islands and serious problems with the quality of drinking water (see previous section on *availability and quality of water resources*). The telecommunication system remains a monopoly of the ex-national company OTE since it is the only one that has a network of infrastructure on these islands.

The local transportation system in both islands shows a periodical activity with more intensity during the summer months for the use by the tourists; this is considered unfair from the local population, although there is an issue of cost effectiveness to run these systems as the increase of private cars leads to less use of public transport from the local population.

On the island of Kalymnos more than 95% of the population is connected to a waste water collection system and 70 to 80% is connected with a Sewage Treatment System, it is under planning to cover the remaining population both with Collection and Treatment Systems within the next two to three years.

On the island of Lipsi the 90% of the population is connected to a waste water collection and treatment system. The remaining are isolated households which have their own septic systems.

On Lipsi a new solid waste treatment plant (sanitary landfill) is operating since 2009 and the municipality has organised a system to recycle materials by concluding agreements with the companies in charge with recycling at the national level as EU regulations demand for.

2.2. Issues that affect the Attractiveness of Kalymnos & Lipsi for the Population

Accessibility

Access at and quality of public interest and economic services

In a small island as Lipsi as there is not any services located locally, people have to travel to an other island or on mainland. For services where quality matters, people is not choosing necessarily to go to the nearest place. The destination is also influenced by the possibility of the person to do more things within one visit.

Table 13: *Accessibility to different services from Kalymnos and Lipsi*

Island	Type of service							
	Hospital		Bank		Public services*		Pharmacy	
	Island where	Daily trip	Island where the	Daily trip	Type of service	Island where	Daily trip	Island where

	the service is available	availability	service is available	availability		the service is available	availability	the service is available	availability
Lipsi	Proximate: Kalimnos	✓			Tax service Social Security Agriculture bureau Investment assistance Court 1 st level	Leros Leros	✓		
	Frequent: Rodos	-	Lipsi (for some transactions) Leros	Locally ✓		Kalymnos	-	Locally	
	Possible: Athens	-			level 2 nd level Prefecture Region Tax service Social Security Agriculture bureau Investment assistance	Leros Kos Rodos locally	✓ - - -		
Kalymnos		Locally						Locally	
	Frequent: Rodos	-			Court	Kos	-		
	Possible: Athens	-			Prefecture Region	Rodos	-		

*for an increasing number of transactions with the administration there is the possibility to contact the Centre of Citizen's Services (KEP) in every municipality; so the citizen has no to move to the island where the administration is located.

From the above table it is easy to see the difference existing between a very small island and a middle size island which is also site of administration (district). It has to be underlined that between Lipsi and Leros the transport is free of charge.

Employment and career opportunities

The possibility to find a job and the opportunities to find a job relative to the qualifications and the ambitions of local people is difficult to be measured directly; it is estimated through employment evolution, unemployment rate, activity rate and profession. As it is analysed at the 1.2. section the situation within the studied islands is not positive.

Security

There is a general sense of security in both islands, although there is an increasing concern in the recent years for the use of drugs and related criminal activities in the island of Kalymnos, which the locals are relating with the young unemployment.

Urban dynamism (cultural and social life)

Given the population of the two islands, there is no FUA on Kalymnos or Lipsi.

While Lipsi has only a small village with very few services for the local population, Kalymnos the situation is different; the fact that the capital town has about 10.280 people of 16.350 inhabitants of the island and 16.576 of the municipality and Kalymnos district comprises also 5 more small islands with a population of 13.447 inhabitants, gives to it the dynamism of a local administrative and commercial centre.

Cultural services

On the island of Kalymnos there are two private cinema rooms (one open for the summer and one close, for the two -open to the public- cinema clubs that the locals have organized. There is also a Library and new open theater as well as a Municipal hall room for many different events.

On the island of Lipsi there are an open theatre at the yard of the primary school, a new close theatre at the High school where projections of movies are also organized by the local cinema club, and a small Municipal hall for many different events.

Value of land / housing

The value of land and housing is similar to that for the enterprises (see previous section on Value of land for enterprises), it is considered expensive by the locals.

The analysis for the other topics as Social capital, Governance quality, Environmental and cultural heritage, Hazards and ITC facilities and use is the same as for the enterprises.

3. What do the locals think about the attractiveness of their island – Data and qualitative information collection from stakeholders and local surveys

This section will be based on an analysis of responses to the questionnaires that will be administered to: (C1) a selection of residents "the Questionnaires of Attractiveness for the Population", and (C2) a selection of the owners/managers of 'competitive' companies/businesses "the Questionnaires of Attractiveness for the Enterprises"

There are in total 130 questionnaires from Kalymnos and Lipsi, 64 from the former and 66 from the later. In each island, 48 questionnaires were answered by locals and 16 in Kalymnos and 18 in Lipsi from newcomers.

Table 14. *The number of questionnaires in the case study islands per locals and newcomers*

	Locals	Newcomers	Total
Kalymnos	48	16	64
Lipsi	48	18	66
Total	96	34	130

Respondents from Kalymnos tend to declare higher incomes than those of Lipsi and the relationship is statistically significant (Pearson's Chi-square = 15.4, $p < 0.05$, $N = 110$). On the contrary, locals and newcomers have similar family income class distributions. Locals tend to have larger households than newcomers (3.44 members compared to 2.65 of that of newcomers). Locals tend also to be younger and older, while newcomers tend to inhabit the middle age classes. This is expected, as they were not born on the island and chose to live on it at some point of their life.

Table 15 *Income classes of responders*

Family Income class (€)	Kalymnos %	Lipsi %	Total %	N
<10,000	18,3	26,0	21,8	24
10,001-15,000	23,3	32,0	27,3	30
15,001-20,000	13,3	18,0	15,5	17
20,001-25,000	8,3	2,0	5,5	6
25,001-30,000	10,0	16,0	12,7	14
>30,000	26,7	6,0	17,3	19
Total	100,0	100,0	100,0	110

Table 16 *Age of responders*

Age of respondents	Locals %	Newcomers %	Total %	N
< 25	15,5	2,9	12,2	16

26-35	26,8	26,5	26,7	35
36-45	21,6	23,5	22,1	29
46-55	20,6	35,3	24,4	32
56-65	11,3	11,8	11,5	15
> 65	4,1	0,0	3,1	4
Total	100,0	100,0	100,0	131

Overall, the findings from the questionnaires seem to point to some common threads in the understanding and the construction of island identities and island living. The issue of transport from and to the islands dominates most of the answers in the negative part of the scale, along with the lack of technical education, costs for tickets and for building a house and the quality of health services. On the positive end of the scale, the quality of nature, the quality of life and the security that respondents feel get significantly higher scores than the rest of the attractiveness factors used.

Table 17. Frequencies of the answers of respondents of the case study islands and calculation of the total value for each variable

Question/attractiveness factor	Agree completely	Agree	Neither agree nor disagree	Disagree	Disagree completely	Don't know-not answer	Total	Value
the frequency of scheduled connections is satisfactory	1	7	11	44	68		131	-171
Technical education services are satisfactory		5	16	37	68	5	131	-168
ticket cost is satisfactory	1	5	17	52	56		131	-157
the cost for building- buying a house is satisfactory	2	7	22	31	66	3	131	-152
health services cover my needs	1	7	22	48	53		131	-145
the cost of living is satisfactory	2	12	29	35	53		131	-125
I trust the local ministry	1	10	29	23	56	12	131	-123
public services are satisfactory		11	36	38	44	2	131	-115
involvement in local decisions is satisfactory	3	11	33	37	40	7	131	-100
transport quality is satisfactory	3	18	36	45	29		131	-79
waste collection and treatment services are satisfactory	4	33	23	28	41	2	131	-69
electric power services are satisfactory	5	28	29	34	34		130	-64
I trust local administration	12	27	23	33	35	1	131	-52
sport events are available locally	3	29	34	40	20	4	130	-45
the built environment is satisfactory	6	25	44	29	23	3	130	-38
education services cover my needs	6	29	29	43	17	7	131	-36
satisfactory and continuous water supply	9	31	35	34	22		131	-29
public transport network covers our needs	8	33	41	33	14	1	130	-12
employment is available locally	8	27	43	51	2		131	-12
internet services are satisfactory	6	36	24	26	16	22	130	-10

cultural events are available locally	11	34	33	41	11	130	-7
generally most of the people can be trusted	8	40	45	23	13	2	131
I am interested in local politics	24	31	24	19	26	7	131
the quality of nature is satisfactory	48	55	20	6	2	131	141
the quality of life is satisfactory	56	54	14	5	2	131	157
I feel secure	66	43	13	6	3	131	163

Value of answers: 2* agree completely, 1* agree, 0* neither agree nor disagree, -1* disagree, -2* disagree completely

Concerning differences between the residents in the two islands and between locals and newcomers, the later are surprisingly less than those between the inhabitants of the two islands.

Table 18: Statistical important differences of answers between locals and newcomers and the inhabitants of the islands of Kalymnos and Lipsi

	Locals - Newcomers			island		
	Correlation Coefficient	Sig.	N	Correlation Coefficient	Sig.	N
the frequency of scheduled connections is satisfactory				-0,34	0,00	130
internet services are satisfactory				0,29	0,00	129
electric power services are satisfactory				0,54	0,00	129
satisfactory and continuous water supply				0,21	0,02	130
waste collection and treatment services are satisfactory	0,23	0,01	131	-0,33	0,00	130
education services are satisfactory				0,28	0,00	130
sport events are available locally				0,46	0,00	129
health services cover my needs				0,31	0,00	130
the cost for building- buying a house is satisfactory				0,25	0,00	130
the cost of living is satisfactory				0,51	0,00	130
the quality of life is satisfactory	-0,20	0,02	131	-0,24	0,01	130
the built environment is satisfactory				-0,58	0,00	129
public services are satisfactory	0,19	0,03	131	-0,23	0,01	130
involvement in local decisions is satisfactory				-0,18	0,04	130
I feel secure	-0,28	0,00	131	-0,26	0,00	130
I trust local administration	0,18	0,04	131	-0,43	0,00	130
I trust the local ministry	0,20	0,02	131	-0,20	0,02	130
generally most of the people can be trusted	-0,19	0,03	131			

Differences (that are statistically significant) between locals and newcomers tend to focus to the degree of trust towards local administration and the people of the island. Newcomers feel that they can trust the inhabitants more than locals and feel much more often more secure than locals. In the same vein, newcomers regard

the quality of life more satisfactory than locals, perhaps as they have chosen to move to the island because of this quality. But, newcomers are less satisfied with public services and especially waste collection and treatment.

Table 19: Answers of Locals and Newcomers on attractiveness factors

		Agree completely %	Agree %	Neither agree nor disagree %	Dis-agree %	Dis-agree completely %	Don't know-not answer %	Total %	N	Value	Value % of N
waste collection and treatment services are satisfactory	Locals	4,1	26,8	20,6	22,7	24,7	1,0	100,0	97	-36	-37,1
	Newcomers	0,0	20,6	8,8	17,6	50,0	2,9	100,0	34	-33	-97,1
	Total	3,1	25,2	17,6	21,4	31,3	1,5	100,0	131	-69	-52,7
the quality of life is satisfactory	Locals	37,1	44,3	11,3	5,2	2,1	0,0	100,0	97	106	109,3
	Newcomers	58,8	32,4	8,8	0,0	0,0	0,0	100,0	34	51	150,0
	Total	42,7	41,2	10,7	3,8	1,5	0,0	100,0	131	157	119,8
public services are satisfactory	Locals	0,0	9,3	34,0	24,7	29,9	2,1	100,0	97	-73	-75,3
	Newcomers	0,0	5,9	8,8	41,2	44,1	0,0	100,0	34	-42	-123,5
	Total	0,0	8,4	27,5	29,0	33,6	1,5	100,0	131	-115	-87,8
I feel secure	Locals	42,3	37,1	12,4	5,2	3,1	0,0	100,0	97	107	110,3
	Newcomers	73,5	20,6	2,9	2,9	0,0	0,0	100,0	34	56	164,7
	Total	50,4	32,8	9,9	4,6	2,3	0,0	100,0	131	163	124,4
I trust local administration	Locals	11,3	22,7	18,6	22,7	23,7	1,0	100,0	97	-24	-24,7
	Newcomers	2,9	14,7	14,7	32,4	35,3	0,0	100,0	34	-28	-82,4
	Total	9,2	20,6	17,6	25,2	26,7	0,8	100,0	131	-52	-39,7
I trust the local ministry	Locals	1,0	9,3	24,7	17,5	41,2	6,2	100,0	97	-86	-88,7
	Newcomers	0,0	2,9	14,7	17,6	47,1	17,6	100,0	34	-37	-108,8
	Total	0,8	7,6	22,1	17,6	42,7	9,2	100,0	131	-123	-93,9
generally most of the people can be trusted	Locals	1,0	30,9	36,1	21,6	8,2	2,1	100,0	97	-5	-5,2
	Newcomers	20,6	29,4	29,4	5,9	14,7	0,0	100,0	34	12	35,3
	Total	6,1	30,5	34,4	17,6	9,9	1,5	100,0	131	7	5,3

Differences (that are statistically significant) between the residents of Kalymnos and Lipsi are more important and spread over more factors. Surprisingly given the less satisfactory accessibility of Lipsi, its residents are more satisfied with the frequency of scheduled connections, perhaps due to the fact that the situation of Kalymnos regarding connections has worsened significantly the last few years. The residents of Lipsi are less satisfied though from a series of public and of public interest services, such as electric power, internet connections, water supply, technical education, sport events and health services. They are also less satisfied with increased costs of life and especially for building – buying a house. But, they are more satisfied with the overall quality of their life on

Lipsi, their trust towards local administration, the built environment and their involvement in local decisions.

Table 20: Answers of inhabitants of Kalymnos and Lipsi on attractiveness factors

		Agree completely %	Agree %	Neither agree nor disagree %	Dis-agree %	Dis-agree completely %	Don't know-not answer %	Total %	N	Value	Value % of N
the frequency of scheduled connections is satisfactory	Kalymnos	0,0	1,6	3,1	28,1	67,2	0,0	100,0	64	-103	-160,9
	Lipsi	1,5	9,1	13,6	39,4	36,4	0,0	100,0	66	-66	-100,0
	Total	0,8	5,4	8,5	33,8	51,5	0,0	100,0	130	-169	-130,0
internet services are satisfactory	Kalymnos	6,3	42,9	14,3	15,9	4,8	15,9	100,0	63	19	30,2
	Lipsi	3,0	12,1	22,7	24,2	19,7	18,2	100,0	66	-30	-45,5
	Total	4,6	27,1	18,6	20,2	12,4	17,1	100,0	129	-11	-8,5
electric power services are satisfactory	Kalymnos	6,3	39,7	28,6	15,9	9,5	0,0	100,0	63	11	17,5
	Lipsi	1,5	4,5	16,7	34,8	42,4	0,0	100,0	66	-74	-112,1
	Total	3,9	21,7	22,5	25,6	26,4	0,0	100,0	129	-63	-48,8
satisfactory and continuous water supply	Kalymnos	9,4	31,3	23,4	23,4	12,5	0,0	100,0	64	1	1,6
	Lipsi	4,5	15,2	30,3	28,8	21,2	0,0	100,0	66	-31	-47,0
	Total	6,9	23,1	26,9	26,2	16,9	0,0	100,0	130	-30	-23,1
waste collection and treatment services are satisfactory	Kalymnos	0,0	14,1	18,8	21,9	43,8	1,6	100,0	64	-61	-95,3
	Lipsi	6,1	36,4	16,7	19,7	19,7	1,5	100,0	66	-7	-10,6
	Total	3,1	25,4	17,7	20,8	31,5	1,5	100,0	130	-68	-52,3
technical education services are satisfactory	Kalymnos	0,0	6,3	14,1	37,5	40,6	1,6	100,0	64	-72	-112,5
	Lipsi	0,0	1,5	9,1	19,7	63,6	6,1	100,0	66	-96	-145,5
	Total	0,0	3,8	11,5	28,5	52,3	3,8	100,0	130	-168	-129,2
sport events are available locally	Kalymnos	4,8	41,3	25,4	19,0	6,3	3,2	100,0	63	12	19,0
	Lipsi	0,0	4,5	27,3	40,9	24,2	3,0	100,0	66	-56	-84,8
	Total	2,3	22,5	26,4	30,2	15,5	3,1	100,0	129	-44	-34,1
health services cover my needs	Kalymnos	1,6	10,9	26,6	29,7	31,3	0,0	100,0	64	-50	-78,1
	Lipsi	0,0	0,0	7,6	43,9	48,5	0,0	100,0	66	-93	-140,9
	Total	0,8	5,4	16,9	36,9	40,0	0,0	100,0	130	-143	-110,0
the cost for building-buying a house is satisfactory	Kalymnos	3,1	7,8	20,3	28,1	37,5	3,1	100,0	64	-57	-89,1
	Lipsi	0,0	1,5	13,6	19,7	63,6	1,5	100,0	66	-96	-145,5
	Total	1,5	4,6	16,9	23,8	50,8	2,3	100,0	130	-153	-117,7
the cost of living is satisfactory	Kalymnos	3,1	15,6	37,5	25,0	18,8	0,0	100,0	64	-26	-40,6
	Lipsi	0,0	3,0	7,6	28,8	60,6	0,0	100,0	66	-97	-147,0
	Total	1,5	9,2	22,3	26,9	40,0	0,0	100,0	130	-123	-94,6
the quality of life is satisfactory	Kalymnos	32,8	43,8	15,6	6,3	1,6	0,0	100,0	64	64	100,0
	Lipsi	53,0	37,9	6,1	1,5	1,5	0,0	100,0	66	92	139,4
	Total	43,1	40,8	10,8	3,8	1,5	0,0	100,0	130	156	120,0
the built environment is satisfactory	Kalymnos	0,0	4,8	23,8	34,9	36,5	0,0	100,0	63	-65	-103,2
	Lipsi	9,1	31,8	43,9	10,6	0,0	4,5	100,0	66	26	39,4
	Total	4,7	18,6	34,1	22,5	17,8	2,3	100,0	129	-39	-30,2
public services are satisfactory	Kalymnos	0,0	6,3	15,6	35,9	42,2	0,0	100,0	64	-73	-114,1
	Lipsi	0,0	10,6	39,4	22,7	24,2	3,0	100,0	66	-40	-60,6
	Total	0,0	8,5	27,7	29,2	33,1	1,5	100,0	130	-113	-86,9
involvement	Kalymnos	0,0	3,1	25,0	32,8	29,7	9,4	100,0	64	-57	-89,1

in local decisions is satisfactory	Lipsi	4,5	13,6	25,8	22,7	31,8	1,5	100,0	66	-42	-63,6
	Total	2,3	8,5	25,4	27,7	30,8	5,4	100,0	130	-99	-76,2
I feel secure	Kalymnos	39,1	35,9	12,5	7,8	4,7	0,0	100,0	64	62	96,9
	Lipsi	62,1	28,8	7,6	1,5	0,0	0,0	100,0	66	100	151,5
	Total	50,8	32,3	10,0	4,6	2,3	0,0	100,0	130	162	124,6
I trust local administration	Kalymnos	1,6	9,4	17,2	29,7	42,2	0,0	100,0	64	-65	-101,6
	Lipsi	16,7	30,3	18,2	21,2	12,1	1,5	100,0	66	12	18,2
	Total	9,2	20,0	17,7	25,4	26,9	0,8	100,0	130	-53	-40,8
I trust the local ministry	Kalymnos	0,0	7,8	15,6	14,1	50,0	12,5	100,0	64	-68	-106,3
	Lipsi	1,5	7,6	28,8	19,7	36,4	6,1	100,0	66	-54	-81,8
	Total	0,8	7,7	22,3	16,9	43,1	9,2	100,0	130	-122	-93,8

From the analysis of the business questionnaires the first impression coming out is that businessmen are less satisfied than the local population; accessibility factors record the worst results. Business sector in Lipsi is less satisfied than in Kalymnos for different public services as electricity, internet, and technical education but they are more satisfied from local authority's services as waste collection and local public transport. They don't think that business is supported. Both are unsatisfied from cost of living, they don't cooperate with other business and they don't hope to local authorities for solving their problems. They trust people but not the local authorities even if in Lipsi they think that the local authority has a development vision. They feel totally secure and they are rather confident for the perspective of their island.

Table 21: Answers of businessmen of Kalymnos and Lipsi on attractiveness factors

		Agree completely %	Agree %	Neither agree nor disagree %	Dis-agree %	Dis-agree completely %	Don't know-not answer %	Total %	N	Value	Value % of N
the frequency of scheduled connections is satisfactory	Kalymnos			3,4	17,2	79,3		100,0	29	-51	-175,9
	Lipsi			8,3	41,7	50,0		100,0	12	-17	-141,7
	Total			4,9	24,4	70,7		100,0	41	-68	-165,9
ticket cost is satisfactory	Kalymnos		3,4	17,2	34,5	44,8		100,0	29	-35	-120,7
	Lipsi			8,3	8,3	83,3		100,0	12	-21	-175,0
	Total		2,4	14,6	26,8	56,1		100,0	41	-56	-136,6
The cost of transporting goods is satisfactory	Kalymnos			6,9	37,9	55,2		100,0	29	-43	-148,3
	Lipsi			8,3	16,7	75,0		100,0	12	-20	-166,7
	Total			7,3	31,7	61,0		100,0	41	-63	-153,7
the quality of transportation is satisfactory	Kalymnos		10,3	13,8	62,1	13,8		100,0	29	-23	-79,3
	Lipsi			16,7	50,0	33,3		100,0	12	-14	-116,7
	Total		7,3	14,6	58,5	19,5		100,0	41	-37	-90,2
internet services are satisfactory	Kalymnos		32,1	25,0	14,3	10,7	17,9	100,0	28	-1	-3,6
	Lipsi			8,3	16,7	33,3	41,7	100,0	12	-10	-83,3
	Total		22,5	20,0	15,0	17,5	25,0	100,0	40	-11	-27,5

electric power services are satisfactory	Kalymnos	6,9	48,3	24,1	20,7	0,0		100,0	29	12	41,4
	Lipsi			8,3	0,0	91,7		100,0	12	-22	-183,3
	Total	4,9	34,1	19,5	14,6	26,8		100,0	41	-10	-24,4
the provision of water is satisfactory	Kalymnos	6,9	44,8	13,8	24,1	10,3		100,0	29	4	13,8
	Lipsi		16,7	50,0	25,0	8,3		100,0	12	-3	-25,0
	Total	4,9	36,6	24,4	24,4	9,8		100,0	41	1	2,4
waste collection and treatment services are satisfactory	Kalymnos		13,8	13,8	24,1	48,3		100,0	29	-31	-106,9
	Lipsi		33,3	33,3	33,3	0,0		100,0	12	0	0,0
	Total		19,5	19,5	26,8	34,1		100,0	41	-31	-75,6
the network of public transport is satisfactory	Kalymnos		24,1	48,3	24,1	3,4		100,0	29	-2	-6,9
	Lipsi	8,3	50,0	8,3	33,3			100,0	12	4	33,3
	Total	2,4	31,7	36,6	26,8	2,4		100,0	41	2	4,9
labour is available and satisfactory	Kalymnos	3,4	13,8	17,2	48,3	17,2		100,0	29	-18	-62,1
	Lipsi			8,3	25,0	66,7		100,0	12	-19	-158,3
	Total	2,4	9,8	14,6	41,5	31,7		100,0	41	-37	-90,2
technical education is satisfactory	Kalymnos			3,4	55,2	37,9	3,4	100,0	29	-38	-131,0
	Lipsi			8,3	8,3	83,3	0,0	100,0	12	-21	-175,0
	Total			4,9	41,5	51,2	2,4	100,0	41	-59	-143,9
the cost for constructions is satisfactory	Kalymnos		3,4	6,9	48,3	41,4		100,0	29	-37	-127,6
	Lipsi				25,0	75,0		100,0	12	-21	-175,0
	Total		2,4	4,9	41,5	51,2		100,0	41	-58	-141,5
the cost of living is satisfactory	Kalymnos		17,2	13,8	41,4	27,6		100,0	29	-23	-79,3
	Lipsi				16,7	83,3		100,0	12	-22	-183,3
	Total		12,2	9,8	34,1	43,9		100,0	41	-45	-109,8
public services are satisfactory	Kalymnos		3,4	20,7	17,2	58,6		100,0	29	-38	-131,0
	Lipsi			8,3	25,0	66,7		100,0	12	-19	-158,3
	Total		2,4	17,1	19,5	61,0		100,0	41	-57	-139,0
The cost of labour is satisfactory	Kalymnos		10,3	31,0	41,4	17,2		100,0	29	-19	-65,5
	Lipsi		0,0	0,0	66,7	25,0	8,3	100,0	12	-14	-116,7
	Total		7,3	22,0	48,8	19,5	2,4	100,0	41	-33	-80,5
companies are supported	Kalymnos		3,4	13,8	27,6	55,2		100,0	29	-39	-134,5
	Lipsi				16,7	83,3		100,0	12	-22	-183,3
	Total		2,4	9,8	24,4	63,4		100,0	41	-61	-148,8
other businesses can support	Kalymnos		51,7	20,7	20,7	0,0	3,4	96,6	28	9	32,1
	Lipsi		8,3		25,0	66,7		100,0	12	-18	-150,0
	Total		39,0	14,6	22,0	19,5	2,4	97,6	40	-9	-22,5
incentives are satisfactory	Kalymnos		6,9	13,8	27,6	51,7		100,0	29	-36	-124,1
	Lipsi				16,7	83,3		100,0	12	-22	-183,3
	Total		4,9	9,8	24,4	61,0		100,0	41	-58	-141,5
innovation is supported	Kalymnos		6,9	20,7	24,1	37,9	10,3	100,0	29	-27	-93,1
	Lipsi			8,3		58,3	33,3	100,0	12	-14	-116,7
	Total		4,9	17,1	17,1	43,9	17,1	100,0	41	-41	-100,0
cooperation with other businesses is possible	Kalymnos		17,2	24,1	27,6	31,0		100,0	29	-21	-72,4
	Lipsi		16,7	16,7	25,0	41,7		100,0	12	-11	-91,7
	Total		17,1	22,0	26,8	34,1		100,0	41	-32	-78,0
local authorities try to solve problems	Kalymnos		6,9	24,1	31,0	37,9		100,0	29	-29	-100,0
	Lipsi		8,3	41,7	16,7	33,3		100,0	12	-9	-75,0
	Total		7,3	29,3	26,8	36,6		100,0	41	-38	-92,7
there is a development vision from local	Kalymnos		3,4	10,3	20,7	62,1	3,4	100,0	29	-41	-141,4
	Lipsi	33,3	50,0			16,7		100,0	12	10	83,3
	Total	9,8	17,1	7,3	14,6	48,8	2,4	100,0	41	-31	-75,6

authorities											
involvement in local decisions is satisfactory	Kalymnos		3,4	13,8	31,0	51,7		100,0	29	-38	-131,0
	Lipsi	8,3	16,7	25,0	25,0	25,0		100,0	12	-5	-41,7
	Total	2,4	7,3	17,1	29,3	43,9		100,0	41	-43	-104,9
I feel secure	Kalymnos	44,8	44,8	10,3				100,0	29	39	134,5
	Lipsi	83,3	16,7					100,0	12	22	183,3
	Total	56,1	36,6	7,3				100,0	41	61	148,8
I trust local institutions	Kalymnos		3,4	17,2	24,1	55,2		100,0	29	-38	-131,0
	Lipsi			41,7	33,3	25,0		100,0	12	-10	-83,3
	Total		2,4	24,4	26,8	46,3		100,0	41	-48	-117,1
generally most of the people can be trusted	Kalymnos	3,4	31,0	44,8	13,8	6,9		100,0	29	3	10,3
	Lipsi		50,0	33,3	8,3	8,3		100,0	12	3	25,0
	Total	2,4	36,6	41,5	12,2	7,3		100,0	41	6	14,6
I am interested in local politics	Kalymnos	17,2	24,1	10,3	17,2	31,0		100,0	29	-6	-20,7
	Lipsi	16,7	16,7	8,3	25,0	33,3		100,0	12	-5	-41,7
	Total	17,1	22,0	9,8	19,5	31,7		100,0	41	-11	-26,8
future prospects in the island are positive	Kalymnos	6,9	34,5	24,1	24,1	10,3		100,0	29	1	3,4
	Lipsi	33,3	25,0		25,0	16,7		100,0	12	4	33,3
	Total	14,6	31,7	17,1	24,4	12,2		100,0	41	5	12,2

Table 12 Accessibility from Kalymnos and Lipsi

Destination port	Departure port	Distance	Travel time	Number of connections	Daily connection on average	Probability to miss the ferry	Frequency	Waiting time	Total time	Travel speed	Virtual distance	Accessibility
Pireas	Rodos	439	14,8	10	1,43	0,50	8,4	2	25,2	29,7	748,44	1,70
	Kos	346	11,6	10	1,43	0,50	8,4	2	22,0	29,7	653,40	1,89
	Kalimnos	315	11,8	4	0,57	0,50	21,0	2	34,8	26,9	936,12	2,97
	Leros	298	10,0	4	0,57	0,50	21,0	2	33,0	26,9	888,61	2,98
	Lipsi	283	10,5	2	0,29	0,50	42,0	2	54,5	26,9	1466,05	5,18
Rodoss	Kalimnos	121	4	17	2,43	0,25	2,5	1	7,5	26,9	200,96	1,66
	Lipsi	160	5,4	8	1,14	0,50	10,5	1	16,9	26,9	454,61	2,84
Kos	Kalimnos	26	0,5	60	8,57	0,09	0,3	0,5	1,3	26,9	33,68	1,30
	Lipsi	66	2,5	14	2,00	0,25	3,0	0,5	6,0	26,9	161,40	2,45
Leros	Lipsi	20	0,8	14	2,00	0,25	3,0	0,5	4,3	26,9	115,67	5,78

Island Case Study report: Samsø, Denmark

Background

Although the geography of Denmark is dominated by islands -- almost 3.4 million of the country's 5.5 million inhabitants live on the islands⁸⁹ -- those islands not connected with bridges to the main land/islands account only for approximately 65.000 inhabitants.

With only 4003 residents in 2009 on an area of 114 km² Samsø in terms of population is the third largest of the islands without a fixed link to the mainland. The map in figure 1 shows the location of the island between Jutland and Zealand.

Figure 1: Samsø in the geographical middle of Denmark⁹⁰



The landscape of the island has been shaped predominantly by agricultural production and only a limited area with forests remains. The population is spread out in small villages.

Public service

In the following only some main characteristics of the public service on Samsø are mentioned. A major reform in Denmark in 2007 of the regional and local governmental structure left only 98

⁸⁹ 443 named islands of which 78 have permanent residents (2009).

⁹⁰ Map from The Ministry of Interior (www.im.dk).

municipalities in the country with Samsø being one of the three smallest municipalities⁹¹. The problems of a small municipality in terms of meeting its obligations, which have arisen from the new reform are not discussed here. However, since the reform aims at creating municipalities with 30.000 – 50.000 inhabitants with the responsibility for most of the welfare-related tasks, the challenges for Samsø are considerable.⁹² Nevertheless, Samsø has with the Danish decentralised model of local government kept significant governmental power on the island.

The administration of the municipality is in the largest village, Tranebjerg with approximately 800 inhabitants. At the Nuts 3 level Samsø is part of the region of Central Denmark (Region Midtjylland). The main responsibility for the regions in Denmark is for health care, but they also have tasks relating to regional development strategies.

The island has a small hospital staffed with specialised nurses and a few doctors. The hospital has a limited number (currently 8) of beds and most hospital treatment is done in Aarhus on the mainland, where helicopters can transport patients in emergency cases. In 2008 the island's hospital was threatened with closure, but an agreement between the region and the municipality on sharing the cost of the facilities kept the basic hospital service on the island.

A pharmacy is located in Tranebjerg on Samsø. Open every day from Monday to Saturday.

The localisation of banking

Two major banks have branches with full service are located on Samsø: Danske Bank and Jyske Bank in the village of Tranebjerg. Both banks are open every weekday from 9.00/9.30 to 16.00/17.30.

http://www.jyskebank.dk/_jb/asp/apps/organisation/forside.asp?afdkode=3552&aaben=1&shadowid=4118

<http://www.danskebank.dk/da-dk/Om-banken/Kontakt-os/Privatkunde/Find-din-afdeling/Afdelinger/Pages/4516-samsoe.aspx>

The localisation of tax and social security offices

The tax and social security office is located in Tranebjerg on Samsø. Open all weekdays.

⁹¹ The two smaller municipalities are also islands: Fanø and Læsø.

⁹² Further information on the local government in Denmark:

<http://english.ism.dk/municipalities-and-regions/Structuralreform/Sider/Start.aspx>

Education

Education for children between the ages of 6-7 and 16 is provided on Samsø. One school with around 300 pupils financed is by the municipality and there are two smaller private schools with about 50 pupils each. From the age of 16 pupils must attend schools on the mainland to continue their education.

There is no tertiary education on Samsø. In Aarhus on the mainland all tertiary educations are represented; from the second largest university in Denmark to all sorts of vocational training.

Transport

Samsø has ferry connections to Kalundborg on Zealand and Hov in Jutland. The journey to Jutland is normally scheduled with 7 daily departures and each journey takes approximately one hour. The sail to Zealand takes almost two hours and is scheduled with 2-3 daily sails depending on the season. The line to Zealand is supported by state aid amounting to 1.1 million euro per year. The municipality is responsible for the contract and receives around 1.5 million euro per year from the state to support the line.

The price for a single journey is €11.5 for a person and €34 for a car on the line to Jutland. The prices to Zealand are €15 respectively €72. Citizens on the island travel for half price.

Table 1: Key figures for ferry connections to Samsø

		1990	2000	2008	2000-2008
Kalundborg-Samsø	Return journeys	873	828	921	11%
	Passengers in thousands	123	142	158	11%
	Cars	25 200	38 224	51 320	34%
	Cargo in 1000 tons	17	31	46	48%
Hov-Samsø	Return journeys	2 512	2 458	2 638	7%
	Passengers in thousands	282	350	339	-3%
	Cars	67 300	99 088	113 135	14%
	Cargo in 1000 tons	71	97	124	28%

Data source: www.statistikbanken.dk (Statistics Denmark)

Table 1 shows the growth in the traffic to Samsø. Especially the amount of cargo and the number of cars have risen between 2000 and 2008.

The trade-off between environmental consideration and cheap and fast transport has become evident in a recent controversy surrounding a newly-built ferry for the line to Jutland. It has turned out that the ferry uses significant more fuel than the former vessel and now a political debate is taken place about why the tender for

operation the ferry did not include conditions on the fuel consumption.⁹³ This situation has become particularly problematic for the municipality since (as described later) Samsø has been branded as energy self-sufficient.⁹⁴

The airfield on Samsø is short grass runway field used by small airplanes and without any regular flights.

Aid from EU's structural funds

Structural funds have played an important role in the regional development of Samsø the last 20 years. As a disadvantaged area in Denmark, Samsø has been designated for aid in all the main programs implemented in Denmark since 1989:

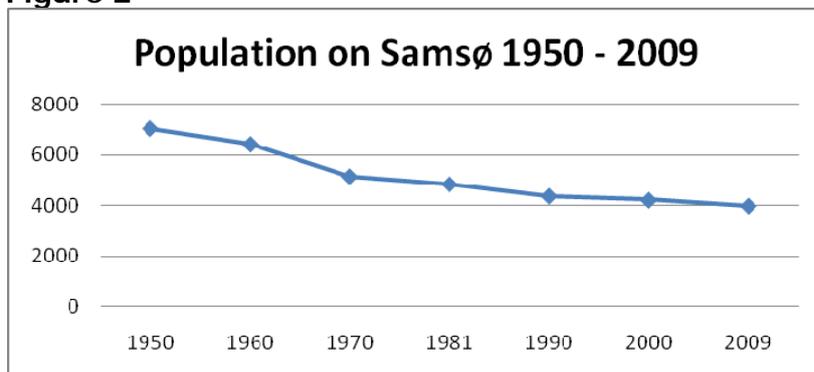
- Objective 5b, 1994-1999
- Objective 2 and 3, 2000-2007
- Leader and Leader+, 1994-1999, 2000-2007
- Article 33

Samsø is also eligible for aid from the structural funds in 2007-2013.

Demographics

The population on Samsø has been declining steadily the last 50 years, but the pace of decline has dropped significantly the last two decades as it can be seen from figure 2. Conversely, for Denmark as a whole the population has grown by 29% since 1950.

Figure 2



Data source: www.statistikbanken.dk (Statistics Denmark)

According to the demographic forecasting from Statistics Denmark Samsø's decline should be reversed in the coming decades; in 2030 the population should grow to around 4,200, an increase of 5%.

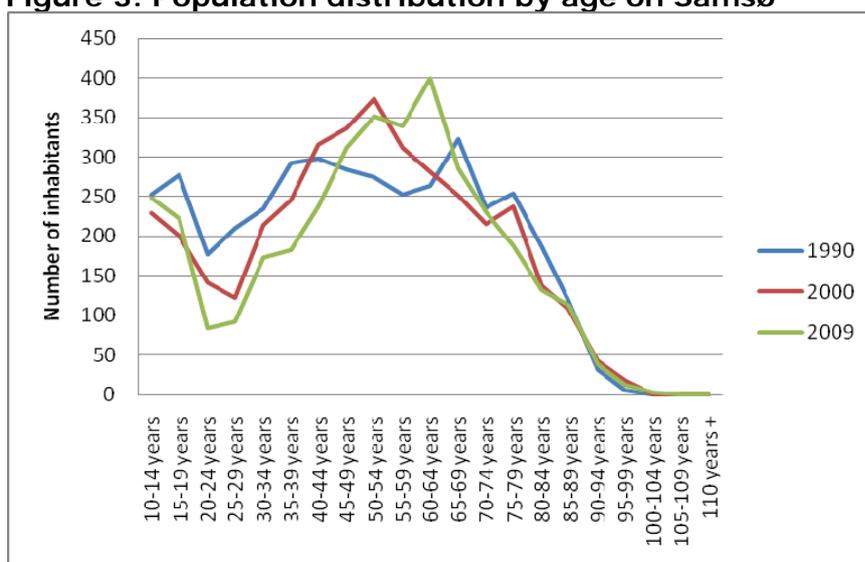
⁹³ Jyllandsposten, 1 October 2009.

⁹⁴ For a recent international reference:

http://www.nytimes.com/2009/09/30/world/europe/30samsø.html?_r=2

The main explanation behind the decline in population seems to be the limited possibilities of education and jobs in a modern specialised economy, meaning young people have to leave the island. In recent years it seems like older people coming to the island make up part of the loss in population. Figure 3 shows how the young people are leaving the island, and how people older than 40 years have become a larger part of the population.

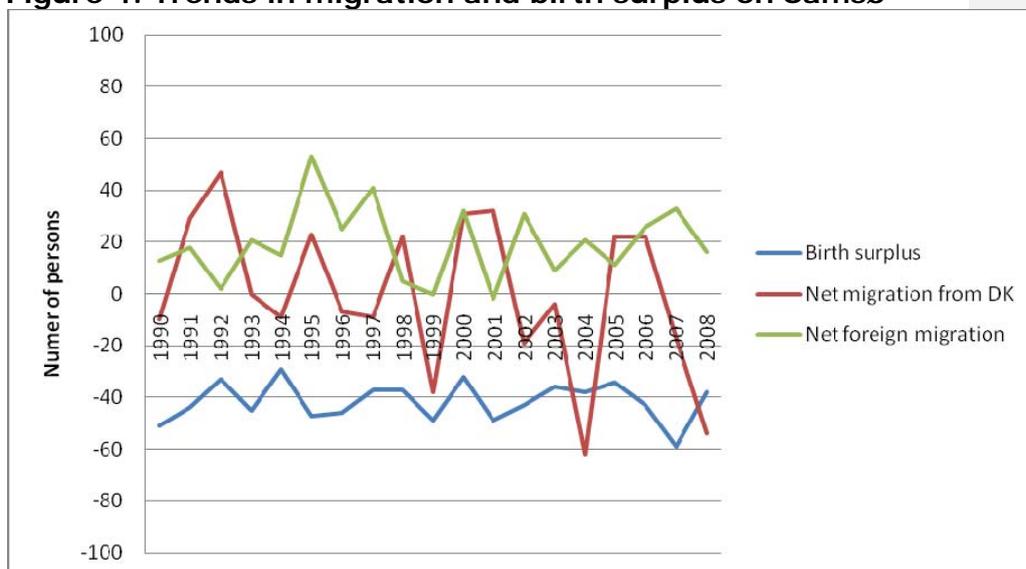
Figure 3: Population distribution by age on Samsø



Data source: www.statistikbanken.dk (Statistics Denmark)

In figure 4 below the population change trends from 1990 to 2008 are analysed in terms of change in births' surplus (births minus deaths), net migration from other parts of Denmark and net migration from countries other than Denmark. The graph shows that deaths exceed births by around 40 people per year in the period. This trend is expected since the island has a deficit of younger grown-ups who have the highest birth rates. The net migration from foreign countries is around 20 people per year. The net migration to other parts of Denmark describes around 500 people moving to or from Samsø. As figure 4 shows this element is the most volatile of the three components of the population balance.

Figure 4: Trends in migration and birth surplus on Samsø



Data source: www.statistikbanken.dk (Statistics Denmark)

The policy consequence, as many municipalities in Denmark have realised, is to try to increase the internal migration in their favour because internal migration present the largest flow to and from the island.

The decline in population mirrors the development in many other islands and peripheral regions. The modest decline over the last decades and even the forecast of some increase in the population could be explained by the relative closeness (less than two hours away) to Aarhus, the second largest city in Denmark. This argument is strengthened by the growing tendency in the commuting out of the island. In 2008 almost 10% of the work force living on the island had their main occupation in other parts of the country according to Statistics Denmark.⁹⁵

Economic Conditions

Agriculture is still a central industry on Samsø as on many other islands. The island is known nationally for its vegetables and there are 55 livestock farms covering 4800 hectare out of the total agricultural area of 8360 hectare.⁹⁶ In table 2 the distribution of employees in industries shows that 16% of the labour force is

⁹⁵ 182 people out of 1919. www.statistikbanken.dk. The numbers of commuters are significantly too high according to Ms. Løkke, Manager of the local development office, but Statistics Denmark maintains the correctness of the figure. The tendency to growing commuting is probably correct, since it is a general trend in Denmark.

⁹⁶ Analysis of the agricultural industry 2009, <http://www.statsforvaltning.dk/everest/tmp/090623145513/Samsøe.pdf>

working in agriculture⁹⁷ compared to only 3% in Denmark as a whole. Samsø lacks behind the rest of Denmark in manufacturing industry as well as a finance and business service sector, the later being a strong growth sector in Denmark the last decade.

Table 2: Distribution of jobs in industries, 2008

	Denmark	Samsø
1 Agriculture, fishing and quarrying	3%	16%
2 Manufacturing	14%	5%
3 Electricity, gas and water supply	0%	0%
4 Construction	7%	7%
5 Wholesale and retail trade; hotels, restaurants	19%	17%
6 Transport, post and telecomm.	6%	12%
7 Finance and business services	16%	8%
8 Public and personal services	35%	35%
9 Activity not stated	0%	1%
All industries	100%	100%

Data source: www.statistikbanken.dk (Statistics Denmark)

Samsø has lost 5% of the jobs located on the island since 1998, but over the last 3 years the number of workplaces has actually grown 6% as table 3 shows. Even though this growth has been largely due to a favourable national economic climate, it is a positive sign that the local economy on the island can actually benefit from such conditions and witness the creations of new jobs.

Looking at specific industries, half of the jobs in manufacturing have been lost since 1998 and the sector is now the smallest of all the industries in terms of employment apart from the tiny sector of electricity, water and gas.

Table 3: Change in numbers of jobs on Samsø, 1998-2008

	1998	2005	2008	Change 1998-2008	Change 2005-2008
1 Agriculture, fishing and quarrying	359	295	311	-13%	5%
2 Manufacturing	184	105	92	-50%	-12%
3 Electricity, gas and water supply	4	8	7	75%	-13%
4 Construction	150	112	131	-13%	17%
5 Ws. and retail trade; hotels, restaurants	344	306	322	-6%	5%
6 Transport, post and telecomm.	159	199	224	41%	13%
7 Finance and business services	143	131	155	8%	18%
8 Public and personal services	646	653	670	4%	3%
9 Activity not stated	28	14	12	-57%	-14%
All industries	2 017	1 823	1 924	-5%	6%

Data source: www.statistikbanken.dk (Statistics Denmark)

⁹⁷ Samsø has almost no fishery and quarrying, which are in the same category as agriculture.

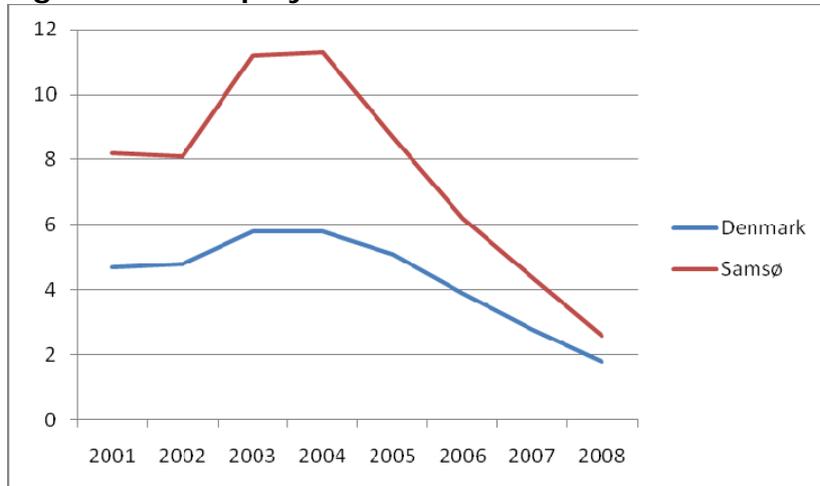
The general structural decline witnessed in agricultural employment throughout Europe, originally hit the island particularly badly due to the closure of its only meat factory in 1999. Nevertheless, it is now evident that on Samsø, this sector has witnessed a slight revival in the period 2005-2008. Since the numbers are small but the high class branding of the vegetables from Samsø combined with the growing demand for these products in the booming economy seems to explain this development in agricultural employment.

Also the increase in jobs in finance and business are important because peripheral regions often do not witness the expansion in this sector seen in other more economically developed regions. The trend in public service employment follows the national trend.

Labour force

The unemployment data for Samsø compared to Denmark as a whole are shown in figure 5 and demonstrate that Samsø continually has had a higher rate of unemployment than the rest of Denmark. On a positive note, however, it can be said that Samsø has actually benefited greatly from the country's very low unemployment rate and, thus, circumstances are not as bad as might be expected.

Figure 5: Unemployment in % of work force



Data source: www.statistikbanken.dk (Statistics Denmark)

The distribution of educational attainment in the work force on Samsø is quite similar to the average in Denmark except for the underrepresentation of people with higher education and an overrepresentation of people with only basic school attainment. The limited number of jobs available to people with a higher education is the best explanation.

Table 4: Highest attained education of the population⁹⁸

	Denmark		Samsø	
10 BASIC SCHOOL 8-10 grade	714 352	25%	572	30%
20 GENERAL UPPER SECONDARY SCHOOL	177 927	6%	75	4%
25 VOCATIONAL UPPER SECONDARY SCHOOL	77 061	3%	15	1%
35 VOCATIONAL EDUCATION	995 122	35%	742	39%
40 SHORT-CYCLE HIGHER EDUCATION	162 449	6%	110	6%
50 MEDIUM-CYCLE HIGHER EDUCATION	400 187	14%	242	13%
60 BACHELOR	48 974	2%	14	1%
65 LONG-CYCLE HIGHER EDUCATION	220 336	8%	80	4%
90 Unknown	61 157	2%	69	4%
Sum	2 857 565	100%	1 919	100%

Data source: www.statistikbanken.dk (Statistics Denmark)

The average yearly income per employee on Samsø was €32,600 in 2007 amounting to 88% of the national average in Denmark.

Responses to ESPON Survey Questionnaires

Between the 14th and 18th of September 2009 two phone surveys were conducted with people on Samsø. One was a survey addressed to business owners and/or managers, while the second targeted local inhabitants. A total of 19 representatives of businesses and 56 inhabitants were interviewed for the surveys.

The respondents were randomly selected and only a few of those contacted declined to answer the questions. Even though the interviews took place in the late afternoon, most people answering the call were older than the average age on the island, but under any circumstances the limited sample sizes also exclude any formal statistical analysis. Nevertheless, the answers to both surveys offer a well-founded description of the opinions of Samsø's inhabitants and entrepreneurs.

Business survey

The 19 business respondents who were interviewed included 12 males and 7 females (Annex 1). All but two were between the ages of 35 and 65. 13 of the respondents reported they were either managers or owners of the surveyed company. The survey included a wide range of businesses: Hotels, business services, food processing establishments, farms, wholesale trading, transport and manufacturing. Samsø is the headquarter location for 16 of the companies, which have between 1 and 35 employees (mean=6) over the whole year. During the peak season (for tourism and vegetable production) some companies employ a significant number

⁹⁸ People aged 15-64 years.

of seasonal workers. The yearly turnover for the companies was reported to between €15 000 and 1 million euro. Only two of the companies surveyed expressed negative opinions about the prospects of their business on the island. This is a fairly optimistic picture taking the current economic crisis into consideration.

The business respondents were given 28 questions relating to different aspects of the business environment. For each question an indicator was calculated based on the respondents' level of agreement on different positive statements relating to the business environment. A negative score for an indicator then represents a negative assessment of the island attractiveness (for that particular indicator) for a business and a positive score a positive assessment.⁹⁹

Eight of the indicators had overall negative scores between -1 and -7. Three of the negative scores were given for the cost and quality of ferry service. The five other negative scores relate to local transport, availability of trained people, opportunities for training and local authorities' competence and development strategy. Though negative the scores are all except one single-digit figures, meaning the negative assessment is relatively mild. The respondents added also comments expressing acceptance of the limited service on the island regarding for example training. On the issue of ferry service the businesses wanted a better situation.¹⁰⁰

On the plus side, significantly high scores (10-37) were given to 13 factors: Broadband connection; energy and water supply; waste systems; and costs of living, land and labour, as well as support by other businesses, security, trust in government and locals, and interest in politics. The first indicators signify a relative good infrastructure on the island. The positive assessment of costs is based on a comparison with the rest of Denmark. The last indicators can be seen as an expression of social capital normally also associated with Denmark.

Asked to offer additional comments about their island's attractiveness, business respondents mentioned the following factors: The nature; the brand of Samsø; the tourists as basis for business; and a social atmosphere.

The following factors were mentioned when asked what could make the business move from Samsø: Diminishing customer base; deteriorating transport connections to the mainland; and lack of

⁹⁹ See appendix 1.

¹⁰⁰ A newly-built ferry has caused great problems for transport in the summer, surely affecting the answers.

qualified labour. But the most common remark is that nothing could make the company move, because the product of the company is closely connected to the specific conditions of Samsø, for example specific tourist attractions or the agricultural land.

Residents survey

The survey of the residents of Samsø (Annex 2 of the report) had 56 respondents. Of the 56 respondents, 35 were females and 21 males and their age ranged from 16 to 87 with a mean age of 59. 75% of the respondents had a short or no education leaving 20% with a long or medium-cycle long education. The respondent's household had from 1 to 5 members with a mean of 2 and they worked in all the main business sectors with most (1/4) being accounted for in the public sector and 1/5 in retail and transport.

Given questions relating to 24 elements of island attractiveness, the resident respondents indicated negative feelings with respect to six of these. Poor scores were given for the cost, frequency, and quality of transportation to and from the island, while the quality of the island's local transportation system was also criticized. Also receiving negative scores were the lack of availability of job opportunities and educational service. As noted earlier many respondents said the current problems with the ferry to Jutland influenced the indicator regarding the ferry service negatively.

On all the other factors the assessment of the attractiveness was remarkably positive: Eleven indicators received scores between 40 and 105, six indicators having scores between 10 and 39, and only one with a score 1.

Infrastructure relating to water, energy, broadband, and waste management is very positively assessed, as are the possibilities for events in sports and culture. However, several respondents remarked that they assessed events on Samsø on a different scale than events in cities. This means they enjoy the sort of rich cultural life existing on Samsø and do not expect big national or international events take place (regularly) on the island.

Opinions on different costs of living were moderately positive. Indicators on quality of life, nature, the built environment, security and trust to locals obtained very high scores. These factors' importance was underlined by the supplementing remarks, which put emphasis on the following aspects of Samsø's attractiveness: Nature; peace and quiet environment; friendly people; safety; and the short distance to large cities. The municipality is assessed less enthusiastically, but still in quite a positive manner. The dominant answer on what could make the respondent leave Samsø is in

accordance with the positive assessment of the islands attractiveness, namely: Nothing! The other reasons mentioned are family, health, transport links, and education. One respondent indicated a negative aspect of the close social links on Samsø, namely that people there can be perceived closed and unforthcoming to newcomers.

Answers to other questions targeting the inhabitants reveal that they have a fairly high level of involvement in non-governmental organizations. 63% of the respondents mentioned they were members of an NGO, while 30% of the respondents indicated they had in the past done volunteer work for an NGO. This situation could indicate that, on an island like Samsø, there are fairly close ties between the local inhabitants, with high levels of bonding social capital.

Overall, the inhabitants who answered the survey expressed strong positive feelings about living on the island.

Interview with policy maker

The leader of the municipality's office for regional development, Ms Løkke, was interviewed the 30 October 2009 regarding best practices of policies and the attractiveness of Samsø as a place to live and a place to conduct business.

Concerning Samsø as a place to live Ms Løkke underlined the following factors in terms of determining the attractiveness of Samsø as a place to live: Job opportunities; quality of life and nature; social networks; and good transport connections. In this respect she is in line with the responses obtained from the resident survey on the island. Ms Løkke further explained that island attractiveness is difficult to pinpoint on specific indicators. On the one hand, the important indicators mentioned form in a complex interaction together with other factors, for example direct contact with the democratic processes, constitute "island quality". On the other hand Ms Løkke stressed that infrastructure and welfare service had to be up to (national) standard not to keep people away.

Ms Løkke mentioned that funds from European structural policies have been essential in the development policy on Samsø the last decade with support for a wide range of projects. A European insular policy should according to Ms. Løkke focus on job creation, infrastructure and business development. The major ambition for such a policy should be that it should concentrate on reversing the trend of a declining population but also look at substantially upgrading the existing infrastructure.

Looking at the attractiveness factors for Samsø from the business point of view almost the same elements were mentioned, but the infrastructure and the cost, frequency, and quality of transport to and from the island was highlighted as absolutely indispensable for a business to thrive on Samsø.

Two policy areas are elevated as best practice on Samsø: The focus and investment in renewable energy and the continuous development of the agricultural sector in order to protect and increase its competitiveness. Although implemented locally, these policies involved finance from regional authorities, state agencies and European structural funds.

Especially both the investment and focus on renewable energy over the last decade have had a positive effect on the image of the island, although the direct job creation from the projects is still minor. These policies are already being implemented in many other places, so they are indeed transferable according to Ms Løkke.

Samsø: The Renewable Energy Island of Denmark

Samsø was chosen to be Denmark's Renewable Energy Island in 1997. The goal was for the island to be self-sufficient in renewable energy in 10 years. After 10 years the island's land-based wind turbines produce 100 % of the island's electricity.

The large towns on Samsø are connected to various community heating systems, that all use renewable energy sources to provide hot water and heating. In the north of the island lies a large solar heating installation, with 2.500 m² of solar panels. These panels are complimented by a furnace that burns woodchips from Brattingsborg Forest.

On the south of the island three straw-fed community heating plants provide the heating for four towns. Outside these community heating networks, many private households on Samsø have chosen to replace or supplement their oil-fired heating with solar panels, geothermal heating or wood-pellet furnaces.

Today about 70 % of Samsø's heat production comes from renewable sources. When it comes to transport, Samsø is experimenting with electric and biofuel vehicles, while keeping a watchful eye on hydrogen technology. It should be possible one day to use wind turbine energy to propel electric or hydrogen vehicles. To compensate for the energy demand by the island's transport system ten huge wind turbines have been built in the sea south of Samsø. Each year this wind farm sends more electricity to the mainland grid than the island uses on transport – including oil for the 3 ferries. In fact the sea wind farm is so productive, it compensates for the 30% of the island's heating energy still provided by non-renewable resources, such as oil-fired boilers.

On this basis Samsø can today proudly claim to be 100 % CO₂ neutral. In 2007 Samsø Energy Academy opened its doors to the public for the summer season, and functions as a centre and exhibition hall for renewable energy and energy saving schemes. The Energy Academy also houses the Samsø Energy Service, which islanders can use for free advice on subjects like effective insulation, or alternatives to oil-fired heating. The Academy arranges exhibitions, workshops and corporate events, for the 4000 politicians, journalists and schoolchildren from all over the world that visit Samsø each year to see the Renewable Energy Island.

http://www.energiakademiet.dk/default_uk.asp

All the European structural funds have had a significant positive impact on Samsø, since these funds have been instrumental in

putting the ideas of regional development into action. Based on these experiences Ms Løkke recommends three elements for a European insular policy:

- Making direct investment possible in companies' innovation;
- Development of the work force competencies;
- Making companies eligible for funds.

The management of LEADER+ by local actions groups is a model Ms Løkke will recommend.

Summary

Structurally Samsø has many of the characteristics of insularity and peripherality as many other islands but these factors are alleviated by the geographical proximity to large urban areas as well as success in sustaining the traditional industries of agriculture and tourism combined with development in new areas such as renewable energy.

The socioeconomic development of Samsø therefore shows positive signs. Especially the limited population decline is positive compared to the historical trend and the tendency on many other small islands throughout Europe.

The relative optimism and satisfaction with the island's condition among residents and businesses also reinforce the impression of an island with potential.

To assess the impact of the regional development policies is difficult in this context but it seems clear that they have played an important role in branding Samsø as a green island, which is in the interest of tourism, agriculture (sale), and the municipality's ambition to promote the island as a good place to live. It is important to note that Samsø is still very dependent on the traditional industrial sectors. The use of European structural funds has been crucial for the local development policies.

As on any island, transport is fundamental for the wellbeing of Samsø's inhabitants and businesses. Apart from the current problems associated with one of the ferry lines, it is mostly the cost of transport people and companies would like to reduce. An increase in the subsidies to the ferries seems not the most likely political scenario. The time of transport could be improved with a faster ferry, but the economic and environmental aspects need further examination.

To link Copenhagen and Jutland closer together a bridge from Zealand over Samsø to a place near Aarhus is from time to time

proposed. Until now it has not become a realistic prospect, but with growing traffic it can become a possibility within 20 years turning Samsø into 'exotic suburbia' and ending talk of island problems.

Appendix 1: Business responses to a battery of 28 questions regarding the business environment (N=19)

Business Respondents (N=19)	I agree totally (+2)	I agree (+1)	I neither agree or disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't know/No answer (0)	Total	Weighted Score
1 Frequency of scheduled trips (by ferry, ship, plane) is adequate	2	6	4	5	2	0	19	1
2 Cost of air or sea travel to the mainland is praiseworthy	0	6	3	3	7	0	19	-11
3 Cost of transport of goods from/to island is praiseworthy	0	3	4	4	4	4	19	-9
4 Quality of transport services to mainland is praiseworthy	3	4	2	6	4	0	19	-4
5 Broadband connection is satisfactory	9	3	2	3	1	1	19	16
6 Regularity of energy is sufficient	18	1	0	0	0	0	19	37
7 Regularity of water supply is sufficient	16	3	0	0	0	0	19	35
8 Waste water collection & treatment system is adequate	6	4	8	0	0	0	19	16
9 Quality of local public transportation covers local needs	3	3	3	5	3	2	19	-2
10 Sufficient and available trained/qualified human capital on the island	1	7	4	4	3	0	19	-1
11 Sufficient opportunities for training	0	4	7	6	1	1	19	-4
12 Land and construction costs of commercial property are praiseworthy	1	9	7	1	0	1	19	10
13 Cost of life is satisfactory	3	9	6	1	0	0	19	14
14 the local public administration is effective	3	5	6	2	2	1	19	5
15 Labour cost is satisfactory	1	10	6	2	0	0	19	10
16 The business support agencies (such as business development corporations) are adequate	2	7	4	2	1	3	19	7
17 There is sufficient support by other businesses (goods and services of local market)	4	10	0	3	0	2	19	15
18 the economic incentives to businesses (subsidies, tax incentives) are sufficient	1	4	8	3		3	19	3
19 Possibility to support innovation in the production process is sufficient	0	4	10	1	1	3	19	1
20 There is the possibility to develop cooperation with other businesses for information and know-how exchange	2	6	5	2	1	3	19	6
21 Local authorities show sufficient competence to solve problems	2	2	7	7	1	0	19	-3
22 Local authorities have an adequate development vision (strategy, plan, activation)	1	2	7	5	3	1	19	-7
23 Degree of stakeholders' involvement in the decision-making process is sufficient	2	5	6	4	2	0	19	1
24 I generally feel secure (from crime)	18	1					19	37

25 My trust in the local authorities (municipality) is high	5	5	6	1	1	1	19	12
26 Generally, the locals are trustworthy	14	4	1	0	0	0	19	32
27 My interest in local politics is high	3	7	6	3	0	0	19	10
28 Perspective of my business on the island is positive	4	9	3	2	0	1	19	15

Appendix 2: Resident responses to a battery of 25 questions regarding island attractiveness (N=56)

Resident Respondents (N=56)	I agree totally (+2)	I agree (+1)	I neither agree or disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't know/No answer (0)	Total	Weighted score
1 Frequency of scheduled trips (by ferry, ship, plane) is adequate	5	18	11	10	12		56	-6
2 Cost of air or sea travel to the mainland is praiseworthy	2	10	9	22	13		56	-34
3 Quality of transport services to the mainland is satisfactory	2	14	11	10	15		56	-22
4 Broadband connection is satisfactory	15	18	8	6		9	56	42
5 Regularity of energy is sufficient	50	4	0	0		2	56	104
6 Regularity of water supply is sufficient	48	3	2	0		3	56	99
7 Waste water collection & treatment system is adequate	27	12	5	5	1	6	56	59
8 Quality of local public transportation covers local needs	5	7	17	19	8		56	-18
9 Sufficient job opportunities	2	13	15	16	7	3	56	-13
10 Sufficient opportunities for training	No answers because of a mistake in the data collection of the phone interviews.							
11 Adequate opportunities to attend cultural events	17	21	11	5	1	1	56	48
12 Adequate opportunities to attend sports events	17	19	11	4	2	3	56	45
13 Quality of health care and services covers my needs	14	17	9	12	4	0	56	25
14 Quality of education services covers my needs	0	19	15	9	8	5	56	-6
15 Land and construction cost of domestic homes is praiseworthy	10	24	12	5	3	2	56	33
16 Cost of living is satisfactory	8	23	16	8	1	0	56	29
17 Quality of life (short daily distances, low noise, clean air) is satisfactory	39	13	2	2	0	0	56	89
18 Quality of nature is satisfactory	50	5	1	0	0	0	56	105
19 Quality of the built environment is satisfactory	8	35	10	2	0	1	56	49
20 Local public administration is effective	5	20	20	7	4	0	56	15
21 Degree of involvement of citizens in decision making process of sufficient	9	17	16	8	5	1	56	17
22 I generally feel security (from criminal activities)	48	8	0	0	0	0	56	104
23 I trust the local authorities (municipality)	11	21	12	7	2	3	56	32
24 Generally the locals are trustworthy	38	16	1	0	0	1	56	92
25 My interest for local politics is high	5	15	16	10	7	3	56	1

Island Case Study Report: Malta

Introducing the island

The Maltese Islands comprise of two inhabited islands Malta, and Gozo, and a very small island Comino, plus various other small islets and rocks. Total population amounted to 413,609 by the end of 2008, within a geographical area of 316km², which make the islands densely populated with 1,309 persons per km² when the EU25 average is only 117.5. With a mild temperature averaging between 13 Celsius in the winter and 26 Celsius in the summer, the islands have tended to exploit the tourism industry similar to other islands in the region. In fact, during 2008, the islands welcomed 1.3 million tourists. Malta is accessible by air from various main airports in Europe and the Mediterranean region and also from Italy by sea, carrying a large number of passengers annually between the two countries, promoting tourism and merchandise trade. However, in recent years, the island has successfully endeavoured to develop the cruise industry as well. The second largest island, called Gozo, can be reached by a 25 minute ferry ride from the northern end of the mainland of Malta.

The Islands became independent in 1964 and joined the European Union in 2004 and has been a Republic since 1974, having a 65 member parliament which is elected every five years. (At present the number of MPs stands at 69). The local government comes in the form of local councils, with 68 representing villages and towns on the two main islands (54 councils in Malta and 14 in Gozo). Some local councils are relatively large, catering for some thousands of people; while others represent few hundreds. The number of representatives on the council depends on the size of the locale, the total number of councillors during 2009 being 444. The smallest council has five representatives (catering for a village of just under four hundred people) while the largest council has thirteen members representing a town of almost 22 thousand people.

The Population

The age composition of the Maltese population (inclusive of foreign residents) is shown in table 1. Females (207,736) slightly outnumber males (205,873). Seventy percent of the population are of working age; details on their employment are presented further on. More detailed demographic data is presented in the tables below.

100 N.B. Generally speaking, data is given for the Maltese Islands. Only some data is provided separately for each island.

Table 1 – Population by age group, 2008

Age group	Number of people	% of total population
0 – 14	66,177	16%
15 – 64	289,527	70%
65 +	57,905	14%

Source: National Statistics Office (NSO) 2009

The population has continued to increase, putting more pressure on the resources of the island. In fact, it more than doubled in a century from 184,742 in 1901. The non-Maltese comprise 12,112 persons, or 4.4%, most of whom are in the working-age group. Furthermore, a total of 2,775 undocumented migrants (coming in by boats from North Africa) landed on Maltese shores with most requesting refugee status. During 2008, only 19 were accorded this status. Moreover, 3,014 persons (mostly male) were found to be living illegally in Malta, (97% from Africa), and were obliged to leave the country.

It is estimated that 9,033 persons, mostly males (57%) were *bona fide* immigrants to Malta during 2008. Only 13% were returned Maltese migrants while the majority (about half) came from other EU countries. The rest are third country migrants. Emigrants totalled 6,597, with the highest figure being for EU nationals (57%), 21% for third country nationals and 22% for Maltese citizens. This means that the islands saw net positive migration. Life expectancy is relatively high at 76.7 for males and 82.3 for females.

Table 2 – Population (15+) by civil status, 2005

Status	Total	Males	Females
Single	100,803	54,089	46,714
Married	195,523	97,337	98,186
Separated	11,045	5,022	6,023
Divorced	2,309	1,033	1,276
Widowed	19,248	4,099	15,149
Remarried	810	655	155
TOTAL	329,738	162,235	167,503

Source: NSO 2007

Projections for 2050 indicate a slight decrease in total population to about 400 thousand, one of the main reasons being a low birth rate. Almost 60% of the 15+ population are married, while 30% are single, and the rest being mainly widowed. The number of divorced persons is very low at 0.7% (divorce is not legal in Malta but Maltese authorities generally recognize the status if the couple becomes divorced overseas). The number of widows is higher than widowers, reflecting the higher expectancy life for women. In Malta 15 year olds are not allowed to work before completing their compulsory education on reaching the age of 16.

In 2005, the number of private households amounted to 139,583. Table 3 provides a breakdown of households by number of persons in each. Over one fourth of households comprise two persons. Large households of six or more persons comprise only 3.21% of the total number. Earlier generations had seen larger families as the norm. However recent decades have seen a lower birth rate and the tendency for couples to remain childless, have fewer children or delay the date for starting a family. In fact, the mean age of marriage has continued to increase and stood at 29.7 (males) and 27.1 (females) in 2008.

Table 3 – Households by number of persons, 2005

Total households	139,583
One person	26,410
Two persons	35,889
Three persons	30,717
Four persons	30,809
Five persons	11,298
Six persons or more	4,480

Source: NSO 2007

The next section will delve more deeply into economic, social and environmental issues which may be putting the sustainability of the Maltese state in question.

The Sustainability State

This section provides data on three main areas: economic effectiveness, social equity and environmental preservation.

Economic effectiveness

The 15-64 population amounts to 289,527; however, only 151,582 or 52.36% (May 2009 data) form part of the labour supply. Of these 144,316 have a full time job while 7,266 are registered as unemployed. In 2009, the unemployment rate continued to increase particularly due to loss of jobs in connection with the international recession and the figure reached 7,521 by September 2009. There are a further 48,850 part-time jobs, with 27,426: 56% of these being primary jobs, especially in the case of females. This may either reflect a desire by women to work on reduced hours in order to care for their family, and/ or it may be a reflection of a lack of adequate child care facilities. The remaining 44% are secondary jobs for persons with other full time jobs. The public sector employs 28.19% of total employed; however, this proportion was higher in previous years. The number of male workers is more than double that of females. Both the employment rate and especially the female participation rate remain relatively low when compared to other EU countries. However, one notes that female participation in employment up to the age of about 35 years compares well with the female participation rate in other EU Member States. Most of the workers are employed (127,029 or 88.02%) while the remaining 11.97% are self-employed. The details are shown in tables 4 and 5.

Table 4 - Full-time Employment by Sector, May 2009

Sector	Total	% of total	Females	Males	Private sector	Public Sector
Agriculture, Fishing and Mining	2,789	1.93	230	2,559	2,624	165
Construction	12,605	8.73	541	12,064	8,773	3,832
Manufacturing	20,776	14.40	5,148	15,628	20,344	432
Private Services	96,476	66.85	36,980	59,496	71,333	25,143
Public Administration	10,961	7.60	3,266	7,695	-	10,961
Others	709	0.49	110	599	556	153

(apprentices)						
Total	144,316	100.00	46,275	98,041	103,630	40,686
% of total employed			32.07	67.93	71.81	28.19

Source: NSO 2009

Table 4 provides sectoral employment with services offering the highest level of employment, whilst the primary sector provides a very low level of full-time employment of only 1.93%. Manufacturing is also low at 14.4%: this sector has shed hundreds of jobs in recent years and these were not replaced within the sector but rather in the services sector. Furthermore, manufacturing companies tend to be small, and the small internal market coupled with a low level of available labour, do not generally lead to economies of scale. The biggest manufacturing company in Malta employs only about 2,000 workers.

Table 5 – Part-time Employment by Sex, May 2009

	Total	Females	Males
Part time as primary job	27,426	16,305	11,121
Part time as secondary job	21,424	6,304	15,120

Source: NSO 2009

Figures thus seem to indicate that Malta is not making effective use of its human resource since the employment rate remains low at 54.9% (June 2009) and the unemployment rate stood at 7% in June 2009. Government's recent policies to try to entice more women to join the labour market, which has received a positive response, need to be accompanied by systems which guarantee that children can be cared for suitably while women are at work.

The educational system needs to encourage more students to continue beyond their compulsory education years, (which is after reaching the age of sixteen). Around 2,700 students graduate from the University of Malta each year, the biggest number graduating in business studies and law. The number is lower in science related courses. The percentage of early school-leavers, referring to "persons between 18-24 years of age who have achieved lower secondary school level or less and who are not in further education" has gone down to 36.4% in 2008 from a high 54.9% in 2001. However, one needs to note that compulsory schooling starts at the

age of 5, following at least two years of kindergarten, with six years of primary education and five years of secondary education.

Nevertheless, these still constitute a significant number of students who leave the educational system without specific skills for employment. More efforts need to be made for this category of people, which is more accentuated for males than females. The setting up of the Malta College of Arts, Science and Technology in 2001, which brought together a number of existing vocational institutions and introduced new ones to comprise nine institutes in the College has been having a very positive impact on the very substantial increase in the number of students who follow vocational courses at post secondary level. Furthermore, the Institute of Tourism Studies, the Employment and Training Corporation, and a wide range of private and commercial educational institutions are contributing to education and training beyond compulsory education. Besides, great importance is being given to a wide range of courses for young people and adults within a lifelong learning context and culture.

Following a consultation process which started in autumn 2005 and to facilitate access to lifelong learning, the Malta Qualifications Council launched a Malta Qualifications Framework (MQF) in June 2007 and referenced the Framework to the European Qualifications Framework (EQF) and the Qualifications Framework of the European Higher Education Area (QF-EHEA) in September 2009. Based on an eight-level system and on a learning-outcomes approach, the framework established parity of esteem between vocational education and training and academic education as processes for greater transparency and quality assurance. The Framework is currently being referenced to the ISCED levels and an Awards system will shortly be launched to establish a better *rapport* between qualifications, workloads and employability.

The GDP of Malta for 2008 stood at €5.8 billion. The value added per capita in PPS for the same year was €19,800, equivalent to 79% of the EU27 average. Table 6 indicates that all but private services have seen decreases in their share of the GDP. This fact continues to confirm that private services continue to increase their importance in the Maltese economy. Increases have mostly occurred in real estate, personal health care and other community and personal services.

Table 6 – Value Added by Sector (2005 and 2008)

Sector	2005 % of	2008 % of
--------	-----------	-----------

	GDP	GDP
Agriculture, Fishing and Mining	2.99	2.62
Construction	3.89	3.56
Manufacturing	17.23	16.71
Private Services	68.8	70.46
Public Administration	7.09	6.65
Total	100.00	100.00

Source: NSO 2006 and 2009

Although Malta has a deficit in terms of merchandise trade, exports in services are relatively healthy. Nonetheless, Malta has a current account deficit of €317million. The small size of the economy and the dearth of natural resources feed into a huge imports bill. Only 27.7% of imports are consumer goods. Fuels account for 16.4% of the total import bill, while industrial supplies and capital goods amount to 41.5% and 14.4% respectively.

Malta continues to attract substantial inward foreign direct investment. FDI for the challenging first six months of 2009 led to a net inflow of €207.2 million. This figure is only slightly lower than the corresponding months of the previous year. Most of the investment originated from Asia (41.8%) while a further 41.3% came from EU27. Almost half of the investment went into financial intermediation.

Social Equity

This section looks at education, housing and health as aspects of everyday life which can guarantee a level of equity within the social fabric of society. Access to these three merit goods provide for a more equitable distribution of the islands' resources. The section also briefly presents some discussion on social protection benefits and the poverty rate.

Enrolment figures for compulsory education are very high; however, the rate decreases somewhat for tertiary and post-secondary education. Certain policies are aimed at encouraging more students to undertake further training, especially in specific areas such as IT, electronics and science related areas, where government would like

to see the jobs being created and the island heading for. Certain incentives, additional courses and more investment in these areas is being undertaken, such as the vocational education incentives (MCAST programme). Since its inception MCAST has been set up "to provide universally accessible vocational and professional education and training with an international dimension, responsive to the needs of the individual and the economy.

The literacy rate is 92.8%, with females having a slightly higher rate (93.9) compared to males (91.7). At all levels of the educational system, females outperform males and this continues at the tertiary level where 58% of graduates are females. This trend began in 1991. However, this success is not replicated in the employment sector where top positions are generally held by men. The global gender gap index 2008 ranks Malta at the 83rd place, a loss of eight places since 2006 (although the index increased from 0.6518 to 0.6634). Gender pay gap for 1998 stood at 80.8%, with this remaining almost static ten years later.

Nonetheless the level of total graduates as a percentage of the 15+ population remains at about 10%. About 45% managed to complete school up to the compulsory school-leaving age of 16 (that is, secondary school); while a fourth of the population only succeeded in completing primary school. The compulsory school leaving age was only pushed up to 16 years in the early 1970s. However, in recent years the number of students who continue with further studies beyond compulsory education has continued to increase

Table 7 - Level of Education of 15+ Population, 2005

Level of education achieved	Number of persons	% of total 15+ population
No schooling	8,101	2.41
Special schools for people with Disability	925	0.28
Pre-primary	1,414	0.42
Primary	85,640	25.53
Secondary	151,844	45.26
Post secondary	46,371	13.82
Non-tertiary	9,017	2.69

Tertiary	32,164	9.59
(of which): University Diploma	(4,994)	(1.49)
First Degree	(10,735)	(3.20)
Masters Degree	(4,126)	(1.23)
Doctorate	(927)	(0.28)
Total	335,476	100.00

Source: NSO 2007 (Census of Population 2005, Table 51, p.190).

The majority of Maltese people are multilingual. Although most (326,703 out of 362,376 of the 10+ population) speak Maltese at home but a great majority can speak a second and third language relatively well. In fact, 234,391 speak English well, 99,630 Italian, 13,933 French, 4,199 German, 2,911 Arabic and 6,974 other languages (NSO 2007, Census of Population 2005, Tables 45 and 46, pp 180-185).

In 1995, the total number of dwellings was 155,202, with 35,702 or 23% being vacant. The stock of housing had increased to 192,314 by 2005 (representing a 24% increase in ten years), with vacant dwellings also increasing to 27.6%. Most families live in terraced houses, flats and maisonettes. The 53,136 vacant dwellings are mostly apartments in coastal regions, which are used either as summer second homes (around 10,000) or rented out for tourism. However, a large number of dwellings built during the building boom in the last 20 years have been the result of heavy investment in what so far has been very lucrative business. Most (75.2%) of occupied dwellings are owned, while 20.6% of the population rent their residences. The rest either live in them free of charge or are held by emphyteusis (long term lease). Persons who are most likely to rent are separated, divorced or single. While the married and re-married categories are the ones most likely to own their homes.

The health system in Malta operates as an integrated and comprehensive health care system, through central government and is on the whole provided free of charge to all Maltese citizens. There are 1,374 registered medical practitioners. Child and infant vaccinations are covered by the system, yet data shows that whilst in 2005, over 90% of children were vaccinated, this figure decreased to about 74% by 2008. The system is paid through the social security system. This guarantees a basic health care programme for everyone, irrespective of income. However, private health clinics also operate simultaneously. Although most of the people do not have private health insurance, private clinics offer a faster system and are used by all who can afford them. The fees

may put pressure on low income families who nonetheless sometimes resort to them in order to ascertain quicker diagnosis and treatment.

Social protection benefits as a percentage of GDP have continued to decrease in recent years. At 17.9% in 2006, they are below the EU25 average of 26%. This decrease appears to be the trend in most EU countries. Nonetheless this trend is likely to put more pressure on social cohesion and access to basic needs.

According to the most recent data available for 2001, the percentage of at-risk-poverty rate stood at 14.9%, representing 59,315 persons. The EU15 average stood at 18% (NSO 2002). "The social protection system, coupled with an active role played by NGOs and strong family and community ties, explains the low level of poverty in Malta" (EC 2007:154). The fairly closely knit extended families also tend to provide social protection. If one excludes all social transfers, this figure (14.9%) would increase to 30% (NSO 2002), which still remains well under the EU25 average of 40% (EC 2005). Moreover, data for 2005 shows that the income inequality indicator, i.e. the S80/S20 ratio (the ratio between the sums of the highest 20% and lowest 20% equalised incomes of persons within households) only stands at 4.1.

This section has shown that social equity appears to be evident in areas such as housing and access to education and health. While education is free and available to all, the system appears to lose a great proportion of potential candidates in the process. However, major initiatives are successfully being undertaken at all levels and sectors in education and training in order to increase substantially the number of students continuing their studies at further and tertiary education. The health system is also available; however, problems with the management of the system appear to create waiting lists which do not necessarily lead to people having immediate access to the resources. The poverty rate is lower than the EU average, yet social benefits do have an impact on the standard of living of this category of society, without which almost one third of the population would be living below the poverty line.

Environmental Conservation

According to land use data for 2008, 29% of the land is linked to any type of development, such as urban, airport, industrial, ports and leisure facilities. The rest is used for agricultural land or natural vegetation.

Sixty-two percent of bathing water in 2008 was of Class 1 (stations in which faecal coliform counts are less than 100 per 100 ml in at least 95% of the samples collected) while 38% was of Class 2 (or less than 100 per 100 ml in at least 50% of the samples collected).

Air pollution can be heavy especially due to the large number of vehicles on the roads. In fact, by the end of 2008, there were 294,658 licensed motor vehicles, meaning about three cars for every four persons. A recent push towards a reform in the public transportation system is aimed to encourage less use of private cars. Licences for vehicles have in recent years tried to mirror the impact of pollution on the environment by increasing the road tax on bigger vehicles. This however, has not deterred persons from buying more cars.

The CO emissions originating from fuel consumption in road transport stood at 31.93Gg in 2007, up from 23.65Gg in 1990. The SO₂ emissions from the power stations was on an upward trend from 1990 (14.75Gg) until 1998 (31.87Gg), but then a downward trend was achieved, resulting in an emissions level of 12.39Gg in 2007. The use of coal was discontinued after 1995. However, other fuel consumption for power stations has continued to increase in the last decades. In 2007, fuel consumption reached 1,869,993TJ (for gas diesel oil) and 24,545,199TJ (for residual diesel oil), from a low 373,461TJ and 9,279,268TJ respectively in 1990. Fossil fuel imports, mainly used for local transport, industry and power stations, have increased in the past years. Industry and commercial activities account for 55% of all energy use, while households use 31%. Malta imports all its energy needs. Even though there is good potential for solar energy, the uptake of this usage is relatively low.

Government has of late provided schemes to subsidize solar panels, double glazed windows and other energy saving devices; however, latest data suggests that the funds from these schemes have not been fully utilized. Infrastructure remains relatively expensive. Feasibility studies are also being undertaken for wind energy farms. Malta has no rivers or mountains as natural water extraction systems. Instead, it either abstracts groundwater or desalinates seawater. Data shows that, since 2003, both systems have seen decreases in the volume of water produced. The problem may become accentuated in the future since the salinity level of the water being abstracted is increasing. Almost 72% of water consumption is domestic while the remainder is used by industry and commercial activities. Recent increases in the international price of fuel have put more pressure on the use of water and electricity in Malta especially since such increases have fed into

heavy price increases in the past months in the local production of the two resources.

Solid waste management has also seen a change in the past eight years. Until 2003, all waste was deposited in public landfills creating problems in the surrounding areas. *“Non-hazardous mineral waste and debris, which is mainly composed of construction and demolition material, made up the bulk of generated solid waste”* (NSO 2009). This trend has now been reversed because such waste is now being deposited in disused quarries or dumped at sea in specific permitted areas. Furthermore, other waste is treated. Whilst in 2002, this only constituted 6% of waste, the figure rose to 17% in 2006. Moreover, new schemes to separate recyclable material have also been initiated and have proven relatively successful in recent years.

This section has shown that, whilst great effort is being undertaken to safeguard the environment, some issues such as excessive car pollution and lack of alternative renewable energy systems need to be taken more seriously in order to guarantee a healthier use of natural resources and the protection of the environment for future generations.

Classification of Attractiveness Parameters based on the Questionnaires

The response rate of the questionnaires was very disappointing in the case of Malta. Resident population questionnaires were sent to all 68 local councils, but only nine questionnaires were returned. Business questionnaires were also sent to several entities; however, not even one single completed questionnaire has been returned.

The following table is a summary of the results of just nine questionnaires, which can hardly be representative of the general attitude of the population at large. Therefore, whilst these results are being presented and commented upon, they cannot in a serious manner be considered as other than indicative in the context of this case study.

The transport issue was considered critical, with all respondents considering the frequency of trips (either by sea or air) as the most important concern in order to overcome the insularity problem. Linked with this are the cost and quality of such services. Another means of overcoming this physical isolation is the internet and therefore broadband connection was also considered as important by all respondents. Also on the same level were the cost of living and the quality of health services. This is understandable in the light of recent debates about high inflation when all other eurozone

member states were facing very low inflation, due to reduced demand as a result of the international recession. The opening up of a state-of-art hospital in 2007 led to expectations of high quality health services; however, the waiting lists lingered on and this clouded the high expectations of the hospital in the following years. These areas of connectivity (whether physical or virtual), health issues and cost of living are considered as basic needs to maintain a sustainable and healthy lifestyle, together with access to the outside world.

Other areas seen as important are training opportunities and quality of life. This implies that, when basic needs are satisfied, people seek higher needs such as training to improve on the existing lifestyle. Next in line are quality of nature, good educational services, job and career opportunities, energy and water supply and the cost of transport. Job opportunities have not placed higher on the value system, perhaps because the respondents were local government employees and therefore no-one was anticipating redundancies since their own jobs were secure. If residents had perhaps replied to the questionnaires, the expectation was that more importance would have been accorded to this phenomenon, especially as the country is facing increasing unemployment. After basic needs are satisfied, people can have the luxury of caring for nature and the environment. The primary concern was access to good transport, followed by the cost issue. The energy and water supply services have on the whole been regular and therefore this is not considered as a huge problem at present. Educational services suggest good jobs; therefore, this is seen as important, if considered together with job and career opportunities.

The respondents then consider as important specialized health and educational services. Again, the logic followed is that once such basic services are offered, one can afford to ask for more specialization of these merit goods. The local transport network came next in importance. However, since there are a high number of private cars, the local transport network did not feature higher up on the importance scale. The transport system is not efficient and until a reform is undertaken to make it more reliable and effective, the local people will continue to use their private cars. A reform has recently been announced.

The issues considered as least important are participation in non-government collective activities, opportunities to attend sport activities, extent of diversity in society or importance of social capital, and living in a place with a cultural identity.

Table 8 – Questionnaires for Residents (N=9)

Factors	Very Important	Important	Of little importance	Insignificant	No opinion	Total	Mean Score
	+2	+1	-1	-2	0		
Frequency of scheduled trips (by ferries, ships, airplanes...)	7	1	1			9	14
Cost of air or sea travel to mainland	5	3	1			9	12
Quality of transport services to mainland	5	4				9	14
Broadband connection	5	4				9	14
Regularity of energy supply	5	3	1			9	12
Regularity of water supply	5	3	1			9	12
Connection to the waste water collection and treatment system	1	5	3			9	4
Effectiveness of solid waste collection/ disposal	3	3	3			9	6
Quality of local public transportation network	4	3	2			9	9
Job opportunities	6	2	1			9	12
Career opportunities	5	3	1			9	12
Training opportunities	4	5				9	13
Opportunities to attend cultural events	2	4	2		1	9	6
Opportunities to attend sports events		4	4		1	9	0
Quality of Health Care and services	5	4				9	14
Availability of specialized	4	3	1	1		9	10

health personnel							
Quality of Education services	6	1	1		1	9	12
Availability of specialized educational services	4	3	1		1	9	10
Land and construction cost of domestic homes	2	4	3			9	5
Cost of living	6	2			1	9	14
Extent of linguistic, religious, racial or ethnic diversity in society	1	3	4	1		9	1
Participation in nongovernment collective activities (cooperatives)		1	3	3	2	9	-6
Networks of trust and social capital	2	2	4	1	1	9	1
Quality of life (short everyday distances, low noise, clean air)	5	3			1	9	13
Quality of Nature	3	6				9	12
Quality of the built environment	3	3	2		1	9	7
Residence in a place with distinct cultural identity	3	1	3	1	1	9	2

Questionnaires from institutional entities

There were also three more respondents from central government, an educational institution and a state planning organization. The results are presented in the following table. The most important consideration for these entities was the regularity of water and energy supply. These concerns must be seen within the context of increased salinity in the water being extracted from the ground and the higher international price of fuel. Guaranteeing the supply of

these resources is thus uppermost in the minds of the authorities on the subject.

Other areas considered as important are broadband connection, job opportunities, quality of health and educational services and overall quality of life. These areas deal with policy making for central government, which together lead to a better standard of living and safeguard a certain quality of life.

Similar to the responses of local councils, the areas considered least important are: diversity in society, participation in nongovernmental collective activities, and networks of trust and social capital.

Table 9 – Questionnaires from Institutional Entities (N=3)

Factors	Very Important	Important	Of little importance	Insignificant	No opinion	Total	Mean Score
	+2	+1	-1	-2	0		
Frequency of scheduled trips (by ferries, ships, airplanes...)	1	2				3	4
Cost of air or sea travel to mainland	1	2				3	4
Quality of transport services to mainland		2	1			3	1
Broadband connection	2	1				3	5
Regularity of energy supply	3					3	6
Regularity of water supply	3					3	6
Connection to the waste water collection and treatment system	1	2				3	4
Effectiveness of solid waste collection/ disposal	1	2				3	4
Quality of local public transportation network	1	2				3	4
Job opportunities	2	1				3	5
Career opportunities	1	2				3	4
Training opportunities	1	2				3	4
Opportunities to attend cultural events		2	1			3	1
Opportunities to attend sports events		2	1			3	1
Quality of Health Care and	2	1				3	5

Services							
Availability of specialized health personnel		2	1			3	1
Quality of Education services	2	1				3	5
Availability of specialized educational services	1	2				3	4
Land and construction cost of domestic homes	1	1	1			3	2
Cost of living	1	2				3	4
Extent of linguistic, religious, racial or ethnic diversity in society		1	1	1		3	-2
Participation in nongovernment collective activities (cooperatives)		1	2			3	-1
Networks of trust and social capital		1	2			3	-1
Quality of life (short everyday distances, low noise, clean air)	2	1				3	5
Quality of Nature	1	2				3	4
Quality of the built environment	1	2				3	4
Residence in a place with distinct cultural identity	1	1	1			3	2

Policy Measures already Applied and Proposed for the Future

Only two questionnaires regarding best policy practice have been received. One policy dealt with the provision of higher educational courses on the island of Gozo, which is not part of the mainland. The policy thus focused on human resources and national funds were utilized to make such courses available, even though sometimes the number of participating students was low. Although the costs are generally higher and time consuming compared to similar courses offered on the mainland, nonetheless the returns on such investment is high, especially taking into consideration the lack of job opportunities on small islands.

The other policy focused on services of public interest with implications for policy making and design. In this case, both national and European funds were used. The policy was part of a project which dealt with the development of a sustainability impact assessment tool. Such a tool was then utilized in the negotiations of the Constitutional Treaty, to put pressure on a more inclusive definition of islands within the EU that would also include sovereign island states. Such a policy is also valid for Cyprus.

In terms of European Union policies, one respondent was of the opinion that regional policy has had the greatest impact on the island. Other European policies which have impacted on the island were the Habitats and Birds Directive and Energy and Climate Change targets. These had put pressure on the management of the natural habitat and also pushed for a stronger focus on alternative renewable energy sources. It was also claimed that the single market and the adoption of the euro had positively impacted on the competitiveness of the islands.

Any future European island-targeted policy needed to be flexible enough to mitigate the negative effects of insularity. Although some European policies (such as cohesion, agriculture and fisheries) to some extent catered for the needs of some islands, these were generally fragmented. Thus, any future European island policy needed a more holistic and comprehensive approach.

Concluding Remarks

Malta does not have the problem of not being able to attract people to its shores. Rather, contrary to most smaller islands, its population continues to increase, partially because it is attracting inward migration, mainly from other EU member states. The main issue facing the island is how to make better use of this human

resource; that is, how to attract more people to the labour market, especially women. Moreover, the level of entrepreneurial spirit also appears to be relatively low as only 14.7% of those in employment are actually self-employed, with the rest being employees. Government's role in such cases is to encourage the setting up of more child care services and to provide for an easier system for small businesses to be set up. Several initiatives have been launched, however, the uptake has not been significant.

Social equity appears to be present, in that everyone has access to basic needs such as education and health. Housing is becoming more expensive and this may create more homelessness in the coming years, especially involving vulnerable individuals such as single mothers. Still, conspicuous consumption is also evident in the form of large villas, cars and yachts, which do not necessarily always show up in official figures. The role of the state would thus be to ensure that due taxes are paid, whilst at the same time guaranteeing that the social welfare system is not abused but remains in place for those who really need it.

In recent years Malta appears to have put more emphasis on environmental concerns. This is evident in new schemes for development planning, solid waste management and environmental awareness campaigns. However, further attention needs to be given to the non-degradation of the natural habitat, security of water and energy supplies and the preservation of Malta's unique historical treasures. Whilst tourism can boost the attention given to such sites, it also places pressure on other natural resources. A sound strategy needs to be put into place to ensure that the environment is not the loser in the tourist/environment equation.

From the meagre number of responses to the questionnaires, one can glean some indicative concepts which local people consider as suggesting attractiveness of their home country. Top among these were the richness of the history and heritage, the natural beauty of the islands, the peace, security and tranquillity and the positive climatic conditions. On a more practical consideration, others mentioned the short domestic distances which make the attendance and participation at social activities more feasible. A few mentioned the social cohesion present in the extended family and the small communities of villages, which provide security and guarantee safety to families. One respondent saw the island as attractive because of the feeling of being physically cut off from the rest of the world, though still able to maintain virtual and physical contact with the outside world.

The Maltese islands have developed tremendously since independence in 1964. However, the country has also had to face the strains of physical isolation and a clear dearth of natural resources. Although it has to some extent managed to transform inherent handicaps and external threats into opportunities, competitive pressures continue to expand, putting more demands on finite domestic resources.

Island Case Study Report: Lipari, Aeolian Islands, Italy

Introducing the island

Lipari is the largest island from the seven major islands of the volcanic Aeolian Archipelago, just off the north coast of Sicily, lapping the lower Tyrrhenian Sea, only 20 kilometres away from Messina. The name of this archipelago derives from Aeolus, the god of wind. However the climate is relatively mild with temperatures ranging from 13 to 27 degrees Celsius. The total area of Lipari is about 37km² and the island has a resident population of about 11 thousand (the 2001 census figure stands at 10,554). The islands can be reached by ferry or hydrofoil from Messina and Milazzo. In the busy tourist season, ferries operate from other ports such as Palermo, Naples, Reggio Calabria and others.

The administrative structure

Lipari Commune forms part of the Province of Messina. The Mayor of the Lipari Commune, appoints the Giunta Comunale which is practically the executive of Lipari. At present the Giunta consists of seven members, called 'assessori', and each member is in charge of specific administrative duties such as sport, tourism, maritime transport, etc.

Il Consiglio Comunale (Communal Council), made up of twenty members, forms the elected representatives of the people. The role of the council is to decide on communal regulations, public projects, territorial development, and the budget. These decisions are adhered to by the Giunta and the Mayor in their everyday administrative roles. Lipari also has seven Commissions (with six members each) whose function is more specific, such as public works, tourism, electricity and water, institutional affairs, education and culture, etc.

The Population

The latest available detailed demographic data is that of the 2001 Census. The 10554 persons on the island of Lipari constitute 5241 households. These households comprise 3413 families while the rest (30.94%) are single persons. This one-person family figure has increased from 19.04% in 1971. The island has seen a 6.02% increase in its population from 1977 to 2006, while the birth rate at 9.64 (per thousand population) is higher than the mortality rate of 7.96 (per thousand population.). Tables 1 and 2 give an indication

of the structure of households and families. Data shows that there were only 78 households with six or more persons living in them, while one third of persons are living on their own.

Table1 - Structure of Households, 2001

Total Households	1 person	2 person	3 person	4 person	5 person	6 person and over
5241	1768	1188	973	939	295	78

Table 2 – Family Structure, 2001

Total Families	Couples with no children	Couples with children	Single fathers with children	Single mothers with children
3413	870	2012	113	418

Further census data shows that there were twelve non-household communities, such as monasteries and old-people's homes. However, the number of persons actually residing in such institutions is relatively low, only 65 or 0.6% of the total population. This fact coupled with one-person-households and small families indicate that older people may still prefer to live at home, while being cared for by the extended family.

Table 3 – People Residing in Institutions, 2001

	Institutions of assistance	(of which) old people's homes	Ecclesiastical institutions	Others	Total
Residences	4	3	1	7	12
Male residents	12	7	0	28	40
Female residents	19	19	6	0	25

The number of single males is higher than females but the number of widowers is higher. The number of females who are legally separated or divorced is marginally higher than males, which may indicate that such persons return to their island when this situation occurs.

Table 4 - Civil State of Population 2001

	Single	Married	(of which) Separated	Legally separated	Divorced	Widow/er
Females	2646	2940	53	117	105	641
Males	3065	3011	54	100	75	154

Table 5 below shows total population by sex and age group, which shows that females tend to outlive males. Causes of death are mostly (52.4%) related to circulatory system complications, while 25% are due to tumours, and only 4.8% relate to respiratory problems.

Table 5 – Population Structure, by Sex and Age, 2001

Age Group	Females	Males	Total
Under 5	273	303	576
5 - 9	341	343	684
10 - 14	389	421	810
15 - 19	395	393	788
20 - 24	398	403	801
25 - 29	490	495	985
30 - 34	516	530	1,046
35 - 39	546	538	1,084
40 - 44	530	552	1,082
45 - 49	457	522	979
50 - 54	385	450	835
55 - 59	292	293	585
60 - 64	335	327	662
65 - 69	330	305	635
70 - 74	318	239	557
75 - 79	221	151	372
80 - 84	115	74	189
Over 85	118	66	184

According to 2007 estimates the population has increased to about 13200, while figures for January 2009, indicate that there were 611 foreign residents on Lipari, the majority being in the working age group, as shown in table 6. The rest are children accompanying their working parents and older people who decide to retire on Lipari.

Table 6 - Foreign Residents, 1 January 2009

Age Group	Females	Males	Total
0 - 18	42	46	88

18 -65	281	184	465
65 +	30	28	58

This section has given a concise picture of the population structure. The following section tries to explain how the resources of the island are employed and whether this is sustainable in the future.

The Sustainability State

This section is divided into three parts: the first looks at economic effectiveness by analysing the labour market and the economic activity present on the island; the second provides some data on social equity by looking at educational opportunities and the third part evaluates environmental considerations.

The labour market and the local economy

According to 2007 estimates, the total 15+ labour supply was 6300 with 5100 actually being in the labour force. There were 4600 workers while 500 were estimated to be unemployed. These figures translate into an employment rate of only 40.7% and an unemployment rate of 9.1%. However, the 2001 Census showed a lower employment rate of 30.92%, which indicates improvement in later years. Figures also show that employment in agriculture, fisheries and manufacturing continue to give way to jobs in services (see change from 2001 to 2005). In comparison to data from all Italy, figures indicate that the economy of Lipari is more focused on services than the average for Italy, with minor presences of manufacturing activity on the island. This resembles other economic structures of islands, especially when the concentration of services is tourism based.

Table 7 - Employment by Sector 2001 – 2005

Year	Agriculture and Fisheries	Manufacturing	Services	Total
2001	210	999	3847	5056
2002	224	1020	4166	5410
2003	197	1036	4221	5454
2004	193	948	4128	5269
2005	215	978	4312	5505
% of total for Lipari (2001)	4.15	19.76	76.09	100.00
% of total for Lipari	3.91	17.77	78.32	100.00

(2005)				
Average for Italy (2005)	1000300	6960094	16361722	24322116
% of total for Italy (2005)	4.11	28.62	67.27	100.00

Data for employment has shown that resources may not be effectively employed as the employment rate is relatively low. However, one has to take into consideration that one third of the population are older people living alone. It is also possible that other part-time jobs during the summer months are created.

During 2001-2005 the labour market of Lipari witnessed a positive upward trend. In fact research conducted by the official statistics office of Italy (ISTAT) found that employment had increased to 4461 persons in 2005, indicating an increase of 8.9% (or 366 jobs) compared with 2001. Unemployment in 2005 stood at 634 persons or 12.4% of the labour force. However, this had decreased from 19.8% in 2001. This can be explained in two ways: some preferred to prolong their years of study while others sought employment in other regional markets, starting a trend of emigration, especially of youths. Therefore the year 2005, saw a participation rate of 46%.

The official website of the Lipari Commune does not refer directly to economic activities on the island but states that the island has

...a moderate warm climate typical of the centre-Mediterranean zones. A climate which is surely favourable to the tourist development and the local typical crops

The island is more geared towards local crafts and services, mainly tourism. In fact similar to other islands its population can double in the tourist months' season. The website indicates accommodation for agrotourism, fishtourism and nightlife activities as some of its appealing features. There are also references to the island's historical and cultural heritage, its flora and fauna, and its 156 thousand year old volcano.

Starting from the 1960s, the island of Lipari has been transformed from an island dependent on the primary sector (fisheries, agriculture and other extractive activity) to an island focused more on touristic activities. This has been possible because of local

characteristics which have made the island integrate more on a national and international level.

The island has about 3000 economic units. Those active in different tourist related activity constitute 35%. Construction accounts for 20% while fisheries are responsible for 15%. The industrial and handcrafts sector provide for another 15%, while transport and maritime activities account for 10%. The remaining 5% are in other sundry activities such as public administration and other services.

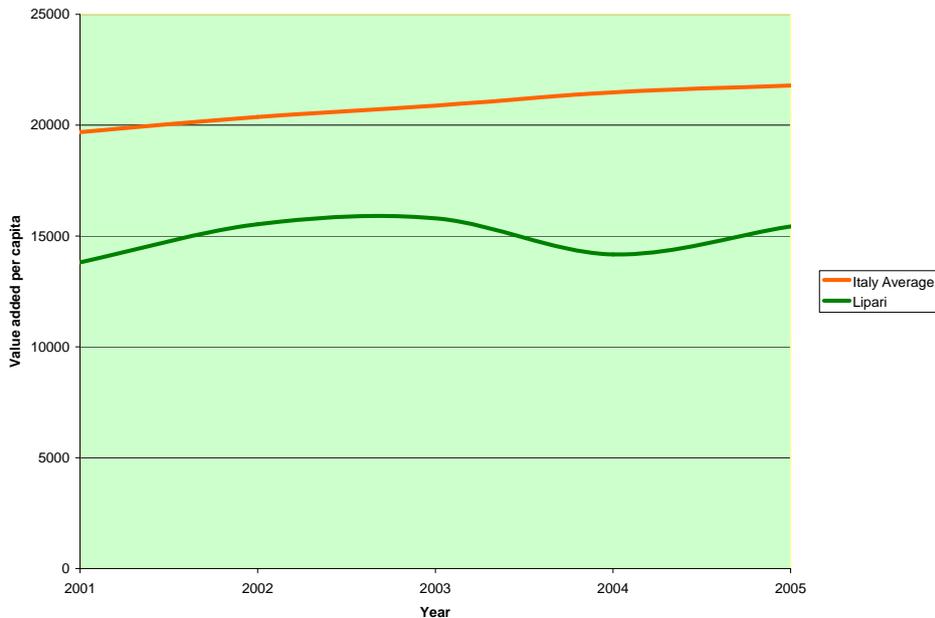
Traditional activities are still evident and these include agricultural related products such as capers and a type of wine (malvasia), hand-crafts made from ceramic, pottery, earthenware, and pumice stone. Paintings by local artists are also a favourite with tourists.

Agricultural activity is carried out by small farms. From the products which are sold, the highest proportion (65.38%) is manufactured, while 31.98% are sold directly as cultivated and the remaining 2.65% is derived from cattle and poultry products. Most of the products (88.24%) are sold directly by the owners, while the rest are split unevenly between those that have a contractual obligation (1.18%) and those who do not (10.59%). This indicates a very informal system, again typical of small islands who have to work with small quantities and who prefer to eliminate the middle man in order to increase revenue. However, one can conclude that agriculture is not very competitive and the only sustainable manner available for its continuity would be to marry with it tourist activities to develop forms of agro-tourism which would not be detrimental to the environment.

Lipari boasts of a significant tradition in the fisheries sector. There are ten active fisheries cooperatives. It is estimated that about 800 people are directly employed, with 450 being part of the ten cooperatives while the remaining 350 are self-employed. Due to EU legislation regarding drift nets and strict enforcement in recent years, the sector has been thrown in uncertain waters. It has become imperative for local authorities to make this sector sustainable, in conjunction with demands to safeguard employment in this traditional sector whilst protecting the marine environment and species in danger.

The tertiary sector is very evident in the economy of Lipari. The sector represents 73.8% of economic activity, employing 1829 people (or 60.7%). However the sector is characterized mostly by seasonal activity and this can pose serious demands on accommodation and services in peak tourist months.

**Graph 1 - Value Added per Capita (current prices)
2001 – 2005**



Data for the value added from 2001 to 2005 shows that Lipari has a GDP below the average for Italy and in the six year time period has also seen more fluctuations.

When one analyses the sectoral value, one notices that increases have mainly been visible in the services sector. However, when the type of services is analysed in more detail, most of the activity caters for the local community including activity related with the provision of tourism related services. In fact, beds per 1000 population, associated with tourist activity amount to 419.06, although the average occupancy level is 24.78% of total beds. This indicates a concentration of activity in specific months of the years and does not guarantee occupancy in the shoulder months which may see leaner tourist activity. Services to local firms and consumers amount to 89.99% of total services, while 0.75% is provided as educational services, 0.45% for health services and 8.82% relate to other public, social and personal services.

Table 8 - Value added by Sector, 2001 – 2005
(in million euro)

Year	Agriculture and Fisheries	Manufacturing	Services	Total
2001	3.00	33.21	141.12	177.33
2002	3.10	41.09	155.50	199.74
2003	3.85	41.39	158.96	204.20
2004	3.07	33.80	147.90	184.86
2005	3.02	36.00	163.75	202.78
% of total for Lipari	1.49	17.75	80.75	100.00
Average for Italy for 2005	28047.82	339355.07	909341.75	1276744.63
% of total for Italy	2.20	26.58	71.22	100.00

When compared to the average of Italy, Lipari has a higher percentage of its value added deriving from the services sector and as expected has a lower percentage value in the primary (agriculture and fisheries) and the secondary (manufacturing) sectors. Data is shown in table 8.

The type of manufacturing entities varies but is not very diversified. According to data from the 2001 Census of Industry and Services (available on <http://dwcis.istat.it/cis/index.htm>), there were 96 manufacturing entities, almost a third (31) of which were engaged in the foodstuffs, beverage and tobacco sector. Five manufactured textiles and clothes and one made leather goods. A significant number (22) produced wooden products while there was one company which worked in the paper and publishing sector. Seventeen companies worked with metals and non-metallic ores. Eleven companies manufactured goods dealing with machines, electric machines and means of transport. The remaining eight companies were engaged in other manufacturing activities.

Data in Table 9 provide information on health services on Lipari from 1999 to 2003. Data shows that the island has on hospital which caters for the health needs of the residents. The number of first aid treatments somewhat decreased over the five-year period. Although the number of doctors increased slightly from 22 to 25, the number of nurses decreased more, from 80 to 66. Other staff decreased too, which saw the total number of paramedic staff decrease from 165 to 125. The number of hospital beds almost decreased by half from 63 to 35, which concurs with the impression of households (shown later on in the questionnaires) that the level of health services is not adequate. Although the average length of stay in hospital remained stable at seven days,

the total number of days in hospital saw a significant 31% decrease.

Table 9: Health Indicators for Lipari (1999 – 2003)

	1999	2000	2001	2002	2003
Number of Hospital/Institutes	1	1	1	1	1
First aid treatments	10989	10403	12430	8485	10382
Doctors	22	26	26	23	25
Nurses	80	88	61	49	66
Other personnel/staff	63	81	66	61	34
Total personnel/staff	165	195	153	133	125
Number of Hospital beds	63	60	47	39	35
Stay in hospital	1521	687	1694	1753	1610
Stay in hospital (number of days)	7850	4455	8050	7633	7042
Number of Hospital beds in day hospital	7	7	7	7	7
Days in day Hospital	1875	779	682	1042	1293

Source: http://www.istat.it/dati/catalogo/20061102_00/

The following section provides information regarding tourism. The number of tourists for all Aeolian islands in the past fifteen years has remained somewhat constant, about 440,000 per year. Authorities maintain that according to several studies conducted, that the average stay of tourists are between 4 and 5 nights, which means that the islands can boast of 2 to 2.5 million bed-nights per year. As in most other small islands, tourist activity is mostly (97%) concentrated between April and October.

Table 10 provides information about the number of hotels and other accommodation in the past five years. Data shows that this has increased by 16% in the time-period. However this resulted in a slightly lower occupancy rate from 23% in 2004 to 19% in 2008.

Table 10 - Aeolian Islands: Tourist Accommodation 2004-2008

Year	Hotels	Other Accommodation
2004	75 (3400)*	106 (1804)*
2005	78 (3480)	113 (1829)
2006	83 (3780)	122 (1909)
2007	86 (4057)	131 (2026)
2008	89 (4082)	137 (2116)

- figures in brackets indicate bed space.

It has to be noted that 40% of all hotels are on Lipari and this increases to 52% if one were to include all types of accommodation.

Overall Lipari accommodates 44% of all bed-spaces on the Aeolian Islands. A breakdown is show in Table 11.

Table 11 – Lipari Accommodation Possibilities

	No	Rooms	Bed Spaces
Hotels	36	865	1701
Other Accommodation	71	422	996
TOTAL	107	1287	2697

Data on tourism has shown that Lipari accommodates most of the tourist activity on the Aeolian Islands. However, data does not indicate the impact this has on the local economy or the local environment.

Social equity

One of the indicators of social equity is the effectiveness of the educational system and if the population is educated enough to attract higher level jobs. When compared to the province of Messina, Lipari already appears weaker in the educational achievements of its population. In 2001, data showed that whilst the 8% of the province of Messina's population were graduates, Lipari's share was lower at 4.93%. This may show that the island does not offer jobs for graduates and these decide to migrate to other parts of Italy in order to find a job. The percentage of the population who managed to gain an upper secondary school diploma also tends to be lower than Messina's figure. Almost 36% of the population has finished compulsory secondary school, which is higher than the 29.13% for Messina. The figures for those who only managed to finish elementary school, or who are literate even though they have had no education, or are in fact illiterate are thus lower than the corresponding figures for Messina.

Table 12 - The Level of Education (2001)

Level of education of population	Lipari	Lipari % of total	Messina	Messina % of total
Degree	492	4.93	50131	8.00
Upper Secondary School Diploma	2436	24.43	160614	25.63
Finished Secondary School	3570	35.80	182587	29.13
Finished Elementary School	2225	22.31	148778	23.74
Literate but no education (total)	1077	10.80	71443	11.40
Of which over 65 years	327	3.28	28319	4.52
Illiterate (total)	171	1.71	13164	2.10
Of which over 65 years	99	0.99	9297	1.48
TOTAL	9971	100.00	626717	100.00

Other indicators looking at social equity would include the poverty rate and several health indicators.

Educational services in Lipari are found at all levels, from kindergarten to higher educational institutes. An institute for commercial and science studies has about 600 students and 70 teaching staff. The lower level educational institutions (kindergarten, primary and secondary levels) also accommodate about 600 students and 100 teaching staff. Three separate comprehensive Institutes manage these levels, which are spread over the Commune of Lipari. The following section tackles the third area of the environment.

Environmental Preservation

The population density of Lipari is 122.94 per square kilometre, which means that the islands have a low density, compared to Messina for example with a population density of 1160.63. This density of 122.94 for Lipari increases to 733.53 for urban areas, which is nonetheless a far cry from the 6616.76 for Messina's urban surroundings. The density for Lipari can further increase in the summer months when the island attracts a relatively high number of tourists. The island can boast of natural beauty, unique fauna and flora and a rich history of long successions and volcanic activity. The natural environment is marketed for specific tourists who do not visit the island for its sun, sea and sand only but is also aimed at ramblers and nature lovers.

Most of the existing houses on Lipari (55.72%) date back to before 1945, 17.12% were built between 1946 and 1971, 15.17% between 1972 and 1981, while the remaining (11.99%) were constructed after 1982. This shows that tourism may have affected some construction in the last twenty years but for the most part, construction does not appear to have increased dramatically. Furthermore, 49.39% of houses are second homes, which are in fact empty or occupied by non-residents. These houses are all on the coastal region. Compared to other communes of Messina, the number of cars per square kilometres is relatively low at 377.33 (in comparison with 3751.89 for Messina). Moreover, the percentage of cars per 100 inhabitants (51.85%) is slightly lower than other communes or 56.43% for the province of Messina.

The issue of transport within an insular setting is of particular importance, especially maritime transport. Transport not only affects daily commuting and complicates living problems but directly

impacts the development process of the territory. The question of transport has in recent years gained a higher level of open debate in the Aeolian islands. Internal transport is essential to link the historical centre with the high and peripheral zones within the islands. At the moment, the service is normally provided by traditional which do not necessarily compliment the ecological needs of the island (such as quietness, clean air, modern means of transportation). Particularly for tourists the alternative to this mode of public transport is the hiring of two-wheel commodities such as bicycles and motorbikes.

The present production of electrical energy on the island of Lipari is through a diesel power station. Sometimes demand is higher than the supply especially during the summer months. This can create difficulties especially for businesses. The present of this power station in the immediate vicinity of the harbour, is a sore point since it detracts from the attractiveness and sustainability of the environmental surroundings. The power station is managed by a private company (SEL, Societa Electrica Lipari). Recently the issue of alternative energy resources has been a source of debate. Citizens and the business community appear to appreciate the need for this and are in favour of this initiative, however, it appears that bureaucratic difficulties need to be solved by the authorities before any headway can be made in this regard.

This section has provided some information on the sustainability of the environment and it would appear that similar to other small islands, transportation remains a problem and the respect for the environment would necessitate more attention to polluting factors, however, in most cases infrastructure would need heavy investments which may not always be available. Further information would also be appreciated in the realm of waste management and bathing sea water quality.

Classification of Attractiveness Parameters based on the Questionnaires

Resident Questionnaires

Eighteen resident questionnaires have been received from the island. The authorities translated the questionnaires into Italian so that the language problem would be overcome. Results are shown

in Table 10. Thirteen business questionnaires have been received and these are presented in Table 11 below.

The perception of insularity is strictly related to the contact with the sea, distance from the mainland, dimension limitations, and variety. The sense of being on an island for both residents and tourists augments proportionally to an accentuation of these characteristics. The distance of the Aeolians from the mainland ranges from a minimum of 20 Km (Vulcano) to a maximum of 55 Km (Alicudi). The various degrees of distance from the mainland influence the island's socio-economic and environmental settings, as distances are related to accessibility and, thus, transport and other service provision (e.g. imports). So, while on the one hand, a greater distance may aid environmental conservation, on the other it could increase difficulties related to accessibility. At the same time, the concept of smallness clearly arises in the particular case of the Aeolians, as they appear from the comparison with a number of other islands (below). Finally, the variety of the resource base will also greatly impinge on the islands' development.

The Aeolians represent certain attractive varieties (apart from the natural environment which has both the sun, sand and sea element and the geologic one, the islands also offer a rich cultural and historic component). Their economic base however, is not as varied as it is becoming increasingly dependent on tourism.

Size, distance from the mainland and variety of resources give rise, both on their own and through their interrelation, to a number of other implications:

- Small land area, as in this case, signifies limited resources base, while a reduced population, a non-existent domestic (in the sense of the same Archipelago) market. Thus, the dependency on outside sources of income is greater, there is a great need to import products (given the limited resource base, e.g. water and energy scarcity) and the limited volume of business will also imply diseconomies of scale.
- The islands are subject to greater population variations than most other areas, as happened for the Aeolians at various times. Moreover, migratory phenomena can easily disrupt the delicate balance between supply and demand for labour.
- The limited available territory creates conflicts on how it should be utilised. As tourism develops, the price of land goes up and speculation begins. This was and still is the case in the Aeolians, where people are constrained to pay much higher prices for a house or piece of land as its value has increased by what it could produce in terms of tourism investment.

- Agriculture tends to operate, as in the Aeolians, with a lack of technological innovation, both because the investment scope is limited (especially, when renting a room to the tourist is much easier and guarantees an income) by the low availability of land and quality of soil which allows only rather primitive methods. At the same time, the fishing industry encounters problems related to storage and commercialisation.
- Access is limited; the islands' size has yet to justify the construction of a conveniently sited airport, and since the islands are not on other major routes, specific services have to be established to reach them. Such disadvantages in the Archipelago have been directly proportional to their size and distance from the mainland.

The results of the household questionnaires indicate the following observations.

The two main problem areas are the issue of adequate transport accessibility, and the insufficiency of job opportunities on the islands. The concern of the locals is more linked to the frequency of scheduled trip and less on the adequacy of internal transport. The lack of jobs often leads to the migration of locals, especially the younger generation. Some locals also complained that the opportunities for local training are also low which makes it more problematic to acquire new skills. Another preoccupation is the cost of living, which tends to be rather high, and this trend is also found in the high prices for land and construction works.

The locals lament that citizens are not involved in decision-making and this leads to a low level of trust in local authorities. Furthermore the respondents do not particularly feel that the local administration is very effective. Some also feel that the quality of health care and services is relatively low.

Other concerns relate to the fact that sports and cultural events are not readily available. However, although some locals believe that

Table 13 – Resident Questionnaires (N=18)

Resident Respondents (N = 18)	I agree totally (+2)	I agree (+1)	I neither agree nor disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't Know/ No Answer (0)	Total	Mean Score
1. Frequency of scheduled trips (by ferry, ship, plane) is adequate		2	2	12	2		18	-15
2. The cost of air or sea travel to mainland is praiseworthy	4	5	2	5	2		18	4

3. Quality of transport services to mainland is satisfactory			1	7	10		18	-27
4. The broadband connection is satisfactory		3	6	7	2		18	-8
5. The regularity of energy supply is sufficient	1	11	3	3			18	10
6. The regularity of water supply is sufficient	1	3	1	9	4		18	-12
7. Waste water collection & treatment system is adequate		2	3	7	6		18	-17
8. Quality of local public transportation network covers local needs		4	9	5			18	-1
9. There are sufficient job opportunities			2	6	10		18	-26
10. There are sufficient opportunities for training		5	1	9	3		18	-10
11. There are adequate opportunities to attend cultural events		1	2	10	5		18	-19
12. There are adequate opportunities to attend sports events		1	4	3	10		18	-22
13. Quality of Health Care and services covers my needs		1	3	6	8		18	-21
14. The quality of Education services covers my needs	2	8	2	3	2	1	18	15
15. Land and construction cost of domestic homes is praiseworthy		5	2	4	7		18	-13
16. The cost of living is satisfactory		4	2	3	10		18	-19
17. Quality of life (short daily distances, low noise, clean air) is satisfactory	12	4		1			18	27
18. The quality of Nature is satisfactory	3	12	1	1			18	17
19. The quality of the built environment is satisfactory	1	9	4	3	1		18	6
20. The local Public Administration is effective		3	4	8	3		18	-11
21. Degree of involvement of citizens in decision making process is sufficient		1	4	3	10		18	-22
22. I generally feel security (from criminal activities)	8	7	3				18	23
23. I trust the local authorities (municipality)		3	1	6	7		18	-17
24. Generally the locals are trustworthy		6	2	2		8	18	4
25. My interest for the local politics is high	1	11	2	2	2		18	7

basic needs such as waste water collection, a regular water supply and access to the broadband are also ineffectively available; these are not high on the list of complaints.

Nonetheless the majority of respondents feel very positive about the island, especially the quality of life offered in terms of short distances, low noise pollution and clean air. The locals also feel safe and secure from criminal activity. Furthermore, they feel privileged to have retained the quality of nature at such a high level and the quality of the built environment is also acceptable. Most

respondents feel that the quality of education is good. They are also satisfied with the regularity of energy supply.

The interest in local politics appears high. To the question on the trustworthiness of locals the result is globally positive although most respondents preferred not to comment on this. Respondents are also equally balanced on the idea of whether the cost of sea and air travel to the mainland is commendable.

Overall, although the islanders suffer from problems normally associated with insularity such as accessibility and lack of jobs, the respondents were very positive on the role the island plays on their everyday quality of life, especially in terms of the natural surroundings and the safety and security associated with island life. Although they would prefer more say in how decisions are taken locally, in that they feel an affinity with the island and feel it belongs to everyone, they are not very positive on the way the island is presently administered. Access to basic services (such as good health care and water) is not always guaranteed, although other services (such as education and energy) appear acceptable.

Business Questionnaires

Table 1 4–Business Questionnaires (N=13)

Business Respondents (N = 13)	I agree totally (+2)	I agree (+1)	I neither agree nor disagree (0)	I disagree (-1)	I disagree totally (-2)	Don't Know/ No Answer (0)	Total	Mean Score
1. Frequency of scheduled trips (by ferry, ship, plane) is adequate			2		11		13	-22
2. The cost of air or sea travel to mainland is praiseworthy	1	9	1	1	1		13	8
3. Cost of transport of goods from/to island is praiseworthy			2	2	9		13	-20
4. Quality of transport services to mainland is satisfactory			1	8	4		13	-16
5. The broadband connection is satisfactory		2	2	8	1		13	-8
6. The regularity of energy supply is sufficient	1	11	1				13	13

7. The regularity of water supply is sufficient			2	2	9		13	-20
8. Waste water collection & treatment system is adequate		1		10	2		13	-13
9. Quality of local public transportation network covers local needs			10	1	1	1	13	-3
10. There is sufficient and available trained/qualified human capital in the area/island		1	1	10	1		13	-11
11. There are sufficient opportunities for training of the employees in the area/island			1	3	9		13	-21
12. The land and construction cost of commercial property is praiseworthy			1	11	1		13	-13
13. The cost of life is satisfactory		11		1	1		13	8
14.. The local public administration is effective			1	9	3		13	-15
15. The labour cost is satisfactory			11		2		13	-4
16. The business support agencies (such as business development corporations) are adequate				11	2		13	-15
17. There is sufficient support by other businesses (goods and services of local market)		1	9	3			13	-2
18. The economic incentives to business (subsidies, tax) are sufficient			1	9	2	1	13	-13
19. The possibility to support innovations in the production process is sufficient			1	10	2		13	-14
20. There is the possibility to develop cooperation with other businesses for information and know-how exchange			1	2	10		13	-22
21. Local authorities show sufficient competence to solve problems				2	11		13	-24
22. The local authorities have an adequate development vision (strategy, plan, activities)				2	11		13	-24
23. The degree of stakeholder's involvement in the decision-making process is sufficient			7	4	2		13	-8
24. I generally feel security (from criminal activities)	3	2	5	3			13	5
25. My trust in the local authorities (municipality) is high			1	10	2		13	-14
26. Generally the locals are trustworthy		1	11		1		13	-1
27. My interest for local politics is high		11	1		1		13	9
28. The perspective of my business on the island is positive	1		3	9			13	-7

The business respondents were somewhat more negative than households. Similar to households, businesspersons consider the local administration as lacking competence and vision. Business networking is not very evident and cooperation is not seen as being

very present. Similar to households they have their reservations about the frequency of transport services and training opportunities for local people. The cost of transport for commercial purposes is considered as high and the quality not adequate. Businesses also complain about the irregularity of water supply. They do not consider the local administration as efficient enough and the development agencies are also lacking in their effectiveness. Business respondents were not positive on the support services offered for innovation or the level of incentives for businesses as adequate. This makes the faith in local administration rather low, even though they feel they can contribute to the decision-making process. The cost of land for commercial services is also considered as high, while the system for waste water collection is inadequate. Businesses also find the level of human resources availability as insufficient and broadband connection as poor. Due to these negative perspectives on the local business environment, the future prospects for both the business and the island are not positive. Furthermore, the cost of labour is not competitive and the local transport networks could be improved. The respondents were rather non-committal on the effectiveness of business networking and the level of trust in local people.

However, the respondents were positive on the regularity of the energy supply. Business persons also showed a high interest in local politics, although they do not feel that they are involved in the decision-making process. The cost of transport and the cost of living are both considered as satisfactory. Moreover, similar to the household respondents, businesses also feel safe and secure from criminal activities.

Local Government Questionnaires

Two further questionnaires were received from local government entities. One dealt with attractiveness conditions for residents and the other looked at attractiveness for business activities.

For residency purposes, the most important considerations were for the quality of life, regularity of water and energy supplies, the frequency of scheduled trips and the quality of health care. Of less importance were the networks of trust and social capital, participation in non-government collective activities, the extent of diversity in society, and the cost of living and of home-ownership. The latter two contrast with the responses of the residents themselves who put more importance on such costs.

For business activities the frequency of trips was the most urgent issue, followed by regularity of water and energy supplies,

effectiveness of public administration and solid waste collection. Of less importance were security issues and threats from natural or technological hazards. What was particularly interesting to the researcher was the fact that some areas were given little importance, when a priori one would expect them to be more important to businesspersons. These areas included broadband connection, business support agencies, cost of commercial property, possibility to support innovations in the production process and cooperation with other businesses for information and know-how exchange. More elaboration on these issues could lead to some interesting results from the analysis.

One definition put forth which is possibly one that encompasses the positive and ideal conditions one expects from life in general, sees attractiveness as the,

...possibility of living in a high quality environmental setting that still manages to ensure an acceptable degree of accessibility, social life and job opportunities.

Other factors for residents included, low environmental pollution, peace and quiet, and access to quality public services. For businesspersons, the factors were somewhat different and looked at the development stage of the economy, cost of importation and accessibility.

Policy Measures already Applied and Proposed for the Future

One questionnaire dealing with best policy practice was received. The following short section presents the findings from this, which took a particular project as an example of how policies could be developed from such an event.

A national/European funded project was adopted, aimed at managing and making better use of the natural and cultural resources found on the island, by inspiring the promotion of the local entrepreneurial spirit of the residents. In this manner a service in the public interest could be achieved. The final result of this project was to encourage the development of local tourism enterprises, which example could be relevant for other small European islands.

Two European policies have had positive impacts on the island. These are the European sustainable development strategy which includes the conservation and management of natural resources, and social inclusion. The European Union Structural Funds have

been the main contributing factor to Lipari's recent economic growth.

Under the programming period 2000-2006 Lipari Municipality has utilised the following instruments, from both European and nationally funded programmes:

- Integrated project (Prusst and Territorial Pact) (national)

Several specific financial projects to improve the quality of accommodation and tourist infrastructure; creation, development, modernization of tourism infrastructure for sustainable valorisation of natural resources and for increasing the quality of tourism services, in order to increase Lipari' attractiveness, to develop local economies and create new jobs.

- APQ (funded with national and regional resources)

This Program Framework Agreement defined governance and administrative principles and objectives to increase inner island accessibility.

A sustainable mobility study and report were commissioned. These considered how global mobility patterns might evolve, what strategies exist to influence this evolution in ways that might make transport more sustainable, and what is required to enable these strategies to succeed.

- INTERREG IIIB Archimed (European)

The ISOLABELLA project mainly aimed at strengthening the Governance of Public Administration (PA) with particular attention to small islands, in a bid to transform them from marginal and peripheral communities of the Mediterranean to a "networking" system, able to promote new development models, instruments and strategies based on a participatory decision-making process on behalf of the local communities, sharing choices of sustainability between PA and world of the enterprise with particular reference to the tourist field.

- Leader (European and local funding)

Through this European program a local action group was created (GAL) which promoted agriculture and rural development.

- Integrated Territorial Programmes (PIT Isole minori) (European and Regional funding)

The main specific objectives of this program were:

- The valorisation of local human resources through specific courses on cultural heritage resources for the local development and tourism strategies.

- The sustainable valorisation and promotion of the cultural heritage and natural resources through conservation and the preservation of cultural heritage, with a focus on the existence, condition, and accessibility of archaeological and ancient ruins.
- To improve the relationship between Sicilian islands, to promote new development models, a cluster, a "district", a Governance network able to give instruments and strategies to manage theme development territories according to principles of tourism and territorial marketing based on sustainability.

- LIFE (European and regional funding)

The project "NATURA LIFE99 NAT/IT/006217 "EOLIFE99" carried out communication and information actions to safeguard a number of endemic species: *Bassia saxicola*, *Cytisus aeolicus* e *Silene hicesiae*.

Any future European insular policy should promote the development and the adoption of island specific measures, particularly in sectors such as alternative energy, tourism planning, enterprise and island networking, cultural heritage conservation and valorisation, human resource training and transport issues. Such a policy should be aimed at providing a framework for a sustainable development model tailored especially for the specific needs of islands.

Concluding Remarks

From the responses of the various questionnaires, one can get some insight into the attitudes of the locals towards the situation of their islands, the services offered and the role of local government in the development process of the island. Although the thirty questionnaires cannot reflect the attitudes of 11 thousand people, some indication can nonetheless be gleaned although it cannot be considered as representative. It is thus within this context that the analysis of these questionnaires must be taken into consideration.

The statistical data presented at the Province level (ie Messina) is relatively good and detailed, derived mostly from ongoing surveys and questionnaires. However, data at the Commune level (ie Lipari) is relatively less extensive. Yet some data on all three sectors, economic, social and environment was made available, with the cooperation of the contact person at the Ministry for Economic Development. Some data is old, being based on the 2001 census however, a website presenting socio-economic statistics on the Sicilian region proved very helpful.

Island Case Study Report: Cyprus

Introduction

Cyprus is one of the largest islands of the Mediterranean and an Island-state that constitutes an external border of EU in the S.E of Europe. It lies in the south eastern Mediterranean Sea, historically serving as a bridge between Egypt, the Levant, Asia Minor and Europe.

It is one of the largest islands of the Mediterranean with an area of 9252,2 sq. Km, *of which 36,2% is under Turkish military occupation. The population of Cyprus (2008) is approximately 790,000 people in the areas in which the Government of the Republic of Cyprus exercises effective control with density of 131 people per sq. Km.* It is a diverse island geographically, with high mountains and level areas.

1.1. Efficiency of economy

1.1.1. Economic effectiveness

The Gross National Product (GNP) of Cyprus is lower than the average of the EU (at 90,3 in 2006 and 93,6% in 2007 compared to 89,3% in 2000), but it has been increasing at a higher rate than the EU average (1,92% from 1996 to 2006) reducing the relative distance from this average. The GDP per person employed (2004) is lower than the EU average (at 72,7 %). The sectoral breakdown of the GNP reveals an economy based heavily on services, as approximately 80% of the total GDP is produced by services, only 2.4% by agriculture and the remaining 19% by manufacturing and construction (10,3% and 8,6% respectively). A closer analysis of the breakdown of GNP demonstrates the influence of tourism, with roughly 28% being produced by trade- hotels and transport and 24,4% by Public Services. The analysis of 'gross value added at basic prices' that is available for a time series (Table 1), demonstrates the decrease of the added value for agriculture only, while all the other branches increase with the highest rates in the financial sector and services. The analysis of the employment breakdown per sector follows the same outlines.

Table 1: Gross value added at basic prices for NACE branches for Cyprus 1995, 2002, 2006 (in mil. €)

Gross value added at basic prices	1995	2002	2006	1995-2006 change %
Agriculture, hunting, forestry and fishing	327,4	381,2	315,4	-3,7
Secondary Sector	1452,7	1963,7	2494,3	71,7
<i>Manufacture, Mining and quarrying, electricity, gas and water supply</i>	<i>916,5</i>	<i>1213,2</i>	<i>1359,2</i>	<i>48,3</i>
<i>Construction</i>	<i>536,3</i>	<i>750,5</i>	<i>1135,1</i>	<i>111,7</i>
Services (excluding extra-territorial organizations and bodies)	4683,9	7864,4	10337,3	120,7
<i>Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods; hotels and restaurants; transport, storage and communication</i>	<i>1986,6</i>	<i>3046,7</i>	<i>3625,2</i>	<i>82,5</i>
<i>Financial intermediation; real estate, renting and business activities</i>	<i>1355,5</i>	<i>2447,4</i>	<i>3504,4</i>	<i>158,5</i>
<i>Public administration and defence, compulsory social security; education; health and social work; other community, social and personal service</i>	<i>1341,8</i>	<i>2370,3</i>	<i>3207,7</i>	<i>139,1</i>

<i>activities: private households with employed persons</i>				
Total	6464,1	10209,2	13147,1	103,4

Source: EUROSTAT database

1.1.2 Economic development and fragility

Weight of competitive economic branches

The importance of tourism can not be underestimated as it appears to be one of the main driving forces of the economy of the island. Other very important branches are financial intermediation; real estate, renting and business activities (Table 1). The rest of the economic branches refer either to public services or to activities related to tourism (such as construction, transport, etc.) or to the urban sector of the permanent inhabitants and tourists (such as retail and wholesale services).

Small and medium enterprises are the backbone of the economy of Cyprus today but with a decreasing importance (18,2 in 1980 and 9% in 2005). The main national industrial policy objectives include the provision of support for the restructuring of traditional industries and the attraction of high-tech industries and foreign investment. Investment has been promoted as a result of further measures to open the market and reduce administrative procedures. Moreover, the need for boosting entrepreneurship and competitiveness by modifying the system of state aid is evident.

Cyprus used to be one of the leading transit centres in the Mediterranean and the most important in the Eastern Mediterranean. It used to serve its immediate region but also ports further away, with about 62% of its transit trade being from/to East Mediterranean ports and the remaining 38% from/to ports in Western Europe, the Baltic and the areas expanding south of the Suez Canal to Japan. It is notable that about 16% of the Mediterranean, Middle East, Far East and Australia trade use to be served through Cyprus ports. During the last 15 years there is severe decrease of this activity (around 50.000 of TEUs after 1998 compared with 250.000 TEUs for the previous period).

Nevertheless Cyprus is still one of the most important countries concerning international maritime affairs. It is ranking tenth among international fleets - with 1,857 ocean going vessels of a gross tonnage exceeding 21 million - is continuously upgrading its services in order to offer a high standard of support to international shipping and a reputation of a "Flag of Progress". Cyprus is also a major ship management centre worldwide with a total of around 60 companies operating in its territory and appears to be among the top five countries and territories in the world with the largest number of third party ship management companies on its territory. Among the companies established and operating from the Republic of Cyprus, 87% are controlled by Cypriot and EU interests. Such companies employ almost 40.000 seafarers out of whom 5.000 are EU nationals. According to recent governmental estimates, the total fleet managed from Cyprus represents 20% of the world third-party ship management market.

This situation is possible due to the tax and other facilities offered by the Cypriot Government to these companies as **Liberal Foreign Direct Investment** regime allowing up to 100% foreign participation in most sectors of the economy; **no exchange control** and freedom of movement of foreign currency; **no tax on**

profits from the operation or management of a Cypriot registered vessel or on dividends received from a shipowning company; **no capital gains tax** on the sale or transfer of a Cypriot registered vessel or the shares of a shipowning company; **no estate duty** on the inheritance of shares in a shipowning company; **no income tax** on the emoluments of officers and crew; **no stamp duty** on ship mortgage deeds or other security documents; **full protection** for financiers and mortgagees; **favourable tax regime** for ship management; **low set up** and operating costs for companies (internet site of Cypriot Government, Marine Affairs).

The branch of financial intermediation (6,9% in 2005), real estate, renting and business activities (17,7%) is growing very quickly as Cyprus has developed besides tourism a satisfactory level of living for foreign people and very good relations with the neighbouring countries.

The tourism industry is one of the most important sectors of the economy and one of the main driving forces behind economic growth in Cyprus. In 2001, tourism accounted for 9.7% of total gross value added but only 7,3% in 2005; this evolution underline the problems related to the development pattern of mass tourism prevailing on the island that perhaps has reached its limits; the lack of special tourist infrastructures and of special interest tourism are reported as weaknesses of the tourism development model of Cyprus (Strategic Development Plan, 2007-13). The dependence by 50% on the British market is an indicator of vulnerability. Tourism is not only an important source of foreign exchange earnings, but its continued dynamic performance has also had beneficial effects on domestic economic activities as Commerce (12,4%) Transport and Communications (8,2%), partly because a substantial part of the labour force works in tourism related activities. Moreover, the actual importance of tourism for the Cypriot economy is far greater, because of spin-offs in many other sectors of the economy.

Degree of dependence on main activity(ies)-monoculture

What stems from the above data is that the degree of dependence of the island from tourism, real estate and off-shore activities is very high. Since tourism on the island is typically mass, operated by big tour-operators that bring in charter flights or by low-fare carriers and the supply consists of big hotels that can serve the vast numbers of these charter tourists and depend very much on their arrival. This constraint creates significant barriers to a balanced development and employment, as most of the employees in tourism are dependent on hotels to provide jobs. Moreover, these big units operate on a low-cost basis but have to face fierce competition from destinations that can offer similar 'products' and services for a lower price. The above services are representing 81% of exports.

1.2 Social justice/equity

1.2.1 Population Structure and development

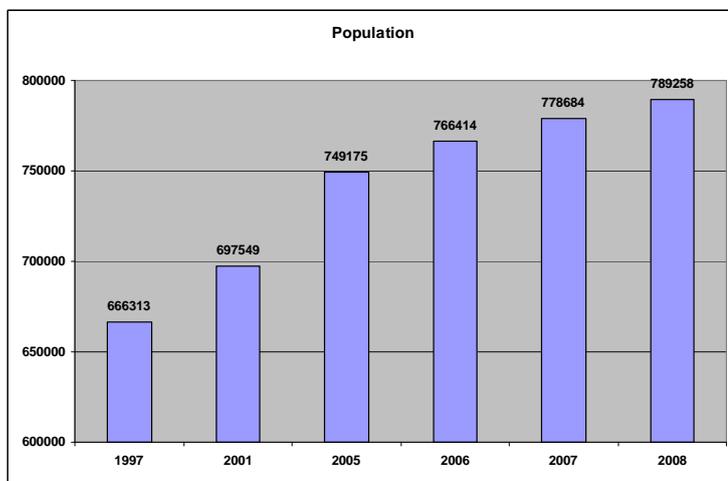
Population and population change

On Cyprus population development is positive (18% from 1996 to 2007, compared to 3% in the EU, Figure 1). This growth is attributed to positive natural growth (9,9/1000 inhabitants in 1990, 7,1 in 1996 and 5,1 in 2008) and positive in migration balance, especially in-migration (+8708 in 1990, +5300 people in 1996 and +3595 in 2008), as the fertility rate is dropping: from 1,95 in 1996 to 1,5 in 2008. The population is not as aged as in the rest of the EU, with 11,9% of the total number of inhabitants being older than 65, compared to the EU average at 16,4%. These positive population developments lead to a relatively balanced population pyramid. The overall picture is that of a population that increases more from immigrants than by natural movement, since the type of economic activities (tourism, construction, trade) attracts immigrants.

Active population – Employment

The active population of Cyprus is roughly 50% of the total population of the island (EU average at 54%) despite the out-migration of younger population for studies and work during the 70s and the 80s. This is due to the fact that the number of employed people on the island has increased by 42% between 1996 and 2008. An important part of this evolution is due to the increase of foreigner workers that represents 15,8% of the active population (2005) compared to 4,6 in 1995; most of them are unskilled and they work as housemaids, in the hotel and restaurants branch, in agriculture or in the construction branch.

Figure 1: Population of Cyprus 1997 – 2008



Source: EUROSTAT database

1.2.2. Social cohesion

Unemployment

Generally unemployment is very low comparing to EU average as all the main indices are around the half of EU rate with an overall low unemployment rate of 3,7% in 2008 (EU average at 7%). Differences between men and women are not very important regarding unemployment with the percentage of unemployed

women at 4,2%. Considering that the unemployment rate for the age class 15-24 for Cyprus is low compared to the EU average (9% compared to 15,8% respectively) and that of women is only slightly higher (9,4%), the state of the employed on the island seems to be satisfactory and this is again an indication of positive in-migration trends. This is reinforced by the fact that the percentage of long term unemployment stands at 23,5% compared to 46% in the EU

Table 2. Unemployment in Cyprus and EU-27 (%)

		2000	2001	2002	2003	2004	2005	2006	2007	2008
men	European Union -27	:	:	:	9,1	9,2	8,9	8,2	7,2	7,0
	Cyprus	5,0	4,0	3,3	4,1	4,3	5,3	4,5	3,9	3,7
young	European Union -27	:	:	:	18,5	18,7	18,6	17,4	15,5	15,6
	Cyprus	10,2	8,2	7,7	8,9	8,7	13,9	10,0	10,2	9,0
long term	European Union -27	:	:	45,30	46,04	45,35	46,19	45,70	42,96	37,22
	Cyprus	25,67	21,37	20,08	23,93	28,04	23,46	19,26	18,59	13,59

Ethnic minorities, multicultural society

Overall, 65.000 non-Cypriots (10% of the total population) from more than 30 different Nationalities lived on Cyprus in 2001, most from Greece (17.500 people or 27% of the total number), followed by people from the UK, Russia, Sri Lanka, the Philippines, Bulgaria, etc. The image of the region as an attractive tourist destination brings in many people from developed countries that buy houses and/or come to work in the tourism sector; while at the same time the availability of jobs brings in also people from less developed countries. The society is therefore multicultural.

Income distribution

Data from 2003 are showing that situation in Cyprus is less unequal than the rest of EU; the 20% of richer people has 4,1 times the income of the 20% of the poorest part of the population when for EU this index is 4,6.

The poverty risk is at the EU level when considering the whole population and very lower than the European average for children. For people over 65 the situation is different as pensions are very low; the strong links within the family may somewhat compensate this problem.

1.3. Environmental conservation

Environmental Preservation

Based on land cover analysis, Cyprus appears to have a low share of artificial surfaces and a moderately high share of natural areas, as well as average agricultural intensity. This above average classification probably reflects the significant share of relatively well protected areas of State Forests and the decrease of agricultural activity in large areas of viticulture and olive cultivation, although in recent years intensive development has been spreading in the fringes

of urban areas and along major transportation corridors, as well as in tourist areas along the coast.

Tourism and real-estate (urban sprawl) development and the climatic conditions of the island create a number of environmental pressures, especially regarding the use of water and land use change towards the built environment in coastal areas. This in turn causes increased traffic, energy consumption and infrastructure costs, while degrading the quality of the environment. At the same time, several areas suffer from environmental degradation and overuse or unsustainable use of natural resources. This phenomenon is particularly acute in coastal areas and along seasonal watercourses. In many seaside areas there is significant coastal erosion (about 30% of Cyprus coast line), partly due to human activities.

In addition to problems linked with urban sprawl phenomena, landscapes are threatened with accelerating fragmentation, rather than specialisation, resulting from continuous pressure for the expansion of development boundaries, trends for lower land use intensity and greater extensiveness, agricultural abandonment, as well as the continuous encroachment of built up areas into surrounding semi-natural areas, which, in addition has negative effects on climate change due to soil sealing and the gradual reduction of greenhouse gas sinks.

The pressure on the coast (due to rapid tourism and urban type settlement growth) threatens also areas of considerable ecological importance as the Polis-Gialia area, which is part of the NATURA 2000 network because it is an important nesting site for the green turtles (*Chelonia mydas*) and the Careta (*Careta caretta*) (UNEP/MAP/PAPRAC, 2008, CAMP Cyprus, ICAM Methodology and ICAM Strategic Framework, p.27). The following table provides some broad figures of the change of land use on the coast.

Table 9: Development along the coast (length of coastal land in km)

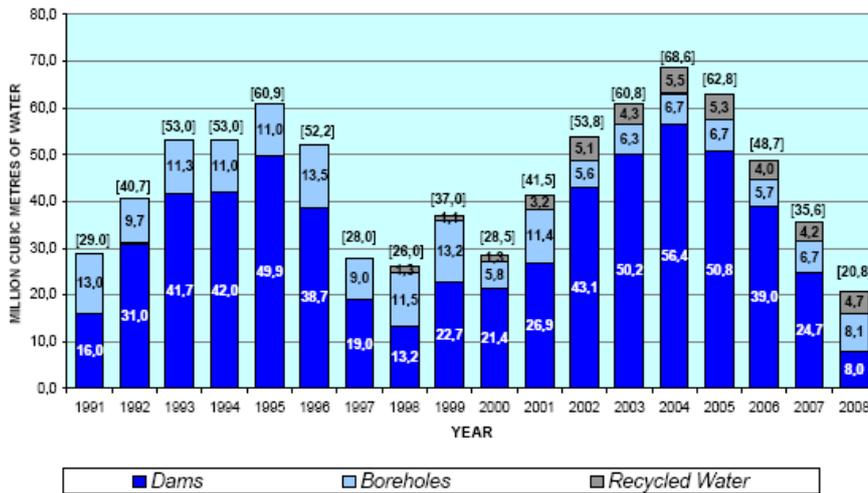
Development type	1974	1991	2000*
Undeveloped	150 (83%)	102 (56%)	72 (40%)
Suburban	9 (5%)	48 (27%)	74 (41%)
Urban	22 (12%)	31 (17%)	35 (19%)
Total length of coast examined	181 (100%)	181 (100%)	181 (100%)

Source: Based on "World Bank, Environmental Review and Recommendations, Republic of Cyprus", 1992.

* Figures for 2000 are rough estimates based on a rapid assessment carried out in the context of the preparation of the Feasibility Diagnostic Report for CAMP Cyprus 2002.

Irrigation water for water intensive cultivations (e.g. oranges, potatoes, etc.) and water requirements of the residential and tourism sectors create a demand that supply of the natural resources of the island can not always provide. At the same time, Tourism infrastructure and second homes are both responsible for these types of pressures. Agriculture used to consume more than 50% of the supplied water during the 90s but domestic use has grown faster during the last decade.

**GOVERNMENT WATER WORKS - IRRIGATION SUPPLY SOURCES
(1991 - 2008)**



As the demand for water is growing the government was obliged to construct dams and desalination plants in order to address the problem as boreholes can cover a decreasing part of the demand. Recycled water is also used and water was even imported from Greece by tankers in 2008, a particularly dry year. In Figures 2 and 3 major water infrastructures and dams constructed are depicted respectively.

Figure 2: Major water Infrastructures in Cyprus

water are used by every inhabitant of Cyprus per day while according to the data held by the statistical service of Cyprus about 144.139m³ of water are required every year just for domestic purposes. Other issues related to water development and water resources include: over-pumping of aquifers causing sea water intrusion; nitrate pollution resulting into leaching of nitrates to the sea; building of dams near the coast cause land use conflicts, landscape changes and accelerate coastal erosion. (UNEP/MAP/PAPRAC, 2008, CAMP Cyprus, ICAM Methodology and ICAM Strategic Framework, p. 23)

Coasts and seas

The bathing waters are in compliance with the standards laid down in the Bathing Waters Directive 76/160/EEC (CSI 022). Other driving forces creating pressures to the marine environment are the urban development on the coast for habitation and tourism activity, the new infrastructures, the overfishing and the invaders (tropic species coming from the Red Sea through Suez channel). Data from the monitoring program for the quality of the bathing water for the years 2004-2006 shows very low problems that have been addressed (UNEP/MAP/PAPRAC, 2008, CAMP Cyprus, ICAM Methodology and ICAM Strategic Framework, p.30).

Table 8: The quality of the bathing waters of Cyprus for the years 2004-2006

Coastal Zones	Σ	C(I) (%)	C(G) (5)	NF (5)	NC (5)	NB (5)
2004	100	86	81	9**	5*	0
2005	100	100	100	0	0	0
2006	100	99	99	0	1	0

Σ: total number of swimming areas
 C(I): % of sampled swimming waters that fell within the obligatory quality levels
 C(G): % of sampled swimming waters that fell within the obligatory and indicative quality levels
 NF: % of swimming waters with inadequate sampling
 NB: % of swimming waters where swimming is forbidden during the swimming season
 NC: % of sampled swimming waters that fell within the obligatory quality levels
 NS: % of swimming waters where no sampling took place or where data are not available
 Note: The data for the year 2007 is not available to the public yet.

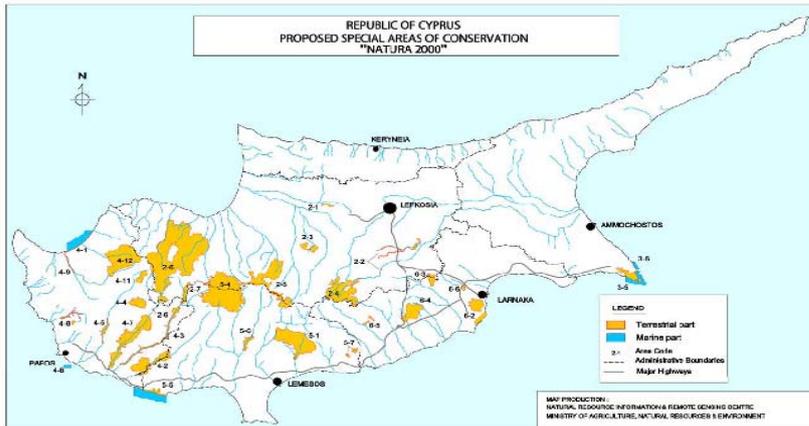
As limited rainfall and scarcity of water forced the government to search for alternative sources of water (desalination plans and recycled water) negative impacts on the marine environment are provoked by the rejection of brine and biological load into the sea.

Biodiversity

Cyprus is considered a very rich area for fauna (2125 species) and flora (3.859) and two very important wetlands; the salt pans of Larnaka and Akrotiri. Terrestrial biodiversity is threatened from fragmentation created by urbanization, and tourism infrastructure as presented above.

With respect to the coverage of protected areas (share of Natura 2000 area in %), there are 31 suggested protected areas on the island for the NATURA 2000 network (Figure 4) both coastal and mountainous. The management plans of these areas had to be concluded by 2008. Other information (National Development Plan 2007-13 and UNEP/MAP/PAPRAC, 2008, p. 14) gives 38 areas and 14% of the territory as NATURA 2000 areas.

Figure 4: Suggested NATURA 2000 sites for Cyprus 2005 and 2010



More recent data (2010) about Natura 2000 network of designated areas (both SPAs and SCIs) are 64 that covers an area of 2476,82 km² in the areas under the effective control of the government of Cyprus; thus the Natura 2000 area covers

the 26,8% of the total surface area of the island. An area of 41,3% is under the effective control of the government. This evolution shows that the European policy on biodiversity conservation has an important effect on the policy of the Cypriot Government who is protecting mainly areas away from the coast having less pressure from economic activities (see maps 4 with protected areas).

The Department of Town Planning and Housing of Cyprus insist on the fact "*that there is very little coast to protect let alone fulfil national strategic land use needs (such as ports and other vital coastal infrastructure), considering that most of the island's coast is outside government control, under Turkish military occupation, taking notice of the extensive coastline segments included in the two British Sovereign Base Areas, where EU acquis does not apply, remembering that the nation's second, third and fourth functional urban areas take up much of the remaining seafront and, most importantly, realising that MOST OF THE REMAINING COASTAL AREAS are under strict protection, with only two particular coastal strips not assigned exclusively to nature protection; firstly, the coastal strip between Limassol and Larnaca, where several vital transport and energy-related installations are in place; secondly the seafronts of Agia Napa and Protaras, Cyprus' tourism 'dynamo engine,' where important environmental protection policy provisions are, anyway, in place*".

Cultural heritage

Based on the information provided by the Cypriot stakeholder "Besides the literally hundreds of scheduled (protected) ancient monuments, including state, church and private properties, as well as the several thousands of listed buildings of vernacular architecture, the Department of Antiquities lists – just in government controlled areas- eleven archeological sites of world importance (4 of which are listed by Unesco in two groupings), 12 state museums, 23 major monuments of international renown, consisting of churches (over 10 of which are listed by UNESCO in one grouping) and several castles. It has also to be mentioned 9 current excavation projects (by the Department of Antiquities or the University of Cyprus) plus over 30 more digs or submarine ones by expeditions from more than 8 countries. Comparable numbers of monuments and sites have also been scientifically documented in the areas of the Republic of Cyprus under the Turkish military occupation prior to 1974".

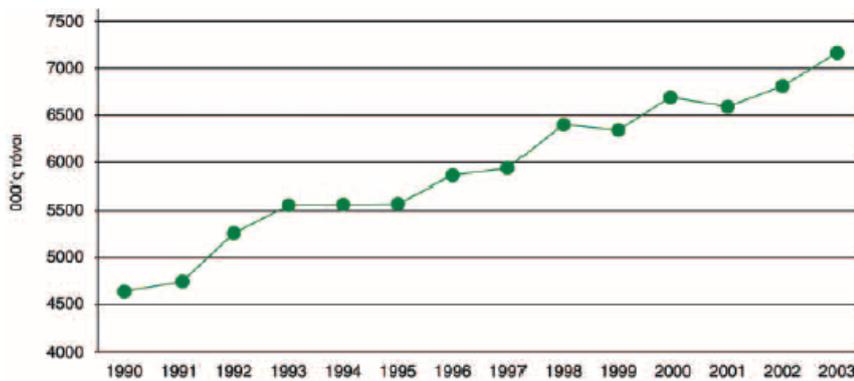
Urban environment

The size of the population of the island and its density create some big urban centres and many urban or urbanizing coastal areas. This creates some typical environmental pressures, including travel congestion, local air pollution and the management of waste. The extension of the central sewerage systems of the cities and the communities with more than 2000 residents planned within the 2007-13 program will ameliorate the existing situation. It is important also to mention that the last two years there has been a recycling programme, which has rapidly taken off.

Air quality/ pollution

Based on the Reports of the Environmental European Agency, and with respect to the Exposure of the ecosystems to acidification (CSI 005), there is no excess of the critical loads of acidity (with respect to the average accumulated excesses for the year 2000); although the emissions of CO2 are continuing to growth during the last period (Figure 5). A strategic plan is established in 2003 to address this problem by ameliorating the energy efficiency of buildings, the use of natural gas, the control of all the big industries, the promotions of renewable energies, the encouragement for the use of public transport and smaller private cars etc.

Figure 5. CO2 emissions, 1990-2003

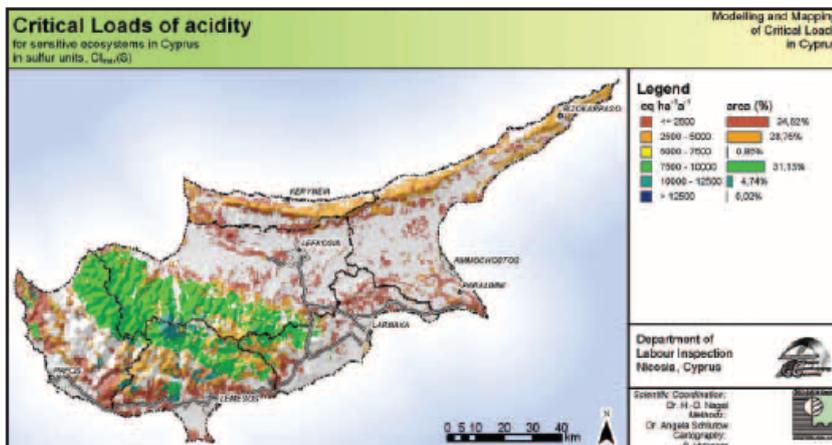


Source: Cypriot Statistic Office, 2006

Soil quality

The lack of waste treatment in Cyprus is the main environmental problem. The production of solid waste is estimated at 730kg/h (2004) that is much higher than the EU average (537). This is due to the increase of living standards and tourism. An important part of the produced waste (657kg/h, 247kg/h in EU) is going to landfills as recycling concerns only 3% of the production; in EU the minimum percentage for recycling is 15%. This uncontrolled disposal has provoked severe problems of pollution of the soil (Figure 6) and underground water. A project co-financed by EU concerns the implementation of an integrated system for waste treatment for the districts of Larnaka and Famagusta including a factory for recycling.

Figure 6. Soil contamination



Problems are also provoked by the lack of systems for treatment of waste water: till 2002 65% of the population was not connected with a central system for sewage compared to 10% in the EU.

2. Issues that affect the Attractiveness of Cyprus for Enterprises and Population

Accessibility

The accessibility of the island can be regarded as satisfactory compared to other islands, but at the same time it is not so positive when compared to other Member States located closer to the center of Europe. Besides the frequent air connections to various airports of Europe, Asia and Africa, there are also many charter flights especially in summer. According to the ESPON multimodal accessibility Cyprus is given a value of 51, which ranks it in the lower classes of accessibility.

A major problem for Cyprus is the lack of sea link for private cars and passengers with European mainland.

“Underlining the country’s insularity and position at the periphery of the European space, Cyprus performs rather poorly in this area. In addition to the absence of road and rail links (insularity) and the distance factor (peripherality), the relatively small size of the local market and population also explain the moderately low overall accessibility to market by air. This stresses the importance of maritime connections to the continent and particularly the need to strengthen air connectivity” (ESPON 2006 program, Project 2.4.2., 2005, Annex Country Study: Cyprus, p.4).

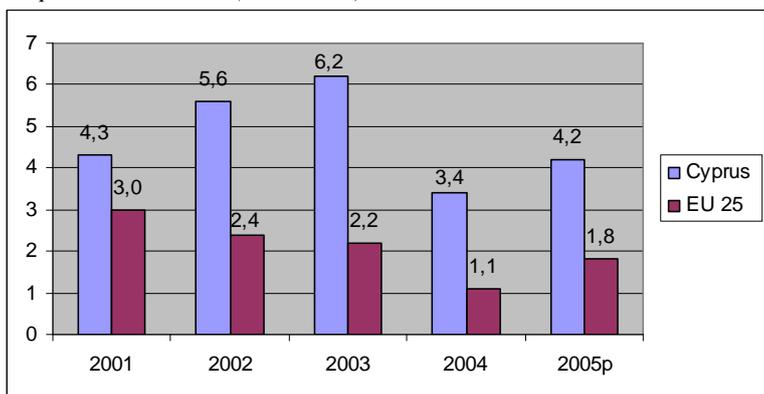
Labour qualifications and cost

The share of population aged 15 years and above with tertiary level education for Cyprus in 2001 was 20.1%, a fact that shows a medium quality of human capital. The human capital of the island is diverse and more skewed than the European average with 32,6% of the residents of Cyprus with low education level, compared to 29% of the EU average. But, at the same time, 28,6% of the population is with high education level, compared to 22,4% of the EU average.

The labor cost in Cyprus is growing faster than the EU average fact that undermines the competitiveness of the economy; low productivity mainly in agriculture and industry is an additional reason explaining the decrease in these sectors of the economy.

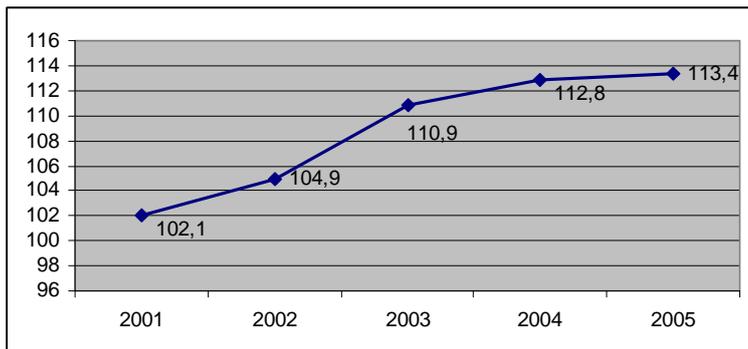
*“The analysis of the evolution over time of Unit Labour Costs compared to the corresponding ones in competitive countries and of the real effective exchange rate - which are quantitative indicators widely used for this purpose - illustrates a general deterioration of the Cyprus economy’s competitiveness. In particular, the annual growth rate of the Unit Labour Costs in the 2001-2005 periods was higher than the corresponding EU25 average (see **Figure 2.6**). Furthermore, the real effective exchange rate in the past five-year period (see **Figure 2.7**) exhibits a trend of erosion in competitiveness.”*

Figure 2.6: Growth Rate of Unit Labour Costs in Cyprus compared to the EU25 (2001-2005)



Source: *European Economy, No 2/2006, Ministry of Finance*
 * Provisional data for 2005

Figure 2.7: Real Effective Exchange Rate (base year 2000=100)



Source: *International Monetary Fund*

(Source: Republic of Cyprus, 2007, National Strategic Reference Framework For Cohesion Policy 2007-13, Planning Bureau, p. 17)

Research and innovation

The amount of expense on R + D for Cyprus is very low compared to the EU average even if during the recent years there is an effort to reduce the gap; only the 0,46 % of GDP in Cyprus is dedicated in R&D (2008 compared to 0,37% in 2004 and 0,22 in 1998) when in the EU the average is 1,9%. The contribution of private sector is only 25% when the European goal 67%.

Hazards

Based on the ESPON 1.3.1 project "The Spatial Effects and Management of Natural and Technological Hazards in Europe", Cyprus is classified on the 0-10 percentile type of aggregated hazard, for the 15 natural and technological hazard indicators that was studied. The overall moderately low classification of Cyprus in this field is the result of averaging distinctly different types of hazards exposures. Whereas hazards related to flood events, winter storms and volcanic activity are virtually non existent; earthquake potential hazards are extremely high, while forest fires and droughts constitute significant risks. Concerning the potential risk of radioactive contamination, the RCE study considers hazards exposure minimal, whereas oil contamination hazards (based on harbours, pipelines and refineries) are ranked as moderately low, as there are no refineries or pipelines on the island. The Integrated Vulnerability Index (based on GDP per capita, population density, national GDP (inverse) and proportion of fragmented natural areas to all natural areas (weighted 30:30:30:10)) for Cyprus is of the lowest class.

ICT facilities and use

Despite the quick evolution during the recent years ICT penetration remain still low; only the percentage of companies having an internet connection is close to the EU standards (84,5 compared to 91%). Only 43% of the households are equipped with internet access (71,7% of the EU average). Broadband networks are established on the island but according to official data, in 2008, 33% of the households had broadband connection (67,3% of the EU average); for companies the proportion is 40% and 63%.

Networking services

Cyprus has good electricity, water and telecommunication networks and a very good internal transportation system. Problems are important as electricity production is based on fuel and the water demand is exceeding the water availability from natural sources.

Employment and career opportunities

As the data on migration, the population pyramid and unemployment (especially of young people) indicate, Cyprus is attractive for finding employment at low and high speciality jobs. New comers have no or very low skills.

Urban dynamism (cultural and social life)

On Cyprus there are 4 Functional Urban Areas (FUAs) according to the ESPON typology. As already mentioned, its population size allows the development of all the basic services for residents and tourists but they have not a lot of the functions as big continental cities do; their score is between 1,7 to 1,9 with a European average of 2,5 (ESPON 2006, Urban, rural relations).

Urban areas are, in general, characterised by a relative lack of cultural infrastructure, the development of which could contribute both to the population's opportunities for cultural growth and the linking of culture and tourism as significant economic activities. The insufficient provision of community infrastructure, including multiple activity centres, creativity centres for children and youth, care centres for special groups, as well as adequate spaces and services for the development of public entertainment and recreation opportunities, including adequate and accessible urban parks, open spaces and beaches, downgrades amenities related to quality of life, work and leisure, for residents and visitors alike.

Wise management of natural and cultural heritage: *Cyprus has greatly benefited through the exchange of ideas and experiences with European institutions, such as the Council of Europe, and through the transposition of European environmental acquis. Until relatively recently, only antiquities were considered to be important cultural heritage, while the perception of what constitutes natural heritage was confined to the island's forests. The situation has considerably improved, to where the judicious management of natural and cultural heritage, including sensitive areas, fragile ecosystems and the coastal zone, is now considered as a major prerequisite in the quest of sustainability. National spatial policy also acknowledges the importance of this in terms of achieving a balanced territorial development, but also its role in enhancing economic competitiveness – especially in relation to tourism development and quality of life (ESPON 2006, Project 2.4.2., 2005, Annex Country Study: Cyprus, p.30).*

Conclusion

The overall situation of Cyprus can be summarised as follows:

- The state index for Cyprus (6,5 for the 4 variables and 5,4 for the 5 variables of the index) is higher than the EU average as Cyprus has very good economic and social performance: high economic activity rate, low unemployment, good population structure (low % of old population); even the GDP per capita is just below EU average. Cyprus has also a very high Change Index (7,7) as the performance of the island during the period 2000-6 is very good compared with EU-27. At the same time serious environmental pressures are exerted on the limited resources of the island due to the development model that has prevailed till now.

But the Cypriot situation seems fragile as the tourism and transit commerce are not any more flourishing as used to be till the end of the 20th century; economy's leader sector seems to be now "*Financial intermediation; real estate, renting and business*

activities". "Compared to the overall ESPON space, Cyprus is moderately successful in economic terms; it exhibits an average GDP in purchasing power standards per inhabitant, while the moderately low growth of its GDP is more comparable to the well established regions of the old EU-15 rather than the faster growing regions of cohesion and accession countries. With moderately high employment and higher education rates, Cyprus is one of the best performing island regions, despite its overall moderately low classification in terms of productivity and R&D expenditure and personnel. On the whole, compared with the rest of Europe, the performance of Cyprus in this area is at an average level" (ESPON 2006, Project 2.4.2., 2005, Annex Country Study: Cyprus, p.4)

- The attractiveness index of Cyprus is low concerning the direct and the indirect attractiveness factors (3 and 4,4 correspondingly): accessibility and urban function is low, R&D, Internet penetration are very low, job opportunities very high. The very quick increase of labour cost in correlation with the slow innovation process can be an important obstacle for the future of the Cypriot economy and the overall sustainability.

As a general remark, Cyprus is not an attractive place agriculture and industry are penalized by the lack of natural resources, the labour cost and the extra cost of insularity. Even "traditional" services as transit commerce and tourism –whose development was previously based on low cost- have severe problems to compete in the global market.

Island Case Study report: Sardegna, Italy¹⁰¹

0. Introduction

Sardegna is the second biggest island of Europe and of the Mediterranean Sea, situated in the center of its western part.

Sardegna is one of the two big Italian islands with an area of 24089,9 km² and population of 1657,6 thousand inhabitants. It represents almost 8% of the Italian territory but only 2.8% of its population. Its population density is rather low (68,8 h/km²) compared either with Sicilia (195,1) or Italy (195,6). Sardegna is a semi-mountainous island (67,9% of its territory) with very few plain areas (14,5%).

Administratively, Sardegna is one of the five autonomous regions in Italia and it is composed by 4 NUTS 3 zones. In the Region NUTS 2 there are comprised four other small inhabitant islands: Maddalena-Caprera 72km², San Pietro 51km², Asinara 52km² (which is a national park) and Quirra 1km².

1. The sustainability state

1.1. Efficiency of the Economy

The economic success of a region can be assessed using its GDP as it describes the value of its output and the effectiveness of the economic system.

The GDP growth during the last decade was very slow having as result the widening of the gap with the EU-27 average (from 89,5 on 1995 to 79,5 on 2006). It has to be underlined that during the same period Italy has also a slower growth rate than EU.

Table 1: Evolution of GDP per capita at current market price and GDP per capita index (EU-27)

	Italy	Sicilia	Sardegna	Italy	Sicilia	Sardegna
1995	17700	11500	13100	121,1	78,5	89,5
1996	18500	12000	13600	120,3	78	88,6
1997	19300	12600	14500	119	77,8	89,3
1998	20300	13200	15200	119,8	78	89,4

¹⁰¹ The information used is mostly based on the document "Programma operative regionale – Sardegna. FESR 2007-2013".

1999	20900	13600	15700	117,6	76,1	88,4
2000	22300			116,9		
2001	23300	14800	17600	117,8	74,7	89,2
2002	22900	14500	17000	111,9	70,8	83,2
2003	22900	14600	17300	110,7	70,4	83,5
2004	23100	14500	17600	106,7	67,1	81,1
2005	23600	15200	17900	104,7	67,5	79,7
2006	24500	15800	18800	103,5	66,9	79,5

Source: EUROSTAT web data base

The structure of the economy of Sardegna has as main component the fact that services are producing 77,3% of the total GVA, secondary sector 19,1% and the primary sector only 3,5%; primary sector is not declining only as part of the total GVA but also in absolute terms during the last decade following a very strong growth in 1995 and 1996.

Considering the **specialization** of the local economy compared with the Italian average, the public sector is much more important in Sardegna (30,5% compared to 21,1%); agriculture is also more important in Sardegna (3,5% compared to 2,1%). Commerce, tourism transport and communication sector in almost as important as in Italian mainland (23,6 to 22,8), but manufacture is clearly below the national average (13,1% to 20,7%).

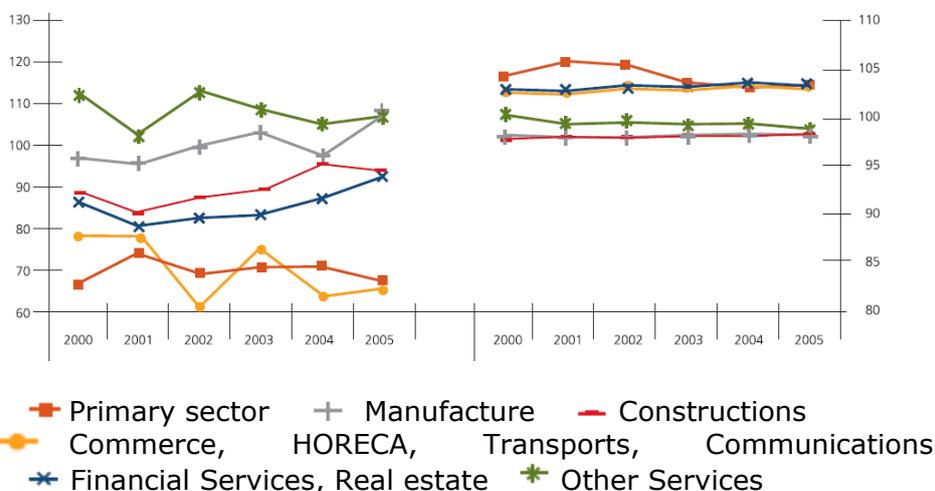
Table 2: Structure of the economy (% of GVA), 2006

2006	Primary Sector	Secondary Sector	Manufacture - Mining - Electricity - Water	Constructions	Tertiary Sector	Trade - Hotels - Transport	Financial Sector	Public Services
Italy	2,1	26,8	20,7	6,1	71,1	22,8	27,2	21,1
Sicilia	4,0	16,7	10,7	6,0	79,3	21,2	24,1	34,0
Sardegna	3,5	19,1	13,1	6,0	77,3	23,6	23,3	30,5

Source: EUROSTAT web data base

Labor productivity is lower than the Italian average especially in agriculture and tourism sector. Differences with convergence regions are no important.

Figure 1: Evolution of the productivity index (Italy = 100) for the different economic sectors in Sardegna and the Italian Regions Objective Convergence



1.2. Social equity

The **population growth** in Sardegna is very low; with an annual rate of 1,0% compared to 4,8% for Italy but only 0,4% for Sicilia, Sardegna has 2,8% of the Italian population (2008) compared to 2,9 in 1997.

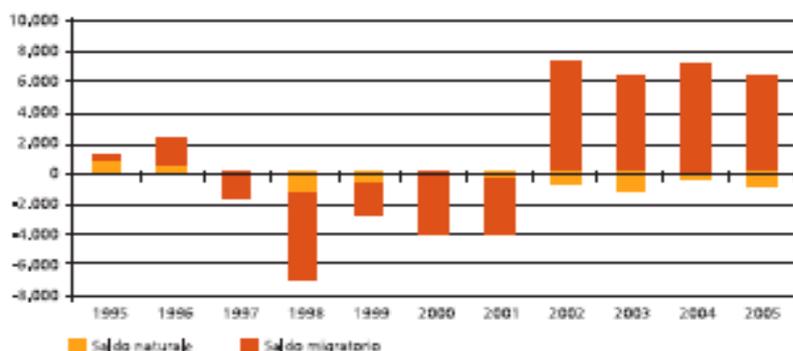
Table 3 : Population evolution (1997-2008)

	Italy	Sicilia	Sardegna
1997	56879278	5010307	1649117
1998	56908265	5011170	1646474
1999	56913634	5004493	1642057
2000	56929477	4994427	1638573
2001	56967735	4979647	1635003
2002	56993742	4965669	1630847
2003	57321070	4972124	1637639
2004	57888245	5003262	1643096
2005	58462375	5013081	1650052
2006	58751711	5017212	1655677
2007	59131287	5016861	1659443
2008	59619290	5029683	1665617

Source: EUROSTAT web data base

This evolution is due to the negative natural balance since 1998 and onwards and the negative migratory balance during the period 1997-2001. Afterwards the migratory balance turned to positive and the total population of Sardegna begun to increase. Fertility rates are particularly low in Sardegna (between 0,99 and 1,06 during the period 1997-2006)

Figure 2: Natural and migratory balance



Natural balance – migratory balance

The negative natural balance laid to the ageing of the population; at the same time the ageing index in Sardegna is lower than in Italy (136,8 compared to 140,4).

Employment rate is lower on islands than in mainland; it less significant in Sardinia than in Sicilia and there is a convergence trend if we compare Sardegna with the evolution in Italy; this convergence is more obvious for men, where there was a difference of 5,5 points on 1999 and on 2008 is was reduced to 3,8 points. At the European level these levels of employment rate are particularly low, signal of low employment importunities. This point of view is supported by the fact that unemployment and especially young unemployment is very high.

Table 4: Employment rate (> 15 years, %)

	total			female		
	Italy	Sicilia	Sardegna	Italy	Sicilia	Sardegna
1999	42,6	32,3	37,1	29,8	17,0	23,2
2000	43,2	32,7	37,0	30,6	17,4	22,4
2001	43,9	33,8	38,4	31,7	18,8	24,4
2002	44,4	34,1	38,8	32,3	19,2	25,2
2003	44,9	34,0	39,1	32,8	19,0	26,2
2004	45,5	34,8	42,0	34,3	21,1	29,9
2005	45,3	35,3	41,9	34,1	21,8	29,1
2006	45,8	35,9	42,3	34,8	22,8	29,8
2007	45,9	35,4	42,5	35,0	22,4	30,1
2008	45,9	35,0	42,1	35,4	22,5	31,2

Source: EUROSTAT, web data base

Unemployment for all the categories is decreasing during the examined period, except 2008, when the first signs of the actual economic crises have recorded.

Table 5 : Unemployment rate (%)

	Total			Females			Young (15-24)			Long term		
	Italy	Sicilia	Sardegna	Italy	Sicilia	Sardegna	Italy	Sicilia	Sardegna	Italy	Sicilia	Sardegna
1999	11,4	24,5	21,0	29,8	17,0	23,2	32,9	60,7	55,3	61,47	68,10	62,62
2000	10,6	24,0	20,6	30,6	17,4	22,4	31,1	58,9	52,1	61,79	70,05	65,16
2001	9,5	21,5	18,7	31,7	18,8	24,4	28,2	54,7	47,1	62,18	70,57	62,80
2002	9,0	20,1	18,5	32,3	19,2	25,2	27,2	51,2	48,3	59,59	69,34	58,54
2003	8,6	20,1	16,9	32,8	19,0	26,2	27,1	53,5	43,6	58,10	66,99	56,33
2004	8,0	17,2	13,9	34,3	21,1	29,9	23,5	42,9	35,5	49,23	61,44	51,06
2005	7,7	16,2	12,9	34,1	21,8	29,1	24,0	44,8	32,6	49,94	61,74	54,60
2006	6,8	13,5	10,8	34,8	22,8	29,8	21,6	39,0	31,0	49,60	60,10	52,50
2007	6,1	13,0	9,9	35,0	22,4	30,1	20,3	37,2	32,5	47,36	60,87	46,41
2008	6,7	13,8	12,2	35,4	22,5	31,2	21,3	39,3	36,8	45,68	58,21	48,76

Source: EUROSTAT, web data base

The average **primary income** of households in Sardegna is constantly increasing compared to the national average: it was 68,9% in 1995 and 74,8% in 2006.

17,9% of the population is living under the poverty level when for the whole country the it is 13%. When we compare Sardegna with other Italian regions, it has to be noticed that it has clearly better scores than convergence regions where 28,6% of the population is living under the poverty level, but it lagging behind the competitiveness regions (6,4%).

1.3. Environmental conservation

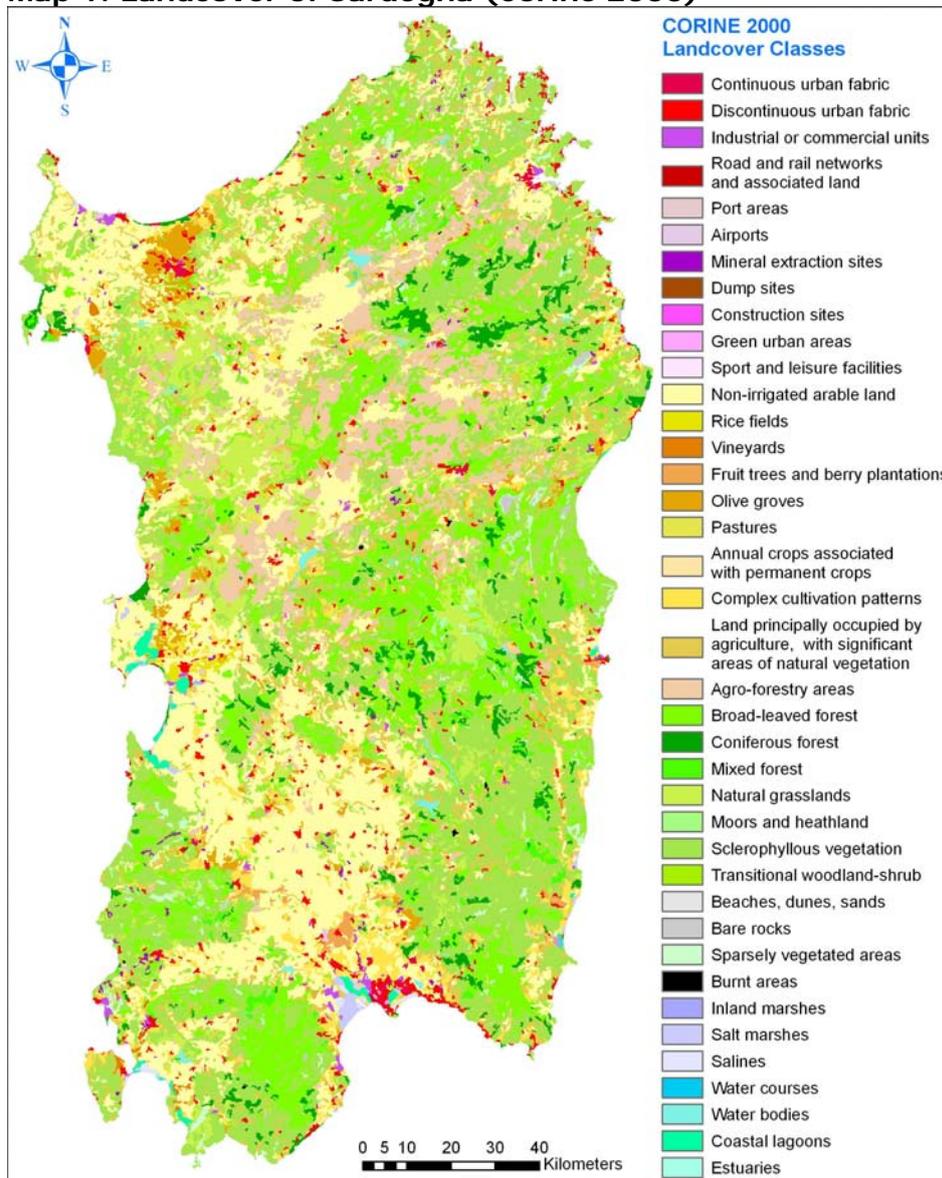
A first approach is to estimate the overall human pressure by using the population density indicator; as in Sardinia is rather low (68,7 inhabitants/km²) and about 30% of the Italian average it can be assumed that the human pressure is low. This is confirmed by the data on the share of artificial land: it is only 2,7% of the total area when 43,7% is agricultural land and 52,5% is forest and semi-natural areas (Corine database, 2000).

Pressure is more important on the coast as 20,5% is artificialised and around the biggest town of the island, Cagliari; its zone has 119 inhabitants/km² when others as Nuoro, Ogliastra and Olbia have less than 50. Tourism is another important fact of pressure as

90% of the hotel beds are concentrated on the costal area; an equivalent impact has the development of second house' vacations.

Sardegna is an important area for biodiversity; it has five marine protected areas, two national parks (Asinara and Archipelago de la Maddalena) and other areas of less importance. Finally there are wetlands of international importance as there are covered by Ramsar convention. The total protected area is 590.083ha.

Map 1: Landcover of Sardegna (Corine 2000)





The ecological quality of the water courses is estimated to be good for 30% of significant rivers, sufficient for 42%, insufficient for 14% and in bad condition 4%.

The soil in Sardegna has the same problems as in the rest of the country with problems coming from fires, erosion and desertification but also from the deposit of waste of industries and mines.

Atmospheric problems are not important and there are located in some areas as urban centers, the provinces of Cagliari, of Carbonia Inglessias and in Medio Campidano. It concerns mainly concentrations of SO₂, PM₁₀ and C₆H₆.

It has to be noticed that there is a significant number of contaminated zones (364 sites) in Sardegna; more than 16% of the regional territory are classified as such when in Italy the share is only 2%. The driving forces behind this problem is mining activities (157 sites), industry (45 sites), urban waste disposal areas (59 sites), amiantus disposal (3 sites) and finally 98 sites for hydrocarbons' storage. The most important problems are concentrated in the industrial area of Cagliari and in Porto Torres (Sassari's port); the amiantus sites are situated in Oristano province where there is an intensive mining activity for 150 years now.

2. Attractiveness

2.1 Accessibility

Sardegna has 4 international airports and 6 ports. Cagliari airport is the biggest one with a lot of national and international flights. The other airports of Alghero, Olbia and Tortoli are served more by low cost companies and Charter flights.

Sardinia has maritime connections operated by 11 companies with different ports of continental Italy as Genova, Civitavecchia, Napoli, Livorno and Piombino. It has also a few international connections with France (Corse and Marseilles) and Spain (Barcelona). It has to be noticed that competition is not completely assured as some ports

are operated only by one company. Travel duration is from 4.30 up to 10 hours; it depends on the destination and on the type of ship.

There are also internal accessibility problems mainly with the rural areas in the center of the island.

2.2. Public Services

Sardegna, as a big island has a lot of the superior public services as hospitals, universities, airports.

Concerning **hospital beds** the index is 434,8 per 100.000 inhabitants when it is 400,6 for the whole Italy (EUROSTAT, 2004). The image is totally different for special hospital services; there is only 3 beds per 100.000 inh. in comparison with 35,9 for the country. The lower utilization of the beds in Sardegna (75% of the national average) shows a superior cost of public health on the island.

Concerning **energy network** it seems to be inefficient in comparison with the mainland; the energy intensity of the economic system is 161,5 tep/M€ in comparison with 124,8 for the whole Italy and the electric intensity is 493,7 MWh/M€ when for Italy is only 240. Finally the interruptions of the system are twice more frequent than for the country. Production of energy by renewable is very low (4,9%).

49% of the **water network** is in bad condition; this involve not only very high leaks of the system (the proportion between the billed and captured water is only 35% compared to 60% for Italy) but also a very high level of families with problems in water provision (31% compared with 14,1%)

The low demographic density and the high dispersion of the population in the territory affect the quality and the cost of different services. This has a negative impact not only to the population but also to the productive system.

2.3 Agglomeration economies – size of the market

Sardegna with 1,65 million people has a significant internal market compared with other islands; however having in mind that it has rather a low population density this advantage is partially valid. Actually Sardinia has 7 towns classified as FUA at the European level (Cagliari, Sassari, Iglesias, Nuoro, Oristano, Olbia and

Macomer) but only the two bigger ones Cagliari and Sassari have some important functions at the European level as educational, tourism and manufacturing centers.

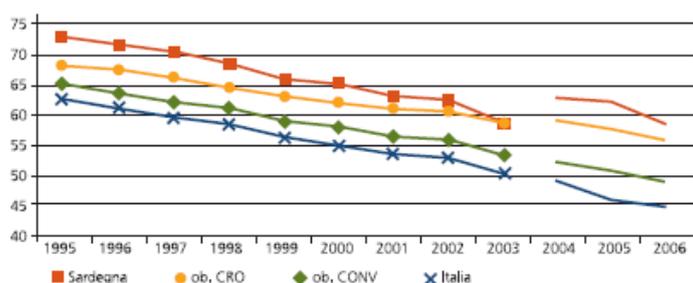
2.4 Labor qualification

The human capital in Sardegna is facing a significant problem of quality that has direct repercussion on the socio-economic development.

The level of education in Sardegna is particularly low compared with all the other Italian zones, (Sicilia included) even if the situation is improving during the last decade. This evolution is due to the high percentage of participation in secondary superior education; but this evolution has not a concrete result as a high percentage of pupils are giving up their studies after the 1st or the 2nd year.

An equivalent situation is observed for university studies; even if a high percentage of students are begging superior studies they have a high level of dropping out. So only 6,2% of young people arrives to a diploma (7,5% for Italy) and 6,7 to a scientific-technical diploma (10,9 for the country).

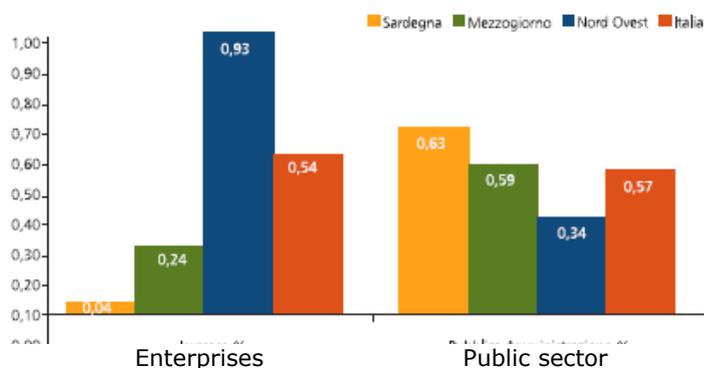
Figure 3. Level of education of the adult population (25-64) as % of the total having inferior secondary education



2.5 Research and Innovation

R&D expenditure is low but not inconsiderable in Sardegna as 0,67% of the GDP is used for this purpose, when for the whole country is 1,13%. The most important problem is that companies are not investing at all in R&D (only 0,04%) so it is impossible to innovate and to be competitive.

Figure 4: R&D expenditure in different Italian zones (%)



2.6 Information Society

The penetration of new communication technologies is high in Sardegna as it is at the same level as the whole Italy: 96,7% have a personal computer in the enterprises with more than 10 employees (96,4% for Italy); for smaller companies this percentage is 54,5 (Italy 55,9%). 36,7% of the households have access to internet (Italy 35,6%) but for enterprises with more than 10 employees is only 17% (Italia 28,2%) . Finally ADSL connection in Sardinia are 59% (2003) when for Italy is 75% and broadband connections for companies is 61,3% (Italy 69,6%).

2.7. Environmental and cultural capital

As it has already presented Sardegna has an important environmental capital: natural resources, coastal areas, landscapes. The cultural resources are not less important: traditional settlements, monuments, museums, local food and local traditions.

2.8 Hazards

Based on the ESPON 1.3.1 project "The Spatial Effects and Management of Natural and Technological Hazards in Europe", Cyprus is classified on the 0-10 percentile type of aggregated hazard, for the 15 natural and technological hazard indicators that was studied. In detail: 1) there are no avalanches, 2) there is a high precipitation deficit as a potential drought indication, 3) there is a high potential for earthquakes, 4) there is a low hazard from extreme temperatures, 5) there is a very low hazard for flood recurrence, 6) there is a high risk for forest fire hazard, 7) there is a

low hazard for areas with landslide, 8) There are no hazards from storm surge, 9) it's a region that lies in vicinity to tectonically active zones and have experienced earthquake/ volcano/ landslide associated tsunamis, 10) it's a region with particularly hazardous volcanoes, 11) there is a very low probability for winter or tropical storms, 12) there is a very low probability of airplane accident hazard, 13) there is a very low density of chemical plants and thus very low probability of such a hazard, 14) there is a very low potential of radioactive contamination since the region is outside the 300 km radius of any nuclear plant and 15) there is a low potential of oil spill hazard based on the volume of oil production and transport related activities in the region.

The Integrated Vulnerability Index (based on GDP per capita, population density, national GDP (inverse) and proportion of fragmented natural areas to all natural areas (weighted 30:30:30:10)) for Sardegna is not homogenous; the Province of Cagliari has a medium degree of vulnerability and Oristano the lowest one at the European scale.

Conclusions

Sardegna's economy is diverging from EU average having the same trend as the Italian economy. Primary sector is declining and the other competitive sectors have no good performance. Productivity level is below the national average.

Population is increasing due to positive migratory balance, as natural balance is negative. The combination of low employment rate and high unemployment rates underlines the difficulty of the local economy to create new jobs and a significant part of the population lives under the poverty rate.

The environment faces pressures as mineral and industrial activities have contaminated an important part of the territory. Pressures exist also to water resources and to the coast even if the population pressure is rather low.

Attractiveness of Sardegna is low as accessibility is low in comparison to mainland and the deficiency of urban centers with a dynamism comparative with those of the mainland. Labor's qualification is low; R&D is inexistent in the private sector; ITC penetration is rather good.