

# Environmental Report 2012

## DONG E&P

- ✓ *Strong QHSE culture*
- ✓ *Zero accident philosophy*
- ✓ *High quality standards*





# DONG E&P QHSE Policy

*DONG Exploration & Production (E&P) explores for, develops and produces oil and gas, and when doing so we have strong focus on Quality, Health, Safety and the Environment.*

*In DONG E&P, we conduct our operations in a responsive, result-oriented and responsible manner for the benefit of our shareholders, customers, employees, the society and the environment we work in.*

*DONG E&P believes that zero accidents are possible and will:*

- *Comply with the "Safe Way or No Way" statement*
- *Build a strong culture within Quality, Health, Safety and Environment*
- *Focus on asset integrity and technical safety to control our risk level to be as low as reasonably practicable*
- *Require high quality standards from ourselves, partners, contractors and suppliers*
- *Commit ourselves to prevention of pollution and continual improvement of our QHSE performance*
- *Minimise our consumption of resources and impact on the environment*
- *Comply with legal requirements and other requirements to which the organisation subscribes*
- *Improve our working environment and prevent injury and ill health*
- *Continually improve the effectiveness of our work processes and systems for management of Quality, Health, Safety and the Environment*
- *Conduct business with partners, contractors and suppliers who hold high business standards and ethics*
- *Implement and maintain security measures that keep the protection of our staff, assets, and information at an effective level according to the risk.*

# Introduction to the Environmental Report

## DONG E&P 2012

DONG E&P is a subsidiary of DONG Energy A/S, one of the leading energy groups in Northern Europe. DONG E&P have an integrated portfolio, including power generation, sales and distribution and exploration and production (E&P).

DONG E&P operates and is partner in a number of exploration and production licenses across Denmark, Norway, the United Kingdom, the Faroe Islands and Greenland. We currently have production in Norway and Denmark.

This report is an introduction to our stakeholders to DONG E&P and to our environmental activities and performance.

The report focuses on environmental issues, activities and challenges relating to assets and licences where DONG E&P is the operator. We have included an overview of our environmental performance, based on equity at the end of this report.

More general information about DONG Energy Group results and activities is presented in DONG Energy's Annual Reports. These reports are available on [www.dongenergy.com](http://www.dongenergy.com).



# **Søren Gath Hansen statement**

## - Executive Vice President of DONG E&P

It is DONG E&P's vision to be one of the strongest and fastest growing oil and gas companies represented in the North Western part of Europe. We make an effort to develop an experienced organisation with a good safety track record. We want to be recognised as a preferred partner of choice by local authorities, E&P companies, employees as well as investors.

DONG E&P aims at producing 150.000 BOE per day in 2020, and have oil and gas reserves equivalent to at least ten times our annual production in 2020. Our ability to expand is based on the competencies that are required to undertake exploration, development and production activities, where QHSE competencies having a high priority and is a line responsibility. Core skills within all these areas are maintained in-house, ensuring that DONG E&P is a competitive and attractive company when applying for licences and working with partners.

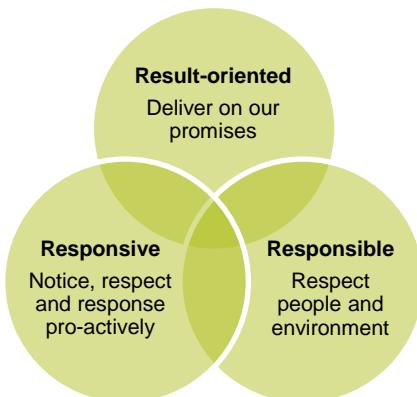
We are active in areas such as the Barents Sea, the West of Shetland area and Greenland. We are also involved in other challenging activities such as "High-Pressure/High Temperature" (HPHT).

Therefore the environment and environmentally sensitive issues are focal points for DONG E&P and our stakeholders, and we have a continuous focus on reducing our environmental impact. We will develop our activities to be aligned with the challenges of expansion.

We believe that by understanding and respecting our own and stakeholders' expectations, we will improve our performance. Environmental issues have special stakeholder attention in the oil and gas industry. We have substantial experience from working with our partners and authorities, and we will continue to develop our stakeholder dialogue.

We therefore welcome your comments and questions.

### **Our Values**



# Our Management System

Organisational performance is a product of culture, competences and systems

DONG E&P has governing standards for our activities, and a strong focus on quality, health, safety and the environment (QHSE) as an integral aspect of our daily activities. Line management is responsible for conducting an effective QHSE management.

Our management system provides a reliable corporate memory, including documented descriptions of policies, standards, processes and best practices. This infrastructure enables performance improvements to be captured, embedded and sustained.

## The Safe or No way

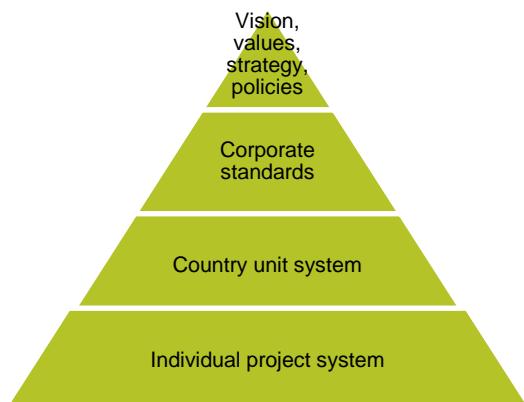
Our top priority is to be a safe and trustworthy company. Our slogan 'The Safe Way or No Way' is a very strong slogan. The slogan implies that our employees must never feel pressured to continue activities to achieve high performance, if they do not feel that it is safe. Health, safety and environmental performance is therefore also an individual responsibility.

We believe that high QHSE performance is key to our success, and we will continuously make QHSE improvements in all of our activities, both offshore and onshore.

## Environmental management

We work in an industry where our activities have an impact on the environment, and therefore it is our mission to work systematically to manage this impact – and we continually strive to minimise negative effects on the environment in all our activities. We have developed environmental standards that set ambitious targets for minimising our environmental impact, see page 8.

*Strong QHSE principles must be an embedded way of conducting our activities in E&P*



# Environmental Aspects

## in our operations

### **Discharge to sea – produced water, chemicals and cuttings**

Production of water is an unavoidable part of oil and gas production. Produced water is separated from the oil and gas, but will contain residual hydrocarbons and production chemicals. The produced water is cleaned and either reinjected in the reservoir or discharged to sea. We have invested in and implemented technology to minimize our discharge to the marine environment.

Chemicals are used both in drilling activities and in production, and serve a wide variety of purposes. Chemicals are either collected and treated, or in some occasions discharged to the sea. We are constantly seeking for and using chemicals with less environmental impact.

During drilling operations drill cuttings are generated. Cuttings can either be transported to land, re-injected in the subsurface or disposed on the seabed, depending on the mud systems used.

### **Emissions to air**

Emission to air is produced from offshore operations, both production and drilling, from fuel combustion by turbines and generators and from gas flares. Emissions to air, including CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub> and CH<sub>4</sub>, have impact on the environment, although the impact differ. Flare recovery systems have been implemented on offshore production platforms to minimize emission to air.

### **Waste**

Waste is generated from platforms, drilling rigs ships etc. Waste generated offshore is sent onshore for recycling, incineration or deposit in a landfill site.

### **Spills**

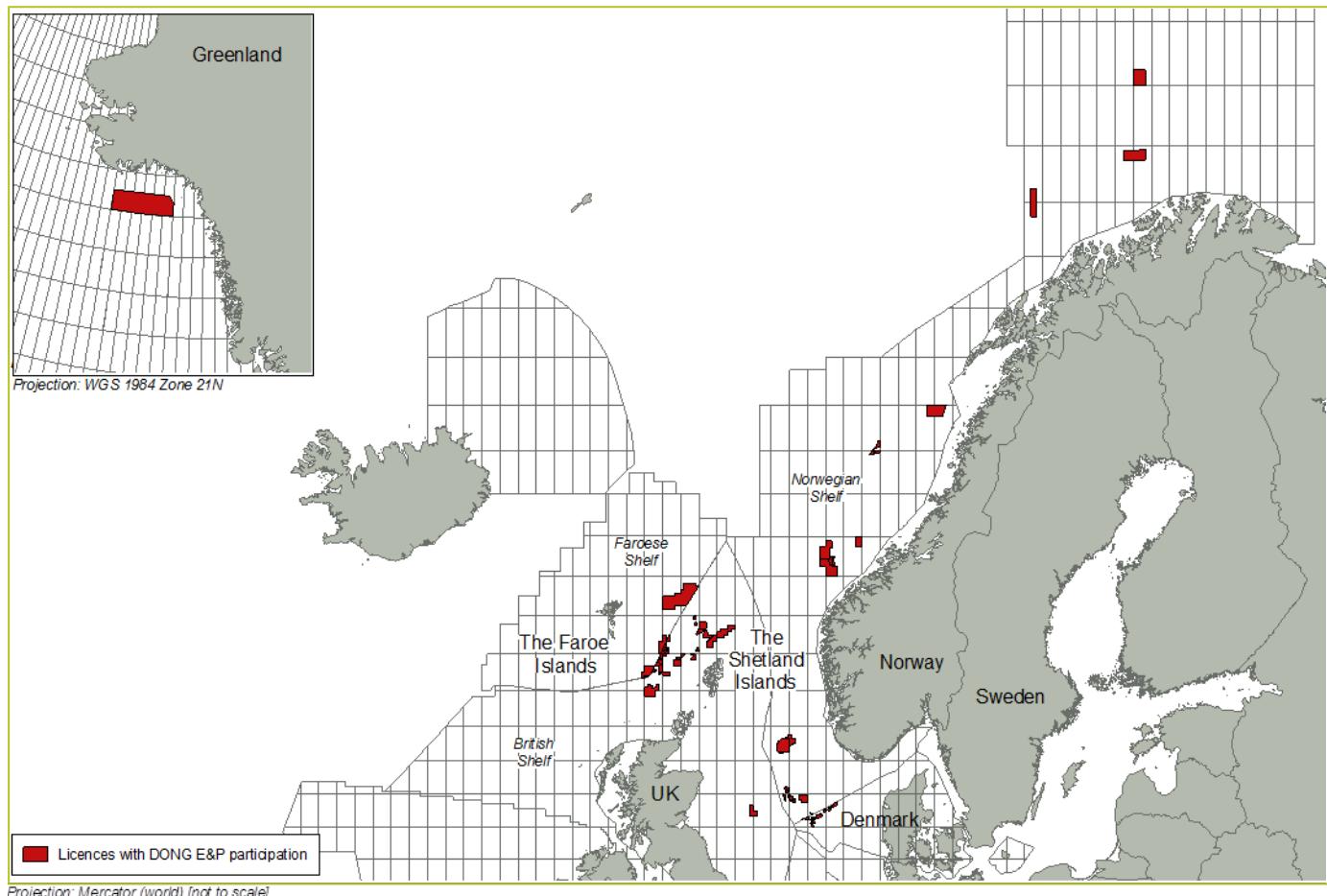
We have a zero spill goal and large efforts and preventive measures are made to ensure this goal. However, we are prepared to react promptly through our spill contingency plans if a spill should happen to prevent a spill from spreading and if possible, eliminate any environmental impact.

# Environmental Ambitions

Environmental Theme	Environmental Ambition
Impact assessment	E&P shall have an overview of impacts on the external environment from all operated activities.
Planned discharges to marine environment	E&P shall minimise discharges from all E&P activities and strive to achieve the ultimate goal of zero harmful discharges.
Spill prevention and spill response	Spills with hydrocarbon fluids and/or other hazardous substances shall be prevented.
Energy management	Energy consumption shall be as low as reasonably practicable on all E&P operated installations and major work activities.
Emissions to air	E&P shall strive to eliminate non-essential flaring and venting, and to minimise air emissions from other sources. Best available technologies and practices shall be implemented, where reasonably practicable.
Waste	Reduction of waste volumes shall be maximised, waste recycling shall be optimised and land filling of waste shall be minimised.
Biodiversity	E&P operations shall have no significant impact on biodiversity.
Noise, vibration and light (non- health/safety)	Noise, vibration and light emissions from E&P operated facilities shall be kept as low as reasonably practicable.
Water consumption	E&P shall practice responsible water resource management by efficient use of limited water resources. Fresh water resources shall be protected from depletion and contamination.
Soil and Ground Water	E&P activities shall have a minimal impact on sediments and soil and shall result in no contamination of groundwater.
Decommissioning	E&P shall leave no unacceptable residual impact on the environment after decommissioning of installations.

# Licence Map

July 2013



# United Kingdom

## Offshore activities and environmental performance 2012



During 2012, DONG E&P UK's offshore activities centred around two drilling campaigns situated in the West of Shetland region, with a view to establishing whether hydrocarbons are present in commercially viable quantities in these areas.

A combined Environmental Management Plan (EMP) was developed specifically for the Glenrothes and Cragganmore exploration wells. This EMP records how the drilling operations were managed with regard to their potential impact to the environment.

### Emissions to air

The total diesel fuel consumption for both wells was 4,119 tonnes, resulting in 13,180 tonnes of CO<sub>2</sub>.

### Chemicals

The Cragganmore and Glenrothes wells were both drilled with water based mud (WBM) throughout and used the same disposal routes for cuttings and associated muds.

A total of 36 different chemical additives for drilling, cementing and completion operations were used for both wells, amounting to a total usage of 2,275 tonnes.

### Discharge to sea

No oil or other hydrocarbons were discharged during the drilling operation at the Cragganmore well. For the Glenrothes well a total of 2.3 kg of oil was discharged to sea.

Of the chemical used, a total of 504 tonnes were discharged to sea, together with the cuttings. The majority of the chemicals were PLONOR (i.e. Posing Little or No Risk to the marine environment).

Cuttings were discharged to the sea. A total of 2,391 tonnes cuttings were discharged.

### Waste

The drilling operations at Glenrothes and Cragganmore generated a total of 525 tonnes of waste.

### Spills

There were no spill of oil or chemicals during the drilling campaign.

#### Chemicals:

PLONOR: Posing Little or No Risk to the marine environment

SUB: Substitution should be assessed, and only if no suitable alternatives are available these should be used

Other: Other chemicals than PLONOR or SUB

# United Kingdom

Environment al Aspect	Target 2012	Performance 2012		New Targets 2013
<b>Emission to Air</b>				
Emissions to air, tonnes	In compliance with limits given by authorities in relation to drilling permission	<b>Glenrothes:</b> CO <sub>2</sub> : 3,480 NO <sub>x</sub> : 39.6 nmVOC: 1.3 SO <sub>2</sub> : 4.4	<b>Gragganmore:</b> CO <sub>2</sub> : 9,699 NO <sub>x</sub> : 110.3 nmVOC: 3.6 SO <sub>2</sub> : 12.1	
<b>Chemicals</b>				
Total use of chemicals, tonnes	In compliance with limits given by authorities in relation to drilling permission	<b>Glenrothes.</b> PLONOR: 1,235 SUB: 35 Other: 51	<b>Gragganmore:</b> PLONOR: 852 SUB: 51 Other: 51	
<b>Discharge to Sea</b>				
Cuttings and water based mud, tonnes Chemical, tonnes	In compliance with limits given by authorities in relation to drilling permission	<b>Glenrothes:</b> Cuttings/mud: 1,237 Chemicals: PLONOR: 304 SUB: 7 Other: 6	<b>Gragganmore:</b> Cuttings/mud: 1,154 Chemicals PLONOR: 169 SUB: 11 Other: 7	
<b>Waste</b>				
Domestic waste from drilling activities, tonnes	No targets for this	<b>Glenrothes and Gragganmore:</b> Total: 394 Recycled: 131		N/A
<b>Spill, &gt; 1 m<sup>3</sup></b>				
Spill of oil and chemicals	0	0		N/A

# Norway

## Offshore activities and environmental performance 2012



### Emissions to air

Emissions to air were generated from operation of drilling rigs at Oselvar subsea development and Trym South exploration drilling. Well testing was performed at the Oselvar subsea development. There was no welltesting at the Trym South exploration drilling. The government permits for drilling rigs were based on the factual predicted emissions only.

### Chemicals

During the planning for the drilling and preparing for the application to "Environmental and Pollution Agency" (Klif), the focus were how to enhance the use of environmental friendly chemicals and reduce the discharges as well as minimize any risks for accidental spills. Only pre-approved chemicals have been used. This was required in the regulations for the offshore activities and part of DONG E&P's own standards and procedures. The discharge limits were finally set by Klif together with requirements for detection of oil spill and combat resources. We have not exceeded any chemical limits in 2012.

### Waste

The bulk chemicals and waste to sea were water based drilling fluids and cuttings from top hole sections, and were being collected and processed according to regulations.

### Spill

There were no spill of oil or chemicals. The targets for 2013 are based on Trym Sør and Musling exploration drilling.

*During 2012 DONG E&P Norge has performed both production drilling at Oselvar and exploration drilling at PL147 Trym South. The Production drilling at Oselvar in 2011 will be reported in the present 2012 report, together with the 2012 figures. This is due to regulatory Klif-arrangements saying that drilling of wells not finished within the report year could be reported the year after.*

# Norway

Environmental Aspect	Target 2012	Performance 2012	New Targets 2013
<b>Emission to Air</b>			
Emissions to air, tonnes	<b>Oselvar/Trym South</b> CO <sub>2</sub> : 76,501 NO <sub>x</sub> : 411 nmVOC: 60.4 SO <sub>2</sub> : 29.83	<b>Oselvar/Trym South</b> CO <sub>2</sub> : 32,870 NO <sub>x</sub> : 283 nmVOC: 18.63 SO <sub>2</sub> : 10.35	✓ N/A
<b>Chemicals</b>			
Total use, tonnes  <i>* Use in closed systems, no discharge</i>	<b>Oselvar/Trym South</b> Green: 15,319 Yellow: 3,735 Red: 173* Black: 0*	<b>Oselvar/Trym South</b> Green: 6,839 Yellow: 1,501 Red : 76.8* Black : 0.3*	✓ N/A
<b>Discharge to Sea</b>			
Cuttings and water based mud, tonnes	<b>Cuttings/mud:</b> N/A(Oselvar) 1,266 (Trym South)	<b>Cuttings/mud:</b> N/A (Oselvar) 5,947 (Trym South)	✓ N/A
<b>Waste</b>			
Waste, cuttings	N/A	546 tonnes (Oselvar)	N/A
Waste, domestic.	N/A	90 tonnes	N/A
<b>Spill, &gt; 1 m<sup>3</sup></b>			
Spill of oil and chemicals	0	0	✓ 0



# Denmark

## Offshore activities and environmental performance 2012



### Emission to air

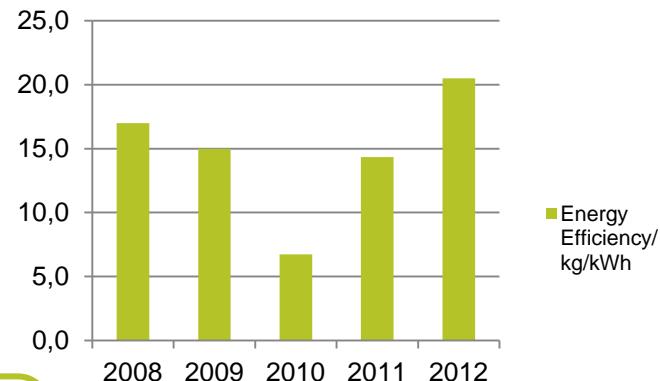
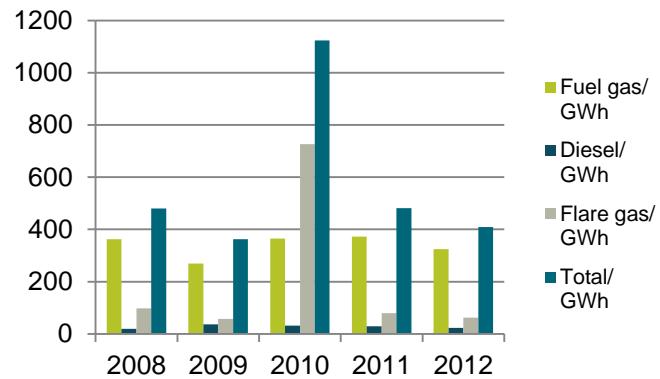
Since 2010 a permit for the daily average flaring has been a part of the Siri production permit from DEA. The target for daily average flaring for 2012 was met and also the target for total flaring. The production permit cover a period of either a half year or a whole year running from 1<sup>st</sup> of July until 30<sup>th</sup> the next year.

The target for 2013 is the same as for 2012.

### Energy Consumption and Energy Efficiency

The total energy consumption has decreased compared to 2011. The decrease was due to less amount of water and gas re-injected compared to 2011. This has also had a positive effect on the energy efficiency, which has increased from 14,3 to 20,5.

The target for energy efficiency for 2013 is 18.



*Energy Efficiency is defined as:*

$$\text{Energy Efficiency}^* = \frac{(\text{Produced (oil, gas, water)} + \text{Reinjected (gas, water)})}{(\text{Fuel gas} + \text{flared gas} + \text{diesel oil})}$$

*\*The higher the energy efficiency the better performance*

# Denmark

## Offshore activities and environmental performance 2012

### Chemicals

The offshore chemicals are evaluated according to the OSPAR rules and guidelines, and will be classified as red, yellow, orange or green.

According to OSPAR's recommendation, red chemicals should not be used after 1 January 2017. In Denmark, the Danish Environmental Protection Agency and the Danish Operators have agreed that use of red chemicals should be stopped from 1 January 2008, unless there are certain conditions where substitution by a less hazardous chemical not is available.

Due to dialogue with suppliers about alternatives to the chemicals classified as red, DONG E&P DK has not used red production chemicals since 1 January 2008.

However, in 2011, DONG E&P DK identified that a hydraulic fluid used in the Stine subsea installation contained very small amounts of a dye which is classified as red due to its low biodegradation. Since DONG E&P started using hydraulic fluid in to use in 2003, 30 tonnes of the product have been discharged to sea. The dye only constituted 4 kg out of the 30 tonnes. The hydraulic fluid was exchanged with a new hydraulic fluid with less hazardous dye, which results in yellow classification in 2012. The Danish Environmental protection agency has been informed about the changed classification. The use of the red dye was 1 kg in 2012 and the discharge of the substance was 3 gram.

The discharge of chemicals to sea in general decrease due to the increase in re-injection of produced water.

*According to OSPAR Decision 2000/2, Appendix 1 all offshore chemicals shall be subject to a harmonised pre-screening based on information about bioaccumulation potential, biodegradation and acute toxicity of substances in the chemical. The Danish Environmental Protection Agency has defined 4 colours to define the result of the pre-screening.*

**Red:** If substances are on OSPARs list of Chemicals for Priority action, inorganic with high toxicity, persistent or meet two of the following criteria:

- Not readily biodegradable
- High bioaccumulation potential
- High toxicity.

**Green:** If substances are on the PLONOR list (OSPARS list of substances which are considered to Pose Little or No Risk to the Environment)

**Yellow:** If substances are neither classified as red or green

**Orange:** This category is only relevant for substances which are surfactants and with high bioaccumulation potential. At the time being, the category is handled as the yellow category but may be classified as red in the future.

*The pre-screening only covers risk of environmental impact. Evaluation of risk to health and safety is not included.*

# Denmark

## Offshore activities and environmental performance 2012

### Discharge to sea

The re-injection of produced water has positively increased during the last five years and reached 98% for 2012.

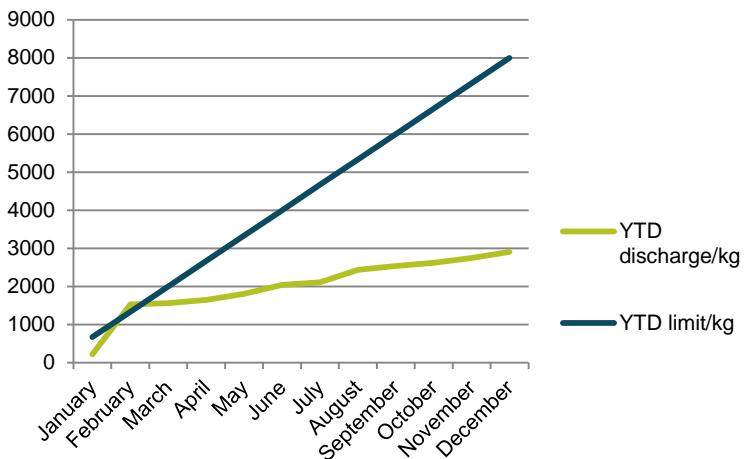
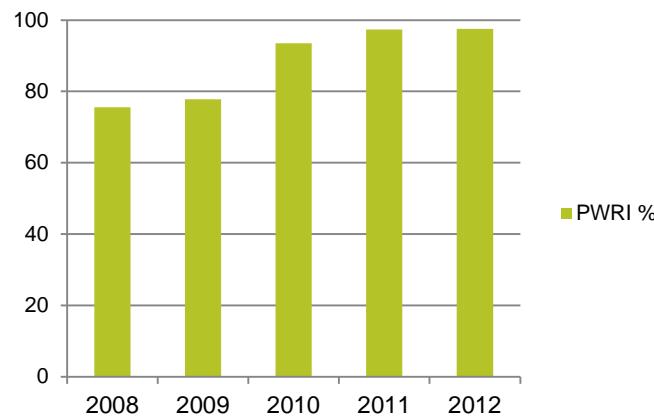
The high re-injection also resulted in low discharge of oil to the sea. In 2012 the amount of oil discharged to sea was 2.9 tonnes. The discharge was below the limit on 8 tonnes but has increased from 2011 performance.

The increase in discharge even with high re-injection is caused by higher concentration of oil in produced discharged water. The higher concentrations of oil was due to problems with wax production from Nini East wells which caused more poor fluid separation.

The limit for the average oil concentration in produced water on 30 mg/l was exceeded in February, August, September and December.

The yearly average was 33,6 mg/l.

DONG E&P received a dispensation from the limit on 30 mg/l for a period August to December 2012 to prepare a solution for the wax problems.



# Denmark

## Offshore activities and environmental performance 2012

### Waste

The target (excl. drilling) was easily surpassed.

No drilling has taken place in 2012. A rig has although been used for work over at the Stine subsea installation.

Possibilities for improved cleaning and use of drilling cuttings for other purposes are continuously being investigated.

The target for 2013 is the same as for 2012.

### Spill

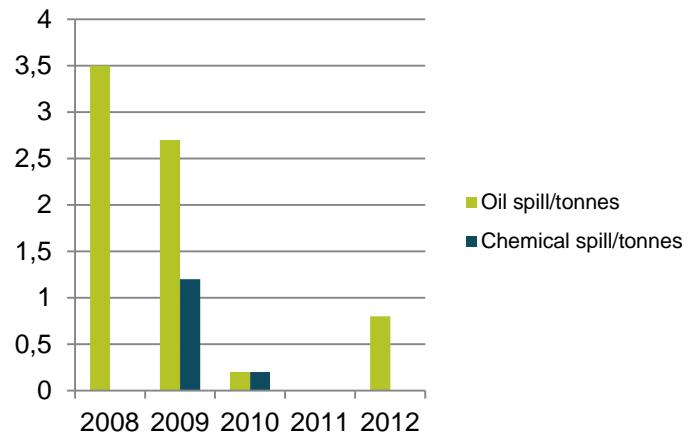
There has been 5 minor spill of oil (diesel, helifuel etc.). All the spills were far below 1 m<sup>3</sup>.

No spill of chemicals.

The target for 2012 is the same as for 2011.

### Seabed monitoring

In May and June 2012 sea bed samples have been taken in distances from 100 to 5000 meter from the seabed around Siri. Seabed monitoring takes place every 3 years to identify if there are effects from oil production from Siri on the seabed environment. The first monitoring took place in 1997 as a baseline study. The study showed that impact from our activities on the seabed fauna can be seen in distances up to 750 meter for the most vulnerable species but no impact in the 1500 meter sampling points.



# Denmark

Environmental Aspect	Target 2012	Performance 2012	New Targets 2013
<b>Emission to Air</b>			
Daily average flare 01.01.2012-30.06.12	16,900 Sm <sup>3</sup>	12,013 Sm <sup>3</sup>	✓ 16,900 Sm <sup>3</sup> (01.07.13 – 30.06.14)
Yearly flare	6.19 mill Sm <sup>3</sup>	4.66 mill Sm <sup>3</sup>	✓ 6.19 mill Sm <sup>3</sup>
<b>Resources</b>			
Energy efficiency	14.2 kg/kWh	20,5 kg/kWh	✓ 18.0 kg/kWh
<b>Discharge to Sea</b>			
Concentration of oil in produced water	30 mg/l	33,6 mg/l	- 30 mg/l
Total discharge of oil	8 tonnes	2.9 tonnes	✓ 8 tonnes
Reinjection produced water	90%	98%	✓ 90%
<b>Waste</b>			
Reuse of waste excluding drilling cuttings	65%	95%	✓ 65%
<b>Spill, &gt; 1 m<sup>3</sup></b>			
Spill of oil and chemicals	0	0	✓ 0

# Greenland

## Offshore activities and environmental performance 2012



### DONG E&P licences in Greenland

DONG E&P has in 2012 been part of two active offshore licence agreements in Greenland - as operator in the Puilasooq (Disko West) Licence (2007/26) together with Exxon, Chevron and Nunaoil and as partner in the Qamut (Baffin Bay) Licence (2011/11) together with ConocoPhillips (operator) and Nunaoil.

### Key activities in 2012

Puilasooq Licence (2007/26)

- Relinquished the licence in end 2012

Qamut Licence (2011/11)

- Acquisition of 3000 km<sup>2</sup> 2D seismic – completed summer 2012
- Processing of new 2D seismic - initiated
- Stratigraphic (scientific) drilling – completed summer 2012 as a Joint Industry Project (Baffin Bay Stratigraphic Coring Project 2011-2012)
- Ice & environmental studies – ongoing as part of NW GL Ice Consortium.

### Environmental aspects

All operational activities within the two licences have been conducted according to conditions stipulated in the licence agreement and the rules and regulations issued by the Bureau of Mineral Resources of Greenland. No unwanted events with environmental impacts have been recorded.

### Other issues with relevance for the protection of the marine arctic environment

DONG E&P has – as an integrated part of the licence agreement - contributed with financial resources to the arctic marine environmental baseline studies conducted by DCE (Danish Centre for Environment and Energy)

DONG E&P is an active member of GOIA (Greenland Oil Industry Association) - a forum for discussion and sharing of best practice among oil and gas companies holding licences in Greenland.

DONG E&P takes active part in the discussions in the GOIA Management Committee and a number of Sub Committees and working groups including the HSE Sub Committee and the Oil Spill Response Working Group.

# Environmental Performance for DONG E&P - 2012

Production <sup>1)</sup>					Drilling <sup>2)</sup>				
	Unit	2012	2011	2010		Unit	2012	2011	2010
Oil & gas productions	MBOE	28.5	26.4	24.4	Drilled km wells	km	14.7	15.1	32.3
<b>Energy consumption</b>					<b>Energy consumption<sup>3)</sup></b>				
Diesel	tonnes	3,113	1,882	1,961	Diesel/Oil	tonnes	6,314	7,997	9,320
Gas	1,000 Nm <sup>3</sup>	69,909	59,969	72,492	Gas	1,000 Nm <sup>3</sup>	1,010	1,910	0
<b>Emissions to air</b>					<b>Emissions to air</b>				
CO <sub>2</sub>	1,000 tonnes	186	151	190	CO <sub>2</sub>	1,000 tonnes	30	39	30
CH <sub>4</sub>	tonnes	772	827	992	CH <sub>4</sub>	tonnes	0.7	2	2
SO <sub>2</sub>	tonnes	17	10	11	SO <sub>2</sub>	tonnes	22	22	43
NO <sub>x</sub>	tonnes	803	631	551	NO <sub>x</sub>	tonnes	304	471	555
<b>Discharge to sea</b>					<b>Cuttings, water based mud (WBM) and oil based mud (OBM)</b>				
Produced water discharged to sea	1,000 m <sup>3</sup>	853	1,023	639	WBM and cuttings discharged to sea	tonnes	5,947	10,436	19,025
Total oil discharged	tonnes	16	16	8	OBM and cuttings sent onshore	tonnes	1,316	11,334	20,981
<b>Spills</b>					<b>Spills</b>				
Spills (>1 m <sup>3</sup> )	number	0	0	1	Spills (>1 m <sup>3</sup> )	number	0	0	0

1) Production data are reported as DONG E&P equities in production licenses, except accidentals spills

2) Drilling data are reported where DONG E&P have been operator, and includes work over activities

3) Consumption includes operation and well testing.

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