A photograph of a coastal landscape. In the foreground, there is a body of water with small waves. In the middle ground, a small island or peninsula features a large, dark building with a gabled roof. The sky is filled with heavy, grey clouds, suggesting an overcast day. The overall color palette is muted, with greys, blues, and browns.

The Wadden Sea Region

A World Class Cultural Landscape

COLOPHON

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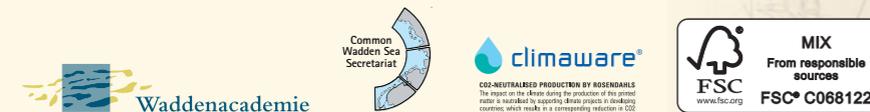


TABLE OF CONTENTS

INTRODUCTION	4
From Project to Booklet	5
WHAT CHARACTERISES THE WADDEN SEA REGION?	6
A Marine Landscape	7
A Trinity of Elements	7
Occupational History	10
Political and Economic History	15
A Conserved Past Explains the Present	16
SIMILAR AREAS IN THE WORLD	18
Comparable Cultural Landscapes	19
Comparison of Significance	28
A World Class Cultural Landscape	30
Influence on Rural Development Worldwide	31
THE WADDEN SEA REGION – PRESENT AND FUTURE	32
Nothing Is Certain But Change	33
Meeting the Challenge Together	33
Sharing Expertise across Borders	34
Best Monitored, Best Understood in the World	34

INTRODUCTION



Peter de Vries

From Project to Booklet

In the course of two consecutive trans-boundary projects, the Lancewad and the LancewadPlan, the cultural and landscape treasures of the Dutch, German and Danish Wadden Sea Region have been mapped and analysed and a proposal for an overall strategy to protect, enhance and manage it has been developed. The process has clearly indicated that the cultural landscape of the Wadden Sea Region is exceptionally important on an international scale.

In 2009, the Dutch-German Wadden Sea was added to the UNESCO World Heritage List for its outstanding natural values. An analysis was made which compared the Wadden Sea Area with similar natural areas around the world; this clearly demonstrated how exceptional it is, as the world's largest tidal barrier island system, with a unique biodiversity. However, the assets of the cultural landscape of the Wadden Sea Region have never been systematically compared to similar areas around the world.

In order to explore how unique the cultural landscape of the Wadden Sea Region is on the international stage, the Historic Environment Branch of the Essex County Council, which also participated in the LancewadPlan activities, was commissioned by the Common Wadden Sea Secretariat to undertake a comparative analysis with other areas around the world. The study *'A Comparative Analysis of the Cultural Landscape and the Cultural Heritage of the Wadden Sea Region'*¹⁾ demonstrated that the landscape and cultural heritage of the Wadden Sea Region is without parallel. Indeed, its cultural heritage may be as significant in international terms as its natural qualities.

¹⁾ The comparative analysis can be downloaded from the website of the Common Wadden Sea Secretariat: www.waddensea-secretariat.org

This booklet summarises the main findings of 'the Essex Report' and is published by the Common Wadden Sea Secretariat and the Dutch Wadden Academy together.

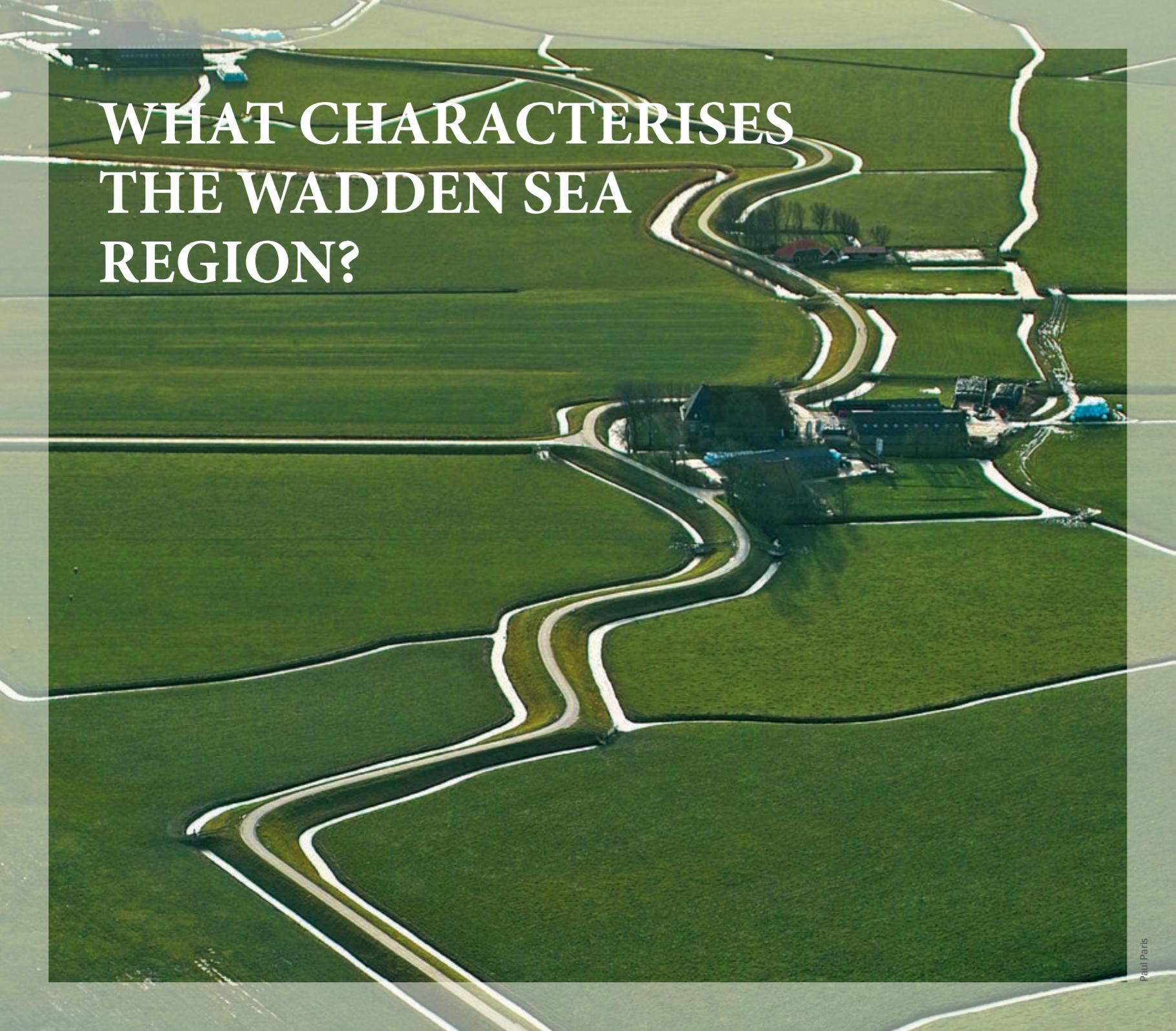
The goal is to inform a broader audience of regional and local policy makers and managers, museums and information centres, and historic associations in order to expand the appreciation of the Wadden Sea Region as a world class cultural landscape; by caring for it in a way that unites all our efforts, regardless of where we come from, we can enjoy it, and take even more pride in it.

Traces of former farmland, now engulfed in the mud flats close to the island of Pellworm.



Martin Stock

WHAT CHARACTERISES THE WADDEN SEA REGION?



Paul Paris

A Marine Landscape

The Wadden Sea Region measures some 22,000 km², almost equally divided between land and sea. About 63% of the Region lies in Germany, with about 30% and 7% in the Netherlands and Denmark, respectively.

Most of the landforms in the Wadden Sea Region have essentially been created from a marine or tidal environment, starting 9000 years ago, whereas the influence of fresh water systems in forming the various elements of the landscape has been marginal. In contrast to other deltaic and river-derived coastal areas in the world, tides are the main generators of sediment transport, resulting in a decrease in grain size landward rather than seaward, as is the case in fresh water-dominated coastal environments.

A Trinity of Elements

The Wadden Sea proper consisting of gullies, tidal flats and salt marshes. Although the Wadden Sea is primarily a natural area, it also contains very important elements of cultural heritage: the scores of shipwrecks dating from Medieval and Early Modern times in the western part of the Dutch Wadden Sea and the many inundated archaeological traces of habitation, agriculture and salt extraction in the Dollard, the Jade Bay and North Frisia being some examples.

Mudflats at the island of Terschelling, with a traditional Frisian barge.

Dainm Schoorhoven/Buiten-Beeld



The islands can be roughly divided into two categories:

1) the larger category of sandy islands, forming a chain of barrier islands from Texel in the Netherlands to Skallingen in Denmark.

2) the smaller category of (marsh) islands, lying inside the barrier islands, e.g. the Halligen in North Frisia; partial remnants of a former salt marsh mainland broken up by the sea.

As well as separating the Wadden Sea from the North Sea, with their age-old agrarian-maritime societies the islands form the most dynamic zone of the Wadden Sea Region.

The mainland consists of three main landforms:

1) low-lying, fertile marshlands created by the sea forming the present salt marshes and the embanked marshes: 'polders' in the Netherlands, 'Groden' and 'Köge' in Germany and 'koge' in Denmark;

2) the 'Geest' is the high-lying, mostly sandy moraines and outwash plains, created during the latest two ice ages; and

3) bogs of varying width are located in the hinterland. In some cases, peat extraction has resulted in the formation of lakes, whilst in other locations the peat has been sealed with a layer of marsh clay.

Despite regional and local differences, the Wadden Sea Region forms one coherent landscape and cultural entity, south of Den Helder in the Netherlands to Blåvandshuk in Denmark.

In certain parts of Tøndermarsken the water level is still maintained high in the ditches during summer time.



Svend Tougaard

Peat-cutting in Rüdershausen, Stadland.



Martina Karle

Cultural Entities in The Wadden Sea Region



CWSS/Naturplan

WHAT CHARACTERISES THE WADDEN SEA REGION?

Occupational History

The occupation and settlement in the Wadden Sea Region has taken place uninterruptedly since 1575-1200 BC. The earliest dwelling mounds date to 700-600 BC, starting in West Frisia and gradually moving east and north. The Danish town Ribe, the most northern town with direct Frisian influence, was founded in 710 AD.

The Wadden Sea Region is a unique example of a transgressive coastal landscape with an exceptionally long history of occupation, representing the successful outcome of the struggle of an 'amphibious' society with and within a rich and fertile, albeit hazardous, maritime environment.

Surrounded by Water for Three Millennia

The salt marshes attracted settlement from the hinterland from an early stage. People were attracted by the natural fertility of the marshlands and the rich diversity of fish and birds. Permanent settlement in the salt marshes was preceded by their seasonal use as pasture by people living on the adjacent geest, which was not prone to flooding and more attractive to early settlement despite the relative poverty of the soil. To protect their farms from flooding, the first settlers, who had established themselves on the highest parts of the marsh (marsh bars and natural river levees) from the 6th century BC, started to raise the areas where they lived by erecting artificial dwelling mounds, the so-called 'terpen', 'wierden', 'Wurten', 'Warften' or 'værfter'. Rising sea levels necessitated further heightening of these mounds. Quite a few evolved from simple house platforms into larger village mounds. In recent years low dykes, raised in the 1st century BC, which protected small fields against summer flooding, have been discovered in the north western part of the Province of Frisia (Westergo).

The First People to Call the Wadden Sea Home

North of the Eider the coastal areas, abandoned earlier by Angles and Saxons migrating to Britain, were settled from the 9th century by Frisian immigrants from what is now the Northern Netherlands. Their migration was probably induced by overpopulation and flooding, as well as the political and economic expansion of Frankish tribes to their south. At the same time Saxon tribes repopulated Dithmarschen and Eiderstedt and, like their precursors in the 2nd and 3rd centuries, created artificial mounds on the beach barriers, whilst their Frisian counterparts initially occupied the higher nuclei of the islands of Sylt, Amrum and Föhr.

Europe's Most Populous Area

During the 1st millennium AD, the salt marshes belonged to one of the most densely populated areas of Western Europe. In the 7th and 8th centuries, the land west of the river Weser, Frisia, was the trading hub of Western Europe.

The dwelling mound of Hegebeintum, Oostergo is the highest in the Wadden Sea Region (8.80 m).



Ron Ter Burg/Buiten-Beeld

Dwelling Mounds in The Wadden Sea Region



Harry Jansen/Naturplan

WHAT CHARACTERISES THE WADDEN SEA REGION?



Dyke in Middag-Humsterland, Husingo.

Ron Ter Burg/BuitenBeeld

To the south Dorestad (Wijk bij Duurstede) and to the north Ribe and the nearby town Haithabu (Hedeby/Schleswig) formed major centres in the chain of trade between the North Sea and the Baltic regions. Commerce resulted in growing prosperity as well as a growing population. Starting in the western areas from about 900 AD, the emphasis on overseas trading shifted to the settling and cultivation of the inland raised bogs. Though Viking traders and raids dealt a severe blow to Frisian trading, growing population pressure certainly led to this movement inland,

as well as technical innovation relating to water management.

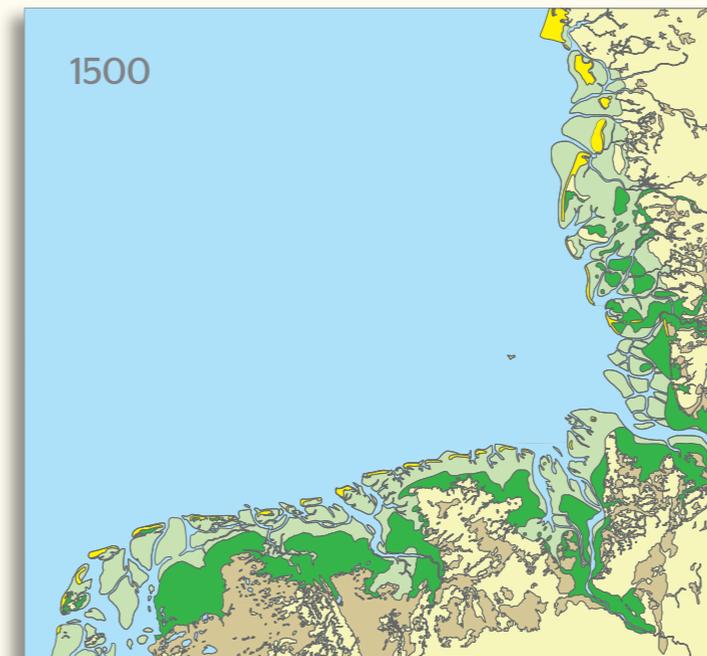
The Water Encroaches

Subsequent to this movement, the salt marshes were adversely affected by a number of environmental pressures: a growing amount of fresh water was unleashed from shrinking inland bogs that, because of colonisation and cultivation, were rapidly losing their capacity to buffer water. Parallel, elongated parcellation boundaries still survive to testify to the colonisation of the adjacent moorland. In addition, numerous lakes testify to the digging and dredging of salinated peat from below the layer of clay in order to procure salt. In West Frisia this probably started in the first centuries AD and in North Frisia in the beginning of 2nd millennium.

Little or no relief was provided by sluggish drainage that, in combination with the intermingling of salt and fresh water, led to a generally brackish environment and endemic malaria in many places.

Dykes - Defence and New Opportunities

At the start of the 2nd millennium AD, a warmer climate resulted in a rise in the sea level, more frequent storms and more precipitation. In order to cope with a growing amount of salt and fresh water, the 10th century saw the appearance of the first ring dykes in the area of Westergo. Chains of dykes protecting areas larger than just a few fields soon appeared in other parts of the Wadden Sea Region. Drainage was developed to lead the surplus water through the dykes, and portages were used to let ships cross them. The development of the sluice enabled the passage of ships at equal tides. Locks were introduced from the 13th – 15th centuries, combining the benefits of both sluices and por-



Harry Jansen/Naturplan



The History of Embankments

- Dunes and higher shoals
- Intertidal areas and salt marshes
- Embanked marshes
- Peat bogs
- Pleistocene or older
- Water

tages. Cistercian and Norbertine monasteries were founded in the area from the late 12th century, often taking a lead in manning and organising the struggle against the waters.

Dyking and water management under transgressive, maritime conditions, originating in the Netherlands, was exported to the German and Danish parts of the Wadden Sea and also abroad; for example to Poland, Russia, France, Great Britain, Italy and the Americas.

The last storm surge flooding of Ribe (1911). Four years later the sea-dyke was erected.



Sydvestjyske Museer

Challenges from the Sea - Losses and Gains

Despite all efforts, the Wadden Sea Region has suffered great losses of land since the 12th century AD. Huge storm surges, like those of 1362 and in 1634, destroyed moor and marshlands in all parts of the Region. In this period Dollart, Leybucht, Harlebucht, Jadebusen and the outlet of the river Eider were created and extended. The mainland of North Frisia was broken into a number of small islands (the

Halligen). Throughout the Wadden Sea Region, wheels of breaching ponds give further evidence of the struggle with the sea. When land was lost in one area, it was often gained in others, as a result of accretion of sediment. The bays west of the Elbe – the Marne, Middelzee, Lauwers, Hunze, Fivel, Campen, Sielmöncken, Harle, Ahne and Heete – were reclaimed, as well as parts of the salt marshes and islands north of the Elbe. In the Danish area the first sea dyke was erected in the mid-1500s, although most Danish sea dykes were not built until the 20th century.

Political and Economic History

In the 7th and 8th century, most of this coastal area was known as 'the Kingdom of Frisia', especially the area west of the river Weser, Land Wursten, as well as the land between the river Eider and the town of Tønder. It was less a coherent territory, centrally ruled by one king, than a collection of rather small political entities, each with its own king and political centre. The relative isolation towards its hinterland and the commercial success of farming in this fertile, though hazardous, environment – a near-constant struggle against the elements and the insular character of its constituent parts – created a tradition of independence and self-sufficiency. Even in the 18th century, society developed along rather autonomous, individualistic lines.

Farmer Republics

The central rule, exercised from the 9th century by emperors and kings through dukes and counts, soon eroded, giving way from the 12th century onward to autonomous republics; self-governing districts under a farming elite that was often descended from the old ruling classes. The adjacent Saxon peoples shared many of the same qualities. In fact, in 1559, the independent farmers' republic of Dithmarschen was the last part of the Wadden Sea Region



'Death before slavery'. The motto of the North Frisians.

to be conquered and integrated into the Danish duchy of Holstein.

National Dependency - Loss of Identity

From the 19th century the integration of the Wadden Sea Region into three larger national political entities has led to the area's increasing marginalisation. Since about 1860, there has been relative economic and demographic contraction, caused by a shift of economic activity and population away from the area to newly-developed economic centres such as the Rhine-Ruhr area in Germany, the Randstad in the Netherlands and Copenhagen in Denmark, as well as to nearby centres like Hamburg and Bremen in Germany and, last but not least, by emigration overseas. Centralised education systems have resulted in the dominance of national themes and plans focused on the more populous and

central parts of the various nations, albeit to a lesser extent in Germany than in the Netherlands and Denmark. Concentration on the economically more successful urban areas pushed regional ideas, languages and identity into a marginal corner of folk consciousness; they were considered to belong to an ancient, backward past. Such developments also led to a rather defeatist self-identity in many parts of the Region.

Times of Financial Boom

Trading, shipping and commercial farming were the cornerstones of wealth until the middle of the 19th century, as this was one of the wealthiest parts of Western Europe. Manufacturing industries flourished in and around towns. Albeit less rich and urbanised than the south of the Netherlands or Flanders, the Wadden Region, and particularly the western areas, attracted large numbers of both seasonal and permanent migrants from the Upper Saxonian, Westphalian, Hessian and Prussian hinterlands. Together with the local inhabitants, migrants played an essential role in developing the adjacent peat bogs into the fen colonies in the Netherlands and Germany. These became a model for fen colonies elsewhere in Western Europe. Before 1800, the Wadden Sea islands and adjacent parts of the mainland were the main providers of skippers, commanders and

The wealth of the 17th century. Haubarg Rosenhof, Eiderstedt.



Thomas Pfaff

sailors in the Baltic trade, dominated by Amsterdam ship owners, and in the North Atlantic whaling fleet owned by German and Dutch companies.

A Conserved Past Explains the Present

The Wadden Sea Region is a unique example of a transgressive coastal landscape, created by the interaction of nature and humanity. It boasts a history that can be traced back more than three thousand years and its physical traits are very consistent: a flat, open landscape of broad horizons broken by thousands of dwelling mounds, thousands of miles of dykes (including many wheels or breach ponds), ditches and canals, sluices and locks and polder windmills; a landscape with characteristic field patterns that reflect former salt marsh gullies and colonisation and reclamation systems, as well as thousands of picturesque villages and harbour towns and often sumptuous historical farmhouses, all of which testify to the age-old innovative character of dairy and arable farming.

An area where the conserved past in a unique way explains the present.

The wealth of the 18th and 19th century displayed in Königspesel, Hallig Hooge.



Hartmut Schwarzbach

SIMILAR AREAS IN THE WORLD

Thierry Sentis/Corbis/Polfoto

Comparable Cultural Landscapes

Similar areas with qualities like those displayed by the Wadden Sea Region have been sought around the world. Two over-arching criteria were used to establish the list of locations for comparison:

1. that the landscapes should be coastal wetlands; and
2. that they should include cultural landscapes which demonstrate attempts to adapt the environment by means of the creation of embankments, dykes, polders etc.

Application of these overarching criteria has resulted in a list of fifteen comparable cultural landscapes worldwide. The locations of the sites are shown on the map below and described on the following pages.

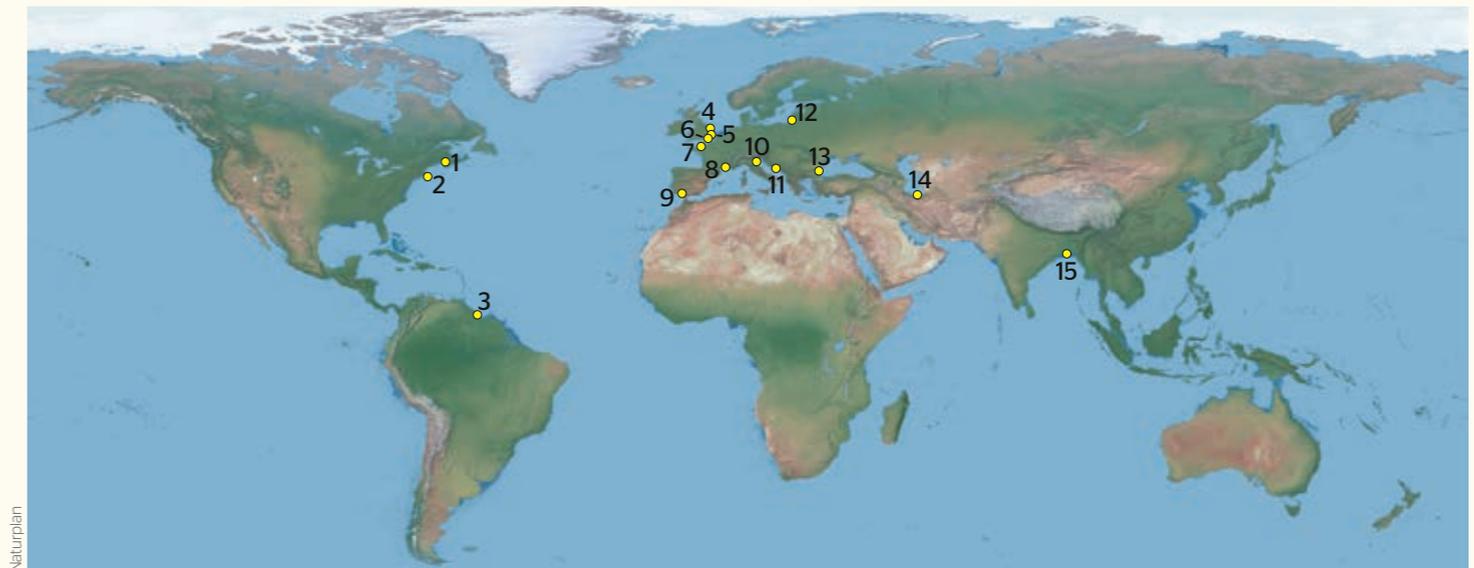
What is a cultural landscape?

The UNESCO Guidelines for cultural landscapes have three main categories. The Wadden Sea Region fits in the second of these:

'Organically evolved landscapes result from an initial, economic administrative and/or religious imperative and have developed their present form by association with and in response to their natural environment. They fall into two sub-categories:

1) a relict landscape is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible;

2) a continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress, at the same time it exhibits significant material evidence of its evolution over time.'



Naturplan

1. New Brunswick/Nova Scotia Dykelands, Canada (200 km²)

The site is divided by the Bay of Fundy, where the world's highest tides have been recorded (16 m) and consists of salt marshes and reclaimed marshes.

The first dykes were constructed in the 1630s by French settlers. They built wooden sluices (aboteaux) fitted with swinging doors in the base of the dykes, allowing excess fresh water to drain from the newly claimed land, but shut to prevent re-entry of salt water at high tide. The site played a central role as hay and pasture land until the early 1920s, but then decreased in importance. By the mid-1940s, the area had deteriorated such that large tracts had reverted to salt marshes. Today, the government of Nova Scotia maintains 240 km of dykes that protect approximately 17,000 ha, in which modern aboteaux maintain drainage of the dykelands.

A view across the Nova Scotia Dykelands at Grand Pré, with the Acadian Memorial Church and Bay of Fundy.



Jamie Robertson



Proehi Studios/Corbis/Pollfoto

The outer spit of Cape Cod. It may have been the 'Promontory of Vinland'.

1325 ha of Nova Scotia (the area of Grand Pré) bears exceptional testimony to a traditional farming settlement in a coastal zone, created in the 17th century. In 2012 this area was added to the UNESCO World Heritage Cultural List.

2. Cape Cod/Martha's Vineyard/ Nantucket/ Elizabeth Islands, USA (8000 km²)

Cape Cod and the islands are all terminal glacial moraines and marine deposits derived from fluctuating sea levels and coastal erosion and deposition.

In the 17th century Cape Cod was one of the first places in North America settled by Europeans. Intensive land use led to overgrazing and deforestation, resulting in erosion, loss of topsoil and the drifting of dunes on to farmland. By 1800, dunes on the outer Cape had become common and after 1860 there was a gradual cessation of agriculture in these areas. The Cape and the islands, particularly Nantucket, also developed as fishing and whaling centres. By the end of the 19th century the area became a summer holiday destination.

3. Essequibo, Guyana (8000 km²)

The coast of Guyana is bordered by a coastal plain about 30 km wide, divided by the delta of the Essequibo River.

The first European settlers, in the early 17th century, were Dutch. In 1680 a seawall was finalised to reclaim land from both the sea and the freshwater swamps. An interlaced network of drainage channels was constructed and sluices were installed. Plantations were laid out in strips running inland and a network of irrigation canals built to supply water to the farmland and settlements. Today, more than 90% of Guyana's population of 700,000 lives on the coastal plain and investment in drainage and other land development projects has continued.

Rice fields in Guyana's coastal plains.



Tracey Dos Santos, Wikimedia Commons



The Wicken Fens with the old wind pump (1886). The pump was used to drain the peat bogs.

4. The Wash, United Kingdom (2450 km²)

The Wash basin consists of inter-tidal mudflats, estuaries, salt marshes and fenlands, established through the erosive action of major rivers flowing to the North Sea over the last millennia. There are submerged land surfaces offshore.

Settlement sites date from the Neolithic period onwards, and landscape adaptation and drainage began in the Roman period. These works were followed by the establishment of monastic institutions from the 7th century onwards. In the 16th and 17th centuries major reclamation began, aided by imported Dutch engineering knowledge. In the 18th century further improvements to the drainage technologies was carried out. It was in the fenlands that the phenomenon of the shrinking of moorland due to drainage was scientifically proven, leading to a paradigm shift in the understanding of the occupational history of the Netherlands and hence the Wadden Sea Region.



Tidal inlets, sea-walls and salt marsh. The causeway crossing is of Saxon origin and the low mound (foreground) is from the Roman Times.

Essex County Council

6. Romney Marsh, United Kingdom (250 km²)

Romney Marsh is one of the largest coastal wetlands in Britain and includes a diverse pattern of landforms: estuaries, salt and embanked marshes; sand and shingle beaches and dunes; cliffs, rivers and floodplains.

In the Roman Times it comprised extensive salt marsh protected by a shingle bank deposited by the sea. Shingle deposits continued, as a result of which many of the medieval ports are now far from the sea. Reclamation had been undertaken since the 9th century. Further reclamation took place in the mid-12th century and the marsh was recolonised in the late 15th century. The economy and landscape were dominated by sheep in the 19th century. Improved methods of pasture management and husbandry meant that the marsh could sustain a density of stock greater than anywhere else in the world. Romney Marsh contains a large number of defensive monuments and structures dating from the Roman Times onwards. Today, this site is also influenced by its proximity to London.

Romney Marsh with Fairfield Church. The present church was part of a village which has disappeared.



Stuart Black/Corbis/Palfoto

5. Greater Thames Estuary, United Kingdom (2000 km²)

The Great Thames estuary is a large estuarine complex with numerous tidal inlets, creeks, extensive sand and mud flats, marsh islands, salt marsh and embanked marshes.

Settlement was continuous from the Mesolithic and widespread from the Bronze Age onwards. In the later Iron Age and Roman Times extensive salt production resulted in the creation of numerous low mounds composed of the debris from salt manufacture in the marshes. For hundreds of years, these mounds were reused as campsites for shepherds and dry areas for stock compounds.

Land reclamation began in the Middle Ages. There was a major phase of embankment in the 17th century which utilised Dutch drainage expertise in part. By the late 18th century, most of the coastline was embanked, managed grazing marsh. Today, the area reflects the close relationship with London – in every sense.

Grand Tour/Corbis/Palfoto



'The Wonder of the West': the medieval monastery and village, surrounded by salt marshes and mudflats.

7. Mont Saint-Michel Bay, France (650 km²)

This site comprises a bay with mud-flats and the small granite island of Mont Saint-Michel with its abbey and village, surrounded by coastal marshes. The bay has one of the highest tides in Europe (10 m).

The salt marshes have been used for grazing since the 11th century and polderisation has converted many of them to pasture. Today, the remaining salt marshes cover 40 km², the largest on the French coast.

The impressive Benedictine monastery, known as 'the Wonder of the West', and the village that grew up in the shadow of its great walls were built between the 11th and 16th centuries on the site of an 8th century church. This developed into one of the great sites of medieval Christian architecture. The Norman and Gothic Abbeys show considerable ingenuity in adapting construction methodologies to the cramped, difficult site. Today, the site is one of the main tourist attractions in France. In 1979 the site was added to the UNESCO World Heritage Cultural List.

8. Camargue, France (900 km²)

Camargue is one of Europe's largest river deltas. Approximately a third of Camargue is either (salt) lakes or marshland, with the remainder comprising pastures, dunes and salt flats, much under water. The boundaries of Camargue are constantly altered by the river Rhône as it transports huge quantities of mud downstream.

Camargue was exploited by the Romans and in the medieval period for salt production; a practice that has continued ever since. The 'modern' salt industry started in the 19th century. Camargue is also famous for its ancient breed of horse which, for thousands of years, have lived semi-wild in this harsh environment. The Camargue horse is the traditional mount of the Camargue 'cowboys' who herd the black Camargue bulls used in bullfighting in southern France.

Land reclamation for farming began as late as 1859. Further irrigation ditches were dug after the Second World War, permitting more reclamation and the cultivation of rice.

Salt pyramids harvested from salt evaporation pans in the River Rhone Delta, the main French centre of salt production.



Guillard Jacques/SCOPE/IMAGE



Alamy/Corbis/Potfoto

The town of El Rocío with the Virgin Mary Church, located at NW edge of the national park. At Pentecost, a million pilgrims gather here.

9. Doñana National Park, Spain (550 km²)

The Park is an area of marsh, shallow streams and shifting sand dunes in the delta of the River Guadalquivir, including springs and pools.

Doñana has a history of over 700 years. Since 1262, Doñana has been the favourite hunting reserve of Spanish kings. From 1737, stone pines were planted widely, but the clearance of coastal junipers later in the century destabilised the sand dunes, which became increasingly mobile. Wood-gathering, charcoal production, cattle-grazing, beekeeping and fish-farming occur within the Park and twenty-five families, mostly park staff, live inside it.

In 1994, the area was added to the UNESCO World Heritage List for its natural resources.

10. The Po Delta, Italy (800 km²)

The Po Delta has been formed by sediments deposited by the river Po and redistributed by the sea and the wind.

Fossil dunes correspond to former ancient coastlines. Eight have been identified in total, dating from 1000 BC to 1600 AD.

Roman settlers were the first to manage water in the region. Evidence for their settlements can still be seen, particularly in the layout of surviving towns and in the square shape of the original plots of land. In the second half of the 11th century religious orders reclaimed the plains through deforestation. Systematic, widespread organisation of water management did not take place until the 16th century. The introduction of dewatering pumps and encouragement of the development of large estates on the drained lands in the 19th century led to drastic changes to the landscape. The result was a countryside characterised by a regular structure, with long channels and straight roads, few trees, and a limited number of inhabitants.

In 1999, 470 km² of the Po Delta was added to the UNESCO World Heritage List as: 'The Po Delta is an outstanding planned cultural landscape that retains its original form to a remarkable extent'.

Rice fields and hunters' cabins at Sacca di Scardovari.



Archivio fotografico Regione del Veneto



Magazin-Chorvatsko

'The Croatian California'. Mandarins are grown in the river delta.

11. Neretva Delta, Croatia/Bosnia (200 km²)

The Neretva is the largest river of the eastern part of the Adriatic basin. Sediments carried downstream were deposited in the flooded valley, filling the karst depressions to form the fertile deltaic marshes and the lakes that remained.

The Neretva valley has a rich monumental heritage dating over several thousand years. Many prehistoric fortifications and settlements, as well as tumuli, are sited along the river. There were settlements and estates all over the delta, which are now covered by marsh. Christianity can be traced back to the 5th century. The first land reclamation dates to the 1880s, when the land was drained by digging channels. The earth thus removed was used to raise the land between the channels, producing a characteristically 'stripy' fieldscape pattern, as in the Wadden Sea. Further land-reclamation works were undertaken in the 1960s and the prevailing wetland landscape was converted into vine and fruit-tree plantations.

12. Curonian Spit, Lithuania/Russia (300 km²)

A 90 km long, dune-covered sand-spit of 400 m to 4000 m in width, created 5000 years ago. It separates the brackish Curonian Lagoon (1600 km²) from the Baltic Sea. The Curonian Spit is home to the highest drifting dunes in Europe, with an average height of 35 m (max. 60 m). Several landforms are present on or near the Spit, from its outer beaches to dune ridges, wetlands, wooded marshlands, and forests.

In the 16th century, a new period of dune formation began. In the 18th century increasing deforestation, overgrazing and logging led to the dunes taking over the Spit and burying whole villages. In response, in 1825 the Prussian government sponsored large scale revegetation and reforestation projects. As a consequence, much of the Spit is now forested. In the past the economy was dominated by fishing. Today, tourism plays the dominant role.

Since 2000, the Curonian Spit has been a UNESCO World Heritage Site: 'it is an outstanding example of a landscape

The community of Nida, surrounded by a 'safety cover' of pine forests.



EJC/Travel

of sand dunes that is under constant threat from natural forces. After disastrous human interventions that menaced its survival, the Spit was reclaimed by massive protection and stabilization works begun in the 19th century and still continuing to the present day.

13. Danube Delta, Romania (3000 km²)

The Danube Delta is the largest in Europe. The area is characterised by reed beds and floating reed islands, and a maze of canals, streams and lakes with bands of fossil dunes supporting forests and sandy grassland.

The delta attracted settlement from the Neolithic period onwards. Fishing remained the mainstay of the economy, together with the exportation of grain and timber to the southern cities of the Mediterranean. The natural wealth and geographical position gave the Danube Delta global importance as a gateway between the Mediterranean world and Northern and Eastern Europe. Large scale canalisation

The Danube Delta has the largest reed harvest in the world.



Ed Kashi/Corbis/Polloto



Arash Dejkam/IranPictures

The coastal plains along the Caspian Sea are mainly used for rice paddies.

work began in 1862 and intensified in the 20th century. Today, a third of the delta is devoted to crop cultivation, forest plantations and fish-farming.

In 1991, the site was added to the UNESCO World Heritage List for its natural resources.

14. South Caspian lowlands, Iran (1800 km²)

The site consists of extensive marshes and freshwater lakes, brackish lagoons, irrigation ponds and rice paddies, stretching over 700 km along the southern edge of the Caspian Sea.

The area has been urbanised for more than 5000 years. It was a significant trading centre and an important stage along the Silk Route, connecting the Far East to Europe. The ports in the area provide sea links to Iran's Caspian neighbours. The area has been extensively cultivated for millennia, as well as providing an important hunting and

fishing resource. In some areas, small ponds created especially for duck-trapping are a characteristic feature. Today, the area is one of the most densely populated in Iran, and a centre for tourism thanks to its cool climate and long, sandy beaches.

15. The Sundarbans, Bangladesh/India (2700 km²)

The site is part of the world's largest delta in the border area between Bangladesh and India. It comprises mangrove forest, deltaic islands, waterways and intertidal mud flats.

The Delta was occupied by fishing tribes until the 11th century. From 1200, dry land was converted to rice cultiva-

tion and the waterlogged forests retained as hunting parks for local kings. Today, the Sundarbans provide a livelihood for an estimated 300,000 people working variously as wood-cutters and fishermen during certain seasons. The latter come in their boats from as far away as Chittagong in Myanmar (Burma) and establish temporary encampments at various sites along the coast, where they remain until the approach of the monsoon season in April, upon which they return to their homes.

In 1997, part of the Sundarbans were added to the UNESCO World Heritage List for its outstanding natural resources.

Native fishermen in the Passur River framed by the largest mangrove forests in the world.



Sayamindu/Creative Commons

Comparison of Significance

Each site was scored according to seven criteria that emerged from the analysis of the cultural significance of the Wadden Sea Region:

1. Extent of the Cultural Landscape

Grading of significance: 1 < 200 km²; 2 = 200-2000 km²; 3 = 2000-10,000 km²; 4 >10,000 km².

The Wadden Sea Region is considerably larger than any of the other comparative sites. Together with its relative coherence this is an important factor in its international significance. By comparison the Sundarbans cover 2700 km² and the three UK sites, the Greater Thames Estuary, the Wash and Romney Marsh together cover an area only a fifth as big as the Wadden Sea Region.

2. Integrity

How whole or intact are the cultural heritage and its attributes, including the survival of physical features, relationships and dynamic functions?

Scoring: 1= Low; 2 = Medium; 3 = High; 4 = Exceptional.

As well as the Wadden Sea Region, seven sites all score highly on the basis of the integrity of their cultural landscape; that is, on how well the cultural heritage and its attributes survive.

3. Authenticity

How far the cultural landscape is truthfully and credibly expressed through a variety of attributes, including: form and design; materials; use and function; traditions; techniques

and management systems; location and setting; language and other forms of intangible heritage?

Scoring: 1= Low; 2 = Medium; 3 = High; 4 = Exceptional.

What makes the cultural heritage of the Wadden Sea Region special or authentic is the extent and completeness of the surviving cultural landscape, its long occupational history and its central position in the southern North Sea between two trading zones (the Baltic Sea and the Atlantic Ocean). In addition, most of the area has its own Frisian identity, reflected in language, customs and place names.

4. Archaeological and Documentary Evidence

How well is the cultural landscape understood? Are there surviving monuments and associated documentation? Has archaeological fieldwork/research been undertaken?

Scoring: 1= Low; 2 = Medium; 3 = High; 4 = Exceptional.

The village mound of Marsum in Fivelingo with the characteristic 'wheel formation' centered on the church.



Bert Nienhuis

Besides the Wadden Sea Region, eight sites have high levels of archaeological and documentary evidence. There are surviving archaeological deposits, features and monuments, ranging in date from the prehistoric period to the recent past. In some cases there are extraordinary levels of preservation because of the good conservation of archaeological sites and deposits beneath or within fresh water or marine environments.

5. Adaptation of the Natural Environment

Scoring: 1= Low; 2 = Medium; 3 = High; 4 = Exceptional.

Besides the Wadden Sea Region, eight sites score highly, demonstrating considerable modification of the landscape through water management methods such as canals, dykes and other forms of drainage and the modification of building and settlement construction methods to suit a flooding-prone landscape.

6. Time-depth

How old are the human elements of the landscape that reflect the processes of adaptation?

Scoring: 1= Evidence for human occupation is present and maybe quite early, but does not relate to adaptation of the landscape; 2 = Post-1500; 3 = pre-1500; 4 = Prehistoric.

Both the Wadden Sea and the South Caspian lowlands score high in this category. They both have long histories of human occupation, significantly in the context of water management for the purposes of agriculture and flood management.

The medieval town of Ribe, mound-located in the river delta, is still visibly connected with the uninhabited marshland and the Wadden Sea.

Jens Jørgensen



7. Associative Cultural Significance

What role does the cultural landscape play in the culture of the mind? Is it an area famous for its influence on artists or writers, noted for its beauty or familiarity or for its role in folklore or identity?

Scoring: 1 = Low; 2 = Medium; 3 = High; 4 = Exceptional.

Part of the cultural significance of the Wadden Sea Region and adjacent parts of the Netherlands is as the progenitor of land reclamation methodologies and technologies. The ex-

portation of these from the Dutch part of the Region to the rest of the world is evident. Many of the sites also played an important role within trading networks. The Wadden Sea Region provided access to the German interior through the Ems, Weser, Elbe and Eider rivers and the Hanseatic cities of Bremen and Hamburg, as well as markets around the North Sea and farther afield.

A World Class Cultural Landscape

The scoring of the Wadden Sea Region and the 15 comparative sites resulted in the following ranking:

Name	Country	Extent of cultural landscape	Integrity	Authenticity	Archaeological and documentary evidence	Adaptation of the natural landscape	Time-depth	Associative cultural significance	Total
Wadden Sea Region	Netherlands/ Germany/ Denmark	4	4	4	4	4	4	4	28
Po Delta	Italy	2	4	4	4	4	3	4	25
Baie du Mont Saint-Michel	France	2	4	4	4	2	3	4	23
Romney Marsh	UK	2	3	4	4	4	3	2	23
The Wash	UK	3	4	2	4	4	3	2	22
Greater Thames Estuary	UK	3	3	2	4	3	3	4	22
Neretva Delta	Croatia/Bosnia	1	4	3	4	4	2	3	21
South Caspian Lowlands	Iran	2	3	3	2	4	4	3	21
Curonian Spit	Lithuania/ Russia	2	2	3	4	4	2	4	21
Camargue	France	2	4	4	4	2	2	2	20
Danube Delta	Romania	3	3	3	3	2	2	4	20
Sundarbans	Bangladesh/ India	3	2	4	2	2	1	4	18
Cape Cod	USA	3	2	3	2	3	2	3	18
Essequibo	Guyana	3	2	2	2	4	2	1	16
Doñana National Park	Spain	2	4	4	2	1	1	2	16
Nova Scotia Dykelands	Canada	1	2	2	3	4	2	1	15

Influence on Rural Development Worldwide

The Wadden Sea Region features one of the most extensive, well-preserved cultural landscapes, much of which survives. Its history of reclamation and management is also much older than many comparable areas – indeed, we can see it as ancestral to many of the other comparative landscapes described here; this latter point is a particularly important element of its significance.

At first glance, the worldwide historical impact of the Wadden Sea Region is most easily seen in the engineering processes that have transformed the landscape. However, the extraordinary cultural importance of the Wadden Sea Region lies in the less immediately obvious effects on human consciousness. From this point of view, the water management techniques developed here can be compared with the development of mining techniques or the construction of railways.

The historical development and great success of water management techniques have had a major influence in transforming humanity's understanding of the relationship with the natural world in general and the sea in particular.

The wind pumps in Ballummarsken, erected in 1836, provided livestock with drinking water until the 1960s.

Hans Haage



THE WADDEN SEA REGION – PRESENT AND FUTURE



KG Ostfriesland Bild, Aurich

Nothing Is Certain But Change

As we have seen, changes to the cultural landscape of the Wadden Sea Region are nothing new. Transformation is an inherent feature of a history that dates from some 3000 years ago. The area and its culture have always been able to adapt to change, accommodate new developments and maintain their heritage. This very adaptability is what makes this area special and one of the oldest cultural landscapes in the world. In this landscape one can read how humankind has interacted with its environment, transforming it to what we see today. Today's landscape visibly reveals all the facets of this interaction, and is amazingly beautiful in terms of openness and design.

Since the EU's Common Agricultural Policy was adopted a generation or so ago, changes in farming have led to much more extensive, specialised farming, as well as introducing new crops and farming methods. Infrastructure projects and the expansion of urban areas have consumed substantial parts of the cultural landscape. Wind farms have changed the perception of one of the principal characteristics of this landscape; its openness and the way in which it offers an unlimited vista. Dredging may destroy the archaeological heritage buried in the Wadden Sea. The anticipated depopulation of many parts of the Wadden Sea Region in the future will represent a challenge not only to its social fabric but also to the maintenance of the landscape.

Meeting the Challenge Together

Maintaining this unique landscape as a cultural heritage for now and for generations to come requires the effort and commitment of governments, regional and local authorities together with local stakeholders and inhabitants.

Svend Tougaard



Modern tourist apartments on the island of Rømø.

We are in the fortunate position whereby the Lancewad Plan project has elaborated a draft strategy for how to maintain this landscape as a shared heritage, a living historic landscape, in an integrated way²⁾.

The trans-boundary cooperation across the Wadden Sea Region's cultural landscape of the Netherlands, Germany and Denmark occupies a very special position. Ultimately, the quality of this world class landscape depends upon the same approach to its maintenance and development, creating awareness of its unique values and engaging people. It is, therefore, immensely encouraging that, in the renewed *'Joint Declaration on the Protection of the Wadden Sea'* (2010), the governments of the three Wadden Sea countries agreed to maintaining the landscape and cultural heritage of the Wadden Sea Region an objective of their cooperation.

²⁾ The LancewadPlan Report can be downloaded: www.lancewadplan.org

Sharing Expertise across Borders

Moreover, the ministers declared that the perception of and identification with the Wadden Sea as a shared ecological and cultural heritage constitute an essential basis for its successful protection in the long term. This should be based on the establishment of a trilateral research platform encompassing an approach with a greater emphasis on cross-border work and an interdisciplinary philosophy.

The *'Integrated Research Agenda of the Wadden Academy'* (2009) identifies a range of research essential to understanding the cultural heritage of the Wadden Sea Region. It will be necessary to determine:

- What are the strengths and weaknesses of existing knowledge systems of cultural history? What measures lead to higher quality, more supervision and improved accessibility to information and knowledge? How can these knowledge systems help us to monitor the degradation of the Region's heritage?

- What best practices are suitable or should be developed for the preservation and meaningful development of the region's heritage in terms of archaeology, man-made landscape and built environment?

Answering these questions calls for an approach in which archaeology, socio-economic history, the history of ideas, cultural history, the economic sciences and historical anthropology each plays a part.

Best Monitored, Best Understood in the World

At the Wadden Academy, the aim is to develop the Wadden Sea Region as a generator of widely applicable, integrated knowledge of the sustainable development of a coastal area, in which natural and cultural values are a key element, forming the foundations of the local and regional economy. The Region is a place where scientists, administrators, policy makers and management agencies from the Netherlands and the other Wadden Sea countries meet. Together, they develop sustainable, innovative solutions based on interdisciplinary knowledge.

By 2020, the Wadden Sea Region will be the best monitored, best understood coastal system in the world.



Johannes Ey

Dyke profile of the 12th - 13th century in Otterndorf, Land Hadeln.





'... Living in huts built on the chosen spots, they seem like sailors in ships if water covers the surrounding country, but like shipwrecked people when the tide has withdrawn itself ... And these are the races which, if they were now conquered by the Roman nation, say that they will fall into slavery! It is only too true: destiny saves people as a punishment.'

Pliny the Elder (23-79 AD),
Roman Natural Philosopher and
Army Commander.

