

## 14. DENMARK

### 14.1 Energy Policies and Actions

In January 2007, the Danish government presented in its energy policy proposal "A Visionary Danish Energy Policy 2025"<sup>265</sup> for the cost effective fulfillment of the overall energy policy objectives including security of supply, environmental impact and competitiveness. The proposal is founded on the government's forward-looking vision of Denmark in the long term being entirely independent of fossil fuels - coal, oil and natural gas. With a view to realising its vision, the government has set the following targets prior to 2025:

- A minimum 15% reduction in the use of fossil fuels compared with today.
- Preventing an overall increase in energy consumption, while sustaining economic growth. With this in mind, the energy saving initiative will be increased to 1.25% annually.
- The share of renewable energy must be increased to at least 30% of energy consumption by 2025.
- A doubling of publicly funded research and development into and demonstration of energy technology to DKK 1 billion annually from 2010 onwards.

In order to achieve these ambitious targets, the government has put forward a number of new energy saving and renewable energy initiatives along with initiatives aimed at new and more efficient energy technologies.

- (i) Energy savings
  - Provide subsidies to households and businesses for implementing specifically defined energy saving measures in buildings and production processes through the sale of energy saving certificates to utility companies
  - Increase energy saving requirements on utility companies
  - Organise campaigns to promote energy savings in buildings
- (ii) Renewable energy
  - Reforming and enhancing the efficiency of the subsidy system for promoting the use of renewable energy, e.g. biogas, wind energy through strategic planning of wind turbine building and heat pumps for householders
  - Improved exploitation of energy from waste
  - Rationalisation of the levy system
  - Increased flexibility in the choice of fuels
  - Tax exemption for hydrogen powered cars
- (iii) New and more efficient energy technologies by developing 2G biofuels for transport, wind power, hydrogen and fuel cells, and low energy buildings
- (iv) Oil and natural gas extraction - Denmark has signed a number of agreements which establish and safeguard a long-term framework for the exploitation of

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<sup>265</sup> Full document for the energy policy can be found in this link: [http://www.ens.dk/graphics/Publikationer/Energipolitik\\_UK/Energy\\_policy\\_Statement\\_2007/pdf/Energipolitik\\_redegorelse\\_200705\\_eng.pdf](http://www.ens.dk/graphics/Publikationer/Energipolitik_UK/Energy_policy_Statement_2007/pdf/Energipolitik_redegorelse_200705_eng.pdf)

North Sea resources. In order to promote the long-term extraction of oil and gas from the Danish oil and gas fields, the Danish Energy Authority has carried out research and development initiatives within the oil and natural gas extraction area as part of the follow-up procedure to the 2025 Energy Strategy.<sup>266</sup>

In 2003, the Danish Government presented a Danish Climate Strategy<sup>267</sup>, setting the frames for future efforts in the field of climate change. The basic approach taken in the strategy is that Denmark must be able to fulfill the international climate commitments under the Kyoto Protocol.<sup>268</sup>

As Denmark has ratified the EU directive on greenhouse gas emission allowance trading, there is the Danish National Plan for allocating CO<sub>2</sub> emission. Also, the emission allowance trading scheme is an important element in the Danish Climate Strategy. The Danish government implemented the EU scheme for greenhouse gas emission allowance trading which has regulated CO<sub>2</sub> emissions from January 2005. The emission trading scheme aims to fulfill the international climate commitment set in the Kyoto Protocol and Denmark has pledged to reduce its total CO<sub>2</sub> emissions by 21% compared to the 1990 level. On the other hand, emissions of SO<sub>2</sub> and NO<sub>x</sub> by large power stations have also been regulated by allowances which aim to reduce the emission of SO<sub>2</sub> and NO<sub>x</sub>.<sup>269</sup>



Wind turbines at Denmark <sup>270</sup>



Power station<sup>271</sup>

<sup>266</sup> Referenced to the Energy Policy 2007, [http://www.ens.dk/graphics/Publikationer/Energipolitik\\_UK/Energy\\_policy\\_Statement\\_2007/html/chapter01.htm](http://www.ens.dk/graphics/Publikationer/Energipolitik_UK/Energy_policy_Statement_2007/html/chapter01.htm)

<sup>267</sup> Full document of the climate strategy can be found in the link: <http://glwww.mst.dk/transport/pdf/Proposal%20for%20a%20Climate%20Strategy%20for%20Denmark.pdf>

<sup>268</sup> Referenced to the web site of the Danish Environmental Protection Agency, <http://glwww.mst.dk/homepage/default.asp?Sub=http://glwww.mst.dk/transportuk/01000000.htm>

<sup>269</sup> Extracted from the web site of Danish Energy Authority, <http://www.ens.dk/sw13515.asp>

<sup>270</sup> Source: <http://www.cardiff.ac.uk/archi/programmes/cost8/case/energy/denmark-wind.pdf>

<sup>271</sup> Source: <http://www.bwe.dk/>

## 14.2 Environmental Evaluation/SEA in Denmark

In Denmark, SEA has influenced by a strong planning system since the early 70's. The legal framework provision of SEA was stipulated by Prime Minister's Office Circulars<sup>272</sup> (1993<sup>273</sup>, further reviewed 1995, 1998<sup>274</sup> when it became legally binding). All government bills and proposals<sup>275</sup> submitted to parliamentary approvals required an assessment if they are expected to have significant effects on the environment. The requirement also applies to policies, plans and programmes (PPP) which are not subject to approval by parliamentary vote but on which the Parliament shall be consulted.<sup>276</sup>

Until May 2004, a new SEA legislation (Lov om miljøvurdering af planer og programmer L nr 316) (The Act on Environmental Assessment of Plans and Programmes<sup>277</sup>) was implemented to comply with the EU Directive 2001/42/EC on the assessment of the effects of plans and programmes (PP) on the environment applied by the Member States by 21 July 2004<sup>278</sup>. It aims to promote sustainable development through the environmental assessment of plans and programmes that may have significant environmental impacts.<sup>279</sup>

To conclude, two SEA systems are developed in Denmark:

- (i) applied to Policy level under the Prime Minister's Office Circulars which is legally binding in 1998.
- (ii) applied to Plans and Programmes level, which is a statutory requirement under the "Act on Environmental Assessment" transposing the EU Directive 2001/42/EC on SEA.

### SEA at Policy level

SEA at policy is provided under the Prime Minister's Office Circulars which is legally binding in 1998. A four-stage process is identified as follows:

- (i) Screening: To identify proposals that are likely to have a potential significant environmental impact and require further assessment.
- (ii) Scoping: To identify the nature and scope of the major or cumulative environmental effects of a bill or policy.

<sup>272</sup> Detail Information on this Circular is referred to <http://147.29.40.91/DELFIN/HTML/C1998/0015909.htm>.

<sup>273</sup> Prime Minister's Office Circular No. 31, 26 February 1993

<sup>274</sup> Prime Minister's Office Circular No. 159, 16 September 1998

<sup>275</sup> Government proposals in a Danish context may be broadly understood as corresponding to national policies or general plans, refer to Strategic Environmental Assessment: A sourcebook and reference guide to international experience, Barry Dalal-Clayton and Barry Sadler, 2004,

[http://www.iied.org/Gov/spa/documents/SEAbook/Chapter3\\_Oct04.pdf](http://www.iied.org/Gov/spa/documents/SEAbook/Chapter3_Oct04.pdf), page 59

<sup>276</sup> Referenced to "Implementation of strategic environmental assessment (SEA) in the transport sector" by European Environment Agency,

[http://themes.eea.europa.eu/Sectors\\_and\\_activities/transport/indicators/integration/TERM38,2001/Implementation\\_of\\_SEA\\_TERM\\_2001.doc.pdf](http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/integration/TERM38,2001/Implementation_of_SEA_TERM_2001.doc.pdf), page 3

<sup>277</sup> In Danish can be found at [http://www.retsinfo.dk/\\_GETDOC\\_/ACCN/A20040031630-REGL](http://www.retsinfo.dk/_GETDOC_/ACCN/A20040031630-REGL)

<sup>278</sup> Prior to this date, "Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive" (European Parliament and Council of the European Union, 2001, Article 13).

<sup>279</sup> Referenced to web site of the Ministry of Environment and Energy, Spatial Planning Department, <http://www.nordregio.se/EA/denmark.htm>

- (iii) Assessment: To analyse the effects identified as potentially significant and decide how assessed impacts are to be described and documented.
- (iv) Publication: A description of the environmental effects is included as a separate section in the commentary, which is attached to the bill or other government proposal when it is submitted to Parliament. This report should be easily understood, non-technical statement that is publicly accessible, together with other background assessment. If a proposal will have no significant impact, this must be indicated in the observations on the bill.<sup>280</sup>

### SEA for Plan and Programme

As mentioned, it is a statutory requirement under the “Act on Environmental Assessment” (transposing the EU Directive 2001/42/EC on SEA) to conduct SEA for certain plans and programmes.

According to the EU Directive 2001/42/EC<sup>281</sup>, an environmental assessment shall be carried out for all plans and Programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use. An environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated. The public should be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme or its submission to the legislative procedure.

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<sup>280</sup> Refer to Strategic Environmental Assessment at the Policy Level: Recent Progress, Current Status and Future Prospects, Barry Sadler,  
[http://www.iaia.org/Non\\_Members/Conference/SEA%20Prague/SEA%20at%20the%20Policy%20Level.pdf](http://www.iaia.org/Non_Members/Conference/SEA%20Prague/SEA%20at%20the%20Policy%20Level.pdf), page 47

<sup>281</sup> As the English version of the “Act on environmental assessment of plans and programmes” is not available, the general requirements under the EU Directive 2001/42/EC is referred here,  
[http://www.environ.ie/DOEI/DOEIPol.nsf/0/b8aeb091f741ee9c80256f5d004cd61c/\\$FILE/0142\\_en.pdf#search=%22EU%20Directive%202001%2F42%2FEC%22](http://www.environ.ie/DOEI/DOEIPol.nsf/0/b8aeb091f741ee9c80256f5d004cd61c/$FILE/0142_en.pdf#search=%22EU%20Directive%202001%2F42%2FEC%22)

### 14.3 Environmental Evaluation/SEA on Energy Policies and Actions in Denmark

For policy or regulation related to energy, it is administrative to conduct SEA under the Prime Minister's Office Circulars which is legally binding in 1998.

For any plans and programmes related to energy, it is a statutory requirement under the "Act on Environmental Assessment" (transposing the EU Directive 2001/42/EC on SEA) to conduct SEA.

Details of the requirements should refer to section 14.2.

A summary table for the energy policies and actions and SEA status in Denmark is presented in **Exhibit DK-1**.

Exhibit DK-1 Summary of Energy Policies and Actions and SEA Status in Denmark	
<b>(a) Energy Policies and Actions</b>	
<b>Energy Policies and Actions</b>	Policies: <ul style="list-style-type: none"> <li>• Energy policy proposal "A Visionary Danish Energy Policy 2025"</li> <li>• Danish Climate Strategy</li> </ul> Actions: <ul style="list-style-type: none"> <li>• Danish National Plan for allocating CO<sub>2</sub> emission</li> <li>• CO<sub>2</sub> emission trading scheme</li> </ul>
<b>Guidance/Legislations for Energy</b>	N/A
<b>(b) Environmental Evaluations / SEA Status in Energy Policies and Actions</b>	
<b>Type of Assessment</b>	Strategic Environmental Assessment
<b>Requirement Mechanisms</b>	<ul style="list-style-type: none"> <li>• It is administratively required for policies level, while is statutory for plans and programmes.</li> </ul>
<b>Legislation for Environmental Evaluation / SEA</b>	<ul style="list-style-type: none"> <li>• For policies, it is governed by the Prime Minister's Office Circulars</li> <li>• For plans and programmes, it is statutory under the Act on Environmental Assessment</li> </ul>
<b>Applications</b>	Policies, Plans and Programmes

#### 14.4 Analysis and Conclusions

In Denmark, the overall objectives of energy policy include the security of supply, environmental impact and competitiveness. In particular, the Danish government has set a target for increasing the share of renewable energy to at least 30% of energy consumption by 2025. In order to achieve the target, the Danish government has put forward a number of new energy saving and renewable energy initiatives, such as energy savings and safeguarding a long-term framework for the exploitation of North Sea resources. In order to fulfill the international climate commitments under the Kyoto Protocol, the Danish Government presented a Danish Climate Strategy which sets the framework for future efforts in the field of climate change. The Danish government has also implemented the EU scheme for greenhouse gas emission allowance trading which regulated CO<sub>2</sub> emissions. On the other hand, emissions of SO<sub>2</sub> and NO<sub>x</sub> by large power stations have also been regulated by allowances which aim to reduce the emission of SO<sub>2</sub> and NO<sub>x</sub>.

For Hong Kong, the key objectives of the energy policy are to ensure that the energy needs of the community are met safely, efficiently and at reasonable prices, and to minimise the environmental impacts of energy production and use and promote the efficient use and conservation of energy. The basic approaches for energy policies are comparable to that implemented in Denmark, such that both places consider to promote renewable energy and to set targets on renewable energy and sustainable energy consumption, and to promote energy efficiency and conservation as part of a sustainable energy policy.

Regarding the Environmental Evaluation/SEA in Denmark, there are two SEA systems. The first one is the SEA for policy under the Prime Minister's Office Circulars which is legally binding in 1998. Another one is applied to Plans and Programmes level, which is a statutory requirement under the "Act on Environmental Assessment" transposing the EU Directive 2001/42/EC on SEA.

While the two SEA systems in Denmark are legally binding, there are also two systems for SEA in Hong Kong, including an administrative requirement and a statutory requirement under Schedule 3 of the EIA Ordinance. Typically, SEA under the administrative system in Hong Kong has applied to three main categories, namely land use planning, transportation PPP, and sectoral PPP. In view that Hong Kong has an increasing evolvement of policies, plans and programmes in different sectors, it would be a good chance for Hong Kong to extent the application of SEA by enhancing its SEA system and providing detailed guidelines referenced to other countries.

## 14.5 Examples of Energy Policies/Actions or their Environmental Evaluation/SEA

Example DK-1 Strategic Environmental Impact Assessment of hydrocarbon activities in the Disko West area <sup>282</sup>	
<b>Type of Study</b>	Strategic Environmental Impact Assessment (SEIA)
<b>Description of Study</b>	In 2006, the waters off West Greenland (the Disko West Area) were opened for hydrocarbon exploration and licenses are expected to be granted in March 2007. The areas include the northeastern part of the Davis Strait and the southeastern part of Baffin Bay, with Disko Island as the most prominent landscape on the Greenland coast. The SEIA provides an overview of the environment in the license area and adjacent areas which may potentially be impacted by the exploration activities. It identifies major potential environmental effects associated with expected offshore oil and gas activities. It also identifies knowledge and data gaps, highlight issues of concern, and make recommendations for mitigation and planning. Besides, the SEIA forms part of the basis for relevant authorities' decisions, and may identify general restrictive or mitigation measures and monitoring requirements that must be dealt with by the companies applying for oil concessions
<b>Summary of Alternatives</b>	No alternatives were mentioned in the report.
<b>Scope of Assessment/ Study</b>	The evaluation parameters in the study include the following: <ul style="list-style-type: none"> <li>● Seismic noise</li> <li>● Solid and fluid waste materials to be disposed of</li> <li>● Placement of structures</li> <li>● Noise from facilities and transport</li> <li>● Emissions to air.</li> <li>● Oil spill impacts on plankton and fish include larvae of fish and shrimp</li> <li>● Oil spill impacts on benthos</li> <li>● Oil spill impacts in coastal habitats</li> <li>● Oil spill impacts on fisheries</li> <li>● Oil spill impacts on seabirds</li> <li>● Oil spill impacts on marine mammals</li> </ul>
<b>Environmental Measures</b>	Some of the environmental measures are described as follows: <p><i>Mitigation of impacts from seismic noise:</i> Mitigation measures generally recommend a soft start or ramp up of the airgun array during exploration activities. This will allow marine mammals to detect and avoid the sound source before it reaches levels dangerous to the animals. Secondly, it is recommended to bring skilled marine mammal observers on board the seismic ships, in order to detect whales and instruct the crew to delay shooting when whales are within a certain distance from the array.</p> <p><i>Mitigation of risk of oil spill impacts:</i> A supplementary way to mitigate the potential impact on animal populations sensitive to oil spills, e.g. seabirds, is to try to manage populations by regulation of other population pressures so that they are fitter and better able to compensate for extra mortality due to an oil spill.</p>

<sup>282</sup> Part 1 [http://www2.dmu.dk/Pub/FR618\\_0\\_kap\\_3.pdf](http://www2.dmu.dk/Pub/FR618_0_kap_3.pdf), page7-11,

Part 2 [http://www2.dmu.dk/Pub/FR618\\_0\\_kap\\_4.pdf](http://www2.dmu.dk/Pub/FR618_0_kap_4.pdf),

Part 3 [http://www2.dmu.dk/Pub/FR618\\_0\\_kap\\_5.pdf](http://www2.dmu.dk/Pub/FR618_0_kap_5.pdf), page100-127

<b>Example DK-1 Strategic Environmental Impact Assessment of hydrocarbon activities in the Disko West area<sup>282</sup></b>	
	<p><i>Mitigation of risk of bird oil contact</i>            Identification of important areas to avoid oil activities in sensitive areas and period, and to priority protection in oil spill contingency plans.</p>
<b>Outcome of Study</b>	<p>The environmental impacts of exploration activities will mainly be disturbance from activities associated with noise, and the impacts are expected to be relatively small, local and temporary, because of the intermittent nature of the activities. No serious impacts are expected if adequate mitigation measures are applied, activities in sensitive areas are avoided in the most sensitive periods and no accidents such as oil spills occur. The winter is particularly sensitive to exploration activities due to wintering marine mammals.</p> <p>Several activities during development, production and transport have the potential to cause serious environmental impacts. Careful health, safety and environment procedures, and planning and application of the best available technique and the best environmental practice can mitigate most of the impacts.</p> <p>The potentially most serious environmental impacts are related to large accidental oil spills. In general, oil spills occurring in the coastal zone are regarded as much more deleterious than oils spills in the open sea.</p>



<b>Example DK-2    Horns Rev Offshore Wind Farm Environmental Impact Assessment <sup>283</sup></b>	
<b>Type of Study</b>	Environmental Impact Assessment
<b>Description of Study</b>	The study describes the concrete wind farm proposal and an evaluation of the environmental consequences of installing an offshore wind farm comprised of about 80 wind turbines with a total output of 150 MW approximately 15 km off the point of Blåvands Huk located at the West of Denmark.
<b>Summary of Alternatives</b>	There is an alternative site for the wind farm, which is to establish a larger wind farm south of Læsø, more than 25 km from the shore where the wind turbines are longer visible from the shore. 5 alternative routes for the submarine cable have been identified with different degree of impacts on the flora and fauna, length of cable route, degree of convenience to fishing and shipping, risk if operating malfunctions, stability on hydrography and military interests in the area.
<b>Scope of Assessment/ Study</b>	The evaluation parameters in the study include the following: <ul style="list-style-type: none"> <li>● Birds</li> <li>● Seals</li> <li>● Porpoises</li> <li>● Fish, shellfish and marine mammals</li> <li>● Bottom vegetation and fauna</li> <li>● Hydrography</li> <li>● Sea bottom and marine biology</li> <li>● Water quality</li> <li>● Visual and socio-economic impacts</li> </ul>
<b>Environmental Measures</b>	Some of the environmental measures are as follows: <ul style="list-style-type: none"> <li>● The turbines are painted a navy grey and a maximum height is set for them, so as to reduce visual impacts.</li> <li>● Fishing with trawl will be prohibited within the offshore wind farm and near the cable to the shore.</li> <li>● Disturbance effects during construction may be lowered by focusing activities outside the main period of calving and by reducing the use of boats for transportation.</li> <li>● Risks of pollution can be prevented by having double walls to diesel tanks to reduce any leakage risk; installing systems to collect any oil spillage; providing lights for turbines to reduce the risk of collision with ships and aeroplanes; and providing trenches for submarine cable to the shore to reduce any risk of damage resulting in oil spillage.</li> </ul>
<b>Outcome of Study</b>	It is concluded that the visual conditions would be improved at the expense of a number of conditions relative to technology, transport and operation, fishing and economy. These are the reasons why the site closer to the shore, Horns Rev, has been selected. The investigations also conclude that a submarine cable laid to Hvidbjerg Strand would cause the fewest problems in terms of environment, laying technique and economy.

<sup>283</sup> Summary of EIA report: [http://www.hornsrev.dk/Miljoeforhold/pdf/Resume\\_eng.pdf](http://www.hornsrev.dk/Miljoeforhold/pdf/Resume_eng.pdf)  
Full document, <http://www.hornsrev.dk/Engelsk/Miljoeforhold/uk-rapporter.htm>