

4 Insularity

4.1 Definition

'Insularity' designates territories separated from a mainland by a body of water, and of limited extent and populated when compared to this mainland. The term is often used in a metaphorical sense, as disconnection from networks of economic, social and cultural networks of interaction. It can in this respect be noted that islands may be more or less insular, depending on the strength of their connections to such networks and island inhabitants' perception of own distinctiveness and disconnection.

Concretely, insularity generally implies a dependence on sea or air connections to reach other destinations. Insularity may also manifest itself through a disconnection from electricity grids and from broadband internet cables. This may generate different types of vulnerabilities.

Insularity may therefore occur in most categories of geographic specificity:

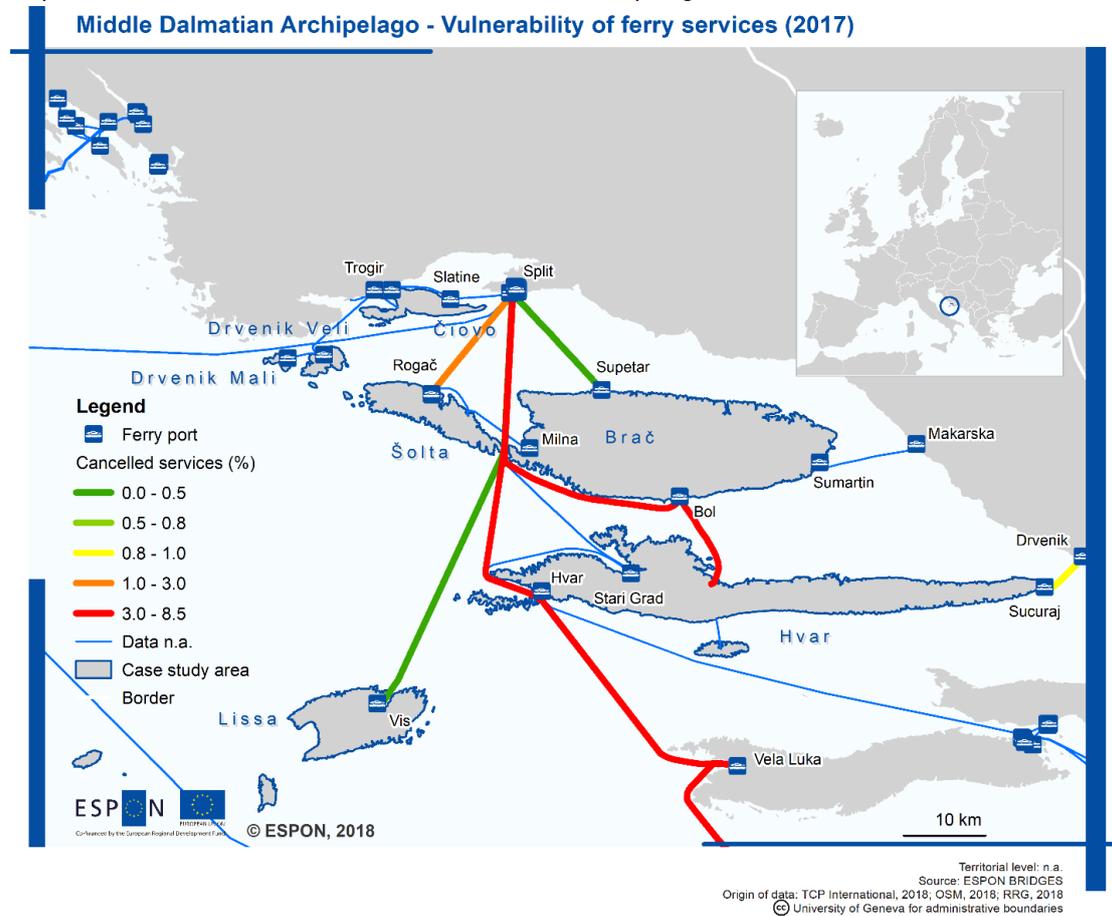
- **Mountains:** Mountain areas have historically been characterised by intense transit traffic along narrow corridors. As producers of hydroelectricity, mountain areas are also well-connected to electricity grids. The concept of 'insularity' may therefore only apply to mountain areas (entire or in part) that are isolated from these numerous infrastructures crossing mountain areas. These are typically areas that are dependent on helicopter rescue services when emergency situations occur. 'Seasonal' or 'occasional' insularity may also occur in mountain areas that are dependent on few transport connections that are disrupted as a result of natural hazards, e.g., landslides, floods, and avalanches. In
- **Islands:** Remoteness from the continent often leads to a situation where islands have isolated and weak energy networks, with low possibility of interconnection. As a result, islands tend to rely to a greater extent on the use of fossil fuels and energy imports. This has led to a drive for 'Cleaner Energy for Islands' through the promotion of renewable sources of energy for islands. The provision of sustainable transport services, which is in line with the requirements of territorial cohesion is often not adequately offered for islands due to market failure requiring the need for intervention through the provision of public service obligations as outlined in this section of the report.
- **NSPA:** A significant proportion of NSPA towns are beyond daily commuting distance from their closest neighbours, and therefore constitute autonomous labour markets. They are also self-sufficient with respect to essential SGIs (e.g. school, primary health care). A number of SPA towns are heavily dependent on their airport or port for passenger transport and freight.
- **Other SPAs:** Poor access to public transportation isolates these communities from surrounding areas.

4.2 Possible representations of insularity

4.2.1 Disruptions of transport services in the Middle Dalmatian Archipelago

As shown in Map 4-1, disruptions of service in the Middle Dalmatian Archipelago range between 0 and 8.5%. This may seem low. However, assuming that all ferry services operate 365 days a year, an 8.5% interruption rate would mean 31 days of cancelled services; a 3% interruption rate would account for almost 11 days, and a 1% interruption rate accounts for almost four days. Such interruptions interfere mobility behaviour of the islanders and with tourism, e.g. when it comes to the risk of missing return flights after a stay on one of the islands.

Map 4-1: Cancelled services in the Middle Dalmatian Archipelago



4.2.2 Emergency services in the Northern part of the Wadden Island

The airborne emergency and rescue helicopter service “Christoph Europa 5” with its ground station in the city of Niebüll, Germany, is the air ambulance serving the northern part of the Wadden Island at the Danish-German border. It is operated by DRF Luftrettung.

Similar to other island territories, the Wadden Islands have to contend with the following challenges:

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- overall, there is a rather low demand for services of any kind in the region, as a result of the poor population base;
- being a tourist destination, the islands as a whole face extreme seasonality in demand for services, with high demand during summer times and often very low demand during winter times;
- there are long distances to bridge to reach closest facilities with quite long travel times (in particular in East-West direction);
- unbalanced spatial structures within the Danish-German border region with a generally strong focus on the Eastern parts along the Baltic Sea coast compared to the Western part along the North Sea coast; in addition, demands for any service on German side are as double as high as on the Danish side;
- difficult access to the Wadden Sea islands by ground modes.
- lack of hospitals for emergency and general care (in fact, there is only one small hospital on the German island of Föhr for general treatments; the other German islands only host wellness clinics or specialist clinics without emergency care)

In response to these challenges, the airborne emergency helicopter in Niebüll gained a great importance in providing fast and reliable emergency care; first and foremost, in the case of accidents and emergencies of any kind, but also in cases where severely ill patients have to be brought quickly to (distant) hospitals. In addition, the airborne rescue is the only service that can reach the island by storm and floods, especially during autumn and winter.

At the time of its inauguration in 2005, no similar airborne rescue services were available in Denmark at all, so, at least for the Danish side, this service was also considered a pilot case to fill a gap in service provision.

The location of the ground station in Niebüll was selected after an in-depth assessment of the airborne rescue services in entire Schleswig-Holstein in 2002-2004. A working group, consisting of representatives from the Land Schleswig-Holstein, the counties, the working group of emergency doctors, the service providers, and health insurances, agreed in 2004 to reform the airborne emergency structures in Schleswig-Holstein. As part of this reform, the previous ground station in the city of Itzehoe was closed, and a new ground station in Niebüll opened in order to better serve the islands and halligen of the Wadden Sea and also the north westernmost parts of Schleswig-Holstein. The in-depth assessment also concluded that approximately 20% of all future operations of "Christoph Europa 5" will take place on Danish territory, which helps to reduce running cost of the service also on German side (joint statement of DRF Managing Director Steffen Lutz and of Carl Holst, major of Sønderjyllands Amt).

The commissioning of the Niebüll rescue helicopter services marked the launch of the first cross-border airborne emergency rescue between Denmark and Germany. The "Christoph Europa 5" helicopter improved emergency care especially for the rural population in the Northern parts of Schleswig-Holstein, the inhabitants of the North Frisian Islands and the West Coast area of Danish Sønderjylland area. In the summer months, in addition to the resident population, thousands of tourists enjoying their holidays in the area benefit from the

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possibilities of the air ambulance as well. For example, the helicopter from its heliport in Niebüll only needs eleven minutes of flight to land on the Danish island of Rømø, or only seven flight minutes to reach the German island of Föhr (Figure 1).

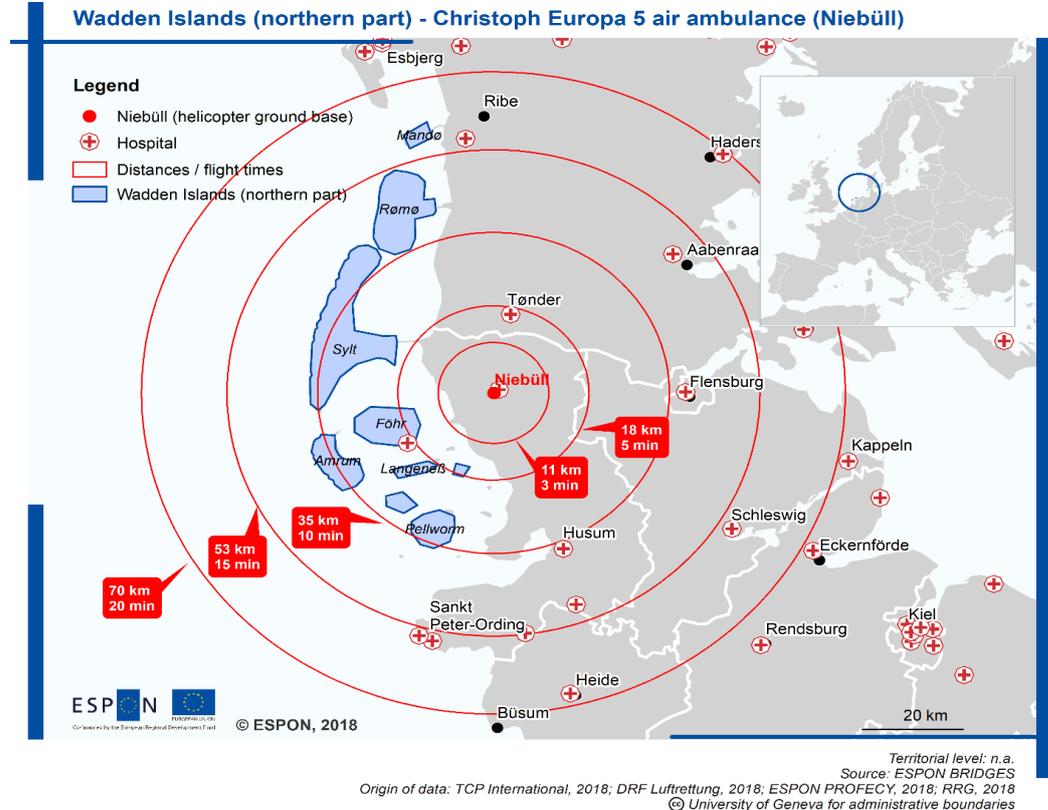
Its service area covers almost the whole case study area of Region Sønderjylland-Schleswig with some exceptions at the Baltic Sea coast (Figure 1). The service has particular relevance for the Northern Wadden Sea islands, as the helicopter represents the only mean for fast rescue services.

In detail, the services cover the following needs:

- Emergency and rescue flights in Northern Schleswig-Holstein with the counties North Frisia, Schleswig-Holstein, Dithmarschen, East Holstein, the cities of Flensburg and Kiel, and the Danish west coast area in Syddanmark.
- Intensive transports of heavily injured or ill patients
- Emergency and rescue flights within a distance of up to 60 km (corresponding to 15 min flight time) over ground and over sea.

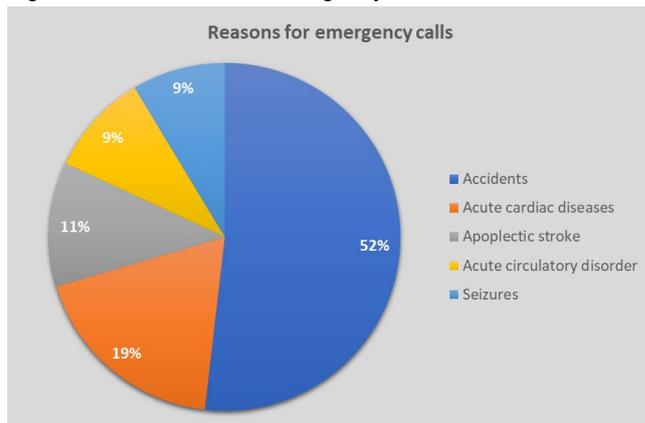
In more than 50% of all cases, DRF Luftrettung was called to accidents (Figure 4-1), followed by almost 20% for acute cardiac diseases and 11% for apoplectic strokes. With about 9% each, DRF Luftrettung immediate responded to emergency calls for acute circulatory disorders and seizures.

Map 4-2: Access to emergency rescue services in the Wadden Islands



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Figure 4-1: Reasons for emergency calls.



Source: DRF Luftrettung, in: Metzger, 2018.

Even though the total area covered by the airborne rescue service is quite large, the number of resident population benefitting from it is rather small (Table 4-1). Within 11 km (3 min), appr. 30,000 residents on the German side are served¹. Within 18 km, a total of almost 70,000 people (64,000 Germans and 6,000 Danish) can be served. This number increases to 285,500 in 35 km distance, almost 500,000 within 53 km, and up to 785,000 people within 70 km. As consequence of the general imbalances in the spatial structures between Denmark and Germany in this area, the served population on the German side is 2.5 to 3 times the number of population on the Danish side.

Table 4-1: Population living in various distance bands of Niebüll

Distance / flight time	Number of residents in service area (2015)		
	Germany	Denmark	Total
11 km / 3 min	39,000	0	39,000
18 km / 5 min	63,768	6,055	69,823
35 km / 10 min	248,970	36,504	285,474
53 km / 15 min	384,301	110,882	495,183
70 km / 20 min	542,361	242,388	784,749

Source: own estimation, 2018

Tourists will add a significant portion to the demand side for air ambulance services, as they by far outnumber the number of residents. Table 2 indicates the number of guests and number of overnight stays on the three largest German islands² for 2016 and 2017 (Table 4-2).

¹ all population figures cover resident population only; tourists excluded, which means that during summer times the potential population numbers that may benefit from the service increases significantly.

² Tourists on the other islands, including the Danish ones, and along the mainland coast need to be added

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Table 4-2. Number of tourists on German islands.

Island	2016		2017	
	Guests	Overnight stays	Guests	Overnight stays
Amrum	136,000	1,290,000	146,000	1,325,000
Föhr	207,206	1,860,000	207,953	1,860,000
Sylt	938,572	6,927,836	<i>n.a.</i>	<i>n.a.</i>
Sum	1,281,778	10,077,836		

Daily operations of the helicopter services start no earlier than 7.00 hours and lasts until sunset (i.e. daytime hours).

All operations are coordinated from the integrated and cooperative Command and Control Centre North in Harsilee, located close to the city of Flensburg, but also from responsible command and control centre Kolding in Denmark. If an emergency call reaches the control centre, the dispatcher decides whether or not rapid emergency doctors are needed, and if so alarms the helicopter. The helicopter can reach every location within 60 km radius in maximum of 15 minutes flight time. The DRF Luftrettung guarantees that the helicopter is ready-to-use within 2 minutes time.

Between 2015 and 2017, DRF Luftrettung flew more than 1,100 operations per year, which is slightly less than 2010 (1,284) but significantly more than 2009 (981 operations), totalling to approx. 10,000 operations since inauguration of the service (Table 4-3).

Table 4-3. Number of operations of Niebüll DRF Luftrettung per year.

Year	Operations	
	Total per year	Average per day
2009	981	2.69
2010	1,284	3.52
2015	1,136	3.11
2016	1,113	3.05
2017	1,133	3.10
Since foundation in 2005	approx. 10,000	<i>./.</i>

Sources: DRF Luftrettung (2018) (205-2017); Lückel (2011, figures for 2009 and 2010)

In the past, there were no similar helicopter services available on the Danish side³. With the stationing of helicopters in Ringsted (Denmark) in 2010, provided by Falck DEF Luftambulances A/S⁴, the number of flights from Niebüll into the Danish territories decreased, but stabilized. In 2017, 37 out of 1,133 operations were made in Denmark (about 1/3 less compared to 2016).

³ Exception: the Danish air forces provided helicopter search and rescue services (SAR).

⁴ The Danish cooperation partner of DRF Luftrettung. The Ringsted emergency station was the first attempt in Denmark to establish airborne rescue services. It was established as a joint venture between Falck and DRF Luftrettung in response to the closure and centralisation of emergency admissions in many Danish hospitals, which increased the needs to establish fast and quick airborne emergency services (Pohl-Meuthen et al., 2006, 55).

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The emergency and rescue helicopter service provides critical airborne emergency services for residents living on and tourists visiting the Wadden Sea islands, where no other forms of fast emergency services are available. But also population living in the rural and peripheral area along the North Sea coast benefit from this service, as high-level road infrastructures are scarce and distances long. On average, helicopter services of DRF Luftrettung were called 3.1 times per day (Table 4-3), illustrating its eminent importance for the region.

4.3 Measurement issues

As illustrated in the previous section, insularity is a relative and multifaceted issue. There are no absolute criteria or thresholds for insularity. For example, an island connection to the mainland by a bridge or tunnel may still be 'insular' in some respects, e.g. as a result of usage tolls, of closures of the fixed link or simply of the persistence of an insular mindset among island inhabitants. Remote SPA settlements and isolated mountain valleys may also be insular to varying degrees and in different respects.

While the notion of 'insularity' may provide a framework for reflections on some territories' disconnection from other regions, it is one that lends itself to synthetic measurements. One may on a case-to-case basis measure different types of social and economic effects of insularity.

4.4 Policy issues

French authorities refer to the so-called "principle of territorial continuity". This principle more specifically guides policies for French Outermost Regions and for Corsica. In French Outermost Regions, students and trainees benefit from support to cover their travel costs, while transports between Corsica and the French mainland have been subsidised to as to make their cost equivalent to road transport. More generally, the principle of territorial continuity is invoked in policy debates when stakeholders identify an excessive discontinuity between their territory and the French mainland.