



BIOSPHERE RESERVE NOMINATION FORM

[2016]

PART II

**Moen Biosphere Reserve
Application**

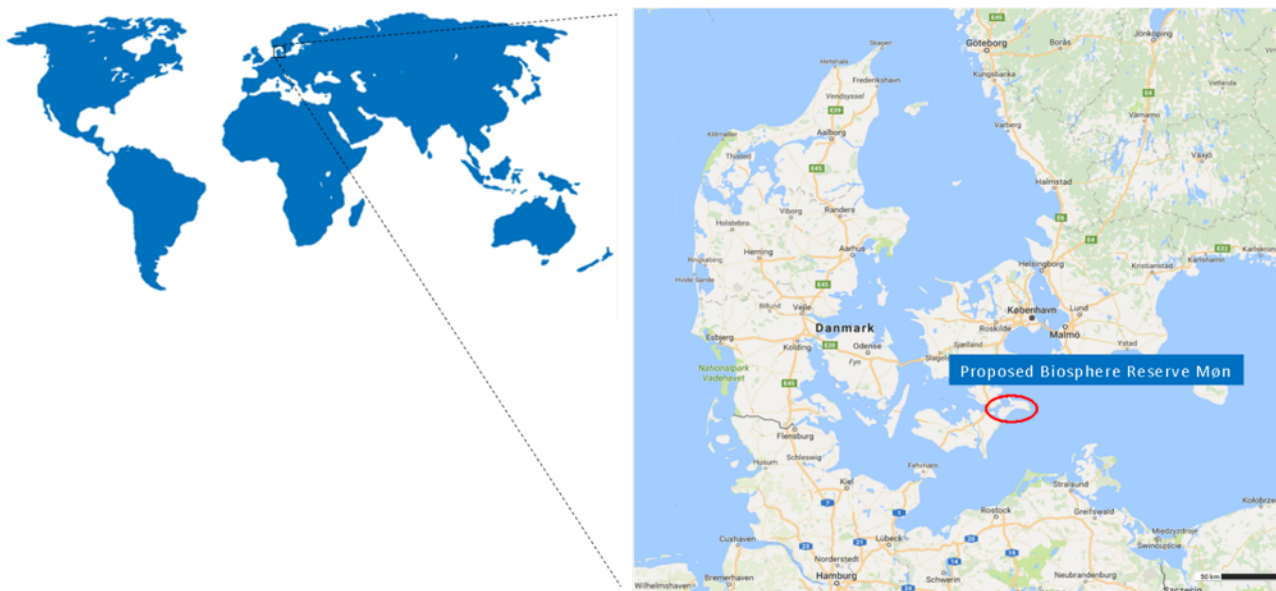
6. LOCATION (COORDINATES AND MAP(S))

6.1 Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84):

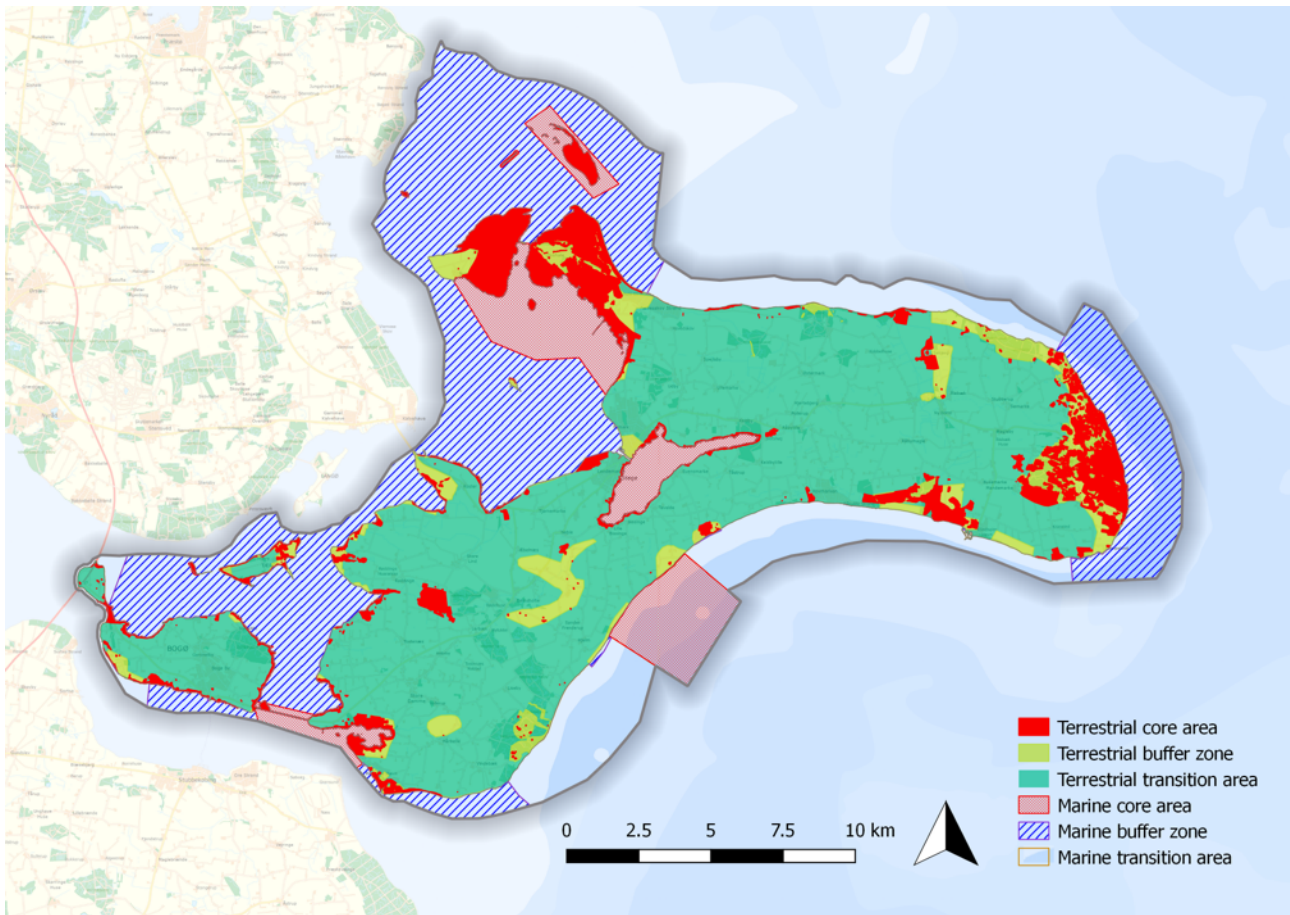
Cardinal points:	Latitude	Longitude
Most central point: <i>The main city Stege</i>	54°58'41" N	12°16'53" E
Northernmost point: <i>Bøgestrøm, northwest of the islet Små Ægholme</i>	55°06'50" N	12°11'34" E
Southernmost point: <i>Grønsund south of Møn</i>	54°52'20" N	12°10'45" E
Westernmost point: <i>Storstrømmen west of Farø</i>	54°57'02" N	11°58'52" E
Easternmost point: <i>The Baltic Sea (off Møns Klint)</i>	54°58'07" N	12°34'59" E

6.2 Maps

6.2 Location of the proposed biosphere area in a global setting:



7. AREA (see map in full size on page 96 and in the Appendix 9):



Total: (ha)

	Terrestrial (ha)	Marine (ha)	Total (ha)
7.1. Core Area	2,767	3,397	6,165 (13,6 %)
7.2. Buffer Zone	2,314	13,100	15,414 (34,2 %)
7.3. Transition Area	18,932	4,608	23,339 (52,2 %)
TOTAL:	24,013 (53,2%)	21,105 (48,6%)	45,118

7.4 Brief rationale of this zonation in terms of the respective functions of the biosphere reserve

The zonal subdivision in the biosphere candidate area is based on Danish environmental legislation and UNESCO's guidelines. During the process the candidate area has sparred with UNESCO's programme coordinator and with biosphere areas in Sweden. The zonal subdivision is a planning tool and does not in itself introduce any new restrictions, but can be used for making priorities of activities and identifying measures to be taken. The proposed Moen Biosphere Reserve and its zonation have been developed to support the three functions: conservation, development, and logistic support with a core area surrounded by a buffer zone, consistent with the requirements in the UNESCO Seville strategy which is a framework for the global network of biosphere reserves and the requirements outlined in the Madrid plan of action.

The zonal subdivision illustrates a landscape where areas of considerable natural value are located in areas with a cultural landscape, and together they form a mosaic of areas that inter-finger with each other. This is especially the case in the eastern part of the biosphere area. In the rest of the area the core areas define more or less continuous areas. They are almost always surrounded by a buffer zone, but not completely. This means that there is a basis for further development of the zonal subdivision that is not a static but rather a dynamic feature over the course of time. In some places the natural values in the biosphere candidate area are closely linked to human activity. It is the use by man of these areas that has created their natural values, and in order to maintain these values it is necessary that the areas continue to be grazed or mowed.

Inspired by the Swedish biosphere areas, Moen Biosphere Candidate wishes to work thematically with the topics water, land and also with the night sky. More than half of the area consists of water. It is therefore natural to focus on sustainable fishery where the centre of attention is on both local businesses and biodiversity, but also on the exploitation of a natural surplus in the form of detached eelgrass. The biosphere area also has many islands and their use will take their cultural history, biodiversity, livelihood and the environment into consideration. Some focus will also be given to vulnerable inhabitants in Vordingborg municipality. Finally, night darkness is a theme, implemented by a local project that is applying for international recognition as a Dark Sky Park/Dark Sky Community.

The core areas are protected by Danish environmental legislation and aim to maintain the natural and recreational values. Slightly more than half of the core areas consist of marine environments. Parts of the two reserves, Fanefjord-Grønsund Wildlife Reserve and Ulvshale-Nyord Wildlife Reserve, where the highest degree of attention is paid to wild life in the form of restricted access and severe limitations on other activities, belong to the core areas of the biosphere project and are both coincident with part of a large Natura 2000 area (N168): The sea and coast between Præstø Fjord and Grønsund. Other marine core areas comprise the two habitat areas that have also been nominated as Natura 2000 areas. One of these, Stege Nor (H179 and N180), has been selected because it belongs to the nature type "lagoon" that is an EU prioritized type of nature according to the habitat directive.

The other marine habitat area, Bøchers Grund (H208 and N208), belongs to the nature type "reef".



Stone is used as anchor for the common mussel

On land the core areas comprise the areas that are mapped as habitat-nature, i.e. nature that is covered by the Habitat directive appendix 1. This mainly comprises the nature types: open natural habitats and woodland; only a couple of areas are lakes. The core areas on land are also based on §3 registrations. This means that nature types like meadows, fens, heaths, small lakes and grassland that are protected by §3 concerning the protection of nature that lays down that no changes can be allowed to take place in the condition of these types of nature. The core areas on land overlap with parts of the five Natura 2000 areas that are included in the oval area of the biosphere territory.

There is considerable overlap between the different nominations. This means that, for example, two geological localities of international value, so-called Geosites, are coincident with the core areas. They are described in section 11.4.

Two core areas also overlap with the areas for which application for recognition by the International Dark Sky Association (IDA) is being made. These areas lie in the eastern part of the biosphere area on Høje Møn and on the island of Nyord.

The buffer areas surround or link the core areas and also involve both land and sea, but by far the greatest proportion is marine. The legal and administrative status of the buffer zones in both environments is based on the fact that they comprise the remaining parts of the Natura 2000 nominated areas in the biosphere territory that are not part of the core areas, together with the beach protection line and the lake and river/stream protection line. This means that consideration of nature and its sustainable usage are very important in the buffer areas.

The transition area in the candidate area is that part where the ecosystems can be considered and that also supports both economic and social sustainability. The terrestrial part of the transition area

comprises an area of cultural landscape with extensive agriculture that also contains considerable recreational and cultural historical values. In this area it is important to find a balance between, and integrate the aims for, the protection of nature, sustainable social and economic development and logistical support ("knowledge, learning and development"). It is in the transition area that locally based and long-term sustainable development will be promoted.

There are no other zonations in the area that overlap or are in conflict with the suggested zonal subdivision of the biosphere reserve.

8. BIOGEOGRAPHICAL REGION:

According to the Udvardy classification system the proposed biosphere reserve is located within the temperate broad-leaf forests or woodlands, and subpolar deciduous thickets.

In EU terminology the proposed biosphere reserve covers both the Continental (on land) and the Baltic region (at sea).

Yet another definition places Denmark in the zone of three biogeographic provinces, the Boreal (cold climate with coniferous forest), the Atlantic (humid climate with mild winters and cool summers) and the Continental (hot dry summers and cold winters).



9.1 Land use

Historical:

The centuries-old development as an arable farming community still characterizes the appearance of the landscape in the largest part of the proposed biosphere reserves transition area. The proximity to the sea has promoted fishing, shipping and trade, which have contributed to the creation of harbours and the market town Stege.

The ancient past approximately began when the first reindeer hunters came from 14.500 years ago to the Viking Age ends around 1060 A.D. The early period is well preserved in all three zones of the forthcoming biosphere reserve. The first use of land was as hunting ground, settlement and protection against enemies is marked by finds, remnants of ring-forts, burial mounds and stone settings.

From the Paleolithic Age Mesolithic, finds of small flint tools and bone tools are indicating that the island's inhabitants lived of hunting and fishing. The landscape was largely timbered with hazel and increasingly oak and alder. Human dwellings have been found along the eastern coast.

The Neolithic Age marks the beginning of livestock, and settlements began to spread around the islands. Flint axes were used and trading with flint, gold, copper and bronze took place. Larger tombs were built and used over longer periods of time. Thus enabled finds like flint axes and pottery shards.

Under the passage grave Klekkende Høj (dating back from the Neolithic period, 4000-1700 B.C.) plough traces from the neolithic Ard Plough were found, which unlike today's plough not turned, but broke up a narrow strip of the topsoil, which resulted in a shallow furrow, also known as drills, where seeds are placed.

In the forest Klinteskov over 100 burial mounds have been counted. Most of them are from the Bronze Age. Also here the remains of so-called high-backed fields are found, which bear traces of the medieval peasant's plough (wheel plough) and is yet another evidence of early settlement.

People sought refuge on Timmesø Bjerg. The hinterland of the cliffs, Høje Møn, was, because of the terrain and the free view over the sea, a good place to seek refuge in troubled times. On top of Timmesø Bjerg a stronghold remains, surrounded by steep slopes and ramparts.

The "Keldbyspanden" is a bucket made of bronze, found in 1827 near Keldby on Møn. The bronze bucket is dated back from the Pre-Roman Iron Age, 300 B.C. and was probably imported from Greece by the Black Sea colonies or perhaps from Macedonia. A second find is from the Viking Age, consisting of about 35 Arab silver coins and testifying travel and active trading.

The city plan of the market town Stege is dating back from the Middle Ages. This is noticed when walking by the distinctive preserved buildings, for example the city gate Mølleporten and ramparts, today laid out as a buffer zone for the core area Stege Nor. The Middle Ages was a rich period for Møn and the surrounding islands, because of the herring fishery in the sound. The herring was allocated to large herring markets in Skåne, and in 1268 Stege received its town charter.

The Skt. Hans Church dates at the year 1200 A.D. and about the same time the castle, Stegeborg was erected by the entrance to Stege Nor. Throughout the Middle Ages, the castle came to play an important role in the relationship with the Hanse capitals. Stegeborg was destroyed in 1534 and later demolished in the late 1700s.

Seven medieval churches on Møn has been conserved: Elmelunde, Bogø, Stege, Keldby, Borre, Magleby and Fanefjord. The churches are located in distinctive geographic locations: at natural harbours as Fanefjord, or they are elevated in the countryside so they could fulfil a function as a navigation mark like Elmelunde Church. The medieval Churches on Møn are often built in the direct neighbourhood of ancient past monuments, thus marking the transition to Christianity.

The churches are located in all three zones of the proposed biosphere reserve. Most villages are also believed to have been built in the Middle Ages, and in several cases, the medieval structure is still visible today. The village on Nyord, but also in Mandemarke and Elmelunde are extremely well preserved.

In the late 1700s, trade life on Møn flourished. There were built large trading houses in Stege and the Liselund Park was designed in the middle of the wild nature of the cliffs. In the islands, Bogø and Nyord, the wealth of the skippers and sailors is documented in the structure of buildings and harbour facilities. The harbours are located in the buffer zone, near the biosphere reserves core areas. The scenery is still shaped by this time. In addition to forests and manor estates are also many dikes seen in the landscape, e.g. forest dikes in Råby Oved Forest and Klinteskov.

In the 1860s, the spiritual awakening took hold. In 1878 Rødkilde Højskole was built and the first village hall on Møn was constructed in its garden. Dairy cooperatives were listed, and the agricultural, industrial and financial sector flourished. The population grew, and migration left its mark on society. In 1880, 149 of the 15.079 islanders immigrated to the New World. Large farms converted their production to sugar beets. In 1878, Klintholm Harbour became a port that exported goods from the Klintholm Manor House, and fish exporters opened at the harbour for seagoing fishing.

The production of sugar beets left its mark on Møn and the surrounding islands in the late 1800s. Beet cultivation became the foundation for Stege Sukkerfabrik, which was built in 1884 in Lendemarke, close to transport routes by land and sea. The previous "soil basins" of the former Stege sugar factory are today seen as a core area in the forthcoming Moen Biosphere Reserve. The soil basins have been transformed into a sub-urban recreation area, and they have become a retreat for waterfowl and amphibians. The area is carefully grazed in order to maintain the breeding and feeding areas.

The industrial production also included flint. The flint industry has left clear traces in the landscape. One part of the core area is the peninsula Ulvshale, where large areas of flint excavating took place. However, with time it became state ownership and natural areas with partly untouched forest, juniper, moors and tidal meadows were raised. At the same time, parts of cultural monuments from different periods are preserved, so it will be interesting in the coming biosphere project to connect the dissemination of natural and cultural heritage with the landscape.

Knowledge-based production has marked the small island Lindholm, which previously produced vaccine against FMD (Foot and Mouth Disease). Lindholm is located by Stege Bay and visible from both Møn and Kalvehave. On a clear day, a classic factory with chimney can be seen from Møn. From Zealand the island's vegetation is seen well. Since 1926, the Lindholm house has been the National Veterinary Research Station. The island is currently closed for visits but is expected to surpass in municipal ownership, when the research department moves to the capital Copenhagen in the coming years. Lindholm is located in the buffer zone N168.

Møns Klint was around 1900 a popular destination for the citizens of Copenhagen. In this period the first summerhouses in Ulvshale was built. The Moen Tourist Association is one of the oldest in Denmark. Steamships transported summer visitors from Copenhagen to Stege until Møn in 1943 became connected with Zealand, as the Queen Alexandrine Bridge was constructed.

Reduced demand for laborer in agriculture and fishing industry, meant fewer people in the countryside. Today it is a mostly knowledge-based society. It has become a characteristic of Møn that cultural traces of the old agricultural and industrial periods are preserved and used for new purposes in the knowledge society. The Moen Biosphere Reserve presents itself as a mosaic of core area, buffer and development zones, where each zone will both represent nature and cultural trails that will help the upcoming Biosphere Reserve to become an exciting development area with a diverse and vibrant community.

Life on the smaller islands

The islands Bogø and Nyord have each a village of the same name. Both islands represent spatially well-defined settlements; Nyord town is one of the few country villages in Denmark that not was separated during the land reforms for 200 years ago.

Nyord City is a close village, located on top of the island's moraine hill with clear external borders. Land and village constitute a well-preserved entity. It is known that already dating back to the 1500s the islanders could pilot ships through dangerous waters around the island, and in the end of 1700s the Noorboer got the right and duty to pilot. It was an occupation that complemented agriculture and fishery very well. In 1871 the forced piloting by the farmers was lifted, and as a result of that the pilot station was built, which today covers the smallest museum in Denmark. First in 1966 the piloting on Nyord was shut down.

The unique 8 square church is located to the middle of the village and was first completed in 1846, so previously the islanders had to sail toward Stege when going to church. It is characteristic on Nyord that traditions are kept alive. For example rings the bell by hand every morning and evening from the tiny belfry beside the church.

The bridge that connects Møn and Nyord was built in 1968. It created a convenient connection to Møn, but also depopulated the island. Today there are 41 residents on Nyord and many of the houses and farms are holiday homes. Nyord's fixed and leisure residents are very active in the islands social life. They take part in nature conservation, operate a fellow house, take care of the local history exhibition, the historical pilot lookout and the island's historic mailboat with 6 volunteer skippers, who carry cyclists, biking the route between Stege, Kalvehave and Nyord. Nyord counts approximately 160.000 visitors a year.

The island Bogø is related to shipping, which is clearly reflected in Bogø By, the small island capital. The town is located on the island's highest point, a North-South-bound ridge in the east. The main street follows the direction of the ridge and the cultural landscape is made up of this street. The street can be seen as a kind of timeline, and it connects Gammelby, the old part of the town, where the church is located in high north, with the port by the southern coast – this part of the town is called “Nyby”, new town, located around the Dutch windmill. Especially these districts contain the towns hinterland functions such as smaller shops and schools.

In between the new and the old are houses that tell about the town's maritime history: stately captain villas and small skipper houses - some with ship names on the facades and especially the venerable Navigation School. From the Bogø harbour the ferry, IDA is linking in extracurricular shuttle traffic Bogø and Møn with Falster. IDA carries every summer about 10.000 cyclists on the international Berlin-Copenhagen cycle route. The ferry, along with two other veteran ships are part of the so-called “sailing cycling paths” that links maritime cultural history with cycling on four Panorama Bike Routes on Møn and South Zealand. From Bogø a dam leads to the small island Farø, from where two bridges provide access to the international motorway between Fehmarn Bælt and the Øre Sound.

9.2 Who are the main users of the biosphere reserve

The terrestrial part of the proposed Moen Biosphere Reserve is partly public and partly privately owned. Grazing, as part of the conservation efforts constitute the use of the biggest part of both core- and the buffer zones. Several places are carried out by care activities in grazing associations or in cooperation between the Environmental Protection Agency and local farmers.

Some areas are completely closed to public access, such as the bird sanctuary on Nyord. Other places allow access to only recreational interested visitors. Møns Klint is the place on Møn with the largest visitor inflow. Several hundred thousand visitors enjoy the cliff and its surroundings each year. They are welcomed at the Geocenter Møns Klint, from where they can – using the path and stair systems – explore the whole area.

The Nature Agency, as authority and managers, has built a trail system through the area and control the usage and protection of the area and its species. This is supported by information campaigns, for example by using signs and flyers. Parts of the cliff, the forest and the High Møn, are part of the biosphere core area. Other parts belong to the buffer zones. In the adjacent transition area on Østmøn villages, a harbour, camping sites and conventional farming are dominating.

The second major core areas and buffer zones are located on Ulvshale peninsula and the island Nyord. The core areas consist for example of an untouched forest, where walking on trails is permitted. At Nyord meadows there is no access, except for ornithologists during bird census and for the care of the grazing cattle. The cattle are put out on the meadows from late May to late October. In the buffer zone a summerhouse area, a camping site and a popular bathing beach are located. Through out the areas, there is put an effort to reduce car traffic. Instead hiking, biking, sailing, kayaking or sail boating as well as transportation by the old mail boat, are suggested. On Ulvshale peninsula there live about 80 residents 'all year around, but during the summer holidays the number of guests in the summer cottages is increasing to about several thousands. At Nyord there are 41 permanent residents, and about 170 residents during the holidays. The traffic counter on Nyord Bridge measures in average 160.000 visitors on the island each summer.

Stege is the centre of business and trade life in the area, has got great historical values and is located in close neighbourhood to the core water areas Stege Nor and the Jordbassinerne (restored nature in the former soil cleaning basins of the sugar factory). The town with its 3000 inhabitants is visited by thousands of tourists during the summer season. Steges surrounding countryside belongs to the transition area.

Coasts, beaches and the water areas are mostly open and available. There is access allowed to almost all Danish coastlines all around the clock, and it is allowed get around by foot. The stays on the coasts are orderly regulated by the state. Parts of the coasts are reed-covered. Here is usually not permitted any human access, except a few places, where reed is harvested for thatched roofs, which is a traditional building style in Denmark.

Along the coasts of Møn, small commercial fisheries with pound nets are located. This kind of professional fishing is expected to cease in the coming years, as the owners of the personal permits retire. There are exhibited no new licenses for pound nets. It would be an obvious and exciting project in the coming biosphere reserve, to develop sustainable concepts for local commercial fisheries guaranteeing both the security of the local fish stocks and a number of local jobs in local commercial fishing.

The only commercial fishing port on Møn is Klintholm harbour. Since the construction in 1878 it has been a very active commercial and fishing port and very important for the development of the whole area. Especially with the expansion of the port with a new marina for yachts and the construction of a holiday resort with apartments in 1984, the ports importance to the livelihood has been emphasized, and the industries and tourism on East Møn has been strengthened. The harbour itself is a transition area. It is surrounded by buffer zone and core area. Klintholm harbour has about 200 permanent residents and receives up to 100.000 tourists a year. The marina offers space for 200 yachts.

Beside the leisure trolling fisheries from Klintholm Harbour, there is a part of leisure- and recreational fishing going on along the coasts of Møn and in the brackish watered areas. This refers to the Fishing Zealand project, which is involved in several of the key development projects on water, including regulation of leisure and fishing.

The largest parts of the land surface on Møn is described as transition area. Here lay roads, towns and villages, smaller industrial and larger farming areas. At the same time a great number of the tourists are spread over summer cottages, hotels, B&Bs and camping sites in the transition area. One industrial production is located in Stege. In the larger countryside towns services and small productions can be found.

9.3 The rules (including customary or traditional) of land use in and access to each zone of the biosphere reserve

Core area, terrestrial

There is continuously found traces of agriculture from the Stone Age to present time. In some areas there are traces of the application of industrial raw material, such as the flint industry or gravel pits. Møns Klint lime was professionally shipped from Klintholm harbour for several years. Preservation of ancient monuments have retained large parts of the coastal landscapes of the future biosphere reserve and led to a change in the use of landscapes and resources toward residential use, volunteer activities and tourism.

The protection on land. In 1982 Klintholm Manor sold the Cliff Møns Klint with a fraction of Klinteskov, Jydelejet and Høvblege, totalling approximately 440 hectares to the state. The entire cliff and nature areas behind it were protected in 1983. The majority of the peninsula Ulvshale is preserved (629 hectares), and only a few holiday home areas are like islands in the protected landscape. The preservation has been implemented over the course of five times, and by the fifth preservation also included some of the coastal areas south of Ulvshale. On the island of Nyord 478 hectares is preserved in 1975, and it is only the Nyord village and cemetery that are not included in this listing. The Bird Protection Fund under the Danish Ornithological Society owns almost half of the 400 hectares of tidal meadows in Nyord. Since 1971 the Foundation implements nature care activities and grazing in order to ensure saving and enriching the bird life on the meadow as much possible.

Large areas of both Ulvshale and Nyord are maintained, so they do not overgrow. The meadows north of the Ulvshale forest grazes permanently so the waders find good breeding conditions. The same occurs in the salt marshes on Nyord where grazing only takes place during the summer. Larger areas of the small heath of Ulvshale has been cleared for trees and shrubs several times, so the landscape has become more open. For some years sheep have been kept here to keep the vegetation down.

Ulvshale and Nyord are located in a Ramsar area and EF bird protection area. The surrounding waters are wildlife reserves. Local development plans, carried out by the Municipality of Vordingborg and Nature Management plans, carried out by the Nature Agency Storstroem ensure that the restoration of existing property and new construction is carried out in accordance with the preservation.

Core areas, marine, by the example of Bøchers Grund in Hjelm Bugt. Many rocks of varying sizes, completely overgrown by mussels characterize the Bøchers Grund. This Natura 2000 area is located outside the municipal borders but within the water level area of the main water catchment 2.6 Baltic Sea.

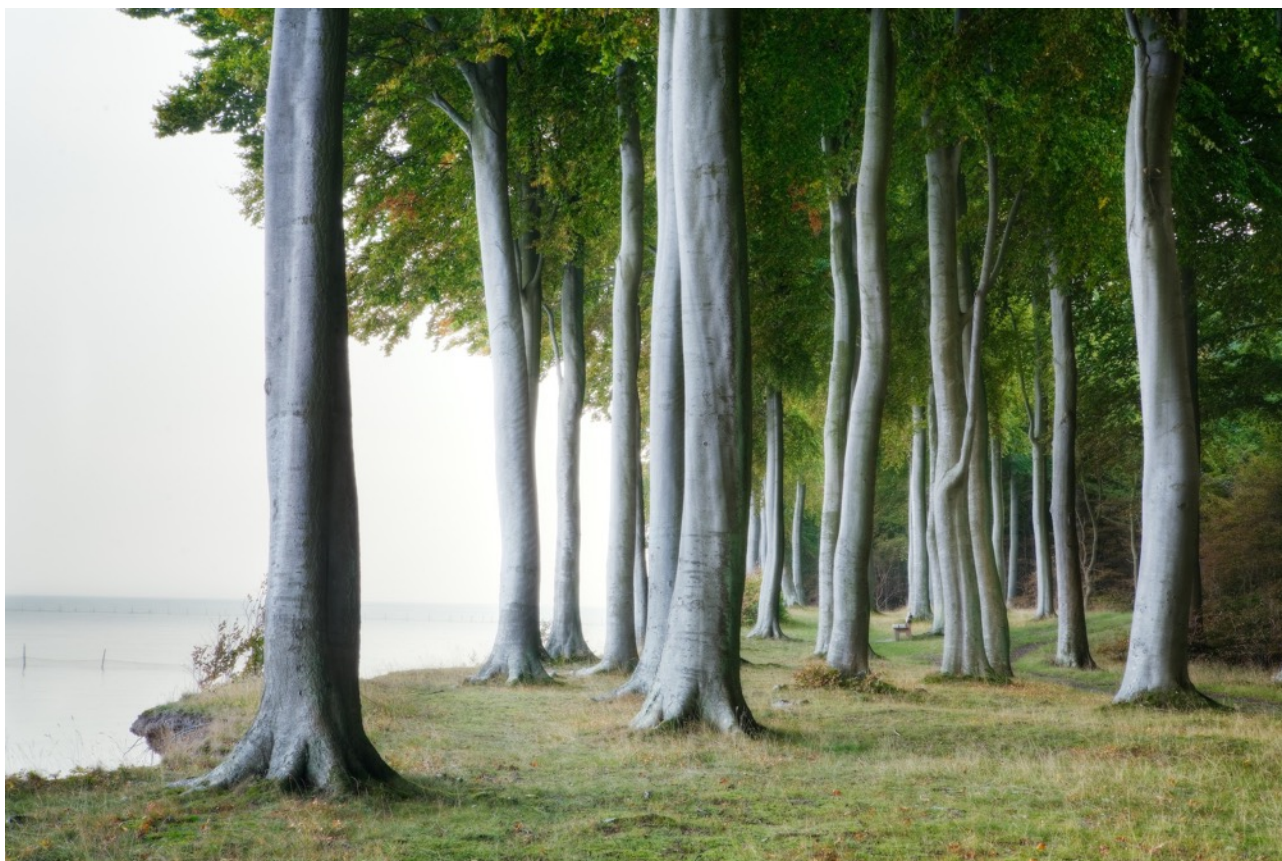
Fishing with trawl may have a negative affect on the aquatic vegetation and wildlife, especially on hard substrates like rock and bubbling reefs. Similarly, net fishing poses a threat to birds and marine mammals due to by catching. Because of the action plan from the Natura 2000 plan of the Ministry of Food and Environment, fishing in habitats like stone- and bubbling reefs is regulated where necessary, on appointment basis.

Danish fishing vessels over 12 meters long are monitored via the so-called Vessel Monitoring System (VMS), which is a satellite-based monitoring system where vessel location, direction of travel and speed are registered once per hour. Another group of Danish fishermen catch a high portion of fish using pelagic trawls.

These fishing methods are not assessed to have the same impact on habitat and species. In a 2010 statement the DTU Aqua estimated, that around 87% of fishing vessels, fishing with trawl have VMS on board, while only about 33% of boats that use net fishing is VMS monitored. These numbers will be a little different today, where boats beginning at 12m are also monitored. VMS data does not show the area's fishing pressure from foreign fishermen, but since the area is located close to the danish coast fishing, fishing only is registered from Danish vessels. The Ministry of Food and Environment/ Danish Nature Agency has the power to impose fishing regulations, if it is needed in terms of adequate protection and securing of the area. In the area commercial and recreational fishing does occur, including with net. Pr. September 1st 2013 the Ministry of Food and Environment introduced fishing regulation, which no longer permits the exercise of fishing with trawl the entire area. Order no. 1048/2013.

Prohibition of exploiting reefs. With the change of the Danish Mineral Resources were stone fishing activities finally banned by January 1st, 2010. This also closed Daneflint A/S, which in recent years had dug flint from the seabed of Grønsund, which water flow and waves have transported here and also had created the “pyntens” beach ridge landscape. Past intense flint digging has transformed the landscape, so that it today appears with water-filled holes and marshes. They are overgrown with bulrush, willow and birch, surrounded by areas of grass and a little heather.

Buffer zone - on land: By an example of the coastline and Fanefjord Forestry and recreation. Fanefjord Forest is a very special forest - not only because it is located right up against the coast, but also because the forest is a common forest. The forest is divided into shares and owned by people in the parish. It is part of the fringe of beech forest that grows right up against the coast on South Møn. The coastline is included as buffer zone in the proposed biosphere reserve. Selective felling and natural regeneration now run the forest. This gives the forest its special open light and slightly wild character, and along with the proximity to the coast makes the forest a very unique experience. The principle of self-rejuvenation made Fanefjord Forest and its Ranger Mr. Haase nationally known. The forest and beach have also complemented each other in addition to the purely recreational area. The area called “Slotshaven” was known for its very high beech trees in the past and more of these



beech trees served as beacons. Four beeches were protected in 1885. But even preservation could not save them from decay. Only the remnants of a single fallen beech remains in the Slotshaven. Between here and Fanefjord Forest wedges an open piece on land with some smaller houses and farms and separates the forest from the sea.

The Beach Protection Act. In 1994 the Danish parliament decided to extend the Nature Conservation Act Beach Protection Act and Dune Preservation Zone from 100 to 300 m. The main aim is a better protection of the open and in particular the pristine coastline. The Beach Protection Act relates to coastal agriculture, forestry, residential and leisure purposes.

Transition zone Intensively cultivated areas characterize the inland of the biosphere candidate area. Here Vordingborg Municipality local planning and environmental approvals are authority and governs the use of the areas. This applies to commercial, residential, roads, agriculture and all forms of environmental approvals.



9.4 Women's and men's different levels of access to and control over resources.

Although women and men in many ways have reached certain equality in Denmark, there are still some differences. In some places, men still have the dominant role, but then again in other areas, women are about to overtake, for example in the education system. Gender-segregated tables on 'statistikbanken.dk' analyse the development concerning the equality between men and women and focus on gender differences in the Danish society. In an international context the Danish employment rate is high, and compared with EU27 – Danish women have got the third highest rate of employment, while men have got the fifth highest. Danish women are above average for the EU27, when it comes to the proportion of part-time workers. The Danish unemployment is below average for both men and women in the EU27. In Denmark, and on the proposed Moen Biosphere Reserve, men and women have the same access to school, education and to the labour market. But there is in the area observed a lack of educational opportunities and jobs, which is due to the decrease of the traditional jobs in for example agriculture, fishing and manufacturing. This leads to migration of especially the younger generation. The biosphere project can contribute with two elements: cooperation with educational institutions regarding qualifying of education, new jobs in e.g. nature conservation, dissemination and guiding, local production and eco tourism services. This will hopefully have a positive impact on relocation and help to reduce the emigration of the young generation. Education and jobs, which focus on digital media and access to the Internet, can generally strengthen the population on the rural areas. The biosphere project has already started to develop concepts for new educations of nature rangers, star guides, angling guides and diving instructors. Partly this is incorporated into two new EU projects, which deal with the Baltic Sea as a habitat and eco tourism.

10. HUMAN POPULATION OF PROPOSED BIOSPHERE RESERVE:

The approximate number of people living within the proposed biosphere reserve is about 10.000. The cottage owners and tourists represent a seasonal growth of population with about 350.000 overnight stays, spread over relatively few weeks a year. Most between the 24'th of June and the 13th of August, about the same time as the danish school summer holidays.

	Permanently	Seasonally
10.1 Core Area(s)	0	0
10.2 Buffer Zone(s)	about 500	about 2000 summerhouse owners
10.3 Transition Area(s)	about 10.250	about 350.000 overnight stays

10.4 The local communities living within or near the proposed biosphere reserve.

The proposed Moen Biosphere Reserve is characterized by a number of small villages in the countryside, and scattered farms, which were relocated in the extension of the rural-reform for about 200 years ago. Most relevant residential areas, beside the market town Stege, are in Klintholm harbour on East Møn, Borre and Keldby along the main road 'Klintevej', Damme/ Askeby on West Moen, Bogø and Nyord, as small Island town-centres.

The eastern part of Møn is clearly marked by the elimination of the traditional jobs in one of the former largest fishing ports of the region and the elimination of jobs in agriculture, trade and crafts. The migration of a part of the population and thus empty houses, are the most visible consequences. On the other hand in this area tourism and recreation potentials can be developed, as for example in the Klintholm Harbour.

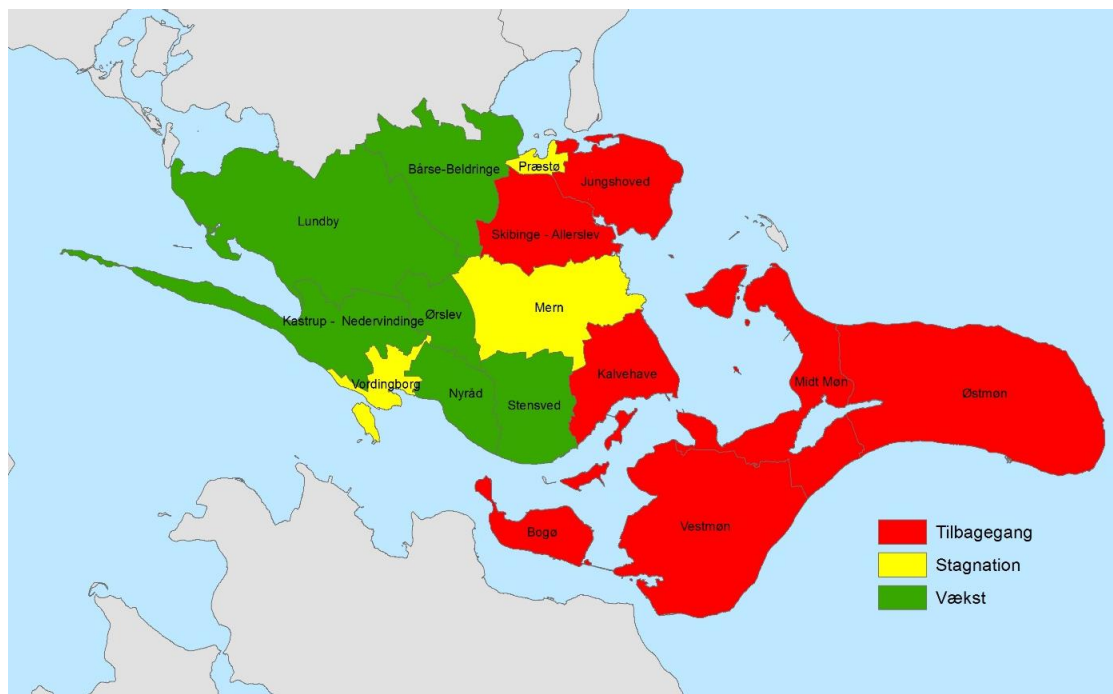
Bogø and West Møn measure less migration and a little better conditions because of their close connection to the motorway. Commuting between a job in one of the bigger cities of the region and quite affordable living close to nature on the coast are especially interesting for families with children and naturelovers.

The area called Midtmøn contains of both the city of Stege and the surrounding countryside, inclusive the island of Nyord in the north west. The comparatively high migration rate can be partly explained by the changing stock of jobs in manufacturing companies and the public sector in the area of the city. In the countryside there are only very few jobs in agriculture. The biggest potential is also here in tourism. The new hiking and cycling trails and the “sailing cycling trails” between Møn and South Zealand are connecting the different experiences of the area. Small tourism enterprises like B&B, farmshops and café are beginning to bloom between the south and north coast.

The latest population figure from the Denmark Statistics (last measured in January 1st 2016) shows a population in Vordingborg Municipality of 45.806 people in total. Towards 2029 we expect an increase of the population in the municipality on about 12 inhabitants, corresponding to an increase of 0.03%, over a period of 13 years. The expected progress is measured without the possible improvements from being a biosphere area.

The red color on the following map marks the 10 local areas in Vordingborg Municipality with expected population decline; included here the 4 local council areas in the proposed biosphere reserve:

- Bogø: - 89 residents (-3,2%)
- Midtmøn (Stege and surroundings): -328 residents (-6,5 %)
- Vestmøn: - 154 residents (-6,7 %)
- Østmøn: - 389 residents (-19%)



Red color: expected population decline, yellow: stagnation / green: growth

The largest population decline is expected in the eastern part of the proposed biosphere reserve.

10.5 Name(s) of the major settlement(s) within and near the proposed biosphere reserve with reference to the map (section 6.2): Stege

10.6 Cultural significance:

Humans settled on Møn, when the first reindeer hunters came for about 14.500 years ago. The proposed biosphere areas ancient period is documented by a little less than 1500 registered archaeological monuments, hereof 800 burial mounds. In the Stone Age Hegnede, south of Ulvshale, was Moens northern most point. At several places along the northern part of Hegnede, where once the shoreline ran, were settlements found from this period. The high part of Møn was a good place to seek refuge in troubled times. On top of the Timmesø hills, there are still the remains of a stronghold, surrounded by steep slopes and embankments. Besides that, the surrounding is marked by the waters proximity.

Because of the herring fishery in the Baltic, the Middle Ages were a rich period on Møn and the surrounding islands. In Skanör there is a known record from 1494, which shows that 149 out of 434 Danish herring stalls, were owned by the people on Møn. During the 1500's though, the herring fishing had a downfall and the people lost the foundation for its earnings.

Seven medieval churches have been well conserved. Elmelunde church is the oldest stone church on Møn. The preserved Bronze Age mound in the cemetery east of the church speaks for that the place from the earliest times has been a centre of pagan worships. A Christian wooden church has, after the Christianization, replaced a suspected cult site. The Reformation transformed the Catholic churches, and the walls with the beautiful murals were whitewashed. Today the Reformatory Danish National Church is the state church.

Most villages are also believed to have their roots in the Middle Ages, and in several cases, the medieval structure is seen today as well – extremely well preserved on Nyord.

The nobles in the Middle Age owned the islands, however in 1572-1631 by exchange of property the crown took ownership, thus the island became suitable for administrative and financial experiments. In 1664-84 Møn was pledged to the Dutch tycoon Gabriel Marselis, and in 1685-97 the island was used as the deployment for the Royal Horse Guards, whose brutal leader Samuel Christoph von Plessen (16-1704) at the same time was the islands prefect.

In 1769 Møn was sold by the crown at a major auction, by which the establishment of three large manors took place: Marienborg, Nordfeldt and Klintholm, and two small manors: Liselund and Ålebækgård. These new manors land were laid out on the peasants former grasslands, and on selected village fields. In addition, two estates were formed. The farmers bought the estates themselves and operated jointly. Throughout Europe, where there previously were 'soil-communities', a replacement of agricultural land was carried out, as a key part of rural reforms that radically changed the old society. In 1771 the replacement began and in the middle of 1800 the peasants were all independent.

In the 1860's a so-called cooperative movement occurred. The Rødkilde Folk High School was built, and Møn's first village hall was founded in 1878. There were dairy cooperatives and the agricultural, industrial and financial sectors flourished. The population grew, and the migration left its mark on the society. In 1880, 149 of the 15079 resident of Møn immigrated to the new world. Large farms converted their production to sugar beets. In 1878 Klintholm Harbour was built as port for Klintholm manor.

The sugar beet production left its mark on Møn and the other islands, in the late 1800's. The beet production set the foundation for Stege sugar factory. The animal production industry did also progress at that time. New farm installations were built in the landscape, like industrial facilities and dairy cooperatives for the processing of agricultural products. The construction systems were built in solid materials and with great spaciousness and can therefore be used today. The industrial

production did also include digging of flint.

A merger in 1968 of the Bøgo Parish, Fanefjord Parish, Damsholte Parish, Keldby Parish, Elmelunde Parish, Borre Parish, Magleby Parish and Stege Parish created the Municipality of Møn. Stege was the new Municipality's capital. The area of the upcoming biosphere lies within the boundaries of the former Municipality of Møn. In 2007 Møn merged with Præstø, Langebæk and Vordingborg, and became the Municipality of Vordingborg, who is the stakeholder of the biosphere project.

The population in the aspiring biosphere area is today broadly composed of both the indigenous people of Møn, newcomers from the rest of Denmark and the EU countries, and a smaller proportion of citizens from non-western countries. The Ministry of Children, Education and Gender Equality publishes, in cooperation with the Immigration service and Denmark statistics, "Figures and Facts of immigration matters". Facts and figures for the Municipality of Vordingborg show that the number of immigrants and descendants of non-western origin, in January 2016 were constituted for 3.6 % of the population. This is equivalent to 1.649 people. The statistics do not show, though, how many of them are living in the future biosphere area. The three largest non-western countries are: Syria (20.8%), Iraq (9%) and Turkey (8.4%)

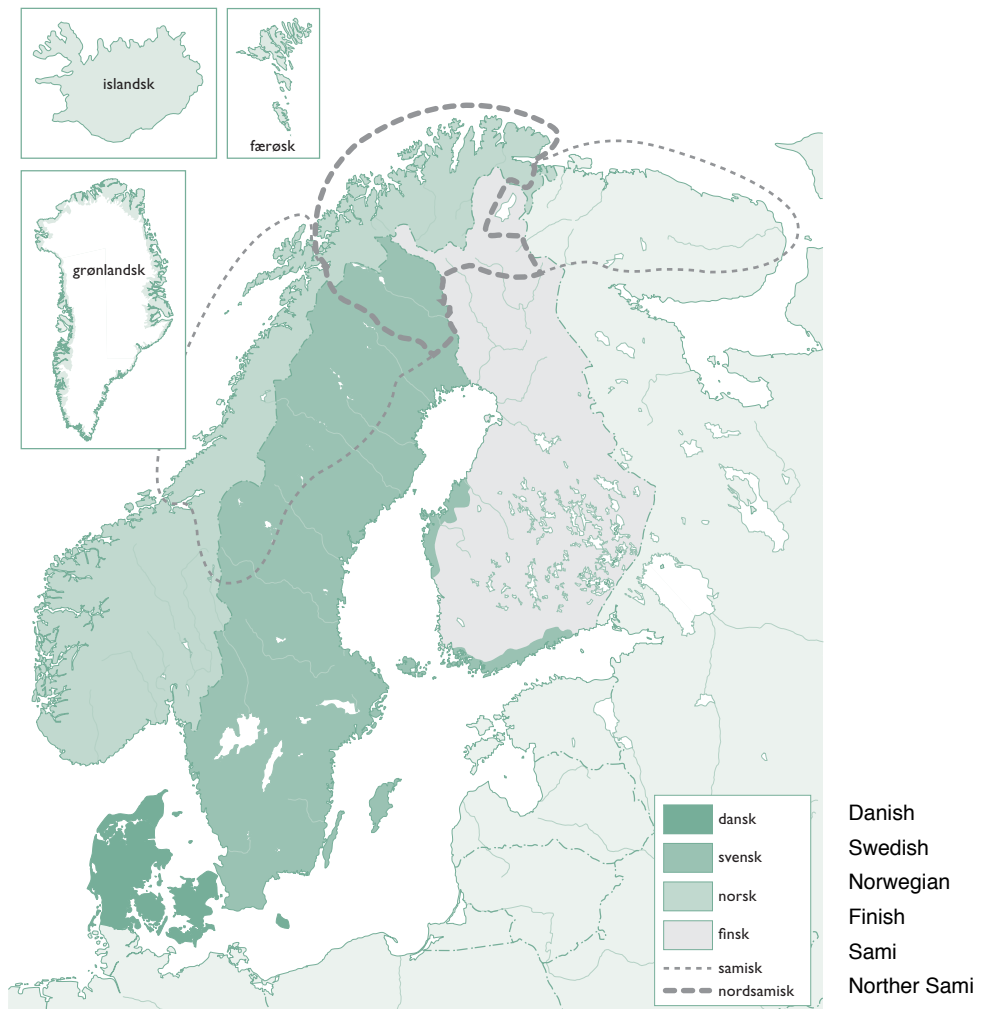
Politically, the proposed biosphere reserve in the Municipality of Vordingborg will be a part of the Danish state, which is a parliamentary, representative-democratic, constitutional monarchy, where the Prime Minister is head of the government and elected in a multiparty system. The government and the Danish parliament, the 'Folketing', exercise the executive power. The Municipality of Vordingborg's Council consists of members who are elected for the period of the 1st January 2014 to 31st December 2017. The mayor, elected in the same period, is at the head of the political leadership.



The neolithic long barrow Grønsalen and in the background the Fanefjord Church.

10.7 The numbers of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve.

The Danish language. In the Nordic countries both closely related languages and languages belonging to completely different families exist. The political-geographical area called the Nordic region, stretches from Greenland to the west of Iceland and the Faroe Islands to Finland in the east - with Denmark, Norway and Sweden in between. Within this large area multiple languages are spoken, some of which have a common origin where others do not, see the following figure:



Figur 1: Norden – geografisk område og traditionelle sprog

Figur 1: The Northern Area - geographical area and traditional languages.

It is therefore important to distinguish between the Nordic languages, which is a common name for the North Germanic subgroup of the Indo-European family: Danish, Swedish, Norwegian, Faroese and Icelandic. The Nordic languages also include languages both from the Uralic language family: Sami and Finnish and from the Eskimo-Aleutian family: Greenlandic.

Same source reports that 5.3 million people speak Danish as their mother tongue.

The local dialects in Scandinavia constitute a dialect continuum. When traveling south from Finnmark in Norway through Norway, Sweden and Denmark to South Jutland or westward from Österbotten in Finland through Norrland in Sweden to the west coast of Norway, the neighbouring dialects are mutually intelligible.

But what languages are native in Denmark? According ethnologue.com, the answer is eight languages, of which one is extinct.

No. one is Danish, the most common language in Denmark. The citizens of the Danish Realm in the north speak Greenlandic and Faroese. The German minority in South Jutland speaks German, and then there is the Danish sign language.

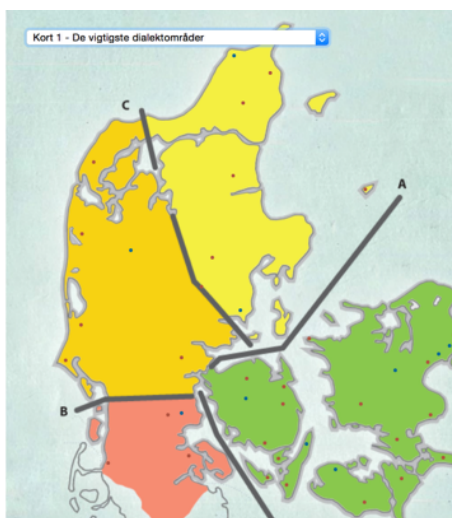
The sixth living language is Jutlandic. Mikkel Wallentin, associate professor of cognitive science and semiotics at the Department of Communication and Culture, University of Aarhus, has mainly studied how the brain works with language comprehension. He argues: "The western and southern dialects are so different from standard-Danish that many from the eastern islands have difficulties to understand them. So, based on the assumption of internal intelligibility, they can be considered different languages. "

According to the same source, Bornholmsk is in the same family of languages as Swedish.

The eighth and extinct language was Danish as the Romanies spoke. There have been Romanies in Denmark since the early 1500s and until the mid-1900s, and a part of them spoke the language called Traveller's Danish, a form of mixture between Danish and Romany. Since the mid-1950s, it has not been possible to find someone who spoke Traveller's Danish.

Danish dialect researchers differentiate between five dialects. Mønsk is one of Zealandic dialects and the forthcoming Moen Biosphere Reserve has at least three different dialects: nyordsk, vestmønsk and østmønsk.

In the Danish dialect research no one mentioned the Nyord dialect. The islands dialects are overall categorized as "islands tongues". The closest one can get is to decide whether Noorboerne spoke more Zealandic than moenski, if the latter it would only be categorized as east or west moenski. This has been researched and published by the University of Copenhagen's on www.dialekt.dk.



Ellen and William Houman from Nyord insist that Nyordsk is not Zealandic. The language tone is more melodic as in the Southern Fyn Archipelago, while many words are East- Mønski or close to it. However, they believe that there are also quite a few words that are specific to Nyord, and that the pronunciation also contains differences, for example Nyordsk does not have the nasal sound as mønski example "e spåing stråingsan" (a bucket beach sand) and the soft "d" is not pronounced in Nyordsk but becomes ij or -ier and on East Møn dialect to -e"-

11. BIOPHYSICAL CHARACTERISTICS

11.1 General description of site characteristics and topography of area

The biosphere candidate area consists of a series of islands and islets in a shallow sea. The terrestrial part of the area can be characterised as consisting of two overriding topographic units. A north-south moraine ridge, Høje Møn (High Møn), extends as a 4-5 km wide belt with individual hills that in the most easterly 2-3 km rise to over 100 m above sea level; Aborrebjerg reaches 142 m. The hills, together with small lakes, sinkholes and gullies give a landscape with considerable relief that developed as a result of dissolution of the underlying chalk by percolating rain water. This ridge is followed by an area with more moderate hills (up to 50 m a.s.l.) before the area slopes gently down to the Borre depression that terminates the Høje Møn area to the west. This depression used to be an arm of a fjord that has been dammed. The eastern boundary of the elevated area with high relief is formed by the cliffs at Møns Klint. These cliffs are one of Denmark's greatest features of natural beauty and have an iconic status for Danish landscape. It is only on Møn that the underlying chalk that has been thrust up in such remarkable sheets can be seen. Møns Klint is built up of resistant sheets of chalk that are separated by vegetated gullies and depressions. These wooded and/or grassy areas consist of deposits from the last ice age; they are locally known as "fald" (fall) areas. The up-thrusted sheets of chalk and the intervening "fald" areas can be followed along the coast for approx. 10 km.

West of Høje Møn is a moraine landscape typical of the eastern part of Denmark with a series of small landscape features that were all formed by the action of glaciers. Elongate terminal moraines, that do not approach the same height as the ridge at Høje Møn, give way to the west to a landscape with many small, gentle hills. This moraine landscape is cut by a series of valleys that presumably were formed under the most recent glaciers as tunnel valleys.



Typical landscape in the western part of the proposed biosphere reserve.

Elevated sea floor and beach ridges comprise characteristic landscape features. A combination of the isostatic rise of the land in post-glacial times and the marine erosion and transport of sediments from the coast further east has constructed the landscape around Ulvshale and Nyord. Most of the area consists of tidal meadows that are periodically inundated by the sea. Since the last ice released its grip on the area, post-glacial processes have modelled the landscape in the candidate area – and continue to do so.

With a total of 185 km of coastline in the biosphere area, it is clear that the coast plays an important role as an integral part of the area where land and sea meet. The coast varies from high cliffs to low sandy and stony beaches, from erosional coasts in the east to depositional stretches and the lobate fjords in the west. Post-glacial landscape-forming processes are very obvious here, with erosion of the cliffs and the development of spits and beach ridges.

The sea surrounding the biosphere area varies from brackish water in Stege Nord and Stege Bugt, to the salt water of the Baltic Sea in Fakse Bugt and Hjelm Bugt. The marine part of the biosphere candidate area includes nature types loastal lagoon (an EU priority nature type) and stone reef as well as a series of features like mudflats and sand flats that are exposed at low tide. The southern part of Grønsund forms a funnel-shaped area of the sea in which there is a submarine delta. This delta was formed by currents that developed as a result of the difference in water level between the Baltic Sea and the Kattegat/North Sea due to the pressure of westerly winds.

The marine part of the biosphere area can also be characterized as consisting of shallow areas to the west where depths are commonly between 2 and 6 m with local deeper channels, and deeper waters to the east where the Baltic Sea rapidly reaches depths of up to 22 m within the boundary of the proposed biosphere area.



The submarine delta in Grønsund sound.

11.2 Altitudinal range

11.2.1 Highest elevation above sea level: is 142 metres at Aborrebjerg (hill), Høje Møn. Older topographic maps indicate the height to 143 meters.

11.2.2 Lowest elevation above sea level: is at the coast, i.e. 0 metres.

11.2.3 For coastal/marine areas, maximum depth below mean sea level: The Natura 2000 area: Klinteskov and Klinteskov Kalkgrund (N 171) defines the eastern boundary of the proposed biosphere reserve and the depth of water in the NW part of this area is between 21-22 meters. There are no factual measurements in the area.

11.3 Climate

Köppen's climate classification system places the Møn biosphere area on the boundary between a warm temperate oceanic coastal climate (Cfb) and a cold temperate humid continental climate (Dfb). It is influenced by the proximity of both the Baltic Sea to the east and the North Sea to the west.

Because the biosphere area is quite small as regards climatic areas, it is placed in a Danish climatic context below.

The fact that Denmark is located between sea and continent means that the weather is very changeable. Denmark is in a belt with dominant westerly winds and is characterized by fronts and changeable weather, but it is also on the margin of the European continent where winters are cold and summers are warm. Compared with other geographical areas that lie on the same latitude, Denmark has a relatively warm climate. This is due to the Gulf Stream that has its source in the tropical sea off the eastern coast of USA. For example, Denmark lies on the same latitude as Hudson Bay in Canada and Siberia in Russia where the short summers and cold winters mean that these areas are almost uninhabitable.

Denmark has a coastal climate with mild, damp weather in the winter and cool, unstable weather in the summer. The average temperature does not vary much throughout the year. There are, however, regional differences and the biosphere area is located in a part of the country with low precipitation and more hours of sunshine compared to the rest of Denmark.

The following is based on Climatological Standard Normals from the Danish Meteorological Institute, 1961-90.

11.3.1 Average temperature of the warmest month: 16.2 °C (August)

11.3.2 Average temperature of the coldest month: 0.2 °C (February)

11.3.3 Mean annual precipitation: 580 mm (recorded at an elevation of 15 metres asl.)

11.3.4 A meteorological station in or near the proposed biosphere reserve

The climate station which has supplied the above data, is outside the candidate area on the island Falster just on the other side of Grønsund. Næsgaard measuring station no. 31290 has coordinates (datum WGS84): 54 ° 52 'North and 12 ° 7' East and has been operating during the period 1960-1990.

Today, the following two monitoring stations are in operation, both within the Biosphere Reserve: Vindebæk kyst (coast) (Measuring Station no. 06147). The station has been in operation since 2006 and has the following coordinates: 54°52'44,3391 "(N), 12°11'3,0186" (E). Level is 3 meters asl. Borre (Measuring Station no. 05986). The station has been in operation since 2012 and has the following coordinates: 54°59'46,7078 "(N), 12°26'38,2665" (E). Level is 2 meters asl. Parameters available from DMI from these observation sites are: Borre observation site: precipitation. Vindebæk kyst observation site: air temperature, humidity, wind, air pressure, precipitation, visibility and weather.

11.4 Geology, geomorphology, soils:

Geological setting

The Danish area is located in the margin of the northwest European sedimentary basin that is separated from the Scandinavian basement by the Fennoscandian Marginal Zone. This marginal zone runs from Skagerrak and Vendsyssel (northern Jutland), southeast through the Kattegat and Skåne to Bornholm and makes up the north-western part of an old fracture zone, the Tornquist zone, that continues southeast towards the Black Sea.

A ridge with elevated basement, the Ringkøbing-Fyn High, stretches from Møn in the east, westwards to the Central Trough in the North Sea and separates two extensional basins in the North Sea basin: the North German Basin in the south and the Danish-Norwegian Basin in the north. Basement rocks occur at a depth of about 1 km on top of the ridge and, by comparison, at a depth of about 10 km in the middle of the Danish Basin.

Rocks older than Cretaceous can today only be seen at the surface in the extreme east on the island of Bornholm that is a horst which was elevated in the Fennoscandian Marginal Zone. The geology of the rest of Denmark is characterised by Cretaceous and the Cenozoic sediments. Quaternary deposits and landscapes formed during the Quaternary glacial and inter-glacial periods comprise the youngest geological formations.

The proposed biosphere reserve area, and especially Møns Klint (Klint = Cliff), was one of the first geological objects to be described in Denmark; the earliest are from the middle 1500's. This presentation of the geology of Møn is based on published work by Peter Gravesen, Michael Houmark-Nielsen and Per Smed, as well as on personal communications with Michael Houmark-Nielsen, Natural History Museum, Copenhagen University, Denmark.

Geological periods in the biosphere candidate area

Quaternary

The Quaternary sediments were partly deposited in connection with glacial advances, and partly during ice-free periods when the climate and vegetation was similar to that on Iceland or in northern Scandinavia today. There are also local marine deposits from the last inter-glacial period.

During the Middle and Late Weichselian ice age, glacial advances from several directions covered Møn and the surrounding area and largely created the landscape that we see today. The area also has remnants of older, rather indistinct glacial landscape forms that have been overprinted by the younger landscapes. Depressions in the terrain, that are now occupied by lakes or bogs, represent kettle holes or sinkholes, while some were formed by river erosion in late-glacial or early post-glacial times. During the recent part of the Holocene, coastal processes continue to degrade the glacial landscape and form erosional cliffs, spits, beach ridges and other coastal features.

The final glacial advance in Late Weichselian times particularly influenced the oldest part of the landscape during its melting phase. About 20.000 years ago, the ice margin melted back towards the northeast and left a belt of dead ice in front of it, as well as a cover of till enriched in glacial erratics from Central Sweden. A glacial re-advance resulted in the formation high, elongate ridges orientated northwest-southeast consisting of folded and up-thrust sheets of Quaternary and Cretaceous sediments.

During the following Young Baltic glaciation about 18.000 years ago, the area was influenced by glaciers for the last time and extensive terminal moraines were formed in the eastern part of Møn. Their internal structure, that consists of more than 25 up-thrust steep sheets of chalk and Quaternary deposits, can be examined along the cliff at Møns Klint. This is one of the reasons for this locality being nominated as an internationally important site, a Geosite, as explained in more detail below.

Chalk

The chalk Pre-Quaternary surface is located deep under the present surface, about 30-40 m below sea level. The chalk was deposited in late Cretaceous times, a bit more than 60 million years ago. This in situ chalk does not appear to have been disturbed by folding or faulting. The reason that we can see the chalk at the surface today is the action of glacial tectonics that thrust sheets of chalk and Quaternary deposits up to the surface to be visible in the cliff today.

During the Cretaceous the Danish Basin was subjected to a rise in sea level and a general sinking in the North Sea area. In the late Cretaceous the coastline moved towards the northeast, and over the Scandinavian foreland up to 2000 m of pure limestone (chalk) were deposited in the Danish area. In the Møn area, however, the thickness of the chalk is much less, about 500 m, because of its location near the Ringkøbing-Fyn High. Calcareous ooze, consisting mainly of microscopic calcareous algae, was deposited on the floor of a shallow tropical sea. This sea extended from the Scandinavian basement in the east to England in the west (where it is important in, for example the Brighton and Lewes Downs Biosphere Reserve).

Post-glacial

The Danish landscape has also been influenced by processes that took place after the cold climate of the last ice age was replaced by warmer conditions that continue today. The post-glacial rise in sea level that culminated about 8.000 years ago considerably influenced the landscape, particularly in areas near the coast. In the biosphere candidate area the sea has eroded the east-facing coasts and transported material to the west where it has been deposited to form spits and beach ridges that contribute to the development of new land. On average about 2-4 m of the cliff at Møns Klint disappear each year, mostly as landslides as a result of frost-thaw conditions in the early spring when the water saturation of the Quaternary deposits in the cliff is particularly high. The fallen material is worked by waves and is transported by coastal currents that can turn white because of the suspended chalk.

Rocks/Deposits

As it emerged in the previous section, the geological deposits in the area are separated by a hiatus of about 60 million years, from late Cretaceous to late Weichselian. This means that deposits from almost all of the Cenozoic that must have been deposited, have been removed by erosion. This erosion took place during uplift that preceded the Quaternary ice ages. Between the glacial deposits there are periglacial deposits with frost-cracked stones, reworked *Cyprina* shells and involutions that bear witness to the action of permafrost. In the arctic lake sediments there are remains of lemmings and low-arctic vegetation that indicate the climatic conditions during the ice-free intervals.

The following significant Quaternary rocks and deposits are present in the area:

Saalian till

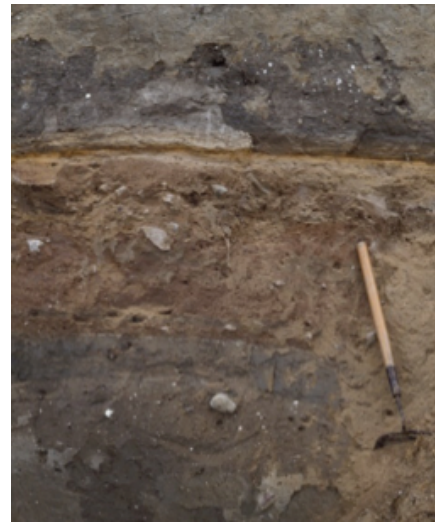
This till from the end of the next-to-last ice age, the Saalian (150.000 – 128.000 years ago) appears grey and has a content of stones that, apart from chalk and flint, consist of Palaeozoic rock fragments from the Baltic area.

Cyprina Clay

Marine clay with a minor content of sand and silt was deposited during the rise in sea level in the Eemian inter-glacial. This clay is found on many of the cliffs at Møn. The content of foraminifera, as well as mussels and snails, show that the clay was deposited in a shallow sound near the coast similar to, or slightly warmer than, the present coast-near environment. The *Cyprina* Clay contains a rich fauna including ocean quahog, sand gaper, tower shell, blue mussel and common cockle.

Ristinge till

The Ristinge till was deposited by a glacial advance that took place about 55.000 years ago. This till contains many erratics of Palaeozoic sandstone and limestone from the floor of the Baltic Sea and the Åland Islands, as well as many blocks of red-violet sandstone. The till is commonly quite thin and poor in fragments of chalk and flint, even though it rests directly on the chalk in many places. It locally contains reworked fragments of mussels and snails from the Eemian deposits. The Ristinge till is grey, but at some localities there are red-violet stripes that are derived from broken fragments of red-violet sandstone.



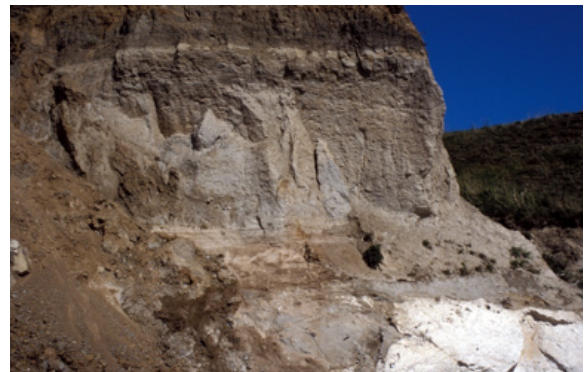
Ristinge till.

Klintholm till

The Klintholm till is a pale grey unit that overlies the Ristinge till in the cliffs in eastern Møn. Erratics from the Dalarna and eastern Småland areas in Sweden dominate, while material from the Åland Islands is absent.

Lake sediments

Above the Klintholm till there is a grey-brown, sand- and clay-rich layer with plant and animal remains that was deposited in a lake during a low-arctic period in later Middle Weichselian times. The age of these deposits implies that the Klintholm till was deposited by a glacial advance that took place some time before the coldest period in Late Weichselian times; it is probably between 35.000 and 30.000 years old.



Klintholm till covered by arctic lake

Midtdanske till

A till with erratic blocks from Sweden that was deposited by glaciers advancing from the northeast overlies the Klintholm or Ristinge till in many places. This till is massive and has a grey colour, often with a greenish tinge. It is locally more than 5 m thick and can contain irregular wedges of sand or slices and fragments of chalk.

Young Baltic tills

'Young Baltic' tills overlie the Midtdanske till as an independent unit, separated from it by a layer of melt water deposits or by a sharp boundary that represents the old land surface. During the intervening ice-free period there must have been permafrost in many places. The Young Baltic Advance took place between 18.000 and 16.000 years ago. The tills are both brownish and contain blocks from the Baltic area. There are local reddish stripes that are derived from broken sandstone fragments.



The cliff at Tøvelde with the three youngest till deposits.



Hvideklint cliff with sheets of chalk thrust into place by glaciers from the northeast.

Chalk and fossils

The chalk is a fine-grained, soft rock that dominantly consists of microscopic remains of shells of single-celled algae, so-called coccoliths, that lived in the chalk sea. Horizons of flint occur at regular intervals up through the chalk. The chalk and flint are the oldest rocks in the area. Slices of chalk have been detached from the solid chalk basement by advancing glaciers during the last ice age and thrust them up to their present positions. The chalk is locally very rich in fossils of, for example, sea urchins, belemnites and sponges, as well as teeth from Mosasaurs and ammonites.

Flint

Flint occurs as benches and lenses in the Danish chalk, as can be seen in the cliffs at Møns Klint. As the cliff is eroded the sediments slide into the sea; the chalk is washed away, leaving the flint behind. Sea currents transport the flint westwards along the coast of Møn, during which process the fragments become rounded. On Ulvshale there is a series of beach ridges that consist dominantly of rounded flint pebbles.

Rounded flint pebbles only occur at a few places worldwide, one of which is in the biosphere candidate area. They were previously used in crushing mills in the cement industry, but have now been replaced by steel balls. For the production of white cement (used, for example, for the white stripes on roads), round flint pebbles are still used in the crushing process.



Old postcard from the local history archives showing the flint-quarrying on Ulvshale. Date unknown.

Glacial erratics

It would seem unlikely that Denmark is well-suited for the study of "hard" rocks, but there are few places in the world that have such a variety of rock types as a Danish beach. The stones on the beaches have been washed out of tills in coastal cliffs that were transported here during several glacial advances and came across a large portion of the Scandinavian mountains, the floor and coastal regions of the Baltic Sea, as well as southwest Finland. They contribute to our understanding of the transport directions of glaciers, and sometimes it is possible to identify the source location within a small area. Some of the larger erratic blocks in Denmark were extensively used as monoliths in the construction of pre-historic graves.



Concerning the erratics in general, we can only be sure that they come from the Scandinavian Peninsula. Precise identification of the source location is only possible in a few cases. The largest erratics in Denmark have always been of interest, and many of them are associated with legends and supernatural powers.

There is a large erratic block on a slope west of Lillehøj at Stege Nor (called "Sagnsten" or "The stone of legends": picture on right) of which it was once said "the small children are fetched from here". This block, which weighs about 70 tons, is preserved.



Top: Stone og legends at Stege Nor.
Bottom: Svantestenen at Møns Klint.

Another large erratic block, Svantestenen, is located on one of the highest points above the Møns Klint cliff. It has scratches and grooves that are said to be made by the “trolls nails”. Cosmogenic radionuclide dating of Svantestenen gives a maximum age for the formation of Møns Klint as 21-19.000 years ago.

Landscapes/Geotopes

The candidate area has several so-called geotopes – delimited areas with special geological qualities. The section below is a summary of a report that describes the geotopes in the area. The report was written in connection with an earlier national park project on Møn. The variation in the types of geotopes indicates the great geological diversity in the area.

Terminal moraines

Terminal moraines form in front of glaciers where the advancing ice bulldozes material up into elongate ridges. The form and location of these terminal moraine ridges therefore reflect the location of the ice front at a particular time. The terminal moraines on Møn are interpreted as having formed in front of the two youngest glacial advances in the last ice age: the Northeast Ice and the Young Baltic Advance. Terminal moraines often contain sheets of older material that the glacier has thrust up from the sub-surface. On Møn many of the terminal moraines contain sheets of chalk, as can so spectacularly be seen in the Møns Klint cliff with the more than 100 m-large sheets of chalk and Quaternary deposits. Terminal moraine landscapes commonly have an overprint of dead ice landscape. This develops when masses of dead ice are left behind when the main glacier melts back. When the dead ice melts it leaves a landscape with small hills (kames) and depressions with no natural drainage (kettle holes). This geotope occurs at, for example, Høje Møn, the Busemark area, Råbymagle, Elmelunde, Hegnede Bakke, Udby-Keldbymagle, south of Stege Nor and Hjelm Nakke.

Other moraine landscapes

Other moraine landscapes comprise undulating moraine surfaces, landscapes with small, rounded hills, large sloping terrain surfaces etc. All of these landscapes were formed underneath a glacier. A landscape with small hills and depressions with no natural drainage indicates, however, that part of the landscape was affected by dead ice. The moraine surfaces are generally covered by Young Baltic till, and their most recent features were formed by this glacial advance, even though there may be several earlier moraine landscapes buried below the surface. This geotope occurs at, for example, Borrelavningen, Elmelunde, Hjelm Nakke and Nyord.

Melt water sand

Areas of melt water sand appear to be an integral part of the moraine surfaces, but the surface consists of melt water sand. In some cases the sand is older melt water sand that has been overrun by younger glaciers that left little or no moraine clay. Alternatively the sand can represent younger melt water deposits that typically were deposited by flowing melt water under the ice (in a tunnel valley) or at the ice front. This geotope occurs at, for example, Møns lighthouse and Borgbjerg.

Kames and hat-shaped hills

Kames are formed in a depression in front of a glacier when gravel and sand are deposited from the glacial melt water. They commonly have quite steep sides and flat tops. Hat-shaped hills are formed in the same way as kames, but differ from these in that they have been overrun by a glacier that has disturbed and folded the layers of sand and gravel, and given the hill its hat-shape. The over-riding glacier has commonly deposited a thin cover of moraine clay on top of the sand and gravel. Kames do not have this veneer of moraine clay and consist entirely of sand and gravel. This geotope occurs at, for example, Ørkensbanke, Gunildsbjerg, Egebjerg and Præstebjerg.

Eskers

Eskers are elongate ridges of sand and gravel. An esker forms when melt water from a glacier deposits sand and gravel in channels and tunnels on or under the ice. Eskers are commonly located in or near tunnel valleys (that are also formed by melt water flowing under a glacier). An esker often consists of a series of elongate hills “esker-pearls”. This geotope occurs at Råbylille.

Larger valleys and lowland areas

Valleys in the candidate area form a large inter-connected system that can be followed into the sea. They are believed to have a long and complicated mode of formation. They may have been formed under the ice as tunnel valleys or as melt water valleys – or as a combination. Melt water valleys form when melt water rivers cut down into the surface in front of a melting glacier. Tunnel valleys commonly have steep sides and an uneven floor with depressions separated by thresholds. The valleys may also have been deepened by glacial erosion. Large portions of the valleys on and around Møn became fjords when sea level rose after the last ice age. When these fjord arms became isolated from the sea they developed into lakes and boggy areas. These depressions have therefore had a complex history of development and contain a sequence of marine deposits, lake deposits and bogs that have formed since the last ice age.

There are also extensive depressions in the terrain where there have been lakes or bogs since the end of the last ice age where sand and “soft” deposits of, for example, clay – sometimes rich in organic material - and peat have been deposited. Larger valleys occur at, for example, Borrelavningen, Busemarke Mose/Råby Sø, Maglemose and in the Klosterskovgård area. Low-lying areas occur at, for example, Langemose, Keldbylille, Oddermose, Kraneled and Busene Have.

Marine surfaces

Marine surfaces are areas that were covered by the sea after the last ice age but today are land areas, either because the land has been elevated, or because marine deposition has built the surface up above present sea level. On Møn, where there has only been slight elevation of the land, it has been the latter process that has dominantly constructed the marine surfaces. They can be formed in a high-energy environment dominated by wind, currents and waves, or in sheltered environments under calmer conditions. Beach ridges are formed in high-energy environments when storm waves throw stones and gravel up onto the beach. This geotope occurs at, for example, Nyord, Tyreholm and Klyholm, Ulvshale-Nyord, the north coast of Møn and Stege Nor.

Sand dunes

Dunes form when sand that is transported by the wind is deposited and forms hills. When dunes wander they can leave a layer of sand behind. An area identified as “wind-blown sand” therefore does not necessarily have sand dunes on the surface. Sand dunes on Møn were formed after the last ice age and are located close to beach areas where sand is abundant. This geotope occurs at, for example, Ulvshale, Pumping Station, Klintholm harbour and Råbylille beach.

Coastal cliffs

Coastal cliffs are sections that the sea has carved in the landscape that make it possible to study the internal structure of the landscape. Amongst the cliffs on Møn, those at Møns Klint are exceptional, but the cliffs around Klintholm harbour and in the bay of Hjelm Bugt are significant for the understanding of geological events in Denmark during the last ice age.

This geotope occurs at, for example, Stubberup Have/Pomlerende, Møns Klint, Kraneled, Borgbjerg and Kobbeldgård and Hjelm Bugt.

Geological designations

The Biosphere candidate area contains a considerable amount of exiting geology that is of interest from the local level to the international level. Protection of the landscape in Denmark used to be entirely by preservation. Today areas of geological interest are also protected by the Planning Act which stipulates that the municipalities must maintain landscapes and geological localities and areas. As a basis for safeguarding geological interests 197 National Geological Interest Areas (NGI), 99 National Coastal landscapes (NK) and 38 Geosites (GS) have been designated.

NGI: Areas of The National Geological Interest are national designations from 1984. The areas are significant for research and education, but also for tourism and raw material investigations. These designations were made to ensure that national geological values were given a high priority in planning of the open landscape and that the conditions of the localities were monitored on a regular basis and that necessary maintenance was performed.

NK: The National Coastal Landscapes are national designations from 2004 that take care of the geology, geomorphology and dynamics of the coastal landscape. The nominations serve to emphasize the variety of processes that, since the last ice age, have formed the great diversity of Danish coastal landscapes.

GS: Geosites is the term used for geological localities of international interest to geoscience that represent key steps in the evolution of Earth history. There are 38 Geosites in Denmark that cover 12 themes. The two Geosites in the candidate biosphere area provide significant information on both the deformational effects of glaciers on the landscape, and climatic evolution during and after the last ice age.

The geological designations in the proposed biosphere reserve are listed in appendix 3.

11.5 Bioclimatic zone:

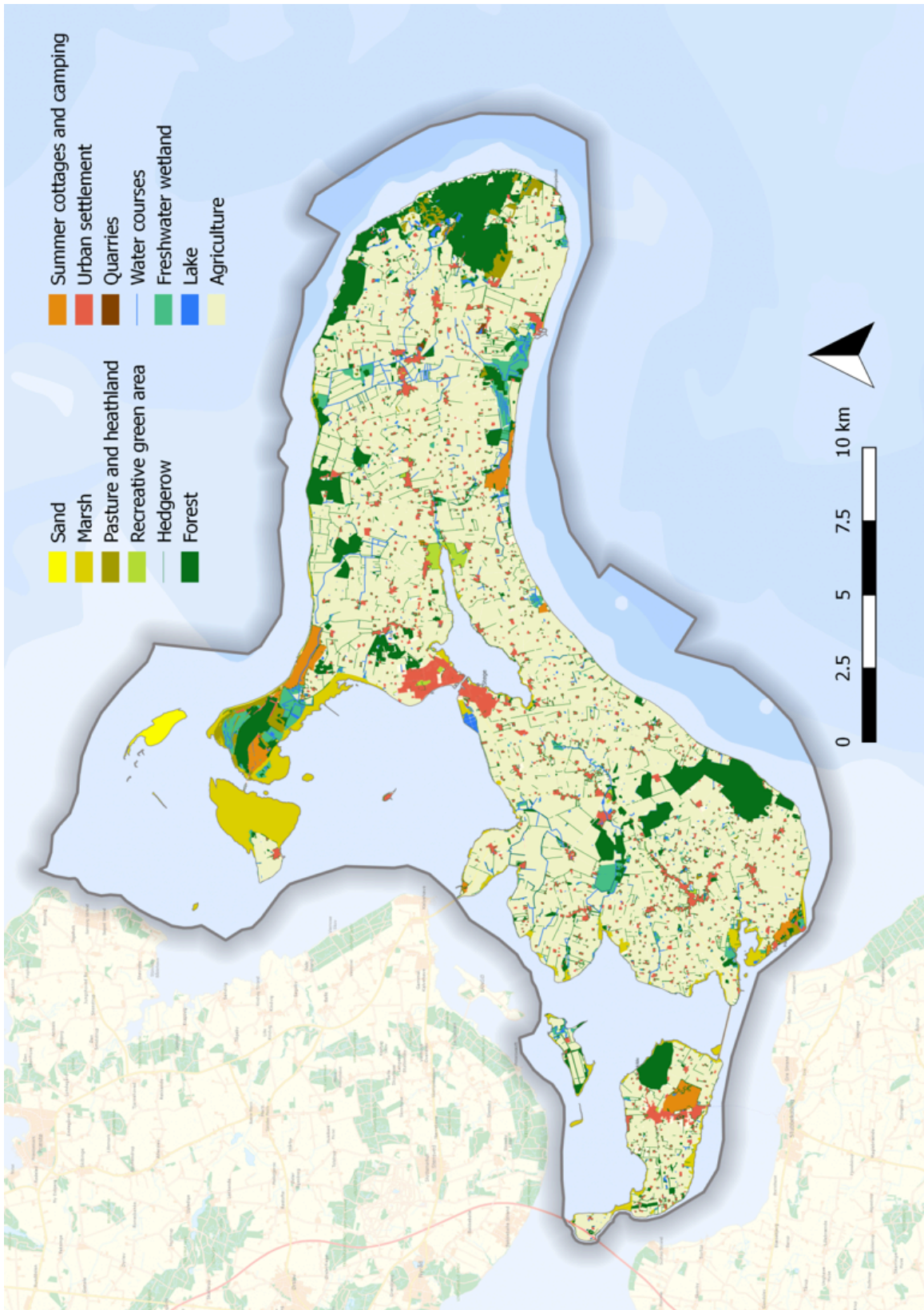
The proposed biosphere reserve has a relatively homogeneous climate and there is no distinction between the different zones.

Areas	Average annual rainfall/mm	Aridity index		Core area(s)	Buffer zone(s)	Transition area(s)
		Penman	(UNEP index)			
Hyper-arid	P<100	<0.05	<0.05			
Arid	100-400	0.05-0.28	0.05-0.20			
Semi-arid	400-600	0.28-0.43	0.21-0.50			
Dry Sub-humid	600-800	0.43-0.60	0.51-0.65	✓	✓	✓
Moist Sub-humid	800-1200	0.60-0.90	>0.65			
Per-humid	P>1200	>0.90				

Table 1: Aridity index resulting from the use of P/ETP

Mean annual precipitation (P)/mean annual potential evapotranspiration (ETP)

Biosphere Land Use Map



11.6 Biological characteristics:

The main habitat types

Seven main types of habitats and land cover occur in the proposed Biosphere Reserve, as follows:

1. Forest, woodland and scrub (on chalk and on beach ridges)
2. Grassland (marsh, heath and meadows)
3. Agricultural land
4. Built-up area
5. Freshwater wetland
6. Coastal area
7. Marine area (brackish and salt water)

11.6.1 Forest, woodland and scrub (on chalk and on beach ridges)

DISTRIBUTION: Local

Forests are the habitat for the richest wildlife in Denmark, supporting a very high diversity of native species among plants and animals. This also counts for this area as demonstrated by the figures in section 4.2 showing areas of bioscore coinciding with forest habitat. Two major forest areas which are unique in each their way describe this habitat type in the proposed biosphere area: "Klinteskov" and "Ulvshaleskov". They are both covered by the Natura 2000 network by lying within SAC. Klinteskov (H 150) has a wooded area of 700 hectares, "Havet og kysten mellem Præstø Fjord og Grønsund" (The sea and the coast between Præstø Fjord and Grønsund) (H 147) where forest constitute 902 ha.

11.6.1.1 Characteristic species

Klinteskov houses some of the oldest beech trees in Denmark where several of them are over 400 years old. Some of the trees have leaves of distinctive bright green color throughout the season. This is because the trees are growing on the up-thrusted sheets of chalk. The limestone keeps on important substances such as iron and manganese and causes the leaves to remain pale green. In many places, forests are characterized as natural (undisturbed) forest. Klinteskov is the most important site in Denmark for the habitat type: Medio-European limestone beech forests of the Cephalanthero-Fagion. The forest floor is marked by a special flora that grows on chalk including different orchid species.

Ulvshaleskov is an ancient species-rich forest that is different from other forests as it grows on the beach ridges and low dunes. The trees grow slowly because the soil is so depleted in nutrients. Ulvshaleskov holds many different species. Oak is the most common species but also small-leaved lime (*Tilia cordata*) and the rare wild service tree (*Sorbus torminalis*) are characteristic. The forest is managed as untouched forest, which means there are many dead and fallen trees. The many kinds of trees and the dead wood gives life for many species, and therefore Ulvshaleskov are also the host for rare fungi and insects such as respectively *Holwaya mucida* and the moth Dark Crimson Underwing (*Catocala sponsa*). Klinteskov is place of growth for at least 22 very rare fungi that has less than 10 Danish findings. In the forests live several different species of bats and in the scrublands breed the red-backed shrike (*Lanius collurio*).

11.6.1.2 Important natural processes and human impacts

Originally, most of Denmark was covered by forest migrated after the ice age had loosened its grip, but after centuries of uncontrolled logging and clearing for agriculture, forests covered only 2-3 percent of Denmark in the early 1800th. Since the first The Danish Forest Act was enacted in 1805, it

has been forbidden to clear the forest in Denmark, and since then a lot of work have been done to plant new forest in Denmark. The total forest area has therefore increased considerably, and it is still growing. At the same time there is a general trend towards more natural forest/more undisturbed forest at least on state-owned areas.

11.6.2 Grassland (marsh, heath and meadows)

DISTRIBUTION: Local (grassland on chalk) / Regional (salt marsh, heath, meadows)

Marsh, heath and meadows are mostly distributed in scattered small areas throughout the proposed biosphere reserve. Besides the forests the grassland in form of marshes (salt marshes) holds the richest wildlife habitats, supporting a very high diversity of species. The high biodiversity is principally a result of many centuries of sustained management by people, dating back to some of the earliest woodland clearance by ancient human populations. Nyord Enge represents the largest coastal marsh area in eastern Denmark but must in a national and global scale be recognized as regional.

Two of the most outstanding areas of dry grassland on chalk occur in the Klinteskov area on Høje Møn; Høvblege and Jydelejet which must be considered as of local distribution.

Grassland as larger occurrences is also found in the coastal areas on the islands of Bogø and Tærø and along the coastal lagoon Stege Nor among others.

11.6.2.1 Characteristic species

Many of the characteristic species living on the calcareous grasslands from Høje Møn area are generally known. The Red Listed butterfly, Large Blue (*Maculinea arion*), whose life cycle is adapted to grasslands habitat, has its only remaining Danish breeding population on Høvblege. The area is Denmark's main orchid locality with 18 recorded species, one of these occurs only here in Denmark, Pyramidal Orchid (*Anacamptis pyramidalis*). The grassland on Nyord is an important breeding area for ruff (*Philomachus pugnax*), dunlin (*Calidris alpina schinzii*) and pied avocet (*Recurvirostra avosetta*).

11.6.2.2 Important natural processes and human impacts

Internationally important for wintering and staging of numerous species of waterbirds, the site of Nyord supports more than 1% of at least five species of swans, geese, wigeons, and coots. Declining grazing and haymaking have resulted in areas of marsh becoming overgrown. Present threats adversely affecting the site ecological character are eutrophication, predation, human disturbance, and drains and ditches in saltmarshes. An observation tower has been in operation since 2001. Management plans have been developed and implemented, and hunting from motor boats has been prohibited.

Høvblege is probably the last remnant of a larger continuous grasslands on the western part of Høje Møn. The area although protected area in 1917, was in a period heavily damaged by sheep grazing. The State took over Høvblege in 1992 and has made a determined effort to prevent exaggerated overgrown with scrub. Only by keeping the landscape open the rare flora can be preserved.

11.6.3 Agricultural land

DISTRIBUTION: Regional

Cultivated fields are the main land use on land and occupy about 70 % of the terrestrial part of the area which is a bit more than the national average on approx. 62 %. Large arable monoculture fields are dominating. Only along the coast and within the designated areas (SACs and SPAs) is the use of land as arable land restricted. The glacial tills support most of the cultivable lands and only minor parts consist of sandy soils.

11.6.3.1 Characteristic species

Of agricultural crops beet are (*Beta vulgaris*), rapeseed (*Brassica napus ssp. napus*), mustard (*Brassica rapa, ssp. oleifera*) and wheat (*Triticum aestivum*) among the most common grown species. Of livestock are cattle (*Bos taurus*) and pig (*Sus scrofa*) dominating. Yet other characteristic species are: Roe deer (*Capreolus capreolus*) and European hare (*Lepus europaeus*).

11.6.3.2 Important natural processes and human impacts

In a recent defense of a PhD thesis, "From hunter to farmer in Northern Europe. Migration and adaptation during the Neolithic and Bronze Age", a Danish archaeologist concludes that immigrants from Eastern Europe brought agriculture to Denmark and southern Scandinavia 6000 years ago. The point is that agriculture is a very complex technology. It takes long time to learn. So it is unlikely that agricultural technology and livestock were spread as an idea alone. Therefore the spreading of agriculture to Scandinavia in the Stone Age was a result of people from established farming communities immigrated and settled in Denmark. As a consequence the forest has been felled to give place to agriculture.

The general tendency in modern times is that agriculture comes in fewer hands even though the arable area remains largely the same. There can be distinguished between conventional and organic farming. Basically, it is expected that artificial fertilizer inputs are applied to boost grassland productivity along with routine application of herbicides to control problem weeds in the conventional agricultural. The intensive arable cultivation involves a high usage of artificial fertilizers, herbicides and pesticide applications generally, with potential implications for groundwater quality in the chalk aquifer.

On the other hand organic farming can be expected to have a lesser impact on the nature relative to the use of chemical applications although natural fertilizers also can have a negative effect e.g. water environment if added incorrect or in excess.

The organic production has moved from being a small niche production that was sold locally, to be an effective supplement to conventional food in Danish supermarkets as in export markets. Organic farming in Denmark amounts to nearly 7 % of total agricultural land.

As a curiosity, it can be highlighted that production of sugar and sugar beet growing has had a major impact on the local area. Sugar beet is the most important plant after sugar cane. In the latter half of the 18th century production of sugar from beets began for real in Denmark. It had been difficult at first to provide farmers because farmers were skeptical about the cultivation of sugar beet, which was a whole new crop. Thereafter it went forward quickly with sugar beet growth. The number of sugar beet farmers has been declining for several years the last 30 years or so, in turn, output per farmer has increased considerably, so here is the same tendency in structural development, as seen in other branches of agriculture. Sugar beet growing led to Stege Sugar Factory was Møn's first major industrial company and the island's largest employer. The factory had both permanent workers, particularly blacksmiths, and seasonal workers who came from agriculture. The factory closed in 1989.

11.6.4 Built-up area (including recreational areas)

DISTRIBUTION: Regional

Within the proposed biosphere reserve there is one relatively large town, the main city Stege on Møn (4.000 inhabitants), together with a few smaller villages spread over the islands. In between, there are scattered settlements and along the coast recreational areas are concentrated in spots with campsites and areas with summer cottages. Green space is represented by the preserved moat and ramparts from the 14th centuries in Stege.

11.6.4.1 Characteristic species

Ground elder (*Aegopodium podagraria*) and Dandelion (*Taraxacum sect. Ruderalia*) are often unwelcome in gardens where the little flower Common daisy (*Bellis perennis*) enjoys a different status. This also goes for the mammals House mouse (*Mus musculus*), Brown rat (*Rattus norvegicus*), European mole (*Talpa europea*) European hedgehog (*Erinaceus europaeus*), which of some are characterized as pests. The Red squirrel (*Sciurus vulgaris*) often has a status of cute. Of insects can be mentioned the Common wasp (*Vespa vulgaris*) also in that end of bad standing.

11.6.4.2 Important natural processes and human impacts

Natural processes of importance in populated areas such as urban, residential and recreational areas hardly exist. Urban greenspace is by definition created and maintained by people. The green areas have public recreation, natural and cultural experiences and health as the dominant purpose. The green areas are important elements of attractive urban environments and are thus also of importance for trade, tourism and residential development. Moreover, they have a positive influence on people's health and wellbeing. Vordingborg Municipality aims that the green spaces of the municipal are kept so extensively as possible in relation to the land use. Only when it comes to the control of invasive Giant hogweed (*Heracleum mantegazzianum*) are pesticides used.

11.6.5 Freshwater wetland

DISTRIBUTION: Regional

Ice Age landscapes such as tunnel valleys often houses nowadays wetlands. Although most wetland areas are now drained for use as arable land. Watercourses and lakes occupy only a minor part of the area in the proposed biosphere reserve. Of the total of 228 registered lakes in the area 215 are < 1 ha. The larger lakes are concentrated in the area of Høje Møn (kettle holes and sinkholes) e.g. Hunosø which is about 6 ha. Only the artificial lakes close to the city Stege, Jordbassinerne, is larger with its 16 ha and constitute today a major nature area and thereby functions as a recreational green area for the citizen.

Busemarke Mose - the largest bog in the biosphere candidate is formed when beach ridges cut off a small cove of Hjelm Bugt (bay), forming a coastal lagoon in the hinterland. Busemarke Mose and Råby Sø (lake) is designated as part of the Natura 2000 network (N 183) and constitute SAC (H 192) on 242 ha. It is designated as a protection area due to the special wetland nature with its occurrences of nature types as alkaline fens and calcareous fens with *Cladium mariscus*.

11.6.5.1 Characteristic species

The area is known for a large number of bird species that breed or raster here throughout the year, such as Water rails (*Rallus aquaticus*), Bearded tit (*Panurus biarmicus*), Eurasian penduline tit (*Remiz pendulinus*), Crane (*Gruidae*) and Grasshopper warblers (*Locustella naevia*). A bird tower has been build in the southwest corner of Busemarke Mose.

The area was formerly rich on orchids which is now gone and species (plants and animals) associated with the habitat are declining. The Desmoulin's whorl snail (*Vertigo moulinsiana*) occurs on the Habitats Directive list (App II + IV) and constitute the basis for the designation of the area as SAC.

11.6.5.2 Important natural processes and human impacts

From the early 1970s a very large part of the bog has been exploited for reed cutting. In order to drain the bog and thereby optimize the harvest a practice began of regular digging of the marine foreland at Nyhåndsbækkens (watercourse) outflow. The consequence has been a significant drop in the number of breeding birds, migration of salt tolerant vegetation and a gradual deterioration of the botanical values.

The remaining land cannot continue to maintain as many and as large populations of species characteristic for the habitat - also due to the opportunity to spread from nearby areas are not present. The area has still varied alkaline fen vegetation though.

Råby Sø (lake) is completely drained, has for some time been cultivated and is then fallow field.

11.6.6 Coastal area

DISTRIBUTION: Local (chalk cliffs, moraine cliffs) / Regional (beaches)

Coastal areas are here loosely defined as areas representing that part of the coastal area on land which is within 50 m from the water edge. This means that these are areas which are covered by the beach protection line in the Nature Conservation Act stating that the condition of nature in beach areas may not be changed. Coastal areas are the places where nature has the potential to change rapidly. Erosion and landslide of cliffs and deposition forms such as beach ridges can be formed in less than one day.



A huge fall in 2007 on Møns Klint.

The area includes 185 km of coastline and although the coasts appear to be very different, they can all be grouped in two main coastal types: cliffed coast and flat coast.

Flat coast is formed by sediments that are moved around and deposited by waves and currents and found where the geological output profile is flat. This means that materials are brought from the seabed and to the coast, or there is large inflow of sediments from the neighboring coasts. Some flat shores are composed of loose materials sand, gravel and stone as a barrier coast and beach ridge coast, another group includes the salt marsh coast. This type of coasts is predominantly in the western part of the proposed biosphere.

Cliffed coast consists of a cliff front, the slope and shape partly depends on the cliff materials, partly on the intensity of the destructive forces, mainly wave impact. The steepest cliffs occur in the most coherent materials, either in moraine with a high content or clay, or chalk. Cliffed coasts occur mostly in the eastern part of the candidate area.

11.6.6.1 Characteristic species

Seakale (*Crambe maritima*) which is a common species on sand and pebble beaches has today become popular in NOMA's Nordic cuisine. Coastal cliffs of moraine clay or sandy sediments are habitats for sand martins (*Riparia riparia*). The peregrine falcon (*Falco peregrinus*) has successfully bred on Møns Klint since 2001.

11.6.6.2 Important natural processes and human impacts

The natural processes at the coasts are erosion and deposition. The Coastal Protection Act aims to protect people from flooding as well as property against flooding and degradation from the sea. This purpose is ensured by a balancing of a number of considerations including protection of coastal landscape and restoration and the nature's free development. For the most the natural processes are allowed to proceed freely in the area and only in a few places are coastal protection installed. E.g. at the shore at Fanefjord Skov (forest) where at a stretch groins have been build.

11.6.7 Marine area (brackish water - salt water)

DISTRIBUTION: Regional

The brackish water in the proposed biosphere reserve cover the area in Stege Nor (coastal lagoon and SAC 179) about 550 ha and Stege Bugt (bay), a large area of shallow water between Zealand, Møn and Nyord approx. the size of 5,000 ha. Most of the marine area in the western part is designated as Natura 2000 Site (168) "Havet og kysten mellem Præstø Fjord og Grønsund" and include one SAC ad two SPAs.

The marine part of the Natura 168 Site is very diverse, from large shielded areas in Stege Bay to areas with more current, in Grønsund and Bøgestrømmen. The marine habitats consist mainly of shallow inlets and bays, but there are several sandbars in the area, some of which are very large, e.g. Sækkesand (north of Nyord). Further, there are several stone reefs scattered in the area, a few coastal lagoons and mud and sand flats.

Stege Nor is a typical coastal lagoon with a narrowed outlet at Stege. The water is brackish and lesser saline than the sea outside the lagoon. The water is shallow with a depth of three meters in the central part. The bottom consists predominantly of sand and mud. However, stone occurs in the region of Maglegrund (in the middle of the lagoon), some of which are large.

The western parts of the marine area are generally considered more brackish than the eastern part facing the Baltic Sea. It should however be seen in context since the Baltic Sea generally is referred to as a brackish sea. The salinity in the area is around 8 ‰ and declines the further into Stege Bay you gets to be totally brackish in Stege Nor.

The eastern marine area contains two habitat areas Klinteskov Kalkgrund and Bøchers Grund in Hjelm Bugt, both designated as SACs.

The marine habitat area Klinteskov Kalkgrund is marked by the prominent limestone that can be attributed to the habitat reefs. Klinteskov Kalkgrund is not yet actually mapped - but reefs and sand banks are the basis of the designation and represent respectively 1,572 ha and 125 ha.

The second marine habitat Bøchers Grund is located close to the coast in Hjelm Bugt, south of Møn and covers an area of 600 ha. It extends from the coast line out to 16 meters depth. The seabed drops steadily with several stony moraine ridges - in some places hollow-forming.

11.6.7.1 Characteristic species

Bøchers Grund is characterized by the many stones of varying sizes that are completely overgrown by Blue mussels (*Mytilus edulis*). Mussels, brackish-water barnacles and brackish-water moss animals comprise the majority of the fauna on the stones. Within the innermost 6½ m depth common filamentous red alga (*Polysiphonia*) the most dominant algae, with a touch of violet filamentous red alga, the red algae (*Furcellaria lumbricalis*) and the seaweed (*Phyllophora pseudoceranoides*).

Klinteskov Kalkgrund is home to a rich vegetation of red algae.

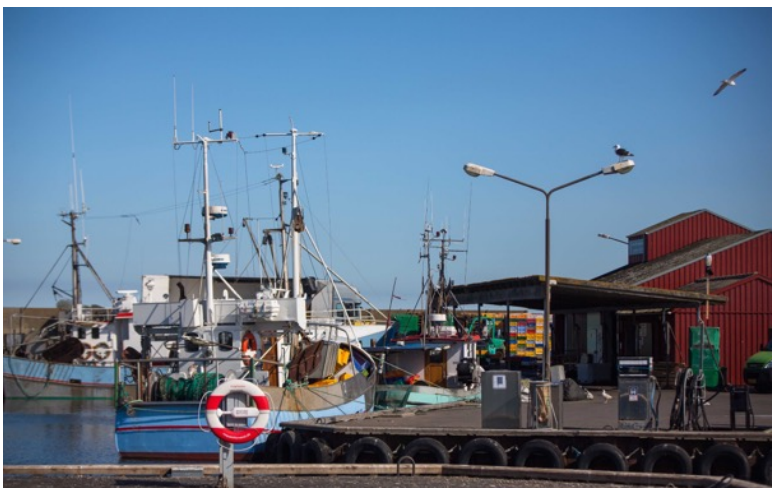
The shallow waters of the western part of the proposed biosphere area is internationally important as feeding area for large flocks of Mute swan (*Cygnus olor*), Coot (*Eurasian coot*), Common goldeneye (*Bucephala clangula*), Red-breasted merganser (*Mergus serrato*) and Goosander (*Mergus merganser*). Few and vulnerable species such as Avocet (*Recurvirostra*), Ruff (*Philomachus pugnax*), Arctic tern (*Sterna paradisaea*) as well as other terns use the shallow areas for foraging as well as the uninhabited islands and islets as breeding ground. Harbour seals (*Phoca vitulina*) breed in the area. White-tailed eagle (*Haliaeetus albicilla*) and Peregrine falcon (*Falco peregrinus*) are new breeding birds in the area. Eelgrass (*Zostera*) is an important benthic fauna and Pike (*Esox Lucius*) and Perch (*Perca*) are characteristic species of the brackish water.

11.6.7.2 Important natural processes and human impacts

The highly varied currents contribute to a diverse coastal landscape. In several places, but most clearly in Ulvshale-Nyord area, there are formed curved land spits with pebble beach ridges and dunes as well as fine-grained wading, with shelter from the current.

The open marine areas with sandy bottom and soft bottom has previously been characterized by large and well-developed stands of eelgrass, but in recent years the occurrence of eelgrass has declined markedly both in shielded areas, but also in the more open and current areas.

Human use of the sea is dominated by commercial fisheries (declining), recreational fisheries (increasing) and bathing areas as well as boating, hunting, kayaking, and kite-surfing activity are taking place.



Fishing Industry at Klintholm Harbour and angling in front of Møns Klint.



12. ECOSYSTEM SERVICES:

12.1 Identification of the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

The types of ecosystem services and their beneficiaries for each of the five principal ecosystems present are described below – detailing the three standard categories of provisioning, regulating and cultural services – as used in international, national and regional studies including: The Millennium Ecosystem Assessment (MA) Framework (2005), The Economics of Ecosystems and Biodiversity (TEEB) Framework (2010) and Naturplan Danmark (2014).

1 - Cultivated land (agriculture incl. extensive grassland and meadows)

Provision of food - fields cover the vast majority of the terrestrial area. The main crops are cereals and beets for human consumption and food for animal production but also vegetables and fruits are produced in a smaller scale. A part of the production is branded and sold as local products, the rest go to the regional and national or other EU markets. Wild food e.g. wild game and fruits from hedgerows are collected on a relatively small scale. A small part of the catch is branded and sold as local products; the rest is consumed or sold privately.

Fuels and fibres - there is a small production of willow (*Salix* sp.) for energy purposes. There's a relatively big production of rapeseed (*Brassica napus*) of which a part of the production is sold for biofuel purposes at the European market.

Water Availability - there are several important aquifers underneath the fields of the larger islands Møn and Bogø, and the islands covers the need for drinking water for the locals as well as field irrigation and other industrial water needs. Crops dominate the agricultural landscape and since the cultivated area is generally intensively farmed, the potential for nitrate and pesticide leaching is present. No or very rare findings of pollution of the groundwater can be an indicator of a good ability in the soils to remove nitrate from the percolating water or that the generally thick layers of moraine with a high content of clay delay the leaching of pesticides and nitrate. However the water quality needs to be continuously monitored to ensure a high quality of drinking water in the future.

Climate regulation - areas with are intensively managed agriculture field have low soil carbon stores owing to intensive production methods, and there is scope for enhancing those stores.

Pollination services - the extensively managed grasslands offer habitats for the pollinator species that are tied to elements associated to pastures and meadows e.g. presence of dung and the micro topography created by grassing animals

Biological control - the extensively grassed areas houses predators and parasites including mammals, birds, bats, spiders, insects, as well as entomopathogenic fungi that could regulate pests and diseases in the different ecosystems present in the biosphere project area.

Maintenance of life cycles of migratory species - Nyord and Ulvshale are part of Natura 2000 site 168 which is designated due to several migratory species of birds.

Biodiversity - especially the grasslands at Nyord and Ulvshale are in a semi-natural condition and houses a high diversity in habitats and species, including rare and specialised wildlife and rare types of open nature, the micro topography created by the grassing animals being an essential part of this

Geodiversity – The agricultural landscape prevents blurring of the shapes and types of the landscape, thus increasing the experience of geological diversity in the area.

Recreational and tourist services - the open land is an important part of the branding and perception of the Danish landscape. Small outlets directly from the farmhouses increase the feeling of supporting the local community, make local products available to tourists and offer shopping possibilities "in the middle of nowhere" for people moving through the landscape.

2 - Urban area (incl. urban green areas)

Climate regulation - the local heating company Stege Fjernvarme is building a solar heating installation in the outskirts of Stege. When finished the solar panels will be able to produce the equivalent to 18-20 percent of the current heat consumption, the rest is covered by straw energy making the whole energy production green.

Biodiversity - the species diversity of urban areas are rather low in comparison to the best semi-natural habitats, but flora and fauna in parks, gardens and other green urban spaces provides a source of joy and inspiration as well as health benefits to many, and services such as the pollination of garden plants and control of pest species.

Recreation and tourist services - the biosphere project area offers numerous possibilities for recreation activities including museums of both local, national and international standards, a network of parks and other green spaces and a variety of shops with local products. The close connection to nature just outside the urban areas is a great attraction and an essential resource for the promotion of natural health and wellbeing.

Other cultural services - both Nyord and Stege presents a rich legacy of culture and architecture, which contribute to a very strong sense of place and urban history for local residents and visitors alike. Several projects promoting different cultural and creative activities and services in Stege are in the pipeline.

3 - Forest (incl. scrub and afforestation)

Provision of food - wild food associated to forest e.g. wild game, mushrooms and fruits in season on a relatively small scale. A small part of the catch is branded and sold as local products; the rest is consumed or sold privately.

Water provision - forest have an impact on both quality and quantity of the groundwater. The precipitation in forests is diminished and delayed in reaching the aquifers due to the evaporation and transpiration from the trees and the amount of ground water generated is therefore relatively low compared to open land. Forests however, can have a positive impact on the vulnerability to influences from the surface as there is no or very low use of pesticide and fertilizers used in forestry, at least not in the state forests and the complex forest soil works as a buffer.

Fuels and fibres - several of the forests at Møn are traditionally managed for timber, pulpwood and firewood.

Genetic resources - the forest at Ulvshale hosts a population of Wild Service Tree (*Sorbus torminalis*) which is rare in Denmark.

Climate regulation - forests are the only major ecosystems where the amount of carbon stored in biomass of the plants exceeds that in the soil. Carbon sequestration in standing timber and woodland soils contribute to absorption of local emissions and might affect the climate regulation. The contribution is different depending on the forest managing regimes: traditionally managed forests primarily stores carbon in the timber that is brought out of the forest, the semi natural forests have a high level of dead wood and organic matter in the soil and the afforestation areas have the potential for storing rather huge amounts of carbon both in the soil and in the trees while growing.

Erosion prevention - the forests along the coastline prevents (to a certain level) erosion of soil.



The wild horses on the island Tærø.

Pollination services - the forests offer habitats for the pollinator species that are tied to elements associated to forests e.g. tree cavities and dead wood

Biological control - the forest habitats houses predators and parasites including mammals, birds, bats, spiders, insects and fungi that regulate pests and diseases in the different ecosystems present in the biosphere project area.

Biodiversity - part of the woodland at Høje Møn and Ulvshale are semi-natural forests and has been unmanaged for many years mainly because of the geological conditions, with either poor and wet soils or a very diverse topography with steep slopes. The complex structures and the stable ecosystem in these forests offer a high diversity in habitats and species, including rare and specialised wildlife and rare types of nature.

Maintenance of life cycles of migratory species - the forest at Ulvshale is part of Natura2000 site 168 which is designated because of several migratory species.

Recreational and tourist services - experiences and recreation in the nature may be health promoting. At the same time it can bring earnings to the local community. Woodlands offer great opportunities for natural recreation and contact with nature for local people and tourists. The hiking route Camønoen goes through several of the forests offering variation and shade on the 175km long trip around the island.

Other cultural services - many of the forests contain burial mounds and other traces of the past. The interaction between the trees and the topography in Klinteskovene at Høje Møn is very special in a Danish context and has been an inspiration for poets, writers and composers through the ages. Locals and tourists benefit from this essential resource for promotion of natural health and wellbeing.

4 - Inland water - freshwater (streams, lakes and wetlands) and brakish water (the lagoon Stege Nor)
Provision of food - the brakish lagoon Stege Nor hosts small-scale pound net fishing as well as recreational angling.

Water provision - natural areas in the form of lakes, streams and wetlands can have a positive impact on the vulnerability to influences from the surface. The wetlands work as a buffer absorbing excess nutrients and play an important role in the natural purification of water quality.

Climate regulation - peatlands contribute to absorption of local emissions via carbon sequestration. Many peatlands have been drained and mined and the restoration of abandoned mined peatlands may represent an important biotic offset through enhanced carbon sequestration.

Pollination services - the wetlands offer habitats for the pollinator species that are bound to elements associated to wet and humid areas e.g. periodic flooded areas.
Biodiversity - a rich diversity is present across the freshwater ecosystems including brackish water. Several of the wetlands in the project area are protected by law, because of their content of rare and unusual species and habitats. As part of a national project to avoid extinction of eels 10.000 elvers are being released into the streams of Møn.

Genetic resources - Stege Nor hosts a unique population of the northern pike (*Esox lucius*) adapted to brackish water. There are special restrictions in the lagoon making it legal only to perform catch and release angling of the pike. In addition, the pikes are protected in their spawning period, which means it is forbidden to fish for pike from April 1st to May 15th.

Recreational and tourist services - lakes, streams and lagoons offer great opportunities for angling, natural recreation and contact with nature for local people and tourists. There are even a few possibilities for put&take at Møn. The hiking route Camønoen goes through some of the wetlands and along Stege Nor offering variation on the 175km long trip around the island.

Other cultural services - the many scattered wetlands continue to offer a source of natural inspiration and peacefulness, benefitting both local people and visitors.

5 - Marine and coastal area, incl. smaller islands and heathland, marsh and sand at Møn

Provision of food - the marine area hosts small-scale inshore commercial fishery as well as recreational sea-angling. Commercial catches mostly go to national and international markets, although some is consumed locally through restaurants and direct sales to the public.

Fuels and fibres - there is a harvest and processing of common eelgrass (*Zostera marina*) at Møn. The production partly covers a demand for seaweed roofs on Læsø, but a part of the production is exported to Germany where the seaweed is used as insulation material in constructions.

Genetic resources - since 1960 a wild population of the horse breed Exmoor has lived on the island Tærø as part of a breeding programme. Several of the terrestrial coastal areas in the project area are protected by law, because of their content of rare and unusual species and habitats.

Pollination services - the terrestrial coastal areas offer habitats for the pollinator species that are bound to elements associated to the coast e.g. organisms with a demand for salinity.

Maintenance of life cycles of migratory species - the marine part of the biosphere project area is part of two Natura 2000 sites (N 168 and N 171), which are designated due to several migratory species.

Geodiversity - the richness of the coastline provides an important opportunity to observe and interpret geological formation and geomorphological processes.

Recreational and tourist services - experiences and recreation in the nature may be health promoting. At the same time it can bring earnings to the local community. The proposed biosphere area has a very diverse coastal landscape and several fine beaches where many families appreciate the shallow waters and many beach facilities. Some coastal areas are characterized by the chalk layer, e.g. Møns Klint which is an iconic landscape of Denmark. The beaches are rich in fossils and stone

and the possibility to find amber hence offering diversion for both locals and tourists. The dam between Farø and Bogø has become an attractive area for kite-surfers and the many harbours are hosts for yachters.

Other cultural services - locals and tourists can discover quiet, beautiful beaches, abundant bird areas and magnificent vistas along the coastline. Høje Møn has been an inspiration for poets, writers and composers through the ages and locals and tourists benefit from this essential resource for promotion of natural health and wellbeing.

12.2 Specification of the indicators of ecosystem services, used to evaluate the three functions (conservation, development and logistic) of biosphere reserves.

Mapping of ecosystem services is estimated to be a very profitable way to illustrate the holistic consideration underlying the UNESCO biosphere areas, hence this proposal. An ecosystem services framework will thus be considered as a potential structure to organize the planned future research to assess changes to variables under the three Biosphere objectives. There are already several indicators of specific ecosystem services nationally or locally and others have to be developed. The identified services are:

Provisioning services: Food Provision, Irrigation, Formation of Groundwater, Timber Production, Christmas Tree Production, Hunting Feral Animals

Regulating services: Adjustment of freshwater quality, pollination, erosion Protection, Reduction of flooding damage, Protection of Drinking Water Sources, Carbon Sequestration, Ecosystem-based control of Diseases and Pests

Cultural services: Recreation, Tourism, Natural and Cultural Heritage

Biodiversity: Biodiversity

12.3 Description of biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

Biodiversity is directly involved in the provision of several of the ecosystem services in the biosphere project area:

Aquatic vegetation – harvest of common eelgrass (*Zostera marina*) supports local small scale export. Wetland plants in general can help to purify water quality by absorbing nutrients and contaminants and trap sediment and serve as biological agents for potential water supply.

Trees (in woodlands and urban areas) – a range of native broadleaved species occur both as wild plants and planted individuals. Main species is Beech (*Fagus sylvatica*) and Oak (*Quercus sp.*), more rare species include Wild Service Tree (*Sorbus Torminalis*). All species play a significant role in purification of local air quality, absorb carbon emissions, create variation in the landscape and some are harvested for timber and firewood.

Bees and wild pollinating insects – these play a crucial role in the pollination of agricultural crops, local fruit production, wild flora as well as in urban areas for flowering plants in public parks and private gardens.

Predator species (varied groups) – various predators and parasites including mammals, birds, bats, spiders, insects and fungi that regulate pests and diseases are important parts of the biological control that prevent outbreaks with damaging effects on food and horticultural crops.

Fish (marine and brackish water) – a broad range of species are targeted by local fisheries, both commercial and recreational. Main marine species are Sea Trout (*Salmo trutta trutta*), Garfish (*Chelon*

Labrosus), Mullet (*Belone belone*), Mackerel (*Scomber scombrus*), Salmon (*Salmo salar*), main species in brakish water are Pike (*Esox lucius*), Perch (*Perca fluviatilis*) and Ide (*Leuciscus idus*).

Wild food – the possibility of public foraging of a wide range of local wild food e.g. wild game, herbs, mushrooms and fruits in season, support recreational and tourist services as well as local small scale production of various food products e.g. conserves and liquor.

12.4 Specification of ecosystem services assessment that has been done for the proposed biosphere reserve.

Ecosystem services are a collective term for the goods and services that humans get from nature. National Centre for Environment and Energy (DCE) Aarhus University published in 2015 a report on the progress of the mapping of ecosystems, ecosystem services and biodiversity in Denmark. The report uses UKNEA analysis framework, developed in conjunction with the British ecosystem evaluation in 2011 as a unifying framework for understanding the relationships between ecosystems, ecosystem services and their importance to human welfare. The survey is based on Basemap, which is the most current and consistent total area maps for Denmark, where Corine Land Cover Classification (CLC), developed by the European Environment Agency in order to establish a common European system for classification of an area with a minimum size of 25 ha. This spatial resolution is problematic, especially in a Danish context, where many important areas, such as many natural areas, are far less than 25 ha.

Status of the economic analyses of ecosystem services and biodiversity at national level are described for 17 ecosystem services, sees above, 12.2.

Status for **mapping of ecosystem services** in Denmark shows that regarding four services mapping have been made on the national scale. The spatial accuracy, data and methodological basis are suitable in relation to the Mapping and Assessment of Ecosystems and their Services (MAES-mapping). More detailed analysis may require additional data and modelling. Mapping of five services is not made on the national scale but data exist so that MAES-mapping can be done with current data. More detailed analyses may require additional data and modelling. Mapping is not made for seven services and data or model basis is incomplete. In principle, the mapping could be made within the foreseeable future, for example, over the next few years. For one services is mapping not made and the necessary activities would require more effort. The mapping within the next few years would be based on existing or potentially measurable indicators. This count for services: Ecosystem-based control of Diseases and Pests.

Status of the Danish **mapping of the values** of ecosystem services shows that regarding four services mapping of the marginal values is made on the national scale and can be related to geographically specific areas. For 11 services mapping of economic values is not performed and data or model basis is incomplete. In principle, the mapping could be made based on current knowledge with the necessary investment in data collection and model development. For one services mapping is not made and the necessary activities would require more effort. The methods are not designed to make valuation of the service or it makes no sense to conduct a geographically specific valuation. This count for services: Ecosystem-based control of Diseases and Pests.

It is the vision that the biosphere candidate must be a pioneer area in regards to map ecosystem services as a tool for monitoring and dissemination of ecosystem value in more than economic terms.

13. MAIN OBJECTIVES FOR THE BIOSPHERE RESERVE'S DESIGNATION:

13.1 The main objectives of the proposed biosphere reserve, integrating the three functions (conservation, development and logistic) and components of biological and cultural diversity.

The stakeholders of the biosphere reserve candidate Møn have chosen the motto: "Living and working in harmony with nature". This goal expresses the desire to become a process example of how small Danish islands will ensure sustainable future with lively communities in a unique and diverse nature. One of the specific goals is to stop depopulation and to prevent a fate as either "museum islands" or "luxury resort" for only a few. This can only succeed if we act today by developing the communities in a sustainable direction and cherish the islands' greatest potential, the amazing nature.

In order to succeed with the above objective, learning and training in how best to preserve the values must be done. This includes building the necessary structures where training, administration, management of nature care and new "green" jobs develops and traditional jobs can become a sustainable matter. There will be implemented development projects in all three zones with the aim of creating interaction between nature care and the islanders.

This is an ambitious goal for a number of small islands in a rural municipality. Hence, the need for knowledge and research, education and training are key factors. We are ready to share our experiences on local, regional, national and international level. The status of a biosphere reserve will be our most important framework, and the biosphere network has already become indispensable.

We are convinced that our work will make a difference and will find sympathy both in Denmark and in the Baltic region.

The three main objectives have been determined for the proposed Moen Biosphere Reserve, according to the functions of the Biosphere Programme, with a focus on the local context, as follows:

- (a) Nature Conservation: Improve important habitats and species care programmes and new marine conservation initiatives, by conservation of the different types of landscape at Møns Klints' characteristic cliffs, limestone grassland with orchids, the natural beech forest by Ulvshale and Nyords' beach ridges, heath, marsh and tidal meadow with its bird life, the surrounding waters with inlets, coves of the coastal lagoon Stege Nor, to the stone reef Bøchers Grund, the habitat for rich fish and benthic fauna. Maintenance of the darkest night skies in the region, where on a clear night one can see through the Milky Way to the next galaxy.
- (b) Sustainable Socio-Economic Development.
The market town of Stege, the villages and the residents on the small islands will be supported with the preservation of the active communities, by implementing green and sustainable projects that focus on quality of life and health. The main focus of socio-economic development is on new jobs in the countryside, local products and food including local brands. The Municipality of Vordingborg's climate strategy implements, including the modernization of the lighting in cities and public spaces for the benefit of darkness and electricity savings. Public health promotes by including nature in the prevention and eco tourism of international format develops.
- (c) Knowledge, learning and awareness: Cherishing the islands heritage and create awareness of the cultural environments will be done through cooperation with nature guides, museums and volunteers, who are engaged in several projects. An access will be provided to outdoor education for all schools and institutions in the Municipality of Vordingborg, with the main focus in nature and cultural environments in the proposed Moen Biosphere Reserve. Support with training, internships and protected jobs within the biosphere area's actions of nature care, conservation and local production the local people will be involved widely in the best way to preserve nature. Research and monitoring are some of the main tasks to secure the biosphere concepts realization.

The biosphere project will get an umbrella function to shape a more environmentally conscious and green profile of the islands and help to create a sustainable society. There will be many exciting projects delivered in various fields, some specific objectives are already present:

- Fishing Zealand - Water and fish care, development of sustainable angling tourism.
- Dark Sky - Light pollution and energy conservation and a new, season-extending eco tourism will be based on the starry sky.
- Nature conservation and local production - Grazing projects, local farming and gardening produce with a history and focus on the green, sustainable transition.
- Health & Outdoor life - Using nature for healing and prevention, and promoting walking, cycling, kayaking etc. as alternative transportation methods by exploring nature and cultural experiences along the way.
- Local democracy model - Involving the public through the active citizen participation in the design of the Moen Biosphere Reserve.
- Training - Providing kindergartens (we already have a dark sky kindergarten), schools (public and independent schools) and institutions access to Outdoor school activities, develop guided-training courses for stargazers and anglers, etc. and promote social jobs in landscaping tasks and local production.
- Accessibility - Creating a "destination for all" with easy access to nature and culture as well as a good everyday.
- Energy and climate - Working with alternative energy and sustainable lighting, which the Municipality of Vordingborg's climate policy has outlined for the entire municipality and the future biosphere reserve.

13.2 Description of the sustainable development objectives of the biosphere reserve.

In the Municipality of Vordingborg, and thus in the proposed biosphere area, there has been worked with climate as a priority for several years. Since 2009, strategies and action plans have continuously been developed, partly in relation to climate change adaptation, for example the handling of water and the reduction of CO₂ emissions. The municipal action plan is revised with current supplements to the municipal policy in order to meet the new state requirements to the data base and design, which is announced in the guide "Climate Adaptation Plans and local climate plans" from the Ministry of Environment and Food in Denmark.

The objective of the Municipality of Vordingborg is that climate change problems considers to be a natural part of daily life in the community and must be reflected in plans and projects.

The objectives for reducing CO₂ emissions will reflect national objectives. This applies to the municipality as an enterprise and for the whole geographical area of the municipality. The reduction of CO₂ emissions is an important tool to reduce the impact of future climate change, and there works with the Climate Strategy from 2010 and an action plan from 2011, which include local goals and actions.

The Municipality of Vordingborg has signed the Danish Society for Nature Conservation Climate Agreement. Through that the municipality has committed itself to reduce CO₂ emissions from municipal businesses by 2% annually. The Municipality has also joined the EU climate pact. Through the climate pact, the municipality has committed itself to reducing CO₂ emissions by more than 20% in 2020 in the municipality as a geographical unit. The aim of the EU climate pact according to the

Climate Strategy of 2011 is primarily achieved through the creation of renewable energy within the municipal boundaries.

The adaptation of the cities and the countryside in relation to climate change must take place through an on going effort in which work priorities are focused on minimizing the impact of rising sea levels and increased rainfall.

The local guidelines

31.1 By local planning, the possibility of alternative construction and energy are assessed. Outside the areas of collective heat-protection, requirements for energy class for new buildings are considered.

31.2 Planning for housing and service functions must be made to minimize the need for transport - for example, by obtaining station vicinity.

31.3 Priority of climate adaptation must be done as a priority within the three areas (Urban, Agricultural land and Nature), which is based on risk maps (maps from 31.1 to 31.6).

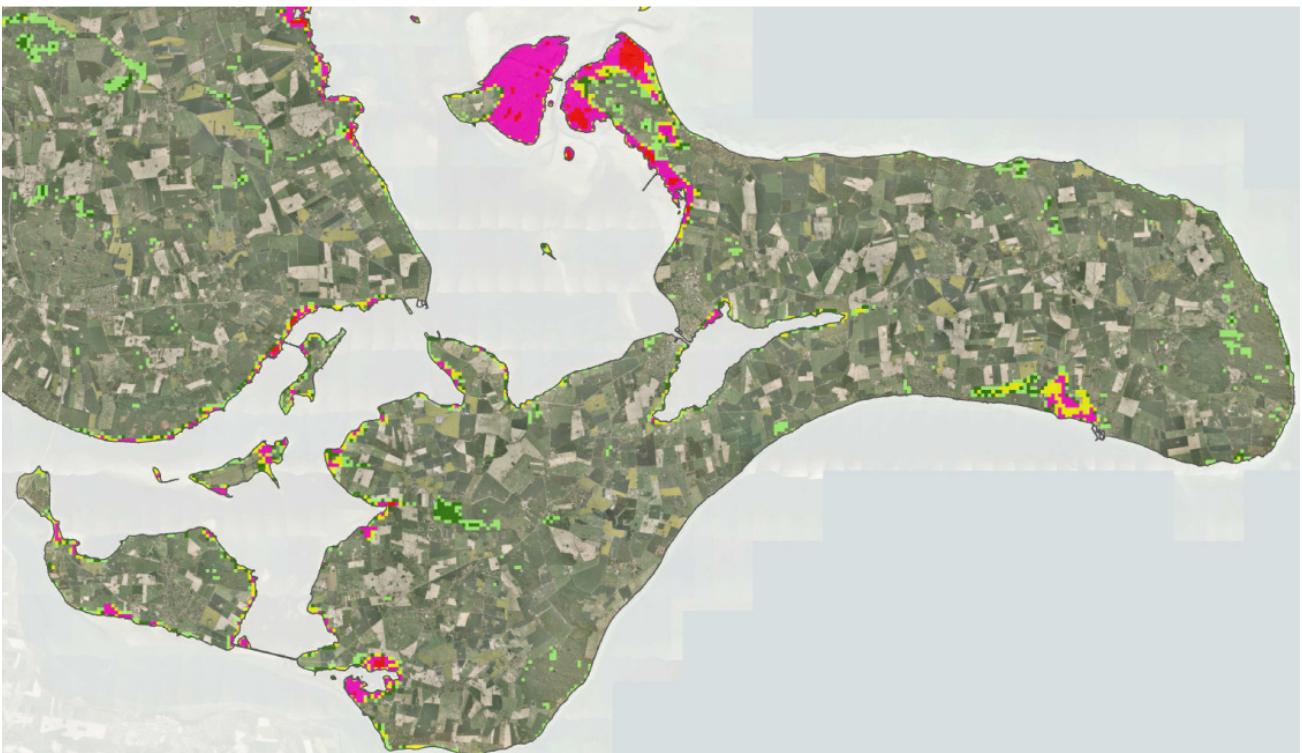
31.4 Flood endangered areas must be kept free of new construction. Local planning must incorporate space for rainwater.

31.5 Technological layouts for climate adaptation in cities should generally engage in recreational, architectural and / or functional solutions as an integral part of the cityscape.

31.6 The countryside should include technical installations for climate adaptation and adjusted to the surrounding countryside.

31.7 Low ground areas and potential wetlands should as much as possible form natural transfer stations for the relief of urban and rural areas who are flood threaten.

31.8 Special habitats that are vulnerable to changes in water level should as much as possible be protected from flooding or there should be identified other areas to which the habitat can be spread.



Areas with risk for flooding.

13.3 The main stakeholders involved in the management of the biosphere reserve.

The Municipality of Vordingborg is the responsible coordinator and authority for the forthcoming Moen Biosphere Reserve. The Municipality and the Ministry of Environment and Food of Denmark and Agency for Water and Nature management will through their regional land manager the Nature Agency Storstrøm take over the primary management of the core and buffer zones. The buffer zones management on land will be supported by the National Museum of Denmark, who is manager of the Liselund Park, and the buffer zones in the water will be supported by regional project Fishing Zealand.

Moreover, there are multiple active partners involved partly in the buffer zone and partly in the transition areas, including the GeoCenter Møns Klint, the Association Nyord Ø, the trading association Møns Handelsstandsforening and the tourism agency. The broad local anchorage in the Advisory Board will be insured by further new members responsible for education, culture and training. Furthermore a network of ambassadors will be built up, and the biosphere project will become member of the public Environmental Council and the local ranger network.

13.4 Consultation procedures for designing the biosphere reserve.

While preparing for this application, a biosphere partnership and advisory board with representatives of the partners involved was set up. The project was designed with the help of Nature Agency Storstrøm's academic staff, members of the Association Nyord Ø, employees of the Department of Land and Environment of the Municipality of Vordingborg, representatives of the social enterprises in Vordingborg, the Museum Southeast Denmark, the National Museum, GeoCenter Møns Klint, the tourism organization Visit Sydsjælland-Møn, Fishing Zealand and various enthusiasts with knowledge of nature and culture. In addition, the project hired a geologist as a technical consultant for the application stage and a biosphere coordinator was employed to design the local project. In order to inform the public and the stakeholders involved, seminars, meetings, public events, study trips to other Biosphere Reserves organized and knowledge obtained during contacts with German and Swedish biosphere organizations. Contacts were made to the Nord MAB and the UNESCO Biosphere Secretariat in Paris, which culminated in a visit by Meriem Bouanrame in May 2015. The Secretary General of the Danish National Commission of UNESCO supervised the applicant and the Danish UNESCO National Commission assessed the application before submission.

13.5 Stakeholder involvement in implementing and managing the biosphere reserve.

The Biosphere Partnership has adopted a governmental structure according to the scheme, summarized in Part One sections 4.6.1 and 4.7.c, with the national, regional, local authorities and individual partners represented. They will be responsible for one or more of the Biosphere zones and objectives.

Following the submission of the application to UNESCO, the partnership will produce an action plan, described in Part One, section 4.7.b., based upon the adopted national and local management strategies for the core areas and buffer zones. The action plan is the common tool to elaborate detailed projects and proposals, including partners and other organisations needed to be involved. It is expected that individual partners or cooperation's between several partners will develop specific project descriptions appropriate to their particular implementation elements.

Expansion of knowledge and public support are the next steps in the local anchoring of the Moen Biosphere Reserve. The primary task of the biosphere secretary is to engage schools, educational institutions and social services, to built up the ambassador network and a business and marketing partnership of private firm and tourism stakeholders. The Outdoor School concept and the biosphere-ambassador concept are important tools in order to engage the locals. Projects of local interest will be fostered in cooperation. An on-going presence at relevant local events and meetings will be maintained to continuously promote the Biosphere initiative and peoples' engagement.

At the time of application the following local associations, enterprises and residents have declared their support:

13.6 The expected main sources of resources (financial, material and human) to implement the objectives of the biosphere reserve and projects within it

“Vi støtter” - the supporters  **MØN BIOSFÆRE**

Ambassadors and culture representatives
Liza Krügermeier and Rupert Sutton, artists
Inge Niebuhr, Yogateacher
Camøno-bureauet, Jeanette Lopez-Zepeda & Henriette Møller
Save Kalvehave, Kai Flinta
Ole Kragh-Sørensen, author and photographer
Jørgen Munck Rasmussen, author and photographer
Ann-Sophie Nøhr Hemmingsen, Journalist and communication specialist
Bent Tenberg, Natur care and interpretation
Ken Holmsted Sørensen, angling guide
Ole Eskling, Tom Axelsen, Susanne Nøhr, Jens Grønager, DARK SKY Møn and Nyord
Kunsthø 44 Moen, international art exhibition
Morten Pihl, photographer and film instructor

Tourism, experience
Geocenter Møns Klint
Feriepartner Møn
Tiendegaarden
Residens Møn
Bakkegaarden Gæstgiveri

Associations
Kunstneretværk Møn-Sydsjælland
Møns Amatøргеologiske Forening
Fugleværnsfonden
Dansk Ornitologisk Forening, Storstrøm Lokalafdeling
Østmøns Naturforening
Danske Handicaporganisationer i Vordingborg Kommune
Danmarks Naturfredningsforening
Foreningen Historiske Planter
Nyord Lokalhistoriske Forening
Postbåden Rørets Venner
Astronomisk Forening for Sydsjælland
Nordisk Kulturlandskabsforbund
Foreningen Nyord Ø

Trade
Møns Handelsstandsforening
SuperBrugsen Lendemark
Noorbohandelen
Fyra Vindar

Agriculture and local producers
Klintholm Gods og Møns Klint Resort
Oremandsgård
Koster Færgesgård
Møn Is og Pollerup Hovedgård
Lene Evers Chokolade
Hårbølle Mejeri
Naturkosmetik på Nyord
Nyord Sennepsmølle

The Municipality of Vordingborg has funded in 2015 a project aimed to identify opportunities and potentials for a biosphere project on Møn. The Nature Agency Storstrom has at the same time co-financed a function program for Hyldevang gaard on Nyord, which is seen as an obvious communication and development location for the proposed Moen Biosphere Reserve. In 2015 the Municipality of Vordingborg provided DKK 3 million for implementing the Biosphere project on Møn.

In connection with the establishment of "House of Moen", Fanefjord Sparekasse provided DKK 350.000 for the start-up of a Biosphere Secretariat and public facilities. The Association Nyord Ø has applied for a grant from the organization, Friluftsråd, to hire the first Biosphere ranger - a ranger only focusing on the Biosphere project. Two EU projects respectively South Baltic (granted) and Interreg (applied for) programmes will contribute to the first concrete development activities in the coming biosphere area.

The drafting of the management and action plan for the proposed Moen Biosphere Reserve is set for a biosphere partnership, which through financial contributions will support and develop the biosphere reserve.

The Municipality of Vordingborg is the responsible coordinator and authority behind the Moen Biosphere Reserve. The operating expenses for the secretariat and the biosphere coordinator are part of those activities, which already are supported, such as a fixed annual subsidy for the Fishing Zealand cooperation. The long-term plan is to share operating costs and project funding between the partners so practical nature conservation activities and development projects on land, water and around the Dark Sky Park and the development of Eco-tourism can be boosted. Projects and fundraising should contribute to local development, and the expected revenue of eco tourism are expected to increase the public funds.

14. CONSERVATION FUNCTION

14.1. At the level of landscapes and ecosystems (including soils, water and climate):

14.1.1 The location of ecosystems and/or land cover types of the biosphere reserve.

1 - Forest and woodland incl. scrub

The three main forest areas of the project area are Klinteskov and the forests along the Northern coastline of Møn, Fanefjord Skov in the Southwestern part of Møn and the woodlands at Ulvshale. All three forests are partly semi-natural woodlands with high nature value and located within core areas (Ulvshale Skov and part of Klinteskov) and buffer zone (part of Klinteskov and part of Fanefjord Skov). The rest of the forest areas are located in the terrestrial transition zone.

2 - Grassland (marsh, heath and pasture)

The project area houses a broad variety of grasslands of which almost all are located within the core areas. The main part is at Nyord and Ulvshale, around Fanefjord and next to Klinteskov but many smaller areas lie scattered along the coastline of Bogø, Tærø, Stege Nor and Møn.

3 - Agricultural landscape

The major part of the terrestrial transition zone is relatively intense managed cultivated land, located all over the island of Møn and Bogø as a matrix around the terrestrial buffer zone and core areas.

4 - Built-up area (incl. summer cottages and recreative green areas)

Urban areas i.e. the main city Stege, smaller villages, scattered settlements as well as 4 relatively big areas with summer cottages near Fanefjord, Ulvshale, Hovmarken and Bogø, are all located in the terrestrial transition zone.

5 - Freshwater wetlands (streams, lakes, meadows and bogs)

The nature types connected to freshwater is distributed at a few main locations and many small areas. The main terrestrial wetlands are located at Ulvshale and the reclaimed areas of Busemarke Mose, Råby Sø and Røddinge Sø - all within core areas - but the small wetlands can be found scattered all over the project area within both core, buffer and transition zones.

6 - Coastal area (sand and coastline)

The coastal area is located along the coastline of Møn, Nyord, Tærø, Farø and Bogø as well as all of Sækkesand. In the East it is dominated by the chalk cliffs facing the Baltic Sea. The rest of the coastline presents a mix of sandy beaches and relatively shallow water.

7 - Marine area (brackish and salt water)

The marine area surrounds the terrestrial part of the project area. Bøchers Grund, Stege Nor, Fanefjord, part of Stege Bugt and the sea around Sækkesand lie within the core area. The rest of Stege Bugt, Ulvsund, Kalve Strøm, Letten, Bredemede Hage, Flæskegrund and (Kliteskov Kalkgrund) Baltic Sea East of Høje Møn lie within buffer zone. The rest of the marine area is located in the transitional zone.

Brackish water perch in the Stege lagoon.



14.1.2 The state and trends of the ecosystems and/or land cover types described above and the natural and human drivers of the trends.

1 - Forest and woodland incl. scrub

The areal state of the forest is very stable but with a small increase thanks to private and public urban afforestation. App. half of the forest area is public (the main part of Ulvshale Skov and the most eastern part of Klinteskov) and is managed according to a close to nature regime with very little or no human impact. Both areas are subject to international nature protection schemes. The managing regimes in the private woodlands vary from untouched forest to traditional management with high human impact.

In the woodlands with no or very little management, the main drivers are by far natural with windthrow, erosion (primarily along the shoreline) and time as the most important. In the more traditional managed woodlands the main drivers are human (selection of species, cutting, reforestation) but natural drivers like windthrow also have an impact.

2 - Grassland (marsh, heath and pasture)

The main part of the grasslands is subject to both national and international nature protection schemes, and is in a rather healthy state due to their size and location close to other types of nature with no use of fertilizer or pesticides. The many smaller areas that lie along the coastline may suffer from nitrate and pesticide leaching from intensively managed fields in the vicinity.

For the marsh the main drivers are human as well as natural: livestock grassing keeps the areas open and periodic flooding from the sea keeps up the salinity and prevents settlement of woody plants. For the more dry types of grassland natural forestation is a strong natural driver which is kept at bay by livestock grassing and mowing. All types of grasslands suffer from nitrification from air pollution but the small areas close to cultivated land may also receive nutrients leaching from agriculture.

3 - Agricultural landscape

Externally the agricultural landscape is intensively managed and rather stable, but internally it is undergoing important structural changes. The extent of the arable area has been the same for many years while the number of farmers is decreasing, with the result that the arable land is now concentrated at fewer but bigger farms. A consequence of the farms getting bigger is that fields are being merged to suit new and more efficient types of equipment, and many hedgerows and boundaries have therefore vanished through the last 100 years. This has made the open landscape even more open and less divided than it was before and has reduced the diversity of the fields. At the same time the efforts for making e.g. very wet areas profitable may be terminated resulting in new areas of nature.

The main drivers are at all levels human. The local farmers decide crops, areal planning and managing regimes, but both national and global economy plays a big role in the structural development of the agricultural sector.

4 - Built-up area (incl. summer cottages and recreative green areas)

The trend of the built-up area is closely linked to the development of the local population. App. 65 % of the population in the project area is older than 45 years old and the population is decreasing due to different processes in society. As a consequence the urban areas are not expanding and there are vacant housing and business areas around Stege. On the other hand the demand for accommodation from tourists is growing and areas set out for summer cottages and especially camping in the municipal planning is there for expanding.

The natural drivers of the urban areas are time and fertility as the average age is rising continuously. The human drivers of all the built-up areas are social structures and economy. Many young people move to the bigger cities locally and nationally for educational and networking reasons etc. and they

may not return. On the other hand a healthy economy and the demand for "close-to-nature" experiences brings an increasing number of tourists to the area.

5 - Freshwater wetlands (streams, lakes, meadows and bogs)

The nature types connected to freshwater is distributed at a few main locations and many small areas scattered all over the rest of the project area. The main locations (Ulvshale and the reclaimed areas of Busemarke Mose, Råby Sø and Røddinge Sø) are all subject to both national and international nature protection schemes and in a rather healthy state due to their size, location and the management in the areas. Many of the smaller areas are subject to national nature protection schemes too but many lie isolated in the agricultural matrix with little or no connection to similar nature types and may suffer from nitrate and pesticide leaching from intensively managed fields in the vicinity, overgrowing, drainage or a combination of all.

Succession and climatic change with increasing rainfall are important natural drivers. Main human drivers are livestock grassing, eutrophication as well as changes in the hydrology whether via maintenance or termination of existing drainage systems.

6 - Coastal area (sand and shoreline)

The shoreline, cliffs and sandy areas are in an ever changing state due to the natural processes of erosion and sedimentation caused by currents in the sea. For the main part of the shoreline there is almost no human impact in the form of shore protection but groynes and nearshore breakwaters are found in connection with harbours and areas of summer cottages close to the coast especially in the bay Hjelms Bugt.

7 - Marine area (salt and brackish water)

The Western marine part of the project area is in an ever changing state and is characterized by a very free and dynamic landscape development with extensive material migration and deposition in the shallow marine areas and along the coasts. The reefs in the Eastern and Southern part of the area are relatively stable due to international nature protection schemes that prevent trawling and exploitation of raw materials. The coastal lagoons with brackish water are relatively stable albeit the aquatic flora and fauna is affected by different human and natural dynamics.

For the areas at open sea natural drivers in the form of local currents are essential to the nature of the landscape formation. For the lagoons the main drivers are sedimentation and succession. Eutrophication caused by agriculture presents a risk for aquatic hypoxia in the whole area.

14.1.3 Protection regimes (including customary and traditional) existing for the core area(s) and the buffer zone(s)

The foundation for the core areas and buffer zones is the Natura 2000 Network, areas protected by the Danish Nature Protection Act as well as the Wildlife Reserves in the project area protected by the Act on Hunting and Game Management.

Core areas

The core areas are based on sites registered as Habitat Nature Types (HNTs) under the Habitats Directive's Annex I within the Special Areas of Conservation (SACs) under the Habitats Directive - 168 Havet og kysten mellem Præstø Fjord og Grønsund, 183 Busemarke Mose og Råby Sø and 171 Klinteskoven and Klinteskov Kalkgrund - as well as the two marine SACs in their entirety - 208 Bøchers Grund and 180 Stege Nor. Also included in the core areas are nature areas covered by the Nature Protection Act (§ 3-areas) within SACs or with a size > 15 ha and the parts of the Wildlife reserves with special protection that extends i.e. the Northern part of Fanefjord Wildlife Reserve, the Northern part of Stege Bugt/Nyord and areas around Ægholm and Sækkesand.

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) requires EU Member States to create a network of protected wildlife areas consisting of Special Areas of Conservation (SACs), and Special Protection Areas (SPAs) established to protect wild birds under the Birds Directive (Council Directive 79/409/EEC of 2 April 1979). These sites are part of a range of measures aimed at conserving important or threatened habitats and species. The legal requirements relating to the designation, protection and management of SACs in Denmark are set out in the Nature Protection Act and the Forest Act.

The aim of the Nature Protection Act (NPA, LBK no 1578 of 08/12/2015) is to protect the country's nature and environment including wild populations, habitats and landscape, to improve, restore or provide areas of importance, and to give the Danish population access the wild. The Local Planning Authorities (municipalities) have duty to enforce the NPA by monitoring relevant areas both subject to and potentially subject to the NPA. Each §3-area has an original citation document that specifies which features it has been notified for as well as the spatial distribution is registered. The aim for every site is to maintain, restore or improve the notified features and hence the notification document is updated regularly. Formal consent from the Local Planning Authorities is required prior to an owner/occupier of a §3-area carrying out any operations that may change the conditions or state of the nature.

The aim of the Forest Act (LBK no 1577 of 08/12/2015) is to preserve and protect the country's forests and increase the forest area, to promote sustainable forest management and through a holistic approach preserve and enhance forest biodiversity, natural and cultural history, environmental protection and outdoor recreation. All areas covered by the Forest Act must be kept with trees that form, or within a reasonable period of time will form, a closed forest.

The aim of the Act on Hunting and Game Management (LBK no 1617 of 08/12/2015) is to protect wildlife, to ensure the quantity and quality of breeding habitats, and to regulate hunting according to organic and ethical principles with regard for the protection of wildlife. The protection of the wildlife reserves in the project area holds specific restrictions for each reserve as noted in Notice of Ulvshale-Nyord Wildlife Reserve (BEK no 14015 of 07/07/1995) and Notice of Fanefjord-Grønsund Wildlife Reserve (BEK no 10301 of 28/06/1999).

Designation as SAC, §3-area and/or Wildlife reserve affords the highest available legal protection for nature protection and conservation in Denmark.

Buffer zones

The parts of the SACs, SPAs and Wildlife Reserves that does not fall within the core areas are designated as buffer zones with protection regimes as described above. This includes most of the marine area in between Præstø Fjord and Grønsund, Klinteskov Kalkgrund and smaller terrestrial areas at Nyord, Ulvshale, Busemarke Mose and Høje Møn.

In addition to the above mentioned protection schemes the buffer zones comprise Areas of Cultural Heritage, forest areas with a High Nature Value (HNV forest) as well as National Coastal Landscapes, including Areas of National Geological Interest (NGI) and Geosites of international interest to Geoscience (GS).

Legally it is through the Planning Act of 2013, that the interests of geology and landscape is protected, but also in the National Planning Act (LBK no 1529 of 23/11/2015, National Park Act, Raw Materials Act (LBK no 1585 of 10/12/2015) and the Museum Act (LBK no 358 of 08/04/2014), there are rules for the conservation and protection of geological and scenic interest for example in the form of conservation of geological profiles after raw material extraction and collection of natural history items during archaeological excavations. Areas of Cultural Heritage are protected under the Museum Act and there must be no planning in areas that are contradict to the protected interests.

The HNV forest areas work as a tool for prioritization the interventions in forests and form the basis for a planned field mapping of nature values in all Danish forests in addition to the mapped forest areas in SACs. The HNV forest areas are all covered by the Forest Act.

14.1.4 The indicators or used to assess the efficiency of the actions/strategy

As part of the Water Framework Directive and the Habitats Directive the state performs baseline studies and monitoring of habitats in SACs every 6 years, i.e. in core areas and buffer zones. The studies are conducted with standardized methods based on the provisions of the two directives.

Vordingborg Municipality has registered the §3-areas (bogs, meadows, marshes, heaths, grasslands, lakes) in 2010 - 2011. These areas occur in all three zones and are registered by standardized national methods as mentioned above. The registration will be updated in 2020 - 2021.

The municipality oversees the protected landscapes and the state oversees the protected prehistoric sites.

As part of the Water Framework Directive the habitats associated to water bodies (water courses, lakes and coastal waters), are subject to a basic analysis and monitoring of the condition using standardized methods with indicator species / species groups. In the coastal waters a single species like Common Eelgrass (*Zostera marina*) is used as indicator species while in the streams groups of species are used as indicators, e.g. stoneflies, mayflies and caddis flies indicate a good water quality. A fish index is developed and in use. The water habitats are represented in all three zones and will be monitored every 6 years like the terrestrial habitats.

14.2 At the level of species and ecosystem diversity

14.2.1 The main groups of particular interest for the conservation objectives, especially those that are endemic to this biosphere reserve, and provide a brief description of the communities in which they occur.

The cores in the level of species are the designation species which are the basis for the Natura2000 designations:

Habitat species

Yellow-Spotted Whiteface (*Leucorrhinia pectoralis*) and Crested newt (*Triturus cristatus*) is associated with ponds and small lakes without fish. Yellow -Spotted Whiteface is found on Ulvshale, crested newt is widespread in the ponds of the biosphere project area. Desmoulin's whorl snail (*Vertigo moulinsiana*) and Narrow-mouthed whorl snail (*Vertigo angustior*) are known from the meadows on the Eastern part of Møn. Barbastelle bat (*Barbastella barbastellus*) is registered at Høje Møn in many country estates. The species is rare in Denmark. Common seal (*Phoca vitulina*) is associated to coastal waters and is rather common in Denmark. It has the benefit of small islands and sand banks, which is present many places in the project area.

Birds Directive species

Breeding birds: Ruff (*Philomachus pugnax*) and Avocet (*Recurvirostra avosetta*) are waders. They are particularly attached to Nyord and nearby islands. The Ruff is very uncommon as a breeding bird and Avocet relatively rare.

Marsh Harrier (*Circus aeruginosus*) is associated with non-forested humid habitats meadows, marshes, and the like but are also found breeding in corn fields. The species is relatively common.

Common Tern (*Sterna hirundo*) and Arctic Tern (*Sterna paradisaea*) are found in small numbers on the islands. Sandwich Tern (*Sterna sandvicensis*) usually require a colony of black-headed gulls

(*Chroicocephalus ridibundus*) for breeding success. Little Tern (*Sterna albifrons*) requires sand beaches.

Honey Buzzard (*Pernis apivorus*) is especially breeding in the deciduous woodlands at Høje Møn.

Red-backed Shrike (*Lanius collurio*) and Barred Warbler (*Sylvia nisoria*) are linked to the dry grasslands on Møn. Barred Warbler is on the edge of its range and has been missing for several years.

Spotted Crake (*Porzana porzana*) is attached to sedge beds and are known mostly from the area around Ulvshale.

Migratory and breeding birds:

White-tailed Eagle (*Haliaëtus albicilla*) and Peregrine Falcon (*Falco peregrinus*) are new migrants and associated with coastal nature. Cormorant (*Phalacrocorax carbo sinenses*) breed on small islands.

Migratory birds:

Coot (*Fulica atra*), Barnacle - goose (*Branta leucopsis*), Graylag goose (*Anser anser*), Golden plover (*Pluvialis apricaria*), Golden-eye (*Bucphala clangula*), Mute swan (*Cygnus olor*), Smew (*Mergus albellus*), Eurasian Wigeon (*Cygnus columbianus*), Whooper swan (*Cygnus cygnus*), Shoveler (*Anas clypeata*), Pintail (*Anas acuta*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*) and Tufted duck (*Aythya fuligyla*) are all found in the biosphere project area. The migratory birds are primarily associated with the shallow areas along the protected shores of the SACs West of Møn except for Golden Plover (*Pluvialis apricaria*) that is associated with marshes.



Kindergarten of Common Merganser



The northern shoveler on Nyord meadows

14.2.2 Pressures on key species

The threats in the SACs are described specifically in the Natura 2000 basis analysis for each area but it is the same threats that are generally applicable to all species and habitats within as well as outside the Natura 2000 areas. The threats are greatest for the small habitats.

- Fragmentation - the habitats are very small or isolated.
- In areas close to intensively cultivated agricultural land the eutrophication promotes strong competitive plant species. This initiates an overgrowth of the areas that eliminates plants, fungi, insects and other species associated with nutrient-poor habitats.
- Lack of management i.e. grazing or mowing is a problem. This is caused by too few grazing animals and the fact that many of the areas are too small to be financially viable.
- Drainage causes the natural hydrology in many areas to change toward drier soil conditions.
- Some habitats are affected by invasive alien species, mainly Giant Hogweed (*Heracleum mantegazzianum*) and Rugosa rose (*Rosa rugosa*).
- Waders and aquatic birds are limited in number several places because of predation by especially Red fox (*Vulpes vulpes*).
- Disturbances in the form of activities along the coast, sailing and landing on the islands affect waders, aquatic birds and marine mammals.
- Commercial fishing may affect marine habitats and species negatively.

14.2.3 The kinds of measures and indicators currently used, or planned to be used to assess both species groups and the pressures on them.

The Natura 2000 areas are reviewed every 6 years by the state via the basis analysis that assess the state of the habitats and their need for management.

In 2011 Vordingborg Municipality has registered, evaluated and assessed the management needs of all habitats protected under the Nature Protection Act (the §3-areas). This includes marshes, meadows, heaths, grasslands and lakes larger than 100 m².

Vordingborg Municipality monitors the condition of the Tree frog (*Hyla arborea*), Natterjack toad (*Epidalia Calamita* / *Bufo calamita*) and Green toad (*Pseudepidalea viridis* / *Bufo viridis*). The aim is to obtain populations with more than 500 individuals in each functional population.

Every year Vordingborg Municipality mediates the counting of birds on Nyord Enge and the earth basins in Stege. These counts have taken place for over 30 years and provides a clear picture of the trends in the areas. The Danish Bird Protection Foundation - which owns approximately 1/3 of Nyord Enge - has in recent years also arranged counts of the bird life.

The quality of coastal waters is assessed by the state as part of the Water Framework Directive (WFD).

DTU-Aqua (a university institute) and Fishing Zealand (municipal cooperation project) are planning studies of the populations and range of the brackish water predators.

Vordingborg Municipality are in the process of assessing the condition of the red-listed species.

14.2.4 Actions currently undertaken to reduce these pressures

The Water Framework Directive (WFD) involves actions designed to reduce pollution levels and the municipal wastewater plans follow up on these. This reduces the input of organic matter, nitrogen and phosphorus to the water bodies.

Formal environmental consent from Vordingborg Municipality and governmental guidelines for fertilizer consumption regulate the amount of fertilizer and air pollution distributed from livestock buildings etc.

Water extraction plans and management of permits for water extraction regulate the effect on water courses, lakes and wetlands.

In the Natura 2000 areas the Natura 2000 action plans are implemented in collaboration between the state, municipalities and landowners. This includes among other possibilities support for restoring the natural hydrology. The state is managing its own areas, while the municipality manages its own land as well as habitats at selected private land, including the control of invasive species.

The municipality has prepared an action plan to control Giant hogweed (*Heracleum mantegazzianum*), which require private landowners to fight the plant at their own estates.

The municipality makes agreements with private landowners to control activities and traffic near nests with White-tailed eagle (*Haliaeetus albicilla*) and Peregrine Falcon (*Falco peregrinus*). Nesting boxes for Peregrine falcon and Common Merganser (*Mergus merganser*) are put up in the same .

A number of landscape protections restrict the access to areas with delicate nature and regulate the possibilities of management and land use in the areas.

Parts of Nyord and the nearby islands are covered by wildlife reserve provisions prohibiting or restricting access to areas with breeding wading and aquatic birds and seals.

Red fox (*Vulpes vulpes*) is being regulated on Nyord to reduce predation on wading and aquatic birds.

Vordingborg Municipality has for many years through participatory projects recreated lakes in order to create new or connect habitats for amphibians and Sand lizards (*Lacerta agilis*) with the aim of increasing the populations of those.

14.2.5 The actions to reduce pressures

The actions mentioned above in the previous paragraph will be continued.

Traffic in delicate areas is a problem. Vordingborg Municipality try to control and separate the traffic flow in the open country through planning and agreements with private landowners.

The various interests linked to the open country will be analyzed and ensured through municipal planning, including planning for green corridors.

Vordingborg Municipality is working under the auspices of the cooperation Fishing Zealand to restore habitats for the brackish predators. The state has further more limited fishing for Pike (*Esox lucius*) in selected coastal waters.

14.3. At the level of genetic diversity:

14.3.1 Indication of species or varieties that are of importance

The brackish predators - which is basically freshwater living species - is adapted to a higher salinity than normal. It is important to ensure these special populations.

For conservation purposes it is important to ensure the populations of the Danish species that are only found on Møn. The number of individuals in each populations should be increased to ensure genetically viable populations. This applies to Large blue (*Phengaris arion*), the Transparent burnet (*Zygaena purpuralis*), a variety of orchids and e.g. Round-seeded vetchling (*Lathyrus sphaericus*). No endemic subspecies has been found.

14.3.2 The ecological, economic or social pressures or changes that may threaten these species or varieties

The greatest threats to protection of the species on land is the lack of nature management in the form of grassing or mowing.

Changes in the commercial fishery can cause changes in the populations of fish and seals.

14.3.3 The indicators that are used, or will be used, to assess the evolution of population status and associated use

See section 14.2.3.

14.3.4 The measures used to conserve genetic diversity and practices associated with their conservation

See section 14.2.4 and 14.2.5



15. DEVELOPMENT FUNCTION:

15.1. Potential for fostering economic and human development which is socio-culturally and ecologically sustainable:

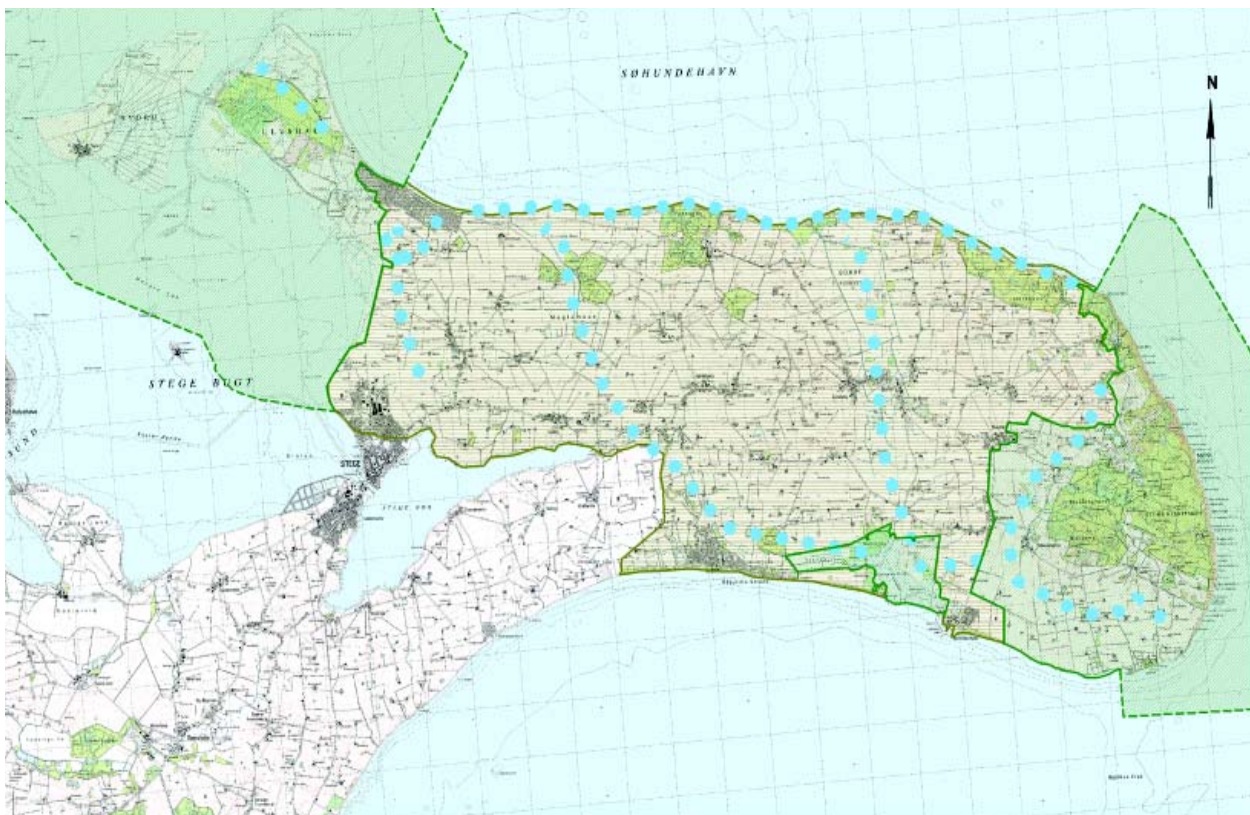
15.1.1 The areas potential to serve as a site of excellence/model region for promoting sustainable development.

A number of authorities have been active over a couple of years about progressing sustainable development in the area that embrace the proposed Moen Biosphere Reserve.

Back in 2005 a working group, consisting of the Nature Agency Storstrøm, the former Municipality of Møn, the Department Storstrøm, Team Møn and a number of nature and culture care associations worked on a concept to create one of the first National Parks in Denmark on Møn. Although the national park project could not be implemented, it has worked out a great amount of high quality material, informations and projects that still have the potential to serve as the basis for this application.

Many elements of the comprehensive preparatory work have been realized since and form the project described herein. Some few examples to be mentioned are the “untouched” forest concept, korridors for plants and animals, but also cycling and hiking paths, cultural heritage projects and developing local specialties. The proposed Moen Biosphere Reserve is built on a foundation of a broad cooperation about sustainable development.

The conflicts of the former Nationalpark proces have been defused during the work with this application through a number of regular meetings and a clear description of the legal foundations for a biosphere reserve in contrast to the former National Park project. Especially the landowners and farmers have been invited personally and a number of public meetings have been held.



Map of the former proposed Nationalpark on Møn, that could not be realized because of the large area of conventional farmland covered and conflicting interests regarding businesses.

The area of the proposed Biosphere reserve can be described as a mosaic consisting of nature care areas, Natura 2000 areas and EU-habitats, an EF- bird protection area and parts of a Ramsar area. Furthermore, the area includes two nominations of international geological interest (GeoSites), four National Geologic Sites of Interest (NGI) and four National Coastal Landscapes (NK). Parts of two wildlife sanctuary areas are also included in the total biosphere.

The cultural heritage of diverse and exceptional cultural monuments is cherished and protected by an active and creative population. This is documented in a variety of cultural projects. On the state of rural development the proposed biosphere reserve can contribute with good experiences of how to manage the various challenges of immigration, dying villages and elderly dominated communities. Some of the creative examples described in this application describe how the residents transform weaknesses in strength, like the “Not a shit happens here” campaign, the Dark Sky project and the Island Nyord, where “time stands still” but the future shall be sustainable.

In the introduction of this application, the proposed Moen Biosphere reserve is described as an enclave of small islands between European big cities. A small, densely populated country like Denmark needs examples of how the quality of life in rural areas can be promoted through sustainable development. A circle of creating new jobs in various nature and environment and the proximity to all necessary services will bring the young generation back from the big cities. That can serve as example for many other small islands as well in Denmark, as in the Baltic Region.

15.1.2 Assessment of changes and successes

There are a number of frameworks for monitoring sustainable development in the area, some examples:

Conservation on land and in the water in the core area and the bufferzones:

Action	Indicator	Successes
Land use and wild life, number of nature care projects and the monitoring of species in the different habitats	Numbers of species, numbers of habitats, increasing number of nature areas	Better conditions for species connected to the different habitats, more nature and a bigger variety of habitats, monitoring systems established.
Grazing projects and “new” sustainable use of land, climate indicators	Number of corridors between conventional farmland and the coast increases. More coastal grazing projects to protect against overgrowth. Biosphere brand of organic nature care cattle.	Along the Natura 2000 Areas are the coasts protected from eutrophication. Extension of the Biosphere Reserve across the Bøgestrømmen. Møn brand is known for organic Biosphere Reserve beef.
The Brackish Water pikes as example for sustainable water and fish management	The DTU Aqua marking project and Fishing Zealand project are monitoring and securing the fishstock in the Natura 2000 Area.	The increasing number of Brackish water pikes will become a well known example how the Moen Biosphere Reserve is dealing with nature care, species and habitats and at the same time creating sustainable tourism experiences.

Development

Action	Indicator	Successes
Fishing Zealand and sustainable fishing	Developing sustainable fishing experiences and events	An increasing number of tourists who like to combine good fishing experiences with care of nature and surroundings and who respect the locals privacy.
Camønoen, hiking route	Coastal hiking paths developed for quality assurance of the Camønoen.	A coastal hiking path that fits with nature care and supports the sustainable transport in the Moen Biosphere reserve.
The sailing cycling routes	The maritime cultural heritage preserved, by developing cycling tourism	3 veteran ships in solid drift; a number of new jobs creates and supports the volunteers.
Sustainable commercial fishing	Develop a project regarding sustainable fishing and further processing methods for a number of local fishermen.	A number of local commercial fishermen sell fresh fish in the proposed Biosphere Reserve.
“New use of land”	Projects to foster new agriculture with crops for local produces.	Increase the number of farms and food production with “green” and local profile.
Health and accessibility	“Destination for all”: accessible experiences created regarding all themes and focus on health in nature.	The Moen Biosphere Reserve has a number of easy accessible and healthy experiences in nature, service and tourism business.
Dark Sky	The Dark Sky park and community on Moen contributes with spots on location, interpretation and experiences. The darkness preserves.	Eco Tourism experiences and reduction of light pollution. The municipality has renewed the public lightning.

Training and local jobs

Action	Indicator	Successes
Out Door School	The concept is spread over the biosphere reserve and available for all children and students in the municipality.	A number of Outdoor school spots spread over the whole biosphere reserve, visited by schools and institutions; known as good example in the region.
The demonstration project on Nyord (location of research, education, training, local engagement and public mediation	Number and themes of research projects; number of education and training programmes and participants; consequences for the residents on Nyord. Public knowledge of the biosphere project	A living centre will reimburse the old farm. A place to secure the living community on Nyord. Partnership between the residents and the Biosphere project. Visitor and volunteer center established. Base for research established.
Stop immigration and new life in old houses	New sustainable jobs creates and family friendly environments in the villages facilitates.	Creative entrepreneurs choose Møn as their favorite place for their businesses. ECO Tourism help to form the business base.

15.2. Tourism as a major activity:

15.2.1 The type(s) of tourism and the touristic facilities available.

Tourism is one of the commercial development areas of the highest priority in the Municipality of Vordingborg. Møn constitutes of approximately 90% of the total tourism revenue in the municipality, which accounts for about DKK 400 million per year. The main foreign markets are the neighboring countries Germany, Sweden and the Netherlands.

During 2012 -2014 the coastal destination Møns Klint participated in a national development project coordinated by the Research Centre for Coastal Tourism. This development project resulted in 20 unique resorts to promote coastal tourism in Denmark. The project produced a potential plan based on various analyzes, prepared by the consulting company Dansk Bygningsarv.

Dansk Bygningsarv studied:

Physical environment that characterizes Møn: coastal, natural, cultural, ports, cities, built heritage and other physical features.

Social resources in relation to the present tourism environment, including tourism operators, experts, planners, enthusiasts and other key local actors.

Intellectual environment that makes Møn unique - the island's history and stories, as well as the atmosphere, identity and self-image that characterizes the island.

A multidisciplinary steering committee and an external panel of experts was formed and involved in the potential plan for development of Møn.

With Møns Klint as a benchmark and as a unique natural icon in Denmark, a vision for tourism development was ideated: "Møn should be known as a coastal destination with Denmark's wildest nature". Møn is to realize its strongest localized potential, the wild, pristine, different nature - with Møns Klint as the iconic benchmark. It is an ambitious goal with both great potential and at the same time challenging. Thus a clear bid for the Biosphere Reserve concept as bearing function.

"Wild nature" in this context should not be interpreted as untouched areas. According to the potential plan Møn must "grow all the many aspects of the meaning 'wild nature', as the island has to offer. The nature of Møn can provide wild experiences for both body and soul. Here you are challenged and lifted. Here you can feel the greatness and hear the silence. And here you go back to when Denmark was born and to yourself. Here, life falls back into place".

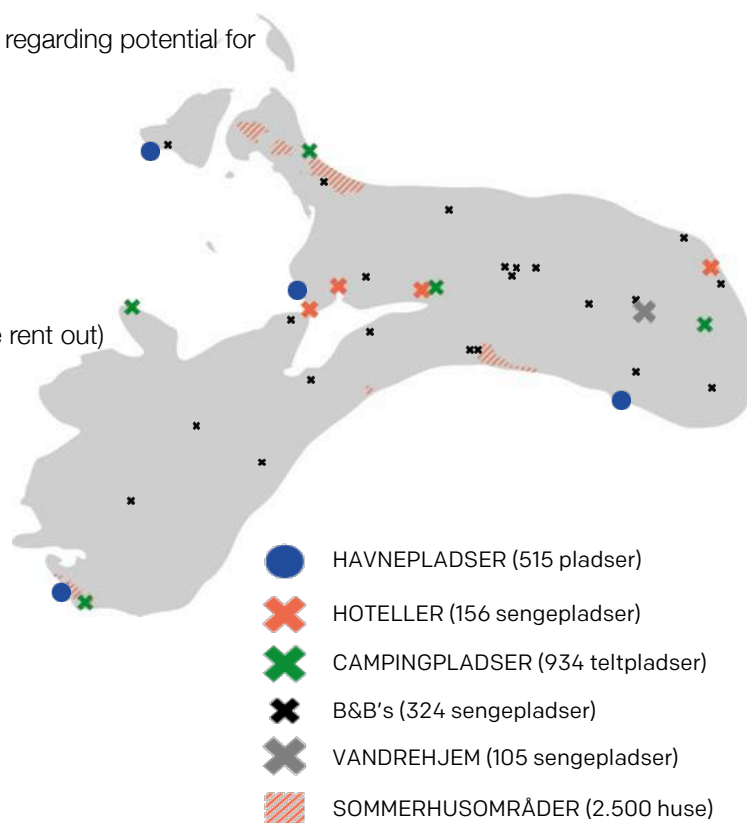
Included in the overall vision it splits into seven value statements describing Møn as a place with Denmark's wildest nature. The seven values ranges from experience to empathy. The report develops a scenario that covers the areas of experiences, learning and empathy. It identifies areas where there is room for "action" and areas where there is room for "contemplation and peace", areas with untouched nature and areas with room for physical activity. It has already included Dark Sky and the potential of a Biosphere Area based on the island of Nyord and natural areas on the peninsula Ulvshale.

The political decision to apply UNESCO for the proposed Moen Biosphere Reserve was based on the process of this potential plan. It was decided during the project's last steering committee meeting in June 2015, to seek both IDA for a Dark Sky Park and UNESCO for inclusion in the biosphere network, which coincides with the positive political response to the UNESCO representatives visit to Møn back in May 2015.

The potential plan unfolds also in a business perspective as reflected in an equally ambitious objective of doubling tourism revenues. According to the potential plan it is achievable by various efforts. The short tourism season during the summer weeks should be expanded with experiences in the periods between peak - low seasons and winter for example through Fishing Zealand and Dark Sky Park experiences. The plan is also mentioning the creation of a coherent structure for the experiences, which include carefully planning of preparing the cycle and hiking route concept, the opportunity for kayaking, kite surfing and swimming. It is further speaking of developing the hotel capacity, including upgrades and developments of B&B offers, newly built hotel and holiday resorts for example in the urban area of the former sugar factory in Stege.

Map of the Potential Plan for Coastal Tourism in Møn, regarding potential for overnight stays

- Harbour boat places (515)
- Hotels (156 beds)
- Camping sites (934 tent places)
- B&B (324 beds)
- Youth Hostel (105 beds)
- Summer cottages (2.500 houses to be rent out)



In addition, the development of the former commercial harbour Klintholm is of high priority. Finally, work has been finalized on target groups for the coming tourists, which aims to be commissioned by the larger and closets cities, such as Copenhagen, Malmoe and Hamborg and partly in the nearby neighboring countries around the Baltic Sea.

15.2.2 Number and structure of visitors that come to the proposed biosphere reserve each year

The number of visitors in the proposed Moen Biosphere reserve estimates to be approximately about 550.000 annually, of which there are about 350.000 over night stays. The Municipality of Vordingborg contributes to 2.2 % of Denmark's total tourism revenue.

The most popular tourist destination in the upcoming Moen Biosphere Reserve are undoubtedly the chalk cliffs Moens Klint. The Nature Agency, national manager of the area, estimates every year about 550.000 visitors by 250.000 cars registered. The Agency has in 2003 published a comparison of the number of visitors of the 50 most popular national forests, in which Moens Klint is taking the 9th rank. The GeoCenter Møns Klint, the cliffs mediation and experience centre, counts 65.000 paying visitors per year.

Among the most visited experiences in whole Denmark, Møns Klint is taking the No. 80 rank and the Liselund Park rank No. 95, with 48.000 visitors annually. Liselund Park is, with 3951 average visiting hours, the number 22 of all places with the highest intensity application of visitors, of a total of 510 examined places with a size of more than 10 hectares (same report page 2; Editor's note).

Another popular tourist destination in the proposed Moen Biosphere Reserve is the little island Nyord. Traffic counts were regularly carried out in the recent years, which document a volume of 160.000 visitors per year. The summer marketdays in Møns capital Stege can draw up to 20.000 visitors per day to the islands centre.

The economic importance of tourism is pointed out in the following table:

Single day visitors estimates here to 17 % (78.000 in total); overnights stays, distributed on the different types of accommodation to totally 362.000 what leads to a total tourism revenue of DKK 440.000,- and 660 jobs.

Tabel 9: Turistomsætning Vordingborg kommune

Kategori	Omsætning
Sommerhuse	86.000.000
Sommerhuse ³	160.000.000
Campingpladser	34.000.000
B&B	9.000.000
Hoteller, ferie og forretning	46.000.000
Feriecenter	6.000.000
Vandrehjem	4.000.000
Lystbådehavne	17.000.000
Total	362.000.000
Dagsturister	78.000.000
Total turistøkonomi	440.000.000
Arbejdspladser	660 arbejdspladser

Kilde: Visit Møn – Sydsjælland, Kystdestination Møns Klint

Det fremgår, at sommerhusene udgør over halvdelen af turistomsætningen i kommunen. Endags-turismen udgør også en væsentlig andel (17 pct.). Alt i alt skaber turismen 660 arbejdspladser.

Tabel 9: tourism revenue Vordingborg Municipality. Accommodation ind summer cottages makes up 50% of total turnover. One dag visitors contribute with 17%. Tourism creates 660 jobs. The table below documents the overnights stays of the diffeneret countries in the years 2001 to 2015.

Overnatningstal samlet med feriehuse - Vordingborg Kommune 2011-2015

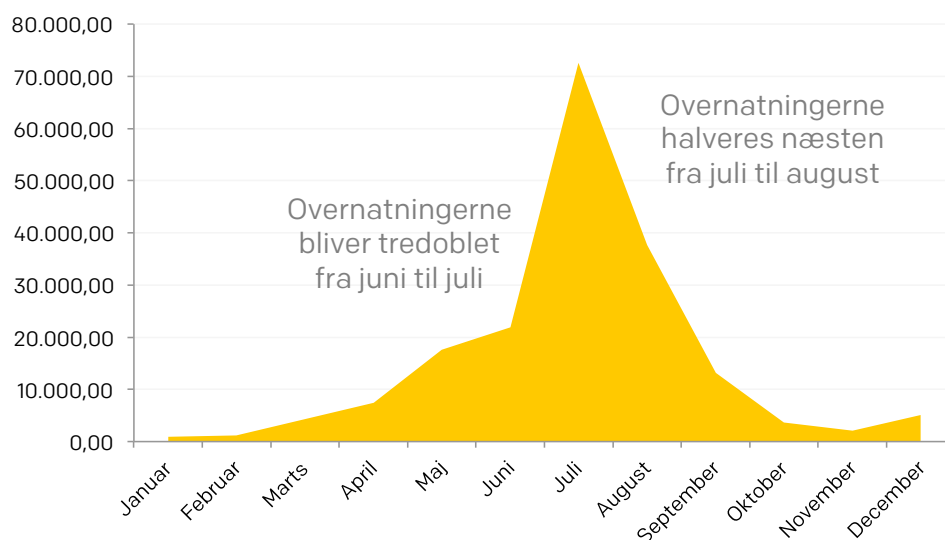
	2011	2012	2013	2014	2015	+/- i % 2011-2015
I alt	317.584	334.140	356.421	358.572	355.668	12,0%
Danmark	161.852	172.161	175.194	167.642	163.480	1,0%
Sverige	7.042	8.486	11.118	11.024	10.316	46,5%
Norge	5.093	5.914	5.568	6.340	6.516	27,9%
Tyskland	111.372	116.825	130.852	136.681	133.084	19,5%
Holland	19.829	17.634	19.481	20.451	24.620	24,2%
Øvrige lande	12.396	13.119	14.209	16.435	17.652	42,4%

Kilde: Danmark Statistik

In connection with this application, the Municipality of Vordingborg has commissioned a calculation of the total number of overnight stays from 2011 to 2015, which is based on numbers from the various accommodation types and the nationalities of the visitors, shown here. The calculation devices between overnight stays in summer cottages, on campingsites, hotels, Holiday Centres and sailing harbours in the Municipality of Vordingborg. In 2015 there have been registered at all 355.680 overnight stays, showing an increase of 12%. Not included are accommodation facilities with less than 40 beds, such as B&Bs and small hotels. A particularly great potential is attributable to that group.

Danes comprise the largest group of visitors and at the same time the smallest visitor increase with only 1%. An higher increase is registered in the foreign markets, hereunder Germany, Sweden and the Netherlands , which underlines the international potential of the destination. The short season is rated as problematic, as the table from the potential plan for the Coastal destination Møns Klint sets out.

The summer season is short and shoulder season bad exploited (Coastal Destination Møns Klint).



The upcoming biosphere reserve will focus on Møn as an international sustainable tourism destination, by promoting nature experiences for example by hiking, cycling, kayaking and sailing. Another important task is to develop and marketing nature related experiences over the whole year. This may include, for example, the Dark Sky and Fishing Zealand projects that will contribute with activities especially in spring and autumn. Another important fact is to ensure that tourism always fits together with the residents quality of life and the care of nature, so the good experiences will be preserved for the future.

15.2.3 Management of tourism activities

In 2015, the Municipality of Vordingborg has entered into a contract for a 4 municipal tourism cooperation with the neighbour communities Faxe, Stevns and Næstved. This leads to a restructuring of local tourism services, as well as common marketing strategies, both nationally and internationally. In connection with the proposal of the Moen Biosphere Reserve and Dark Sky Park, a concept for a joint secretariat has been developed. There is a number of local development and marketing assume functions, managed by this secretariat, granting a new focus on sustainable and locally based tourism development. A number of projects are already anchored in this Secretariat. Here some examples:

Fishing Zealand: developing sustainable fishing tourism and participation in a EU South Baltic project with several Baltic countries from 2016 to 2019.

The sailing cycling trails: The project realized cyclist services in 4 local harbours, the cooperation with volunteers of three local veteran vessels, Outdoor-school activities and promotion of cycling maps and signage of four local thematic cycling trails along the international Berlin-Copenhagen cycling connection. All in all 121 km local cycling trails in the upcoming Moen Biosphere Reserve. In summer 2016 for first time ever it was possible to combine the cycling routes across the water by a sailing trip on board of the three veteran vessels.

Dark Sky: The comparison of the maps of the core- and buffer zones of the proposed Moen Biosphere Reserve and the darkest area of the planned Dark Sky Park Moen, show great match. We see synergy and a good interaction between the two projects related to the protection of nature and the development of sustainable tourism. Both projects will join the common secretariat.

Camøno the local hiking trail, launched by the Museum Southeast Denmark during the last two years, focusing on localized potentials to strengthen the quality of Life in the rural areas. With strong support by the locals, this hiking trail was renewed. A close cooperation is already existing between the Museum and the Moen Biosphere Reserve secretary.

Undine is the name of a female spirit, living under water, maybe some kind of a mermaid, which Denmark is known for. UNDINE II is the title of a new international project cooperation between Denmark and Germany, focusing on the Baltic Sea as nature reserve with great potentials for sustainable tourism. The proposed Moen Biosphere Reserve is partner in the application for this project.

Masterplan for Klintholm Harbour The Municipality of Vordingborg is responsible for a wide spread development project in the biggest harbour of the proposed biosphere reserve. The biosphere project will offer support regarding sustainable local fishing industry, eco tourism and mediation.

House of Moen. In a close partnership between several local stakeholders and the biosphere secretary the House of Moen concept will be realized as a visitor centre and gateway to sustainable experiences i the proposed Moen Biosphere Reserve and Dark Sky Park.

15.2.4 Possible positive and/or negative impacts of tourism

Over the past 20 years, Møn has profiled itself with nature and culture based tourism. Several universities and consultants have conducted different tourism-potential studies during the years 2005, 2010, and 2014, and they all conclude that the strength of Møn lies in nature, coastal landscapes, the sea and tranquillity. The preferred holiday stays take place in summer cottages, on camping sites, bed and breakfasts, hotels and shelter spots. The proximity to the attractive amusement and entertainment parks in the near region has contributed to the development near-nature experiences and focus on authenticity rather than mass tourism on Møn. Family attractions like Bonbonland on Zealand, the Knuthenborg Safari Park on Lolland and the Medieval Centre on Falster are not longer away than one hour by car.

The island Nyord is an example of a place where time seems to have stalled. It is, just because of that, now a tourist destination and in order to ensure the island remains a vibrant society, and not mutating to a living museum, the islanders work on projects for local production and nature conservation. This includes Nyords organic nature care beef, Nyords mustard, Nyord natural cosmetics and the island's historic mailboat 'Røret' – that transport the tourist from the small harbour to other destinations.

'Not a shit is happening here' - <http://www.derskerikkeenskid.dk/fyrhytten.asp> has been a very popular marketing strategy for a couple of years. It depends on the idea, that on Møn still can be found places to stay totally calm, without internet and hustle and bustle. The lack of internet access in the countryside, considered a weakness in rural development studies, is turned on Møn to a part of the tourism strategy. A really great experience is to rent the historical watch post beside the lighthouse of Møns Klint, a really simple place for two persons to stay in the middle of nature and the starry sky.



The GeoCenter Møns Klint, is a modern communication centre, located on top of the cliffs. The centre works in a 'field of activity' between the dissemination of Denmark's geological birth and a broad range of outdoor experiences. The centre also acts as the area's nature guide service for the Nature Agency, including themes like orchids, the peregrin falcon, fossils, geology, sports, physical challenge and versatile nature experiences.

Møn is rarely overcrowded. The residents experience the tourist season mostly negative when the supermarket shelves are empty in July. On the beaches, in summer cottage areas, but also in the island's capital Stege, the tourists create life and help the restaurants and shops to increase revenue.

Challenges lie in the necessary quality assurance and the infrastructure for tourism. In connection with a major wave of immigration from the eastern part of the island, the municipality has put a great program up on the removal of empty derelict properties. It meant a lot to the sight and the citizen's quality of life. Klintholm harbour develops after a period of decline in the fishery-sector and bankruptcy of the marina – to a service and tourism experience port. Another point of interest is, that many of our hiking and cycling trails follow busy roads. We wish to build more trails along the coasts for the

pedestrians and cyclists.

We also have challenges on our beaches. In Denmark there is no such thing as commercial beaches, where the user will contribute an amount for the maintenance and services. It is expensive to operate a 'Blue Flag beach' with samples of water quality, handicap access, and nature interpretation. But as we would like to sharpen the green profile, the means for doing so have to be obtained.

Another area for action is concerning the environmentally friendly public transport in the coming biosphere reserve. It would be sustainable to offer public transport by an electrical bus with a bike trailer, that could pick up sailors, a cycling family and transport backpackers to a bed and breakfast. Today the only access to public transport for the tourist is going to Stege, and a few weeks during summer, buses are going to the Cliff.

We are committed to bring the various tourism projects in the biosphere area together, so that the area's nature and culture experiences can be connected with each other by cycling, hiking, kayaking and public transport and services. We will support the B&B's, small retail sites, farm shops, and cafés located along the routes, so that good supply is guaranteed. We will work on being good hosts, ambassadors and creating new jobs in the tourism services.

The Municipality of Vordingborg's politics for the business development, nature conservation, agriculture and raw materials extraction care about the nature and the areas basic needs. The citizens of Møn are very aware and critical when it comes to the nature and well being, whether it comes to livestock industries or wind power installations in the open countryside.

We do not expect insoluble conflicts regarding the biosphere reserve. At the same time, we emphasize that conflicts always will be addressed through dialogue and on the basis of professional assessments.

15.2.5 Impacts be managed, and by whom?

The future Moen Biosphere Reserve has already got its own secretariat, anchored broadly as shown in the model in section 4.3. Its functions are to implement development and dissemination activities, which will be described in the area's management plan. Behind the secretariat is an advisory board with representatives for all zones, an environmental council, a nature interpreters network, and we wish to establish a Biosphere Ambassador Network.

In close cooperation with the future "House of Moen" there will be organized dissemination of experiences in the Moen Biosphere Reserve and Dark Sky Park. In this way, we want to bring the different actors together and create a common structure for development and eco tourism.

At the same time we must affirm that the secretariat will not perform any form of governmental function. The national and local authorities, represented for example by the Natur Agency and the Municipality of Vordingborg will always perform this role, also in relation to possible conflicts. The biosphere secretariat's task is to create and collect good examples of successful "green" conversion, so that the idea of "Life and work in harmony with nature" is anchored and will be spread.

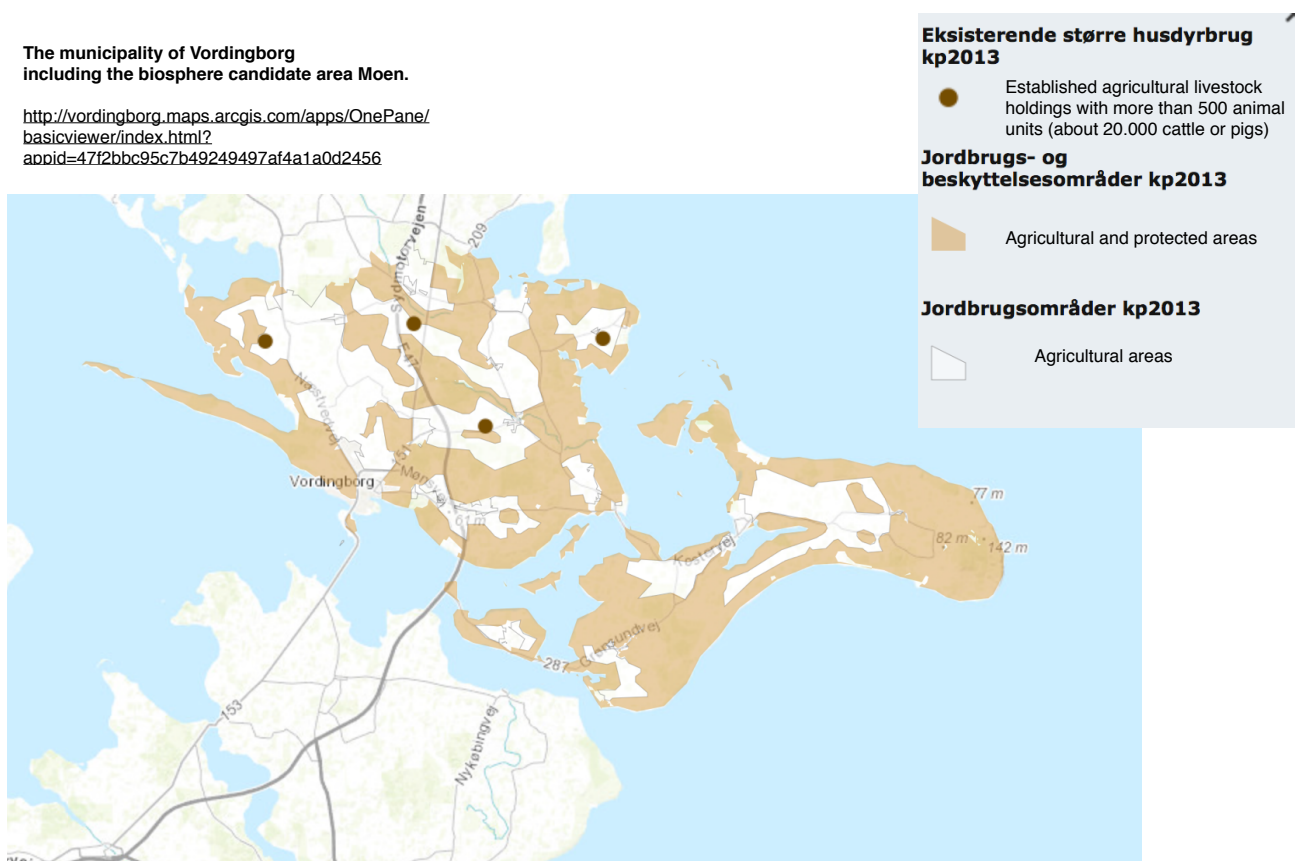
15.3. Agricultural (including grazing) and other activities (including traditional and customary):

In the management plan of the Municipality Vordingborg, an action plan for the use and development of agricultural land has been adopted. The actions plan contributes goals like " to ensure that sufficient areas for sustainable agriculture are available (agriculture, forestry and gardening), which beside for production provide possibility for jobs and settlement in the rural area.

The management plan, worked out by the municipality focuses on identification and secure of particularly valuable agricultural areas. The State Administration (Statsforvaltningen) supervises the municipalities and regions with the legislation specifically applicable to public authorities. Regarding the Municipality of Vordingborgs plan for agriculture, the Statsforvaltningen, implement the agricultural analysis, which can form the basis for appointments and changes to the designated agricultural areas. This happens once in each election term. In connection with the work of the current term, no basis was found to change the previous nominations of the Regional Plan 2005-2017, so these are continued.

The municipality's management plan describes also how livestock must be located in order to minimize the potential conflicts with neighbours, the environment, nature and landscape values. At the same time the plan has to ensure development opportunities for continued sustainable agriculture, that can contribute to the conservation of nature and landscape values.

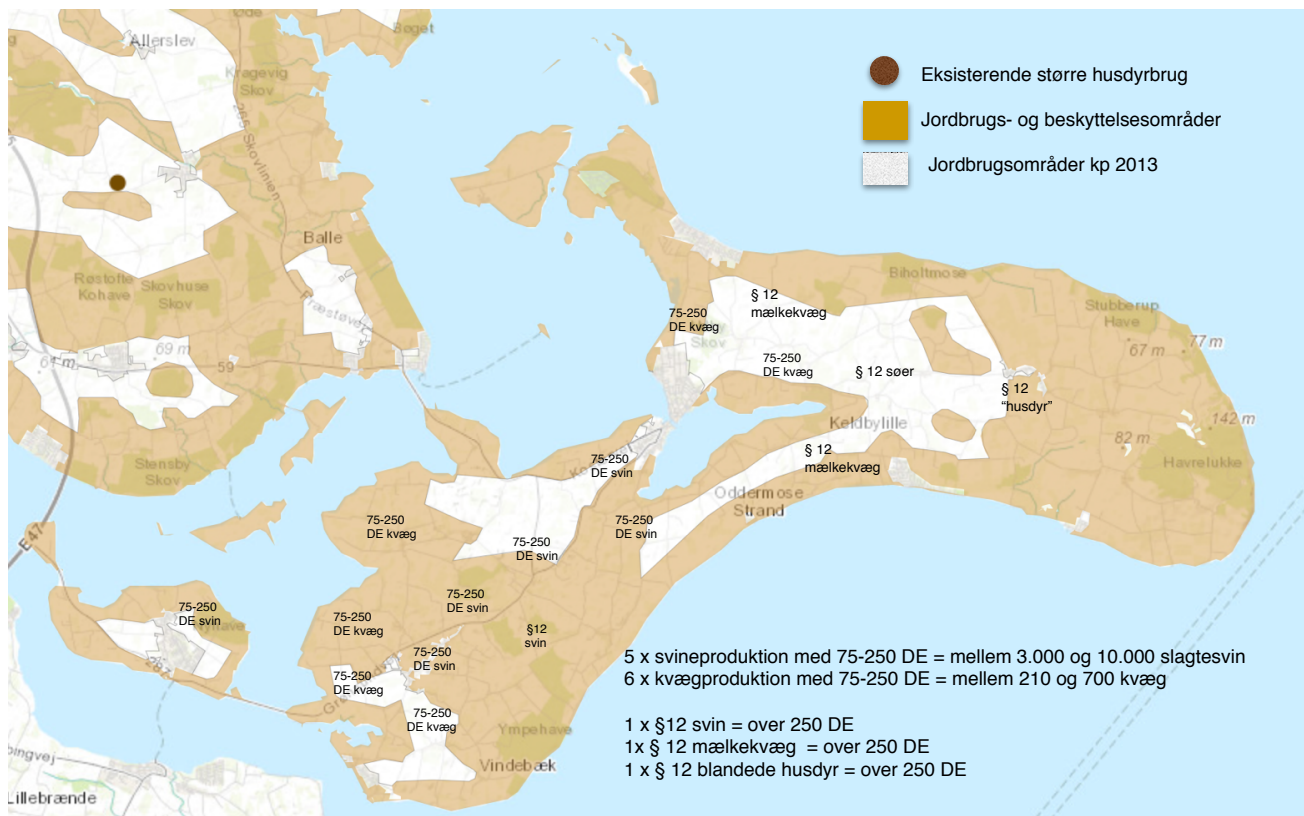
The following map illustrates the agricultural areas within the Municipality of Vordingborg.



Marked with "white" appear farming areas which are primarily reserved for agricultural industries. Only in South Zealand there are established so-called larger holdings with more than 500 animal units, marked on the map with brown dots. With light brown colour are the so called agricultural and conservation areas selected.

The next map shows the section of the planned biosphere reserve. On this site map all farms with 75 to 250 animal units and so called §12 farms with more than 250 animal units are added. In the biosphere candidate area Moen are found 5 livestock productions with up to 10.000 pigs and 6 cattle productions, including two dairy cattle farms with up to 700 animals. The 3 largest livestock producers are 2 pig farmers and one dairy farm with more than 250 animal units.

<http://vordingborg.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=47f2bbc95c7b49249497af4a1a0d2456>



In addition to that, a number of small farms and grazing association with 3-15 or 15-75 of livestock, mostly cattle and to a lesser extent sheep and horses are registered. All farms with 75-250 or more animal units are placed in the transition area.

A current extract from the municipal register for agricultural industries shows for the proposed Moen Biosphere Reserve a total of 82 farms with livestock and one grazing association. In most cases it means smaller or leisure agriculture with animal husbandry of cattle or sheep or a mix of agriculture and animal husbandry. Several small businesses with animal husbandry are visiting farms and / or farm shops with local products. This means over half of all registered farms in the upcoming biosphere reserve have only 3-15 livestock units or maximum 15-75 animal units. Among all registered farms there are 3 purely agricultural industries, 5 farms with horses and a dog pension.

15.3.1 Types of agricultural (including grazing) and other activities, and people involved

In contrast to earlier times, when most residents of the rural areas found work in agriculture and fisheries, the modern agriculture only employ few people. This gets its expression in the growing number of part-time and hobby farms in the proposed Moen Biosphere Reserve. The approximately 100 farms employ a total of 113 employees. The classic farm today still is a predominantly male domain. Women are occupying modern niches like horse breeding or cultivation of local quality products as an organic apple orchard or growing of organic asparagus etc. Out of the total number of farms, there are registered 9 female business owners, which operate three horse farming or horse-boarding; but also one of the two biggest livestock producers is a woman.

The future biosphere reserve is characterized by agricultural 'times of change', as known from other European countries. High-tech and expensive equipped, depending on subsidies and falling prices for conventional products, cause farmers to investigate alternative business cases. The consumers support this trend by demanding organic and local products, which range is increasing in all kinds of supermarkets. Danish consumers become more critical, for example about the recently reinstated law on the use of pesticides, they speak animal welfare and in the bigger cities and at least during their holiday, they inquire locally produced food.

Part-time or hobby farms and a growing number of so-called "creative entrepreneurs" characterize the proposed Moen Biosphere Reserve. Considering life in the countryside as a lifestyle change, which often can be fitted with a shorter stay at the urban workplace and part time homework in front of the computer screen, creates new niche businesses in food and / or local production, from beekeeping to hand made chocolate specialties or a horse pension. Some of these rural entrepreneurs are represented in a local food network called "Kultivator" which consists of 36 members, partly primary producers and partly farm shops, restaurants and accommodations with an interest in local specialties. In this kind of new "use of land", women are represented with 50%.



In addition to that, another group of residents is engaged in nature conservation. Grazing Associations, smaller companies and a number farmers organize grazing by cattle for nature care of the vulnerable coastal areas in the upcoming biosphere area on Møn for the benefit of biodiversity and species-being; including all parts of the islands from the limestone grasslands with orchids on Høje Møn to the bird sanctuary on the tidal wetlands of Nyord.

15.3.2 Possible positive and/or negative impacts of these activities on biosphere reserve objectives

Negative effects of agriculture can occur for example through contamination of streams or groundwater areas through pesticides and fertilizers. The industrialization and intensification of modern agriculture has contributed to the decline of biodiversity in terrestrial and aquatic areas.

Vordingborg Municipality takes in their strategy responsibility for the different pressures that may occur in the open land, which help reduce risks and ensure that account is taken of nature and agriculture interests. Vordingborg Municipality has prepared a supervision plan for the environment and oversees that business and agriculture comply the Environmental Protection Act and the Livestock Approval Act and the rules and regulations are laid down on the basis of these laws.

Vordingborg Municipality emphasizes that supervision is based on dialogue, so that businesses and farms consider the supervision as a means to comply with legislation and guidance on environmental improvement. Supervision will consist of physical inspection and administrative supervision. At the physical supervision the municipal employee will visit the company or agriculture and undergo the environmental conditions partly through a review of production and via documentation. By administrative supervision various data such as analysis, green accounting, internal control reports, fertilizer accounts and so on are checked. For the most part the physical supervision is notified beforehand, but unannounced inspections can be carried out, for example regularly unannounced conducted floating layer controls on the farms.

Assessment of environmental conditions

When reviewing the business or agricultural use the municipality will assess the environmental conditions based on the following general topics:

Agriculture:

- To minimize the discharge of nutrients to the Natura 2000 areas
- To minimize the evaporation of ammonia from livestock housing, slurry tanks and store manure
- To avoid contamination by hazardous waste

Companies:

- Emission of pollutants to the air
- Proper storage of hazardous substances and waste
- Discharge of wastewater to treatment plants and recipient
- Noise in the environment
- Risk of soil contamination
- Disturbance to the local residents

It is estimated that the points above are adequate for the highest risk of contamination in areas with businesses and farms in Vordingborg Municipality.

Environmental risk assessment and monitoring plan

Based on the risk assessment of businesses and farms, there establishes a date for the next inspection. This risk assessment is made after each supervision. When inspections are planned this way, the companies that have the greatest risk of pollution and are in the biggest need of guidance, get supervision often. Experience shows that supervisions prevent contamination and provide good dialogue and good cooperation with businesses and farms. As for the farms, it applies that the agriculture with most livestock will get supervision more often.

In the Municipality of Vordingborg there are no companies covered by the statutory order on risks. There has not been a need for coordinated efforts and cooperation between police, emergency, labor and environmental authority on this kind of companies.

The municipality has designated most areas as areas with special drinking water interests, and therefore the planning of industrial areas and the location of companies has put a special focus on the protection of pollution of soil and groundwater.

The municipality has developed special procedures in their quality management systems that describe the workflow concerning supervision and sanction procedures in the case of violations of the law. After the supervision there is compiled an inspection report, which is send to the company with a letter on possible enforcement. Any enforcement is followed either by physical inspection or by dispatch of documentation of the control.

Agriculture and nature conservation

Even if a property is located on a farming area, there may be regulatory constraints in the agricultural practice. This is the case for the natural habitats designated under the nature conservation act § 3 protection lines and in relation to livestock. In the establishment expansion and major changes on farming of more than 75 livestock units, the livestock production must be approved by the related law.

Installations of intensive livestock farms that require environmental approval, which will result in significant impacts on the environment, cannot be placed in following areas, when the system is in conflict with the designation base of the area:

- a. Nature conservation areas and international nature conservation areas (Natura 2000).
- b. Nitrate sensitive extraction areas for drinking water. Catchments to coastal waters, where the objectives are not met.

The location of new, major animal productions, and the expansion of existing livestock farms to over 500 animals - map 15.3.1 – must be based on a renewed plan. In the future designation of areas for placement of large livestock, farms must be taken into account according to urban growth, landscaping, nature and environmental interests, as well as in the environmental approvals.

15.3.3 Indicators to assess the state and its trends

In the proposed Biosphere reserve the national authority, the Nature Agency Storstrøm, and the Municipality of Vordingborg cooperate about nature care and the monitoring of natural and agricultural areas. This cooperation happens in all zones. The basis of the cooperation lays partly in the national management plans for the core areas, and partly in the municipality-plans prudential rules.

Regarding the socio-economic development in the proposed biosphere area, there will be worked out a management plan in which the indicators as described in 15.3.2 will be incorporated. The interdisciplinary advisory board develops the plan, where also NGOs, volunteers and the business will get a seat.

Examples of indicators:

- Increase the number of nature conservation areas, in the catchment areas of coastal waters, in order to create larger buffer areas from agricultural land.
- Cooperation with agriculture and fisheries – on new sustainable revenue opportunities through local quality products, based on less environmental impacts and greater biodiversity.
- A number of new jobs based in active nature preservation and local production, for example Fishing Zealand or Nyord Organic Meat.

15.3.4 Actions currently undertaken and measures applied to strengthen positive impacts or reduction of negative impacts on the biosphere reserve objectives

As the current municipality management plan shows, there are neither plans nor space for more intensive livestock farming in the proposed biosphere area. Installations for the intensive farming that requires environmental approval, and which will result in significant impacts on the environment, can not be placed in the following areas when the system is in conflict with the designation base of the area:

A. Nature conservation areas and international nature conservation areas (Natura 2000).

B. Nitrate sensitive extraction areas for drinking water; catchments to coastal waters, where the objectives are not met.

In addition, the municipality must also handle the landscape, nature and environmental interests in the open countryside. These interests must be weighed against each other, and all interests should be accommodated, when treating cases of residential and commercial construction or building and construction to tourism, outdoor recreation etc.

The management plan for the future biosphere area will describe positive impacts through projects on nature preservation and the development of sustainable business that support the sustainable development progresses.

The future of the rural surroundings in the biosphere area will be based on sustainable management of land and water areas. The agriculture will get support to receive funding to contribute with cleaner water, local products of good quality and healthy environments with greater biodiversity.

15.4 Other types of activities positively or negatively contributing to local sustainable development, including impact/influence of the biosphere reserve outside its boundaries.

15.4.1 Types of activities, area concerned and people involved (including men and women).

A broad range of other local land and sea use activities occur within, or impact upon, the proposed biosphere reserve. The most significant are concerning alternative energy, climate change and infrastructure building projects, which are set out below. Some projects are already realized, some are under development:

- **The “Kriegers Flak” offshore windmill park.** Before 2022, Denmark’s largest offshore windmill farm to produce CO₂- free power, will be installed. The park of 600 MW will be built off shore at Kriegers Flak in the waters between Møn, southern Sweden and northern Germany. The wind turbines can produce power equivalent to approximately 600,000 households. The Danish part of Kriegers Flak is a 180-km² area in the Baltic Sea. The peculiarity of this area is, that also Sweden and Germany have designated their areas to be turbine areas, so it is estimated that at Krieger’s Flak in total could be placed up to 1,600 MW wind turbines. The landings cables to each national coast will not only be used to carry their own power generation in the country, but also to transfer the power between the countries. The EU supports this project with more than a billion €.

- **The photovoltaic power station.** The solar park consists of 6.000 solar panels and occupies 3.5 hectares of land. It is able to annually produce more than 1.3 million kilowatt. The annual production corresponds to 1.44mW, what about 350 detached household consume together in a year. Another solar power park occurred on private initiative by one of the owners of the new conference hotel in Stege. They performed a photovoltaic park in 2013, of about 3 ha about 5 km from Stege.

- **Stege District Heating is contractor** for both the straw heating plant and the solar park, which supplies Stege town and the public institutions including the nursing home with district heating.

- **Wind turbines:** the Municipality of Vordingborg will help to reduce CO₂ emission from electricity production by the installation of wind farms, where the location of the plant does not conflict with other considerations. Guidelines for the installation of wind turbines in the municipality will ensure that the wind turbines placement and appearance are aligned, and that the turbines are installed in harmony with the landscape.

- **Aqua Park Møn.** The ambitious project idea in the field of Steges former sugar factory, is dealing with the transformation og the factory surroundings to a modern centre for business, culture, leisure and tourism services.

- **A pontoon bridge in front of the Cliffs.** Until the early 1950s there was a jetty at the cliffs of Møns Klint, where tour boats could moor. A project regarding relaunching of a modern pontoon bridge is on the drawing board, but will have to obtain much derogation to the coastal nature before a possible accomplishment.

15.4.2 Possible positive and/or negative impacts of these activities on biosphere reserve objectives

The islanders on Møn are very open to solutions that increase the use of alternative energy. The straw heating plant in Stege has for many years been an inspiring place to visit for rural municipalities from Denmark and Germany in particular. Similarly, solar power plants in the city's business areas are positively received. In the 1990s many citizens had shares in the first wind power plant in the countryside. This positive attitude, has however changed to a predominantly protest attitude. The reason for this change of attitude depends on the modern wind turbines burden due to noise, shadow flicker, and illumination.

In 2016 a proposal to build a 150m tall wind turbine on Møn was abandoned, because of massive citizen protests from the local area.

Advanced tourism projects such as Aquapark Møn or the floating bridge in front of Møns Klint must go through a long and demanding environmental approval process as well as comprehensive fundraising. Both projects are currently in the idea plan. The shareholders of both projects have stated that they will work to unite the projects with the biosphere project value foundation in relation to the conservation of nature and sustainability.

Regarding the impacts of these activities, it can be considered that both the danish legislation and the culture for citizen participation will assure that no negative impacts will threaten the biosphere reserves objectives.

15.4.3 The indicators used to assess the state and its trends

Both on national and on local level structures and indicators are implemented to assess the state and its trends. The Municipality of Vordingborg has adopted a climate and energy policy, which has set goals, guidelines and reporting strategies for climate, wind turbines and energy, including a number of facts and figures to assess the state. See 15.4.4.

The national Beach protection Act is one of the instruments to secure the national coastlines. For the first time ever the country's municipalities have through two laps been able to apply the Ministry of Industry to join in a pilot scheme for unique coastal and nature tourism projects, to provide tourists a wider range of experiences along the Danish coasts. Aquapark Møn is among the 10 pilot projects, which have been given dispensation to build coastal holiday centres to strengthen coastal and nature tourism. Thus, the first hurdle in a long approval process is taken, as there exist a general prohibition of construction near the coasts. It should be mentioned that the Aqua Park Møn not is planned to be build along the open coastline, but on the area of the former sugar factory in Stege harbour.

Also the pontoon bridge in front of the cliffs has to be approved by a number of hearings and permissions as part of the Beach Protection Act, although it is planned as a movable assembly.

15.4.4 What actions are currently undertaken, and which measures will be applied to strengthen positive impacts or reducing negative ones on the biosphere reserve objectives?

Although Denmark is expected least to be effected by climate change, it is becoming warmer and there will in the future be more extreme weather situations. This includes among others heavy rainfall, more frequent and longer droughts, and more and stronger storms. The summers will be more warm and dry, and the fall will be wet. The Municipality of Vordingborg has in recent years formulated its climate action through strategies and action plans, partly in relation to CO2 reduction and partly in relation to climate change adaptation. These strategies and action plans will be regularly be revised as knowledge building in the area progresses.

Construction. By local planning, the possibility of alternative construction and energy are assessed. Outside the areas of collective heat protection requirements for energy classification for new construction must be considered. When planning houses and service functions, they must be built minimizing the need for transport for example by obtaining station vicinity.

Climate Adaption. Prioritizing climate change adaptation should be undertaken as a priority within the three areas: urban, agricultural land and nature, which is based on risk maps. Flood endangered areas must be kept free of new construction. Local planning must incorporate space for rainwater. Plant for climate adaptation in cities should generally engage in recreational, architectural and/ or functional solutions as an integral part of the cityscape. Open countryside must incorporate technical installations for climate adaptation that considers the surrounding countryside.

Low ground areas and potential wetlands should, as far as possible, form natural transfer stations for the relief of flood-prone urban and rural areas. Special habitats that are vulnerable to changes in water level, should be protected from flooding or identify other areas to which the habitat can spread.

15.5 Benefits of economic activities to local people

The benefits and economic activities for the area of the proposed biosphere reserve are described in the “Potential plan for the Coastal Destination Møns Klint”. The long term goal is based on a doubling of the tourism revenue from 440 million. kr. in 2012, to 880 million. kr. 2022.

The potential plan is focusing on the ‘biosphere’ and the ‘dark sky’ concepts as the leading structures for the “green transition” and sustainable development of the destination. The business structure for the proposed biosphere reserve is already today characterized by a varied field of micro-enterprises, which will benefit from the green transition by opportunities for new business models and the expansion of existing concepts. The benefits and economic activities will be connected to new jobs in the field of nature care and local production, development of eco tourism experiences and services and in investments in infrastructure and accommodation.

15.5.1 Income or benefits that derive directly from the site proposed as a biosphere reserve

The estimated economic value of the Municipality of Vordingborg is calculated in yearly reports by the Zealand Growth Forum /Vækstforum Sjælland. The analysis of the conditions for growth and business demonstrate progress in the areas construction employment, exports, entrepreneurship and the housing market. The ‘Analysis of Vordingborg Municipality Commerce DNA 2015’ is covering the whole municipality, including the proposed biosphere area on the islands.

Businesses in Vordingborg Municipality increased in 2014 a value creation by 3.5%. This is a stronger growth than registered in the region and the country as a whole. The improvement is unfortunately not yet translated into stable increased employment. Small businesses with between 1 and 10 FTEs are important for employment in Vordingborg, where none of the major danish companies are headquartered.

Turnover

The revenue for companies based in Vordingborg Municipality were in Q2 2015 of approximately DKK 2,163 million, which is DKK 120 million (approx. 6%) higher than Q2 2014. It is especially resource divisions like energy/environment, medical/health and building/residence, which have experienced impressive growth in revenues of 35 %, 19 % and 13 % 7 in this period.

Employment

The total waged employment is fairly status quo with an increase from Q2 2014 to Q2 2015 to a total of 6.728 jobs. Resource areas food, IT/communications and medical/health experience decrease of 6% , 8% and 4% , which corresponds to an overall decrease of 124 full-time positions. Conversely, going ahead for the construction/housing, transport, energy/environment and other sectors, rising by 4%, 2% , 10% and 3%, in total equal to 138 full-time positions. The private employment, adjusted for seasonal fluctuations, has been relatively stable with 6600-6800 full-time employees. In return, Vordingborg Municipality lost many positions in the public sector since 2013. Out of the 10 biggest private businesses in Vordingborg, two are placed in the proposed biosphere reserve. Bisca A/S (Cake industry) with 270 employees is placed in the transition area near Stege, and Møns Bank with 70 employees is placed in the centre of Stege town, which is pointed out as bufferzone because of its status as cultural heritage.

Economic structure in Vordingborg Municipality

A relatively large share of total private employment in Vordingborg Municipality is in companies with fewer than 20 employees. Here are working 57% of private employees. Furthermore employ micro-enterprises (with fewer than 5 employees) constitute 19% of total private sector workforce in the Vordingborg Municipality.

The food production represents the largest share of total revenue (30 %), and the second largest share of total employment (18%) of private companies in Vordingborg Municipality. Furthermore, the food industry is characterized by a few large enterprises, like the Bisca A/S Cake industry. Only two out of the ten companies have giving up their turnover, respectively Bisca A/S and Danish Malting Group A / S with 417.8 million and 268.7 million. Together, these two companies account for about 32% of the total turnover in the food production of 2.495 million and about 4.4% of total employment out of a total of 6.278 full-time jobs.

The numbers regarding tourism sales in the Vordingborg Municipality are not shown for 2015, since there is established a new tourism marketing destination cooperation, including Vordingborg, Faxe, Stevns and Næstved.

In 2012 the total estimated tourism value was about DKK 512 million, published by Visit Denmark. Spread over the different products, the following table emerges the consumption of tourism by product, Vordingborg 2012:

	Total		Danes		Foreigners	
	mio. DKK	pct.	mio.DKK	pct.	mio. DKK	pct.
total	513	100	283	100	229	100
Tourism products	176	34	103	36	72	32
overnight stays	54	10	35	12	19	8
restaurant	64	12	34	12	30	13
lokal transport	40	8	22	8	18	8
travelservices	3	1	2	1	1	0
culture and leisure	15	3	11	4	4	2
Retail						
Food, drinks, tobacco	109	21	61	22	48	21
Gasoline, other fuels	56	11	37	13	18	8
Others	37	7	19	7	18	8
Other products	135	26	62	22	73	32

Tourism: The national tourism organisation VisitDenmark presents a yearly report about the tourism industry, regarding overnight stays, visitor markeds and job development. All numbers are entered in the national database "Danmarks Statistic". The proposed biosphere reserve is since 2015 part of the tourism association "Sydkyst Danmark" covering four municipalities, which will have consequences for future data comparison. It is proposed in the biosphere management and action plan to collect data of the economic contribution of tourism in the upcoming biosphere reserve.

Agriculture: Also for all aspects of agriculture "Denmark's statistics"- delivers numbers for different types of characters, including employees. Since only a few enterprise are giving up their turnover here, it was not possible to determine the numbers for this application; but it should be mentioned that the agriculture in the proposed biosphere area contributes about 113 jobs, which underlines that the status of agriculture as one the main businesses in the proposed biosphere reserve is decreasing.

Local food growing: Vordingborg Municipality and Fødevarestyrelsen- regularly assess their provision for all activities.

Nature Management: The Ministry of Environment and Food and The Nature Agency Storstrøm are responsible for the areas of the proposed biosphere reserve, and they maintain data and numbers regarding different aspects of management.

Energy and climate: The Municipality of Vordingborg and their energy operators are responsible and deliver data, partly actually online.

Fishing: The danish Ministry of Environment and Food and the DTU Aqua, are responsible for fishcare management in water courses, lakes and coastal waters. Regarding the fisheries contribution to the income and benefits of local communities in the proposed biosphere reserve, it can be stated that there are registered at the time of application 16 enterprises with a total of 17 jobs.

16. LOGISTIC SUPPORT FUNCTION:

16.1 Research and monitoring:

16.1.1 Existing and planned research programmes and projects as well as monitoring activities and the area(s)

The Biosphere Partnership plans to identify the specific research questions and the needs to effectively understand and carry out key management and nature care activities in the area. Hence as part of the wider process for developing a future action plan derived from the management strategy the already existing research and monitoring activities will be incorporated.

The Municipality of Vordingborg and the Nature Agency Storstrøm are committed to the nature and environmental monitoring program NOVANA, which aims to provide knowledge about nature and environment in Denmark. This knowledge is part of the management foundation of the Danish nature and environment policy and decision making for environmental policy initiatives. Data from the program are also included in the documentation of the effects of management initiatives on environment and nature. Finally Denmark uses this knowledge in reporting to the directives and conventions. NOVANA provides data at several levels. But there are groups of species like fungi, insects, butterflies and moth in the proposed biosphere reserves core areas, which the full knowledge is missing about. They are prime candidates for further exploration, especially in the key habitats of the Høje Møn and Ulvshale, where the knowledge base is far from being complete. In addition to the authorities, the local departments of The Danish Society for Nature Conservation (DN) and The Danish Ornithological Society (DOF) contribute to measurements by e.g. counting of birds or knowledge to management planning.

The proposed biosphere reserve wishes work with methodologies and tools for responsible human engagement in nature in order to ensure the natural values in the surrounding landscape. This could include exploration of different ecosystems and making recommendations / launch initiatives to optimize both nature and species, but also exploitation for food and recreational value for people. This could very well go hand in hand with the mapping of ecosystem services and particularly the value of the various services as mentioned in section 12.

Another point of interest is the recycling of biomass, especially from the sea, like seaweed and algae, which several times a year can be found in large quantities along the coastlines.

Measuring the income and/or benefits of the biosphere reserve for the local communities by several examples could be a relevant research topic for master studies.

A target for the Biosphere candidate is also to demonstrate in various ways how to maintain the good life in rural areas where people of all ages can live.

16.1.2 Summary of past research and monitoring activities related to biosphere reserve management.

At this state of the application proces, there is only limited access to scientific surveys in the proposed biosphere reserve. All research undertaken is committed to special projects connected to the Moen Biosphere Reserve work areas.

Water: Monitoring and research

- Marking the brackish water pikes stock by the DTU Aqua in cooperation with Fishing Zealand. Without substantial data it would not be possible to raise a debate, support arguments or gain a hearing in the political decision making process. That is why the Fishing Zealand project also has fundet:
- A report about the Sea trout stock on Møn, Lolland and Falster.

- Vordingborg Kommune is responsible for the monitoring of the quality of the drinking water¹ and the watercourses². The Ministry of Environment and Food is the responsible authority for the coastal waters³.
- A bachelor project in 2015 about Angling tourism on Møn investigates the concept of sustainable fishing tourism, including the benefits of an active implementation of fishing tourism in the local tourism strategy of the Danish municipality of Vordingborg.

Land: Monitoring and research

- Vordingborg Municipality is cooperating with the local ornithologist and nature associations about bird counting on the Nyord meadow reserve.
- The Nature Agency Storstrøm is monitoring the checker tree (*Sorbus torminalis*) in the Ulvshale forrest.
- The association of the Medieval Garden i Stege is collecting historical plants from the proposed biosphere reserve and got during summer 2016 professional help from a guest research worker from the University in Århus to determine and list species in nature, villages and Stege city. The garden in Stege is designed to protect rare species and to communicate their historical use.

Cultural heritage:

- Museum Southeast Denmark has scientifically educated and inquiring personnel in the fields of archeology, history - ethnology and art history. The museum has a clear ambition to contribute significant research in all these areas and already contributed research in the proposed biosphere reserve by the excavation of Stege Borg, the circular rampart Timmesø Bjerget in the forest of Møns Klint or around the different Stone Age settlements.

Tourism:

- Several tourism research projects have been carried out during the last 10 years with focus on tourism potentials and impact on population, economy and environments. The studies were carried out by the Aalborg University, the Danish Center for Coastal Tourism and several consulting enterprises.
- Currently there is an international research project on the tourism economic impact of the Camoeno Hiking Trail project.
- The GeoCenter Møns Klint has hired an industrial PhD as a researcher in a research project focusing on a selected "dinosaur exhibition" that also promotes a science process. How can science exhibitions optimize so that visitors gain a better understanding of what research is and will be better able to navigate in the societies different information and opinion pursuits? The GeoCenter Møns Klint is Co-host institution on a PhD project on 'fossils from Jameson Land - East Greenland'. In connection with Dinosaur Expeditions to East Greenland in 2012 and 2016, which the GeoCenter headed, cooperation with the following research institutions was established: Denmark's Natural History Museum, University of Copenhagen, Lisboa University, Museu da Laurinhã, the Greenland National Museum and the Geoscience Museum of Faøe.

¹ <http://www.vordingborg.dk/kommuneplanen/land-og-vand/grundvand/vandforsyning/>

² <http://www.vordingborg.dk/borger/miljoe-og-natur/vandloeb-og-soeer/vandloeb-og-draen/>

³ <http://svana.dk/vand/badevand/>

16.1.3 The research infrastructure available in the proposed biosphere reserve

Research is needed to terrestrial basic research and marine species, but also in human resources and social sustainable development in the rural area of the proposed biosphere reserve. The following research infrastructure is available:

- Museum Southeast Denmark. The Museum carries out research in the context of archeology and modern times. The topics of research include both basic and applied research. The aim is to guarantee a research of high quality, at local, national and international level. It should be delivered contributions to relevant perspectives and current problems of society debate. The potential of the museum collections will be exploited and there are publications issued.
- There is a cooperation agreement between the Municipality of Vordingborg with the University of Copenhagen, regarding themes for bachelor og master studies, which could be relevant for the biosphere project.
- DTU Aqua, Center for Ocean Life. The center conducts research in oceanography, the dynamics within marine populations and ecosystems, coastal eco systems, freshwater fisher and ecology, fish species stocks and fishery, shellfish and seaweed.
- Roskilde University (RUC), Danish Centre for Rural Research. The objective of the Danish Centre for Rural Research (CLF) is to contribute to the development of sustainable rural areas specially focusing on business development and the population's life condition.

16.2 Education for sustainable development and public awareness:

16.2.1 Existing and planned activities, indicating the target group(s) and numbers of people involved (as "teachers" and "students") and the area concerned.

The educational infrastructure of the proposed biosphere reserve Møn comprises: one public school with three departments in the western, central and eastern part of the Transition Area. In general a Danish public school starts in the kindergarten class and leads all students together until the ninth degree. Subsequently it is possible to visit a secondary school or to start an apprenticeship, both offered in the city of Vordingborg or in the bigger cities on Zealand and Falster.

The public Møn School, including the three local departments, attends 626 students for which there are 46 teachers and a number of educators and trainers for the educational leisure sector. There are three private schools in the transition area, hereunder Møn Friskole with 187 students, 24 teachers and its own private nursery school with 37 children and four teachers. Bogø Kostskole has a long tradition, founded in 1887 in the buildings of a former navigation school, it offers today a day school with 170 students and a boarding school with 53 students from kindergarten class to ninth class. The recent private school was founded in 2015 in a former farm. It is named the School of Life and has today 30 students and 6 employees. In the tradition of the Danish adult education the public college Rødkilde, founded 1865, offers today theatre courses, which extend over 18-22 weeks, or full-time courses of 40 weeks. 24 instructors, teachers, musicians, actors and performers are connected to this school. In October 2016, the school is celebrating its 150th anniversary.

Nature and environmental education is offered by the GeoCenter Møns Klint, which offers a range of teaching subjects in accordance with geography, biology, nature/ technique, sports etc. The education units are age group adapted and include instruction by one of the centre's nature interpreters. The GeoCenter Møns Klint is placed in the Core area of the proposed Moen Biosphere Reserve.

Future planned education projects include:

The outdoor school concept should be realized in cooperation with the public and private schools and institutions and the nature interpreters of the Municipality of Vordingborg and the coming biosphere secretariat. Nature mediation materials could be funded by the Danish Outdoor Council, which earlier has funded the materials for existing education locations.

The Møn school in Stege is participating in a project under the EU Erasmus programme in order to expand its profile as an international school. First partner school is a secondary school in Neustadt, Germany.

Training: To public social employment programs are already established in the proposed Biosphere Reserve: “the forest helpers” and “the practical service”. Both projects offer the labor market inclusiveness equal workplaces, including diverse work tasks, resource clearing and teaching. Each function is individually adopted to the employees level, skills and abilities. The assignments take place primarily outdoor with maintenance of outdoor areas. Activities are e.g. small scale nature care projects, collecting of seaweed and algae and testing of recycling methods. The social enterprises are partners in the biosphere-project and will take part in the development of new projects according to the biosphere action plan.

Both the social projects and the “Outdoor school” have potential to be developed in a broader sustainable way as permanent activities in the upcoming biosphere reserve. Cooperations can be made with similar projects about gardening, farming and local products in the South Zealand parts of the Vordingborg Municipality.

16.2.2 The facilities and financial resources available for these activities

The public schools are financed by the Municipality of Vordingborg. It is part of the public schools strategy to lead to “open school” education with differentiated instruction with a lot of physical movement and focus on digitization⁴. That’s why they welcome the biosphere project as a coming partner in offering new education modules in nature.

The private schools are funded by the students parents supplied by national or private educational funding, and they all have written nature, environmental training and outdoor life in their strategies.

The GeoCenter Møns Klint is an independent institution, financed by entrance fees, projects, national and private funding. The center is one of the most important partners in the eastern part of the proposed biosphere area and together with the biosphere-coordinator applying for coming projects, as described in section 3.3.

The social projects are financed by the Municipality of Vordingborg and the Nature Forest Agency. The Outdoor school project will be a common project of all partners in the upcoming biosphere reserve and available for all children and students in the municipality and in the region, financed by public funding and the Danish Outdoor Council, which earlier funded the already established dissemination media.

16.3 Contribution to the World Network of Biosphere Reserves:

16.3.1 Contribution to the World Network of Biosphere Reserves, its Regional and thematic Networks

During the preparation of this application, the working group has established contact to other Biosphere reserves in the Danish neighbour countries Germany and Sweden, with the Nord Map

⁴ [http://polweb.vordingborg.dk/open/Børne-,%20Unge-%20og%20Familieudvalget%20\(Åben\)/2014/03-06-2014/Referat%20\(Åben\)/03-06-2014-%20-%20Bilag%2003.02%20Strategi%20for%20skoleområdet%20i%20Vordin....pdf](http://polweb.vordingborg.dk/open/Børne-,%20Unge-%20og%20Familieudvalget%20(Åben)/2014/03-06-2014/Referat%20(Åben)/03-06-2014-%20-%20Bilag%2003.02%20Strategi%20for%20skoleområdet%20i%20Vordin....pdf)

network and with the Biosphere secretariat in Paris. Study trips and personal contacts supported the work out of the Moen Biosphere project and to point out themes of interest.

The proposed Moen Biosphere Reserve can contribute to the Biosphere Network on the following levels:

As the first biosphere reserve in Denmark, we will start a cooperation with other places with UNESCO nomination in our region, such as the Geo Park Odsherred and the Stevns Klint World Nature Heritage site. We will offer good practise and invite other Danish islands, municipalities and regions into the biosphere network.

We are already looking out for cooperation opportunities with other biosphere reserves in the neighbour countries, the South East Rügen Biosphere Reserve and the Vattenriket Biosphere Reserve in Kristiansstad in Sweden. There are plans for a "biosphere friendship" between the Municipalities of Kristiansstad and Vordingborg. In March 2017 a delegation of the Moen partnership and local politicians will visit Vattenriket and hopefully the friendship document will be ready til be signed during a visit from Kristianstad after the nomination of the proposed Moen Biosphere Reserve.

We are having a look at EU funding programmes with relevant themes for biosphere projects. This could be possible under the Interreg and South Baltic programmes. It depends on the programmes focus themes to find relevant partners and subjects. The South Baltic programme is right now open for applications about development of sustainable green and blue tourism, which could be an opportunity to focus on a biosphere network around the Baltic Sea.

In September 2015 we took part in the yearly meeting of the North MAB Biosphere reserves in Sweden. We will join this network as soon as the proposed Moen Biosphere Reserve will be nominated.

The themes we would like to cooperate about are various, but in the beginning depending on our action plan regarding the conservation of nature on land, in water and the darkness; furthermore the development of learning and training units for young people and grownups, and the establishment of monitoring, research and support of species, landscapes and social environments.

16.3.2 The expected benefits of international cooperation for the biosphere reserve

The biosphere-partnership on Møn benefits already of some well established contacts to other Biosphere reserves. We got lots of inspiration and professional input that helped us to identify subjects and potentials for the upcoming biosphere-project on Møn. The status as a biosphere reserve will lead focus to our region both national and international and help us to realize the projects described ind our action plan.

We will share experiences and benefit from others' experience on several levels. Some examples: It is relevant to have a broader look at the conditions of several species, such as the migrating birds on the 'Baltic Flyway', which two times a year cross the Baltic sea from the Northern Germany, Poland, Denmark, Sweden and further North. The same situation applies to the origin fish stocks in the Baltic Sea and the invasive species and the problems they cause, like the round goby (*Neogobius melanostomus*). Another proposed theme is the rural development on smaller islands and climate change consequences regarding e.g. floods.

We expect to learn from professional exchange and inspiration between biosphere reserves, and we offer sharing of experiences in cooperation projects. We want to support the UNESCO network during mediation and marketing and expand the biosphere concept in our country.

16.4 Internal and external communication channels and media used by the biosphere reserve:

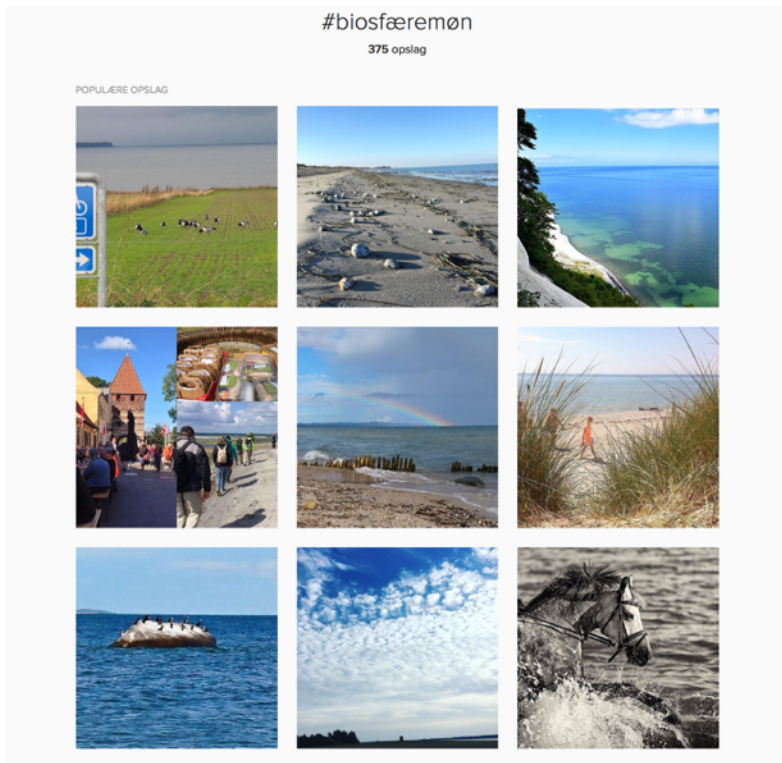
16.4.1 The website

Yes, a danish site is available; the translation is planned during the following month.
www.vordingborg.dk/biosfære

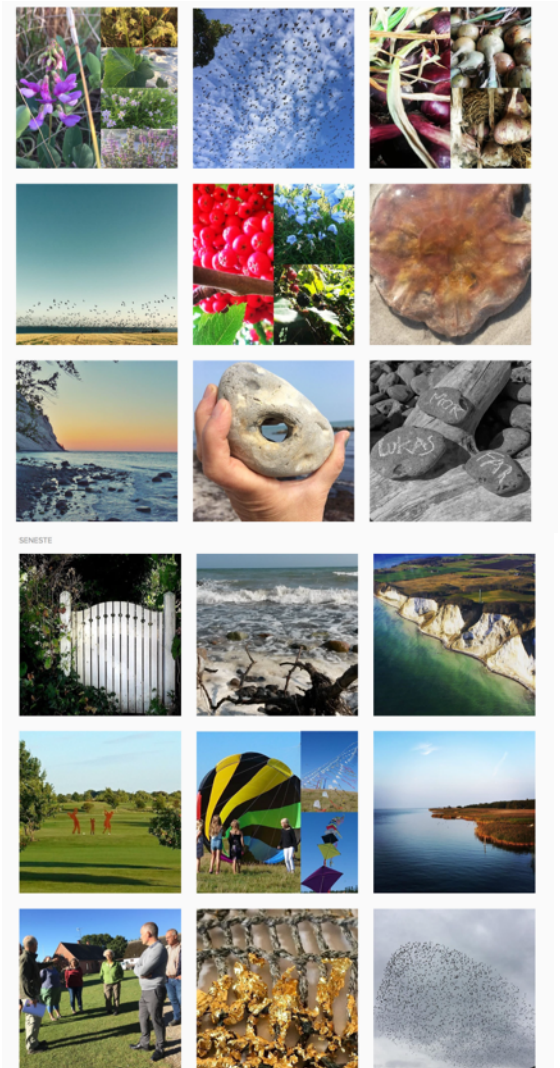
16.4.2 An electronic newsletter

There is planned to publish a half-yearly electronic newsletter i the proposed biosphere reserve.

16.4.3 Social network



On the web-site publishes actual informations under “Here and now”. There are two hashtags #biosfæremøn and #biospheremoen introduced on the Instagram profiles www.visitmoensklint.dk and on www.vordingborg.dk. Furthermore there is established a local danish Facebook group for the bioshere project om Møn with about 120 members.



17. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

17.1 Management and coordination structure:

17.1.1 The legal status of the biosphere reserve

UNESCO nominations are in Denmark given to one Geopark, one Biosphere Reserve and six World Heritage sites. The overall goal of action in the Danish UNESCO participation is to assist in ensuring that UNESCO, as part of the UN process and through its member states, will meet its objectives. The Danish authorities that are primarily working with UNESCO are the Ministry for Children, Education and Gender Equality, the Ministry of Foreign Affairs, the Ministry of Culture Denmark and the Ministry of Higher Education and Science. The Secretariat of the Danish UNESCO National Commission is located in the Ministry of Children, Education and Gender Equality. The Danish National Commission acknowledges the applicant's recommendation.

The anchoring of the proposed Moen Biosphere Reserve is located in the Municipality of Vordingborg, as the local government. Furthermore a local biosphere partnership has been created, which consists of an advisory board with national and local land managers who represent the core and buffer zones. Included in the cooperation are the Nature Agency Storstrøm, the NGO Bird Protection Foundation and representatives of culture, education, volunteers, businesses and tourism.

17.1.2 The legal status of the core area(s) and the buffer zone(s)

The core areas are distributed in the following areas within the appointments:

- Wildlife Reserve, 2,371 ha
- Habitat Nature, 2,496 ha
- Biotope protection areas (§ 3 areas), 2,095 ha
- Natura 2000 area under the EU Habitats Directive, 1,172 ha

The core areas mutually overlap, so that biotope protected areas for example are located within the wildlife reserve. At the same time there is a large or completely overlap between the core areas and other designations such as Natura 2000 sites, international and national geological designations etc. The core areas overlap thus:

- Natura 2000 area under the EU Birds Directive, 3,927 ha
- Natura 2000 site under the EU Habitats Directive, 5,749 ha
- Natura 2000 area by the Ramsar Convention, 2,722 ha
- GeoSites/ NGI/ NK, 644 ha
- Conservations, 2,220 ha

Conservation goals within the core areas are mainly directed towards the protection of birds, both nesting and resting species. At the same time the protective measures are addressed to habitats of marine natural, coastal lagoons and the habitats associated with these areas, both marine and terrestrial (for example seeps and rich fens). Finally, protection focuses on the lime enriched nature because of its rarity, a particularly threatened status or large area representation in the core areas.

Activities permitted within the core areas must be determined by the Danish nature and environmental legislation.

17.1.3 Administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s), transition area(s))

Core and buffer zones: The state is represented by the Agency for Water and Nature Management and the Nature Agency Storstrøm, acting as the local area manager. In the core areas are private lands included and managed, for example by the Bird Protection Foundation (NGO) or local landowners. The Municipality of Vordingborg cooperates with the state for area management. The Danish National Museum acts as manager of the Liselund Park. The Museum Southeast Denmark partly contributes as a research partner and partly as initiator of the hiking trail Camønoen. The Danish Coastal Governorship is the national coastal management unit in Denmark. The wardenship handles among others the authority tasks within coastal protection, preservation of sand dunes, beach protection and the state's sovereignty over territorial waters. The wardenship advises the Minister of Environment and Food, prepares analyses and works throughout the coastal zone both on a national and international level.

Transition area: The administrative authority is primarily anchored in the Municipality of Vordingborg, representatives of the four local councils, development organizations for business and tourism, museums and representatives of culture and the volunteers.

17.1.4. The respective competence of each of these authorities.

Core and buffer zones: The Ministry of Environment and Food's Agency for Water and Nature Management is responsible through its local unit. They assume the authority functions in nature monitoring, the forest law, groundwater mapping, monitoring of aquatic environments and monitoring of municipal wastewater treatment plants. The Nature Agency is responsible for operations and care of the state's forests, light and open areas such as meadows and mires. The Agency prepares operational plans that apply for 15 years at a time including a planned revision once or twice during the 15 years period. They are also engaged in hunting and use of nature, and they implement projects that protect the Danish nature. Projects must ensure a diverse and strong plant and animal life and further enhance outdoor living.

The Municipality of Vordingborg is the municipality in Denmark with the longest coastline of 385 kilometres, including 7 Natura 2000 sites and 4208 ha (6.7%) § 3 areas. The Municipality has prepared nature action plans, which support ceasing the decline of species and habitats in those areas that the state has made nature plans for. Four of the seven municipal nature action plans concern the future biosphere area.

- [Havet og kysten mellem Præstø Fjord og Grønsund 168.pdf](#)
- [Klinteskov og Klinteskov kalkgrund 171.pdf](#)
- [Stege Nor 180.pdf](#)
- [Busemarke Mose og Råby Sø 183.pdf](#)

As long as the Danish Coastal Authority is involved in relation to the future biosphere reserve, the Municipality of Vordingborg will act as the local authority responsible contact for that purpose.

17.1.5 The main land tenure (ownership) for each zone.

Core zones: The Nature Agency, privates and NGO's

Buffer zones: Terrestrial areas of the buffer zone are mainly owned by private landowners. The Danish Coastal Authority manages the marine buffer zones. Transition Areas: The areas of terrestrial transition consist of a mixture of public (local authority) land and private ownership (business and individuals). The transition area concerning the marine sections are managed by the Danish Coastal Authority.

17.1.6 The manager/coordinator of the biosphere reserve

A biosphere secretariat with a coordinator and project staff is already established. The technical departments of the various municipal departments, as well as the nature interpreter, support the secretariat. The Municipality of Vordingborg recruits the staff.

17.1.7 A consultative advisory board

An Advisory Board for the entire biosphere area, with representatives of national and local authorities and all local actors represented for all 3 zones is appointed and will be developed further.

Additionally an ambassador network of volunteers will be recruited, and the biosphere project will be part of the environmental council and the nature interpreters network in the Municipality of Vordingborg. The biosphere project can therefore ensure a wide basis and a diversified consultative expertise.

o The composition, role and competence, and the frequency of their meetings.

The Advisory Board of the biosphere project will be responsible for the strategic planning. The board prepares the biosphere project's "management and action plan" and moreover support the realization of the project's various tasks.

The board will be a diversified group with assorted skills (See table in Section 4). They will meet four times a year and take part in an annual event or field trip with the ambassador network. In addition, the representatives of the board will either be responsible for or involved in various projects that concern the Biosphere Reserve. Currently a biosphere-friendship agreement with the Vattenriket Biosphere Reserve in Sweden will be processed and support the professional exchange of knowledge, experiences and opportunities for practical cooperation.

17.1.8 A coordination structure for the biosphere reserve

o Its functioning, composition and the relative proportion of each group in this structure

The Advisory Board was established in the beginning of 2015, when the conceptual work of the proposed Moen Biosphere Reserve began and further when the design of the application started, and once it is inscribed the board will oversee it. From the beginning emphasis was placed on the involvement of all responsible actors for nature and area management and the public involvement.

The Advisory Board: The Leadership will be anchored in the Municipality of Vordingborg with the director of Development as chairman and support by the staff of the Department of Environment and Land Use. Representatives of landowners in the core and buffer zones are represented with the Nature Agency Storstrøm, acting as the responsible national management unit. Further the Bird Protection Foundation represents as NGO a private landowner, and a farmer, representing agriculture, will be pointed out. In addition, there is one representative for each activity in the three zones: residents, volunteers and culture, economy and trade, tourism, Dark Sky, education and social projects, led by the Municipality of Vordingborg. The biosphere-coordinator will take the function as project leader and secretary.

The Environment Council was established in the Municipality of Vordingborg within the framework of the local government reform in 2008. In this committee all user-groups and authorities for land and nature are represented: agriculture, hunting, fishing, conservation associations, the museum, the Nature Agency, the nature interpreter and officials in charge of the public workspaces: nature, environment, building and construction, coasts etc. In the future, the biosphere-coordinator will become member of this council.

The annual nature-interpreter meeting: once a year all interpreters in the Municipality of Vordingborg meet in order to evaluate and coordinate the different guiding- and project activities. The members of this group are connected to the GeoCenter Møns Klint, a nature center dealing with water treatment and water habitats, a health nature guide, an interpreter of the department for land and environment and in the future, the biosphere-coordinator and hopefully a biosphere-ranger and a Dark Sky ranger.

Planned is the establishment of a Presidency of ambassadors, consisting of volunteers who are involved in the several associations and grass root movements and who want to contribute to the upcoming biosphere reserve's success.

17.1.9 The management/coordination adapted to the local situation

Concerning the project coordination, the Advisory Board contains representatives from all environments: rural, urban, marine areas and the Dark Sky project, who are involved across all three Biosphere objectives. The management structure with the Advisory Board, the Environment council, the interpreters network and the ambassador presidency is built up to contain all interests in the upcoming biosphere reserve and at the same to avoid duplication by working with many of the existing local environmental partnerships and initiatives.

17.1.10 A procedure for evaluating and monitoring the effectiveness of the management

The Advisory board will create a management strategy and action plan for the upcoming biosphere reserve. The plan will include a research plan linked to monitoring key indicators, detailed activities and projects. Indicators of outputs and outcomes will be pointed out, so they can be monitored and evaluated over a five years period. The number of planned and realized will be another criteria for evaluation.

17.2 Conflicts within the biosphere reserve:

17.2.1 Important conflicts regarding the access or the use of natural resources in the area considered (and precise period if accurate).

The only field of conflict identified during the concept- and application process of the Moen Biosphere Reserve, is identified in interests of conventional farming on rural agricultural land use close to the biosphere core and buffer zones. This potential conflict had already created a negative impact on the National Park project in 2006. That is why the dialogue with farmers has taken a large amount of time concerning the planning of the upcoming biosphere project. There were held several meetings with landowners and farmers about the zones, the land use and the possibilities for business in open space. Since the Moen Biosphere Reserves core, buffer and transitions zones strictly follow the national nominations for the protection of nature and habitats, most of the farmers were convinced that the upcoming biosphere reserve not will create a negative impact in their business. At the same time the biosphere concept could win a number of agricultural business partners in the future biosphere work. The farmers, who already joined the biosphere ambassador group, partly represent a younger generation of farmers and partly farmers with special interests in organic and biodynamic agriculture, local food specialties and eco tourism.

The hope is therefore that the current dialogue and interests in cooperation projects will offer and contribute to a better understanding and broader support of the development concerning the Moen Biosphere Reserve. The concept is based on a non-obligatory cooperation and positive impacts to the development of new sustainable businesses, which in the long run will serve the nature, the species and at least the living community.

17.2.2 Conflicts in competence among the different administrative authorities in the management of the biosphere reserve

There have so far not been recognized conflicts between the involved administrative authorities in the management of the proposed biosphere reserve. The partners have cooperated in many years, and actions are being implemented into the administrative structure to manage upcoming conflicts within the national and local administrations.

17.3 Representation, participation and consultation of local communities:

17.3.1 Stage of involvement of local people

The first group of local people has been involved in a very early stage, which was back in 2010 and 2011 when the EU Interreg project Baltic Flyways had organized a study trip to the Vattenriket Biosphere Reserve in Kristiansstad, Sweden. The citizens of the island Nyord have since then cooperated with the Nature Agency Storstrøm and the Bird Protection Fund regarding nature care through cattle grazing. They have built and supported the first organic nature care cattle herd, local production and social projects, like the forest helpers on Nature Centre Hyldevang, as described in section 4.7.d.

From here, the idea of a biosphere reserve was spread across the islands. Several meetings followed it up with potential interested people, associations and enterprises. The farmers were a special focus group from the very beginning.

In the beginning of summer 2015, the broad public was informed about the biosphere-idea, which was based on a couple of good examples of what the biosphere project potentially could offer Møn and at least by the visit of the UNESCO Biosphere representative. The politicians and the public were informed through meetings and articles in the local newspapers afterwards. The Municipality of Vordingborg assumed the management function by the grant of DKK 3 million for the application and implementation of the Moen Biosphere Reserve.

From here the public was informed regularly on excursions in the coming biosphere reserve, several information meetings, by the website, flyers, articles and on tv. A number of people, associations, enterprises and grass roots contributed with ideas and registered themselves as biosphere supporters on the website. A Facebook group was established. The biosphere coordinator took part in several meetings and events, where the biosphere project was presented. In cooperation with one of the farming organizations, broad information about the coming zones was published in the local newspaper and an Open House for landowners in the proposed core zones was held. At least one concrete project was realized as an example project for the upcoming biosphere reserve: "The 'sailing cycling trails on board of a veteran vessels", with cycling maps published and activities held during summer 2016. These activities involved residents and tourists and kept a lot of public attention. An evaluation of this project will be made during autumn 2016.

17.3.2 Representation of the local people (including women) in the planning and management of the biosphere reserve

The female chairman of the Association Nyord Island, who was involved in the biosphere idea from the very beginning, represents at this stage of the project the residents in the Advisory board.

As described in section 17.1.8, the involvement of the residents, volunteers and grassroots comprises of a large number of people, who are engaged in many important projects in the proposed Moen Biosphere Reserve. That's why a network of ambassadors will be launched, where every resident is encouraged to contribute to the topics of the Moen Biosphere Reserve by his/her own interest.

17.3.3 The specific situation of young people in the proposed biosphere reserve

The proposed biosphere reserve is influenced by the expected depopulation of the rural areas in general. In 2009 there were about 2 1/2 times more students registered than citizens over 80 years. In 2029 there will be more people over 80 than children of school age.

The situation for children and students from kindergarten to the 9th degree is characterized by a wide and qualified scale of public and private education and leisure offerings, described in detail in section 16.2.1. The access to secondary education and vocational training is associated with long transport routes or departure from the proposed biosphere area.

The loss of youth characterizes the island in the shape; partly there is no dedicated youth culture at the moment and partly that the youth is missing in the numerous associations of sports and culture.

The principal mean to interact with young people is through the educational sector, which can be realized by the Outdoor school concept and practical projects like a Dark Sky kindergarten and the kindergartens own biotopes with lots of species. The next step in the proposed biosphere project will be the development of educational commitment in creating new jobs with sustainable background. In the coming biosphere reserve there will be created a number of new jobs, from nature care assistants to local production services, from nature rangers and interpreters of the starry sky guides and popular sports trainers. Eco-tourism will create a series of new service jobs. So hopefully the biosphere reserve will offer families with children a future with jobs and infrastructure and thus support the young generation to return to the islands.

17.3.4 The form of the representation

The members of the board and the presidency represent a broad spectre of national and local authorities, associations and NGOs, companies and the trade association, cultural and educational representatives and residents and grassroots, as describes in the sections 17.1.8 and 17.3.1.

17.3.5 The procedures for integrating the representative body of local communities

In the Advisory Board, there will be offered a place for all involved partners in the management of the proposed biosphere reserve. The organizations point out their members. The ambassador network is open for every resident and association who wants to support the sustainable development of the proposed biosphere reserve. The presidency points out a member for the advisory board. The organizations, and the ranger network that represents all interpreters and guides employed in organizations in the Municipality of Vordingborg, appoint the members of the environmental council.

17.3.6 Consultation mechanisms (permanent assembly, consultation on specific projects)?

The pilot project regarding the clarification of the potential of the Moen Biosphere Reserve and the political decision making process began in January and ended in December 2015. The formal public and stakeholder consultation on the Biosphere proposal, objectives and management strategy took place from January 2016 – September 2016, and still goes on as described in detail under section 13.4.

The roles, as they are described in the model in section 4.6.1, are as following:

- The Municipality of Vordingborg: local authority and responsible public project leader
- The Nature Agency, national responsible manager in the core and buffer zones.
- NGOs and private landowners, managers of land and nature care projects, with expertise in e.g. the birds, geology, astrology or rare plants, like the Bird Protection Fund on Nyord.
- Associations and grassroots: involvement of the residents in nature care and sustainable jobs
- The National Museum and Museum Southeast Denmark, responsible for the cultural heritage and mediation.
- The Geocenter Møns Klint, public mediation and school services at the cliffs and on eastern Møn.

- The agriculture representative, contact person to the farmers in the three zones of the proposed biosphere reserve.
- The Tourism representative, in order to describe the eco tourism potential, markets and activities
- The Municipality of Vordingborg designates a representative for the social projects and the environmental activities, who represent their departments and working fields.

Moreover, it has been generated knowledge through two study trips to biosphere reserves in Germany and in Sweden, the visit of the UNESCO representative and some expert consultations during the Nord MAB meeting in Sweden in September 2015. On national plan permanent dialog with the UNESCO national commission and their secretary is established.

17.3.7 The consultation mechanisms used

The consultations described in 17.3.6 had a decisional and consultative character in order to describe and implement the biosphere concept on the islands and in the Municipality of Vordingborg.

Long-term purposes of exchange of experiences and common projects will be established by the partnership with the Vattenriket Biosphere Reserve in Kristianstad, Sweden.

In order to inform the citizens, some valuable examples have been chosen to describe what it means to become a biosphere reserve and what to focus on. Concerning nature values of the proposed biosphere reserve for example a public excursion with the Fishing Zealand project about water treatment and sustainable angling tourism potentials was arranged.

17.3.8 Women participate and their interests and needs

Women participate in community organizations and in the decision making process equally. The Advisory Board has a higher membership of men than women, which depends on the organization-putting representatives forward. It should be an issue for future attention to seek balance. Both the biosphere-coordinator and the consultant are women.

17.4. The management/cooperation plan/policy:

17.4.1 The management/cooperation plan/policy for the biosphere reserve as a whole

The process of designing the Moen Biosphere Reserve in this application brought all aspects together that covers of a management and action plan for the entire proposed biosphere area. The plan will be finished in the months between the application and the nomination. In section 4.7.b the objectives and activities are described.

17.4.2 The actors are involved in preparing the management/cooperation plan

The application and the management/ action plan are/will be written principally by the biosphere-coordinator and the consultant, both employed by the department of Strategy and implementation in the Municipality of Vordingborg. Chapters of special knowledge are written by the consultancy or by specialists of other departments of the Municipality of Vordingborg. The national and local authorities like Nature Agency Storstrøm submit the nature management plans for the areas.

17.4.3 The local authorities and the formal adoption of the management/cooperation plan

The main partners on national, regional and local level have signed endorsement documents of the Biosphere application to UNESCO. The same partners are accompanying the management strategy and the action plan during the next couple of months, where they will discuss whether they in future will make references in their policies and plans.

17.4.4 The duration of the management/cooperation plan

The management strategy and action plan are scheduled to run for a 5-year period formally from April 2017, during which time they will be monitored, adapted if necessary, and then planned to be completely reviewed and revised by early 2022. A yearly activity report will support this work.

17.4.5 The contents of the management/cooperation plan.

The contents of the management and action plan are based on the core values presented by the UNESCO Biosphere Programme: conservation, development, learning and training, logistic support and research. For each theme, concrete actions describe for the proposed Moen Biosphere Reserve.

Some examples:

Conservation

- Planned activities regarding the core and buffer zones: nature care methods, monitoring of species, carried out by the Nature Agency in cooperation with the private partners and the Municipality of Vordingborg
- Land: deforestation of pine (*Pinus sylvestris* L) and warty birch (*Betula pendula*), untouched forest, carried out by the Nature Agency
- Water: brackish water pike and perch, carried out by the Municipality of Vordingborg in cooperation with DTU Aqua and the Fishing Zealand project
- Dark Sky: designing the concept of the Dark Sky Park Moen, The Municipality of Vordingborg in cooperation with the Dark Sky working group

Development

- Citizen participation: the biosphere ambassadors, carried out by the biosphere-secretary
- Land: Demonstration project: Biosphere Centre Hyldevang, cooperation with the Municipality of Vordingborg, the Nature Agency, residents on Nyord, social services and the grazing cooperation
- The Dark Sky Park, mediation and product development
- Water: EU project CATCH about sustainable angling eco tourism, The Municipality of Vordingborg in cooperation with the Fishing Zealand network
- EU project UNDINE II, the Municipality of Vordingborg in cooperation with The GeoCenter Møns Klint
- Eco tourism: Cycling, hiking, kayaking routes and the 'sailing cycling trails' in a broad cooperation within the Advisory board partners

Learning and training

- Outdoor school, cooperation project with The Municipality of Vordingborg, The Nature Agency and a number of local partners
- Nature guide training, cooperation between several partners of the Advisory Board and Education centres
- Biosphere ranger, application to the Danish Outdoor council by the biosphere partnership and the Nyord Island Association
- Social employment, for example the Forest Helpers, cooperation between the Nature Agency and the Municipality of Vordingborg
- Projects with biosphere ambassadors, carried out by the biosphere Secretary
- Dark Sky Community, reduction of public lightning by the Dark Sky working group

Logistic support, research

- Monitoring of species, the Nature Agency, the Municipality of Vordingborg and volunteers
- Species database of the Biosphere Reserve Møn, the biosphere partnership
- DTU Aqua (about the brackish water pikes)
- Measurement of darkness, the Dark Sky working group
- Friendship and cooperation with the Vattenriket Biosphere Reserve in Sweden, the Municipality of Vordingborg and the Advisory board
- Development projects with other biosphere reserves, the biosphere secretary

Detailed measurements are documented by the management plans of the authorities behind the core and buffer zones, which cover a period of 10 years with evaluation after 5 years. In EU projects evaluation delivers within the EU programme evaluation goals. Furthermore a yearly reporting by the biosphere secretary is planned, which includes the possibility for upcoming new projects.

17.4.6 Addressing the objectives of the proposed biosphere reserve (as described in section 13.1) in the management/cooperation plan.

The first two chapters of the section 13.1.1 and 13.1.2, about nature conservation and sustainable development, cover the three Biosphere objectives. All nature conservation and sustainable development activities focus on the main themes of the proposed Moen Biosphere Reserve: the land, the water and the Dark Sky. The management and action plan is built on the main themes, each in relation to conservation, development and logistics.

The social development is covered in its own chapters 13.1.3 and 13.1.4 which include examples of concrete projects, like the development of sustainable fishing, the building up of a Dark Sky Park, a demonstration project about nature care and local production at the Nature Centre Hyldevang, health care and outdoor life, the Participatory Democracy with four local councils in the proposed biosphere reserve, education and outdoor school and at least projects within development of sustainable energy and focus on climate change.

17.4.7 The plans binding based on a consensus

The main objectives of the proposed Moen Biosphere Reserve are selected by the biosphere key partnership, which means that each partner in the Advisory board is responsible for his/her duties either as a specialist or as administrative authority. The cooperation is based on consensus on the basis of the applicable laws and political decisions.

17.4.8 The authorities in charge of the implementation of the plan

The implementation of the management strategy in the buffer zones and the transition area of the proposed Moen Biosphere Reserve are led by the Municipality of Vordingborg, the Agency for Water and Nature Management and the Nature Agency Storstrøm and The Danish Coastal Governorship, who is the national coastal management authority in Denmark.

Furthermore the four local councils represent the residents, as well as the development organizations for business and tourism, the museums and the representatives of culture and the volunteers. Representatives of the schools and institutions will be involved in education and training projects that can take place in all three zones and a representative will be offered a place on the board.

17.4.9 The factors helping its implementation

The key consideration is to contribute to the common aims, described in this application and the proposed Moen Biosphere Reserve's management and action plan. The challenge is for the Biosphere Project to be seen and understood as a useful framework, that adds value through a holistic vision, effective partnership and integrated approach to improve the local environment, including new ways of cooperation and external resources. We are confident that the anchoring of the project, presented in a number of forums with all interested parties represented, will promote dialogue and decision taking and brake down prejudices. Another important aspect of this new cooperation is, not to implement further restrictions on areas, but to generate and add positive examples of sustainable development.

17.4.10 Integration of the biosphere reserve in regional/national strategies

The proposed Moen Biosphere Reserve interacts with the national level principally through the Agency for Water and Nature Management, the Nature Agency Storstrøm and The Danish Coastal Governorship.

The Municipality of Vordingborg is the leading partner and local authority of the upcoming biosphere reserve. The Moen Biosphere Reserve will be listed under the Danish National Commission for UNESCO. The Danish National Commission acknowledges the applicant's recommendation.

17.4.11 The main source of the funding and the estimated yearly budget.

The main sources of funding will also in future be connected to the individual partners responsibility, here below for example the nature care projects, which the Nature Agency carries out on the national owned nature areas. The Municipality of Vordingborg is responsible for financing the biosphere secretariat and the project- coordinator and the services provided by other public departments. In addition to this, the partners will describe, together or in groups, projects and apply for them and secure in this way the biosphere reserve with additional funding. The Municipality of Vordingborg assumed the management function by the grant of DKK 3 million for the period 2016 to 2018. The Development and Marketing Fund of the Municipality has provided the financial resources and will continue to support the project.

17.5 Conclusions:

17.5.1 The functioning of the biosphere reserve and the structures in place

The local partnership, built up around the Moen Biosphere Reserve, has demonstrated its flexibility and willingness to realize sustainably converting processes of nature care, land use and social development, demonstrated in the past two years, by focusing on the current draft and by their commitment to the future cooperation. The partnership extends across sectors that deal with all three objectives of the biosphere programme, and it is working to develop a balanced representation by inviting the cultural heritage and the education and training sector as members on the board. The partnership includes already the critical mass of organizations and support to realize the Moen Biosphere Reserve and will continue to evolve and increase further engagement and the public.

Conservation: Nature types and species of national and international importance mark the core areas and buffer zones in the proposed biosphere reserve. The Nature Agency Storstrøm, the NOGs and private owners have during a couple of years documented their interest in conservation and nature care. For these partners the status as a biosphere reserve will generate the interest of nature funding organizations and international project cooperation in order to secure and to expand their work.

Development: The multiple challenges of people on the small Danish islands, here among the aging population, elimination of employment, education and training of the young generation make a rethink necessary. It is a good time to initiate a rethink towards sustainability, since the densely populated Denmark can offer great potential and good quality of life in its rural areas, provided that it is possible to rebuild a sustainable society with new sustainable jobs, healthy environments and long term perspectives.

Logistic: The partnership has already pointed out a large number of demonstration projects, environmental education and training concepts. Our next task is to structure research and monitoring related to local, regional, national and global issues of conservation and sustainable development. The nomination as the first UNESCO Biosphere Reserve in the Denmark since 1977 will forward the national and international interest in research and monitoring in the proposed Moen Biosphere Reserve.

18. SPECIAL DESIGNATIONS:

Each designation that applies to the proposed Moen Biosphere Reserve and its name:

- () UNESCO World Heritage Site
- (X) [RAMSAR Wetland Convention Site:](#)
Præstø Fjord, Jungshoved Nor, Ulvshale og Nyord (RAMSAR22)
- (X) [Other international/regional conservation conventions/directives \(specified\):](#)
Birds Directive: Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds.
 - Præstø Fjord, Ulvshale, Nyord og Jungshoved Nor (SPA 89)
 - Ulvsund, Grønsund og Farø Fjord (SPA 84)
 - Klinteskoven (SPA 90)Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
 - Havet og kysten mellem Præstø Fjord og Grønsund (SAC 147)
 - Klinteskov kalkgrund (SAC 207)
 - Klinteskoven (SAC 150)
 - Busemarke Mose og Råby Sø (SAC 192)
 - Stege Nor (SAC 179)
 - Bøchers Grund (SAC 208)
- () Long term monitoring site (specify)
- () Long Term Ecological Research (LTER site)
- (X) [Other \(specified\)](#)
 - Executive Order on Ulvshale-Nyord Wildlife Reserve, BEK no. 14015 of 7 July 1995
 - Executive Order on Fanefjord-Grønsund Wildlife Reserve, BEK no.10301 of 28 June 1999

19. SUPPORTING DOCUMENTS (to be submitted with nomination form):

(1) Location and zonation map with coordinates

Provided on USB attached to the application.

(2) Vegetation map or land cover map

Provided on USB attached to the application.

(3) List of principal legal documents

Provided as list on Appendix 6.

(5) Species list (to be annexed)

Attached as Appendix 1.

(6) List of main bibliographic references (to be annexed)

Attached as Appendix 5.

(7) Original Endorsement letters according to paragraph 5

Attached as Appendix 7.

(8) Further supporting documents

Overview over appendices – Møn Biosphere Reserve

1. List of species
2. List of habitats
3. Geological designations
4. Biotope protected areas
5. Bibliographic References
6. Preservations
7. Endorsement letters of support from Biosphere Partners and overview over supporters
8. Important Species (economically important as well as threatened species)
9. Land Use & Management Plans

20. ADDRESSES:

20.1 Contact address of the proposed biosphere reserve:

Administering authority of the biosphere project and all areas:

Name: Jan Michelsen, Director of development

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20.2. Administering entity of the core area(s):

Name: Claus Jespersen, Skovrider

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20.3. Administering the biosphere project secretariat:

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7. Area

