Energy Check on Sein

1 Introduction

In 2015, Sein joined the SMILEGOV[1] project through its membership in *l'Association Les Îles du Ponant* (AIP) and subsequently in the *European Small Islands Federation* (ESIN). The objectives of SMILEGOV, funded by the European Commission, is to establish a clear picture of the island's energy consumption, its emissions and how it is it supplied with energy, moving into an action plan for a more sustainable future, and to invite the island to join the Pact of Islands[2].

[1] http://www.sustainableislands.eu/

[2] http://www.islepact.eu/html/index.aspx

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Being late arrivers in the project, the work with Sein has been focused on checking the island's status and plans, not proposing actions, and to use this knowledge to enhance the total project knowledge of small islands energy needs and solutions.

There are excellent data on energy and emissions on Sein in the AIP documents « Profil Énergie et Gaz à effet de serre – Sein » (2014), « Transition Énergétique des îles du Ponant – Sein"(2014), « Monographie Sein 2103 », and « Atlas des îles de l'Atlantique » (2009). Based on these documents, their own experience and desktop research, Senior Advisor Christian Pleijel, Vice President of ESIN (*European Small Islands Federation*) and Denis Bredin, Director of the AIP, have compiled this limited audit of the energy situation on Sein 2015.

Islands are miniatures of the world, solitary, clearly separated from the mainland by the sea. Being small, distant and vulnerable, an island needs to plan and develop itself in a cohesive and continuous manner, handling the complexity of local, regional and European politics, combining micro and macro scale.

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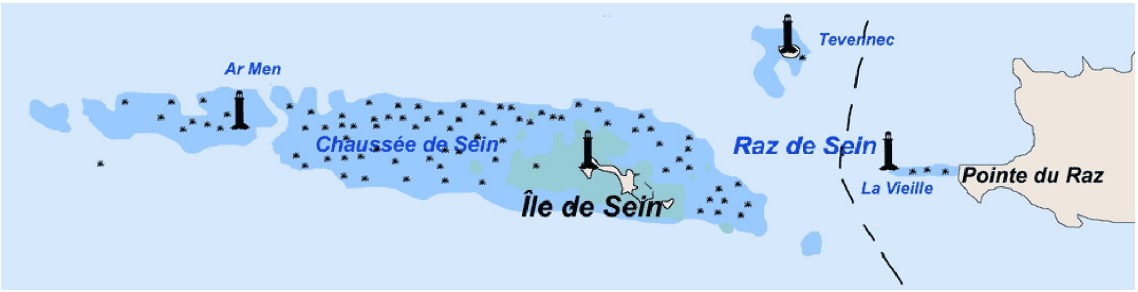


2 A brief description

Île de Sein is a French island in the Atlantic Ocean, off Finistère, four and a half nautical miles (8 kilometres) from the Pointe du Raz (raz meaning "water current"), from which it is separated by the Raz de Sein.

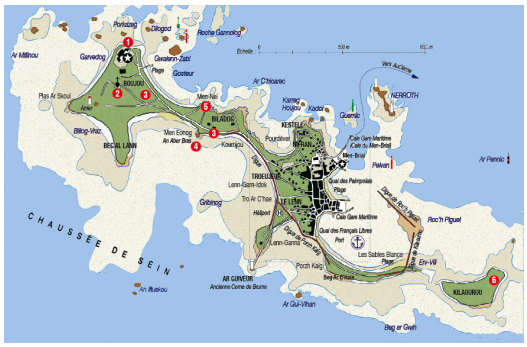
The island, with its neighbouring islets, forms the commune of Île-de-Sein in the Finistère department of Brittany in north-western France.

Lying on the sea routes going south from the English Channel, Sein is well known for the dangers of its waters, the *Chaussée de Sein*, a vast zone of reefs stretching more than 50 kilometres from east to west, requiring numerous lighthouses, beacons, and buoys.

It is one of the smallest French islands with an area of 0,6 km^2 and an average altitude of 1,5 meter. With increasingly rough storms and a global rise in sea levels of 0.14 inches per year since the early 1990s,

culminating on 2008, the existence of the island seems increasingly at risk[3].

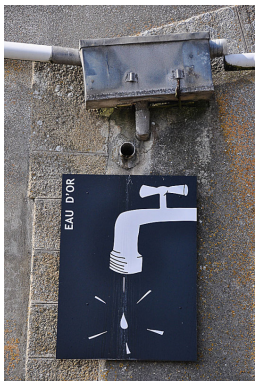
It is also one of the least accessible. It is not possible for the islanders to leave the island in the morning and come back inte afternoon the same day.



Sein has officially 220 all-year inhabitants. Summertime, the number of humans moving around, eating, drinking, producing garbage, litter and emissions, sometimes needing help and healthcare, asking transportation to and from the island, can be as much as 1,500. This is equivalent to an all-year population of 344 people. The human pressure or the "ecological footprint" on the small island is thus much bigger than official data show and is aggravated by the fact that, over the year, the pressure is very uneven[4].

The island has quite high level of public and private services for its inhabitants and visitors, counting four resturants and seven cafés, one doctor but no nurse, a post office and two ATM's, two grocery stores including bakery and butcher while fish is bought directly from the part-time fishermen on the island.

As of today, the school has two children who are part of he islands' integrated and itinerant school system of les Îles du Ponant.



The island's need of freshwater is solved through a station for reversed osmosis = a process that removes salt from seawater.

Electricity is produced with 3 diesel gernerators that use 420,000 litres of oil a year.

The islanders of Sein – "sénans" in French – are well known for their strong sense of independence, being the last place in Europe to be christened and showing exceptional resistance to the German occuptaion of WW2 which excempted them from paying tax.

3 http://www.nytimes.com/2012/07/24/world/europe/french-islanders-face-rising-sea-levels.html?_r=0

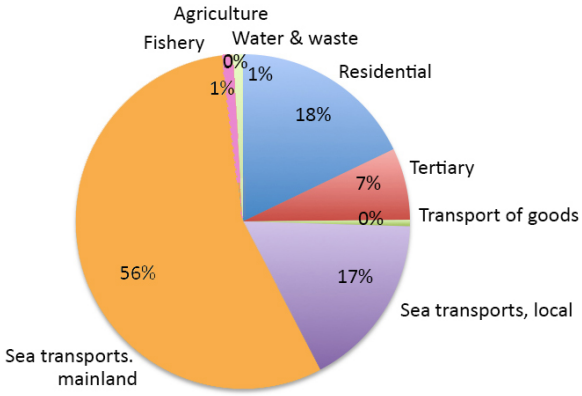
4 Monographie Sein 2103 accounts for 1,227 people in summer season

3 Energy calculations

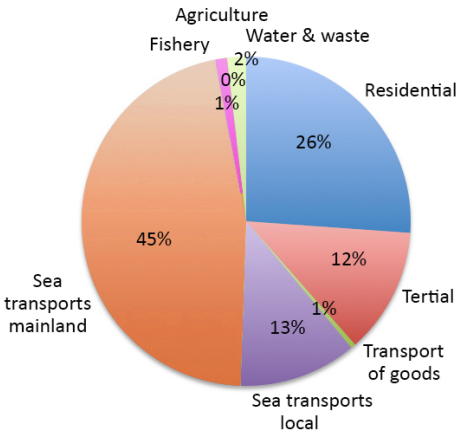
Baseline Year 2011

Population 220 / 344

ENERGY CONSUMPTION



EMISSIONS



For the whole island **5,343 MWh**

Per capita:

Residential	11,483 kWh
Tertial	4,466 kWh
Transport of goods	400 kWh
Sea transports local	1,952 kWh
Sea transports mainland	6,431 kWh
Fishery	574 kWh
Agriculture	21 kWh
Water & waste	115 kWh

Sum per capita (220) **25,443 kWh**

Sum per capita (344) 15,531 kW

For the whole island: **4,550 TEP**

Total figures:

Residential	1,189 TEP
Tertial	562 TEP
Transport of goods	21 TEP
Sea transports local	528 TEP
Sea transports mainland	2,112 TEP
Fishery	53 TEP
Agriculture	0 TEP
Water & waste	85 TEP

4 Conclusions

The greatest threats to the island society of Sein are sudden storms and slow rise of the sea level.

Being far out at sea and living from tourism, 73 percent of the total consumption of energy on the island is for transports to and from the mainland, making 25,5 million kilometres of voyages a year, using 9,272 MWh for sea transports, which causes 58% of the emissions.

A three-year program is ongoing 2013-2015 with the following three actions which are planned to save 160 MWh/year (11 percent of the island's energy use):

(1) 20 buildings renovated saving 4 MWh each = minus **80 MWh/year**
(2) Exchange of 75 x 125W streetlights to 50W LED, saving **50 MWh/year**
(3) Exchange of household lighting (minus 7 MWh), electronics (minus 7 MWh), shower jets (minus 8,2 MWh) and fridges to A++ or A+++ (minus 3 MWh), all in all saving **30 MWh/year**

There is also an action group called IDES – Île de Sein Energie[5] – whose primary goal is to provide a clean and renewable type of energy and make the island totally self-sufficient with local, renewable energy.

Not everybody is happy about this, there are winds of discord blowing on Sein[6].

[5] http://www.idsenergies.fr/idse_home

[6] http://www.rtl.be/info/monde/economie/une-ile-100-verte-le-vent-de-la-discorde-souffle-sur-sein-690278.aspx