

SCOTLAND'S COASTAL ASSETS



The James
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Introduction

This synthesis of Scotland's coastal assets is written for policy advisors and decision makers to provide high level information on social, economic and environmental characteristics for the Scottish coastal zone.

Nearly half of Scotland's population lives in close proximity to the coast (within 5km). As such, the coastal environment plays a fundamental role in all of our lives; its health is important to everyone who lives, visits, and works within Scotland's coastal zone. A healthy environment is crucial for maintaining ecosystems and is essential for many everyday activities and functions including;

- **Employment opportunities** - Scotland's seas support approximately 45,000 jobs
- **Low input food production** - 60% of Scotland's food exports come from our seas, worth approximately £422 million annually
- **Leisure, recreation and tourism** - sailing alone is worth over £100 million to Scotland's economy each year
- **Transportation of goods and people** - Scotland's ports handle over 85 million tonnes of cargo and 10 million passengers annually
- **Source of energy** - Scotland has 25% of Europe's tidal and offshore wind resource
- **Sustaining biodiversity** - Scotland's seas contain over 40,000 species
- **Waste disposal** - the coastal environment is the recipient of treated sewage waste and contaminated run off from industrial and land based activities
- **Provision of a natural sea defence** - many of the coastal habitats such as sand dunes and salt marsh are fundamental in protecting land and infrastructure from flooding
- **A research and education resource** - much of the coast is used for research and monitoring as well as an essential asset for all levels of education
- **Preservation of our history and heritage** - over 20,000 cultural and heritage sites exist around Scotland's coasts and in our seas including wrecks, museums, protected sites, and festivals of the maritime heritage. Each of which add to the distinctiveness of Scotland's coast line and attract many tourists each year.



Policy relevance

The Marine (Scotland) Act 2010 is a major legislative reform that will guide coastal and marine planning and development in Scotland through the production of National and Regional Plans.

The coastal environment is subject to numerous and often competing demands, which vary over time and as such the coast undergoes continuous change.

Many changes result from a combination of natural forces, a changing climate and anthropogenic demands which increase the pressure on the coast. Anthropogenic pressures and demands include an increasing population in the coastal zone who create more waste and sewage which then requires disposal. In addition, there are amplified requirements for food, energy, aggregates, transportation of goods and people along with increasing industry, tourism and recreation.

While some of these aspects have improved, such as reduction in water pollution from untreated sewage entering our rivers, coasts and seas, other impacts for example climate change and its impacts on coastal communities, habitats and species; coastal development; and habitat loss pose an increasing threat to the coastal environment.

Marine planning provides a framework for the management of this change and the sustainable development of the Scottish marine area, setting economic, social and marine ecosystem objectives and offering a mechanism for managing the increasing, often conflicting demands on our coasts and seas, economic investment, stakeholder engagement and decision making.

Such information as that presented here, will be critical in the development of Marine Plans, enabling policy makers, planning authorities, decision makers and other stakeholders to understand our coastal zone, the people that live and work there, the way the land is used and the pressures it may face in the future.

This knowledge will help enable an integrated approach to the use, development and protection of resources across the land sea interface, and offer an opportunity for effective planning to ensure Scotland's coasts develop in a sustainable manner and ultimately help meet the Scottish Governments' vision of a clean, healthy, safe, productive and biologically diverse marine and coastal environment.



Fraserburgh harbour, Aberdeenshire



Socio-economic characteristics of Scotland's coastline

Population

Coastal communities (within 5km of the coast) make up 41% of the total population of Scotland, across varying levels of rurality¹ (Figure 1).

68% of the coastal population live within the 'developed coast' which consists of urban areas such as large towns and cities² (Figure 2).

14% of the coastal population live within the 'undeveloped coast' which consists of small towns and rural holdings as well as agricultural and forestry land, with low intensity recreational areas. Extensive areas of the undeveloped coast are protected for nature or heritage conservation².

The 'isolated coast' is remote and sparsely populated but overall contains 18% of Scotland's coastal population². These areas are also important for nature conservation and natural heritage.

Scottish Government Urban Rural Classification

- Large Urban Area
- Other Urban Area
- Accessible Small Town
- Remote Small Town
- Very Remote Small Town
- Accessible Rural
- Remote Rural
- Very Remote Rural

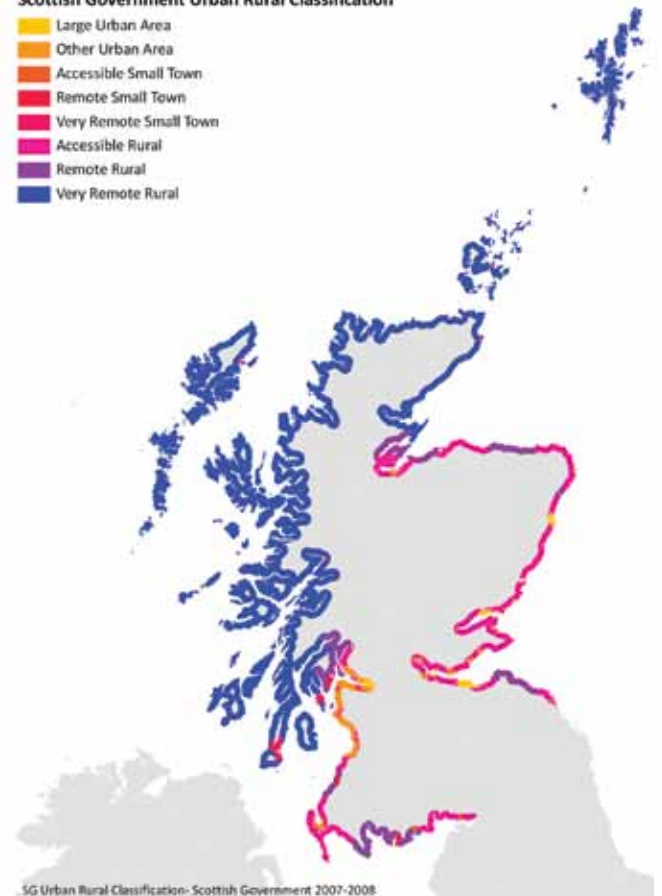


Figure 1: Coastal urban rural classification³

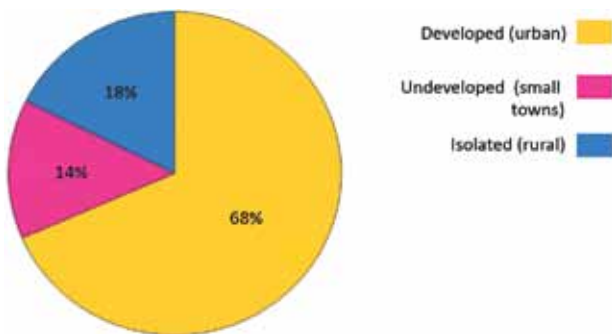


Figure 2: Percentage of coastal population by rurality



CASE STUDY: City of Edinburgh's coastal population

15% of the population of coastal Scotland lives within the City of Edinburgh, which has the second highest population density of 23 people per ha in Scotland. However population density varies from 40 people per ha in the city centre to 1 person per ha in the surrounding rural areas. Despite having a larger eligible workforce, proportionally fewer people are employed and report good health within the city centre than in surrounding rural areas¹.

Within rural communities there is a broader range of industries in which people are employed. A greater proportion works in skilled trade occupations and within the agricultural, hunting and forestry industries¹.

Implications for Scotland's coastal communities

A number of rural areas have experienced population growth due to in-migration whilst areas with minimal employment opportunities have suffered population declines, which is of particular significance for peripheral coastal areas such as the Western Isles.⁴

Coastal communities have experienced a notable shift away from traditional activities (fishing and agriculture), towards service industry based activity. Seasonal employment patterns affect areas where such industries, including tourism are prevalent. Confounding problems are the levels of accessibility in outlying regions, and the exclusion of local communities from the housing market.⁴

Many local authorities and partnerships have encouraged the diversification of local economies as a way of addressing problems facing these communities and to improve regeneration activities.

Economy

Scotland's coastal economy is made up of a diverse number of sectors with connections to both terrestrial and marine resources.

Terrestrial Coastal Industries

Terrestrial based industries within the coastal zone include agriculture and forestry. 33% of Scotland's agricultural land lies within the 5 km coastal area⁹ (Figure 3). Scottish agriculture provided £672m Gross Value Added (GVA) in 2009 and in total supports a labour force of 67,000.¹⁰ As a land cover agriculture consists of arable (crops) and improved grassland (livestock). Commercial forestry and timber industries provided £1.67bn GVA in 2010 and supported 38,500 jobs.¹¹ The majority of coastal coniferous plantations occur along the coasts of Argyll & Bute (37%) and Highland (35%); 39% of Scotland's coastline is unsuitable for forestry.¹²

Maritime Industries

Maritime industries such as oil and gas, transport (ferries and freight) and fisheries are connected to coastal economies through ports and harbours (Figure 4). In 2009, fossil fuels constituted the main form of port traffic and as an industry is valued at £15.4 billion per yr.⁵

The highest freight traffic in Scotland occurs in the Forth, Sullom Voe and Clyde ports, which are also some of the busiest in the UK (Figure 4).

For coastal communities marine fisheries and associated industries (fish processing) are significant, particularly in the north-east. In 2010 the value of landings by Scottish vessels within the fisheries industry was approximately £428 million and provided direct employment for 5,218 fishers, with Aberdeenshire employing 26% of those.⁶

Issues relating to sustainability, such as previous exploitation of some stocks may have contributed to industrial down sizing, income reduction and fewer job prospects. Coastal communities have been experiencing a gradual trend towards part-time employment.

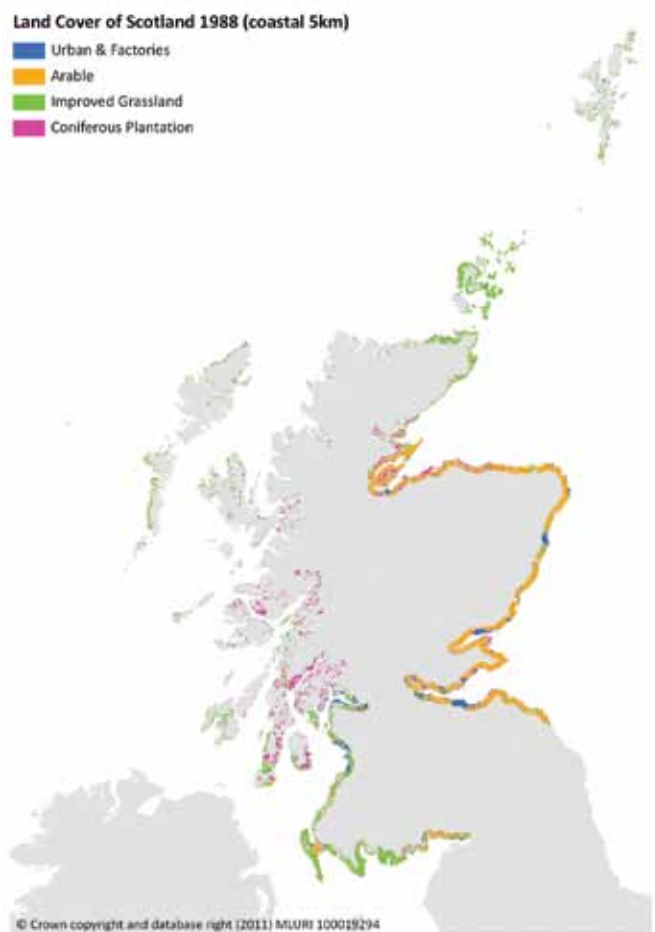


Figure 3: Distribution of terrestrial coastal industries, taken from Land Cover of Scotland 1988

Consequently, based on the recorded and projected declines in fishing and fossil fuel related industries (51% drop in tonnes of products since 2005); the future socio-economic stability of coastal communities will depend on economic diversification, such as the development of the aquaculture industry, predominantly on the west coast.⁷

In 2009 the aquaculture industry was estimated to be worth £427m supporting over 1,000 full-time and 1,146 part-time jobs by farmed finfish production and 514 jobs by farmed shellfish. More recent provisional figures value the industry around £434m per year.⁸ Aquaculture is one of the fastest growing food production sectors and offers employment in remote and rural communities.⁷

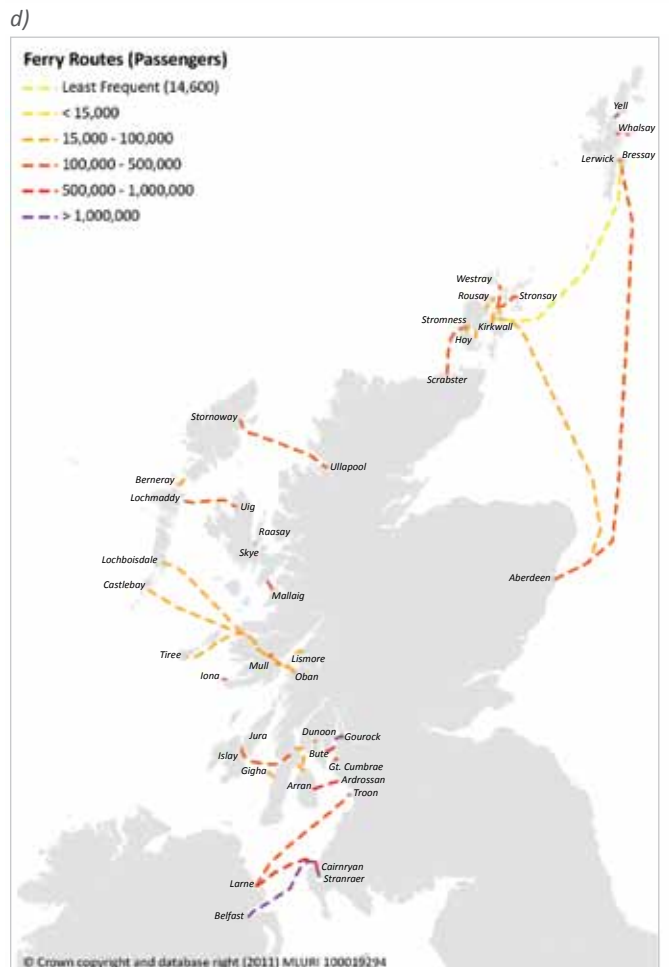
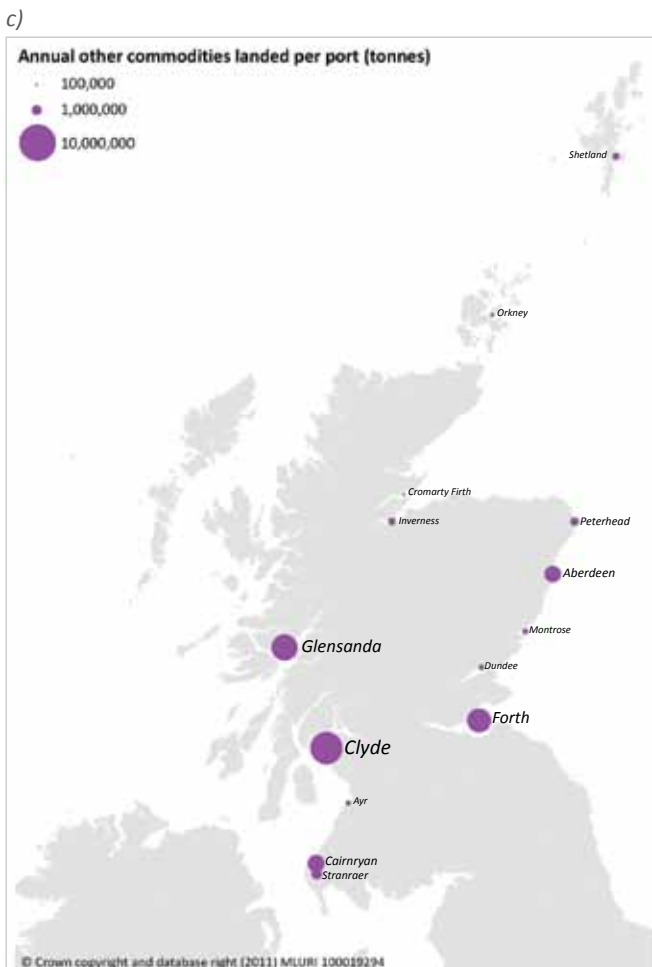
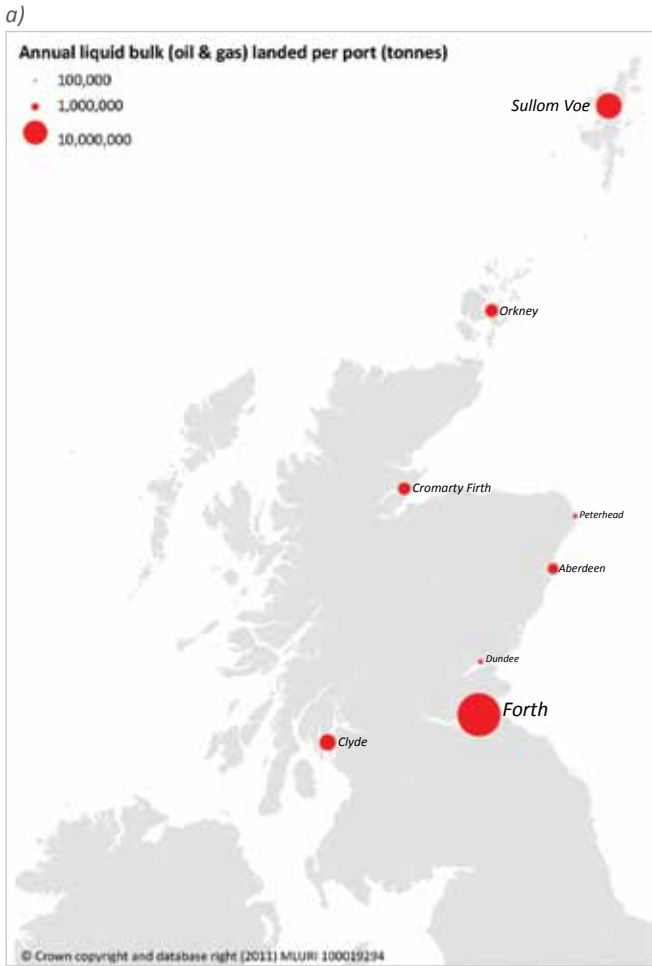


Figure 4: The distribution of maritime industries; a) Oil and gas by port, b) Fish landings by port, c) Other imports and d) Ferry services



CASE STUDY: Shetland Islands

Shetland's coast makes up 1% (22,000 people) of Scotland's coastal population and has one of the lowest population densities at 0.2 people per hectare. Shetland has a relatively young coastal population compared to similar rural areas, with an average age of 38 yrs and 24% of the population being younger than 19 yrs.¹³

In the last 25 years, the island economy has changed substantially. The main sources of economic activity are fisheries (capture and processing), aquaculture and oil related activities followed by agriculture, tourism and knitwear⁴. Approximately 11% of all jobs are dependent on fisheries and agriculture (Figure 5).¹³

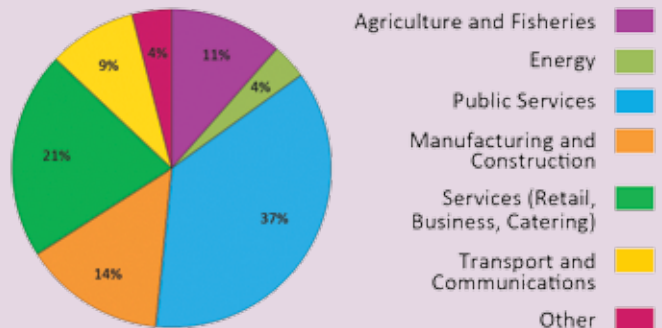


Figure 5: Full-Time Equivalent Employment

Coastal Tourism

Scotland's coastline offers a wide variety of tourism opportunities including popular activities such as walking, cycling, sightseeing, history and wildlife watching. Scottish-wide tourism makes up 5% of GVA and supports around 9% of total employment in Scotland.¹⁴ As of 2009, tourism-related activities in Scotland are worth £4.1 billion per year, with 15 million tourists taking overnight trips.¹⁴ Annual expenditure varies by specific sectors; sailing tourism (£101m per yr)¹⁵, Fife coastal path (£24-29m per yr)¹⁴ and sea angling (£140m per yr)¹⁶. The Fife coastal path is estimated to support 800-900 FTEs in Fife¹⁴ and sea angling supports 3,148 FTEs across Scotland¹⁶. The combined annual net expenditure from other coastal sports such as sea kayaking, sub-aqua and windsurfing is estimated at £10m per yr¹⁴.



Kitesurfing, Balmedie Beach, Aberdeenshire

Links golf courses

Scotland's links golf courses are historically and culturally significant and have an international reputation for quality. As the original home of golf, links courses constituted 76% of the total visitor green fee revenue in 2009.¹⁷ These unique courses attract high numbers of overseas visitors, and make a significant contribution to the overall number of trips and expenditure.¹⁸

Golfing events are beneficial for tourism expenditure, overnight stays and the local economy through increased publicity and visitor numbers. The 2010 Open at St. Andrews Links generated £47m for the Scottish economy. It is estimated the cumulative economic impact of hosting the Open Championship and Ryder Cup from 2010-2020 will bring £270m to Scotland.¹⁹



Royal and Ancient Golf Course, St Andrews, Fife

Coastal and Marine Wildlife Tourism

Wildlife tourism involves visitors (either overnight or day visitors), making a trip with the primary purpose of viewing, studying or enjoying wildlife, both plants and animals. This is taken to include visitors on a dedicated wildlife watching holiday or who make a specific trip to a wildlife visitor attraction. Such visits can be to urban and rural areas, terrestrial, coastal and marine.

Coastal wildlife tourism involves visitors making their trips to the coast to view terrestrial and marine wildlife, from both land and sea vantage points including specified walking trails and boat trips. Key species sought by wildlife tourists include whales and dolphins, seals, otters and seabirds, often in huge colonies.

The economic impact of marine and coastal wildlife tourism in Scotland is significant and growing. Visitors who make their trip primarily to view wildlife at the coast or in the marine environment spend £163 million per year (around 50% of the total wildlife expenditure), generate economic impacts of nearly £40 million, and support 1268 FTEs. Many of these trips occur in May and June.

Studies have found visitors tend to visit wildlife visitor centres more often than other groups²⁰ and are more likely to visit Northern parts of Scotland, with 43% of nights by coastal wildlife tourists spent in the Highlands and Islands²¹. Marine wildlife tourism is also prominent in the Highlands as well as in the southwest of Scotland including Glasgow, Ayrshire, Arran, Dumfries & Galloway.

Tourism related only to Bottlenose Dolphins and the subsequent employment generated for local communities is estimated to contribute £10.4m to the sector (19%). Of which £4 million and more than 200 jobs are solely reliant on the presence of the bottlenose dolphin population centred on the Moray Firth²². Dolphin watching was given as a significant reason to visit the east coast area for 52,200 overnight visitors, and 17,100 of these deem viewing dolphins was the main reason for their trip. The conservation of this species is therefore of particular importance to the local economy of the wider Moray Firth area.

Coastal and marine wildlife as a tourism sector has seen continued visitor interest and growth and is likely to continue to do so, possibly due to changes in public attitudes, increased media coverage of coastal wildlife and a lesser interest in long-haul holiday destinations²⁰, benefiting most to rural coastal communities.



Alcyonium digitatum or dead man's fingers is a species of soft coral found around Scotland's coast

Implications for Scotland's coastal economy

Coastal communities have experienced a notable shift from traditional activities (fishing, agriculture) towards service industry based activity. Greater economic diversification into niche markets and non-seasonal based industries (niche tourism and aquaculture) will ensure sustainable economic growth for peripheral communities.

The sustainable economic growth of the tourism sector will rely on increased spend per visitor as many coastal areas are limited by size, infrastructure, facilities and are subject to peak demand, as well as increased incentives during the off-peak season to increase visitor numbers.

The tourism industry is predicted to grow in terms of its direct and indirect economic contribution but may also offer additional benefits such as social inclusion by offering part time work to those who require flexible working and offering often low skilled jobs; enterprise, innovation and business formation; and regeneration opportunities.

The expansion and development of the offshore renewable energy sector may support the coastal economy and provide jobs as the oil and gas industry declines.



Landforms and habitats of Scotland's coastline

Landforms

The physical features of Scotland's coastline influence both biological and social systems. For example, the location of human settlements and internationally important habitats are both dependent on the coastal characteristics of an area. Coastal industries such as agriculture and forestry being reliant on soil type and the topography of the land, has resulted in the east coast being dominated by agriculture due to its relatively flat land and fertile soils.

Physical characteristics and processes

The majority of Scotland's coast consists of hard rocky cliffs (Figure 6) and is neither eroding nor aggrading (75%). 12% of the coastline is in a state of erosion, 8% aggradation and 5% is unknown.²³

Resistance to coastal erosion and flooding is not only dependant on the physical structure of the coastline. The relief of many of the islands in the Outer Hebrides is low

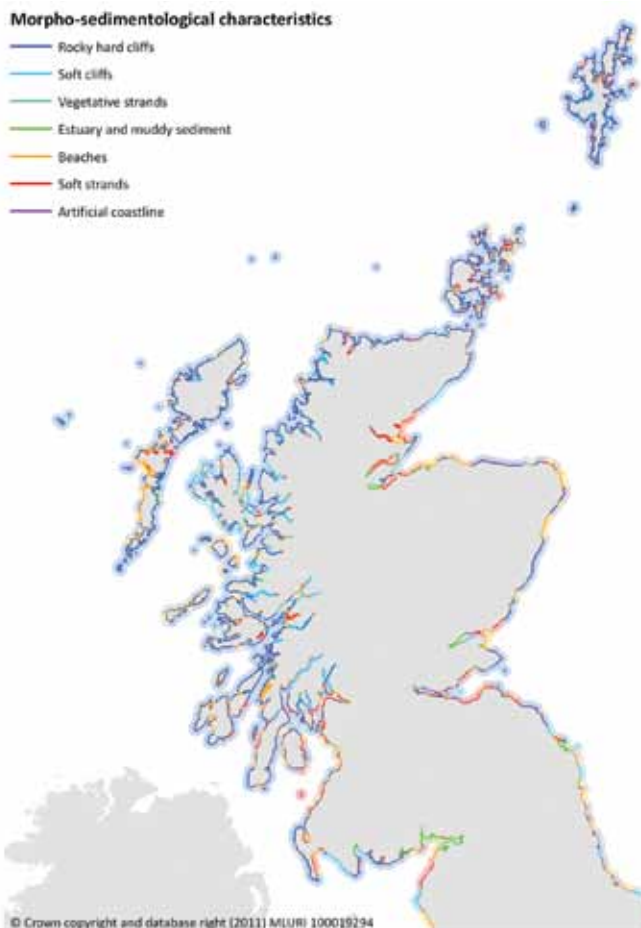


Figure 6: Characteristics of Scotland's coastline (adapted from EUROSION, 2004)

lying, with large areas < 5m above sea level, thus making them vulnerable to Atlantic storms and coastal erosion.

Over 80 flood prevention schemes are now in place across Scotland, though comparatively, the Scottish coastline is the least protected in the UK, with 7% lined with coastal defence works (seawalls, groins) or fronted by artificial beaches.

Taking into account threatened infrastructure, loss of productive land and social services it is estimated coastal flooding in Scotland causes £19m worth of damage per year; much less than flooding through rivers alone (£34.5m). Around 27,000 properties across Scotland's coastline are at risk from a one in 200 year coastal flood event.²⁴



CASE STUDY: Aberdeen Beach

Aberdeen Beach and the neighbouring Queen's Links area are important economic and social assets for the city, being popular for recreational and tourism related activities and a home to a number of beach-front cafes.

Coastal erosion and inundation has been a serious problem for Aberdeen beach. Before 2006, significant amounts of sediment were removed through coastal processes, lowering the sand elevation. The resulting exposure of the existing sea wall foundations reduced its integrity, nearing a critical point after which the structure would be compromised²⁵. Any breach would result in the loss of large sections of road, buildings, tourism sites and a risk of contamination from disused refuse sites which were covered by the revetment.²⁶

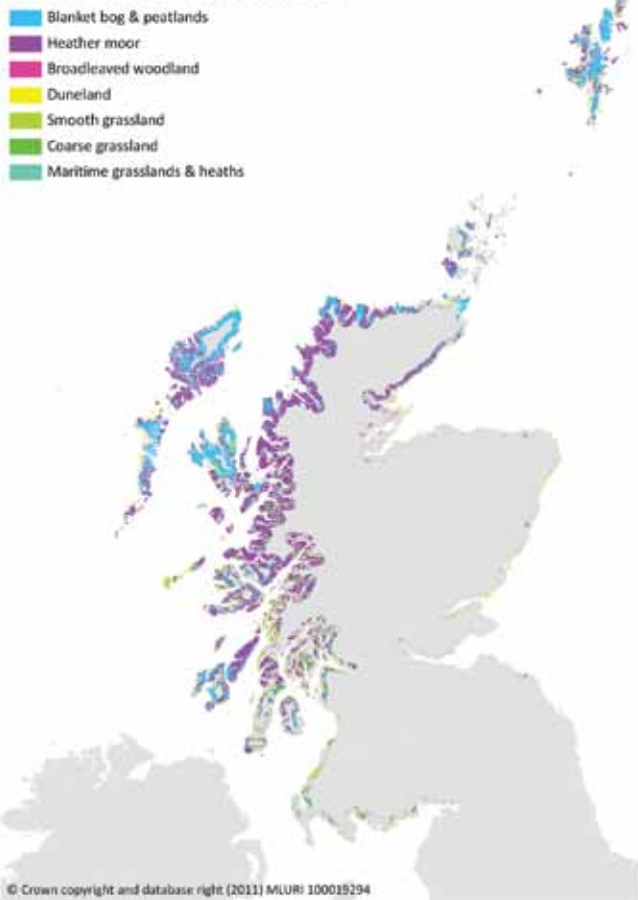
Following this, major beach nourishment and groyne construction was implemented in 2006, over a 600m stretch of beach. 70,000m³ of sand was pumped ashore via a pipeline to replenish the beach as well as the construction of five large granite T-head groynes (pictured above).²⁶ The impacts of climate change which include increased storm surges, precipitation and a rise in sea level will continue to put coastal developments at risk from inundation, therefore long-term management plans will be essential to ensure the continued growth of coastal industries and amenities.

Habitats

Scotland's coastal habitats are of great importance for the UK, with many internationally and nationally protected sites. The locations of these habitats are often dependant on other often competing land uses, soil type and topography of the land. In terms of habitats the west coast is home to predominantly heather moor, peatlands and blanket bog. Maritime grasslands mostly occur in Orkney, Shetland and the Western Isles as well as dunelands in the Western Isles (Figure 7). Land cover types vary inland, with greater coverage of improved grassland and urban areas (Figure 8).

In total there are over 1,000 protected sites within

Land Cover of Scotland 1988 (coastal 5km)



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Figure 7: Distribution of semi-natural habitats.⁹

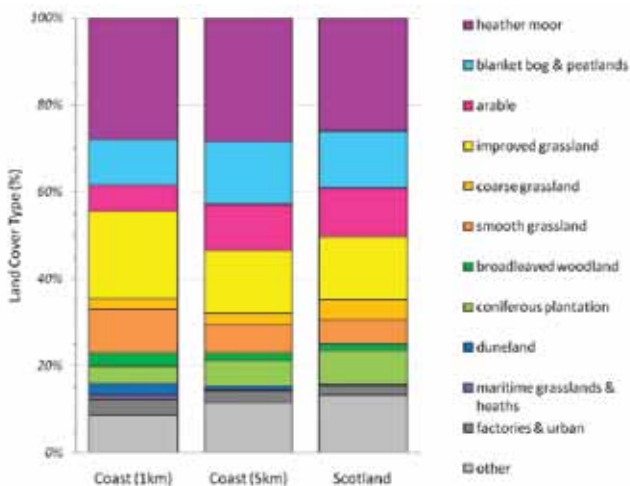


Figure 8: Composition of Scotland's main Land Cover Types⁹

Scotland's coastline (5km), ranging from International to local level designations, covering biological, geological and historical sites of significance, the majority of which are along the coastline of the Highlands.

Machair

Machair is an almost unique Scottish coastal habitat with 70% of the total global coverage occurring in western Scotland (Outer Hebrides- Uists, Barra and Tiree) much of which is internationally protected. It is a type of dune pasture with high shell content (80-90%) listed under Annex 1 of the EU Habitats Directive.

Some of the biggest threats to this habitat are local changes in agricultural practices as well as inundation during storms. Species associated with and threatened from its degradation include birds such as the corncrake, and ringed plover, insects such as the great yellow bumblebee, and plants such as Irish lady's tresses.

Involving local communities will be the most effective way to ensure the long-term conservation of these habitats.



Berneray machair and beach, Outer Hebrides

Implications for Scotland's coastal environment

Careful and considered planning and remedial measures will help to reduce threats to Scotland's coastal habitats, many of which are under threat despite contributing a significant proportion of the UK's resource.

Land use change and coastal developments (agricultural encroachment, factories, power stations, sand extraction, golf courses, and coastal protection works) can alter these habitats through pollution, nutrient enrichment and fragmentation. Human activities can introduce non-native invasive species, further exacerbating existing changes to habitats and species composition.

The multiple pressures from land use change and development, on the functioning and provision of ecosystems services is currently not well understood. For some habitats recovery is possible with sufficient conservation management.



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