



Assessment of the OSPAR Report on Discharges, Spills and Emissions from Offshore Installations 2009 – 2018



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Executive Summary

This report presents the discharges, spills and emissions data from offshore installations in the OSPAR maritime area for the period 2009-2018 and provides an assessment of that data. The assessment is based on the data provided to OSPAR by Contracting Parties and published in the annual reports on discharges, spills and emissions from offshore oil and gas installations.

A more extensive assessment period of ten years has been used for this report in order to support the OSPAR Quality Status Report due for publication in 2023.

a. Level of Activity

The OSPAR maritime area is a mature oil and gas region with the majority of Contracting Parties experiencing declining production. The total production of hydrocarbons in OSPAR’s maritime area has decreased by 27% over the last 10 years, though there was an increase between 2014 to 2016 before starting to decline again. Despite this, oil and gas exploration and development activities continue in order to maximise economic recovery of reserves. The number of wells drilled during the period has varied from a peak of 490 in 2017, to 366 in 2014 and 426 in 2018. Despite the long-term production decrease there had been a 15% increase in the number of oil & gas installations from 2009 up to 2015, with the greatest increase in the number of subsea installations used to recover hydrocarbons from marginal fields. The number of installations subsequently declined by 5% from 2015 due to an increase in cessation of production and decommissioning with the drop in the oil price.

b. Discharges & Spills of Oil

Discharges of oil continue to decrease

The total quantity of dispersed¹ oil (aliphatic oil) discharged to the sea from produced water and displacement water decreased between 2009 – 2018 from 4 890 tonnes to 3 957 tonnes.

As in previous years, produced water and displacement water are the main contributors to the oil discharges from offshore oil and gas activities, representing 95-99% of the total amount of oil discharged to the sea during the 2009 - 2018 period. The exception was in 2011-2012 where a single large spill event accounted for 11-12% of the total oil to sea. Flaring is a minor source of oil discharges and is not covered by OSPAR measures.

It should be noted that dispersed oil in displacement water contributes less than 1% to this total.

The quantity of oil spilled has varied over the period as might be expected ranging from 44 tonnes in 2016 up to 541 tonnes in 2012, the later due to a single large incident which spilled 400 tonnes.

The concentration of dispersed oil in produced water is below the performance standard for most installations

The annual average dispersed oil content in produced water ranged from 12.4mg/l to 13.4mg/l over the period, well below the current performance standard for dispersed oil of 30 mg/l for produced water discharged into the sea.

In 2018, 20 installations exceeded the 30 mg/l performance standard for dispersed oil in produced water. The amount of oil discharged from 16 of these installations is less than 2 tonnes annually. In total the discharge of dispersed oil in excess of the performance standard is less than 2% of the total discharge of dispersed oil in the OSPAR region.

c. Chemicals

Most chemicals used and discharged offshore are considered to pose little or no risk

Since 2001 the use and discharge of chemicals have been regulated by OSPAR. The first reporting year for which all major contributors provided data was 2003. The total quantity of chemicals used offshore decreased from a peak of 838 111 tonnes in 2009 to 637 797 tonnes in 2018. For 2018 less than 2% (by weight) of the chemicals used contain either substances on the OSPAR List of Chemicals for Priority Action (LCPA) or substances which are candidates for substitution.

The total quantity of chemicals discharged into the sea decreased from a peak of 293 402 tonnes in 2009 to 176 721 tonnes in 2018, 82% of which were chemicals on the OSPAR PLONOR² list. Less than 1% (wt.) of the discharged chemicals contains LCPA substances or substances which are candidates for substitution.

OSPAR Recommendation 2005/2 set environmental goals for the reduction of substances on the OSPAR LCPA such that discharges were to be phased out by 2010. The discharge of LCPA was phased out by 2014, and other than a 3kg accidental discharge in 2016 in the UK there has been no other discharge of LCPA.

OSPAR Recommendation 2006/3 sets out environmental goals on the phasing out of discharges of offshore chemicals that are, or which contain substances, identified as candidates for substitution³ by 2026. There has been a 28% reduction in the discharge of such substances over the last 10 years.

1. "Aliphatics" and "aromatics" are defined by the reference method set in OSPAR Agreement 2005-15 (Solvent extraction, Infra-Red measurement at 3 wavelengths). In that context, "aliphatics" and "dispersed oil" mean the same thing.

2 Pose little or no risk to the environment - PLONOR

The phasing out of the discharge of LCPAs and reductions in the amount of substitution chemicals discharged are indicative of the success of the OSPAR measures.

d. Atmospheric Emissions

Atmospheric emissions are stable or decreasing

Atmospheric emissions are not regulated by OSPAR measures, nonetheless, atmospheric emissions from offshore oil and gas activity are reported annually by operators. Emissions to the atmosphere have generally decreased or remained relatively stable for the period 2009-2018, with a 27% decrease in methane emissions, 16% decrease in SO₂, 8% decreases in CO₂ and NO_x while nmVOC's emissions had decreased but since returned to 2009 levels.

Récapitulatif

Ce rapport présente les données relatives aux rejets, déversements et émissions des installations offshore dans la zone maritime OSPAR pour la période 2009-2018 et fournit une évaluation de ces données. L'évaluation est basée sur les données fournies à OSPAR par les Parties contractantes et publiées dans les rapports annuels sur les rejets, les déversements et les émissions des installations pétrolières et gazières offshore.

Une période d'évaluation plus étendue de dix ans a été utilisée pour ce rapport afin de soutenir le Bilan de Santé (QSR) OSPAR dont la publication est prévue en 2023.

a. Niveau d'activité

La zone maritime d'OSPAR est une région productrice de pétrole et de gaz qui se trouve au stade de la maturité ; la majorité des parties contractantes constatent une baisse de production. La production totale d'hydrocarbures dans la zone maritime OSPAR a diminué de 27% au cours des 10 dernières années, bien qu'il y ait eu une augmentation entre 2014 et 2016 avant de commencer à diminuer à nouveau. Malgré cela, les activités d'exploration du pétrole et du gaz se poursuivent afin de maximiser la récupération économique des réserves. Le nombre de puits forés pendant cette période a varié d'un pic de 490 en 2017, à 366 en 2014 et 426 en 2018. Malgré la baisse de la production à long terme, le nombre d'installations pétrolières et gazières a augmenté de 15 % entre 2009 et 2015, la plus forte hausse étant celle du nombre d'installations sous-marines utilisées pour récupérer les hydrocarbures des champs marginaux. Le nombre d'installations a ensuite diminué de 5 % à partir de 2015 en raison d'une augmentation de l'arrêt de la production et du déclassement avec la baisse du prix du pétrole.

b. Rejets et déversements d'hydrocarbures

Les rejets d'hydrocarbures continuent à diminuer

3 Except for those chemicals where, despite considerable efforts, it can be demonstrated that this is not feasible due to technical or safety reasons. Demonstration of those reasons should include a description of the efforts.

La quantité totale d'hydrocarbures dispersés⁴ (aliphatiques) rejetée à la mer à partir de l'eau de production et de l'eau de déplacement a diminué entre 2009 et 2018 passant de 4 890 tonnes à 3 957 tonnes.

Comme les années précédentes, l'eau de production et l'eau de déplacement sont les sources principales des rejets d'hydrocarbures provenant des activités pétrolières et gazières offshore, représentant 95 à 99 % de la quantité totale d'hydrocarbures rejetés à la mer au cours de la période 2009 – 2018. La seule exception est la période 2011-2012, où un seul grand déversement a représenté 11 à 12 % du total des hydrocarbures déversés en mer. Le torchage est une source mineure de rejets d'hydrocarbures et n'est pas couvert par les mesures OSPAR.

Il convient de noter que les hydrocarbures dans l'eau de déplacement contribuent pour moins de 1 % à ce total.

La quantité d'hydrocarbures déversée a varié au cours de la période comme on pouvait s'y attendre, allant de 44 tonnes en 2016 à 541 tonnes en 2012, cette dernière quantité étant due à un seul grand incident qui a déversé 400 tonnes.

La concentration d'hydrocarbures dispersés dans l'eau de production est inférieure à la norme de performance pour la plupart des installations

La teneur moyenne annuelle en hydrocarbures dispersés dans l'eau de production se situait entre 12,4mg/l et 13,4mg/l sur la période, bien en dessous de la norme de performance actuelle pour les hydrocarbures dispersés, qui est de 30 mg/l pour l'eau de production rejetée à la mer.

En 2018, 20 installations ont dépassé la norme de performance de 30 mg/l. La quantité d'hydrocarbures rejetée par 16 de ces installations est inférieure à 2 tonnes par an. Au total, le rejet d'hydrocarbures dispersés dépassant la norme de performance est inférieur à 2 % du rejet total d'hydrocarbures dispersés dans la région OSPAR.

c. Produits chimiques

La plupart des produits chimiques utilisés et rejetés offshore sont considérés comme ne posant que peu ou pas de risque pour l'environnement

Depuis 2001, l'utilisation et le rejet de produits chimiques sont régulés par OSPAR. La première année pour laquelle tous les principaux contributeurs ont fourni des données est 2003. La quantité totale de produits chimiques utilisés en mer a diminué, passant d'un pic de 838 111 tonnes en 2009 à 637 797 tonnes en 2018. Pour 2018, moins de 2 % (en poids) des produits chimiques utilisés contiennent des substances sur la liste OSPAR de produits chimiques devant faire l'objet de mesures prioritaires (LCPA) ou des substances ayant été identifiées comme candidates à la substitution.

La quantité totale de produits chimiques rejetés dans la mer a diminué, passant d'un pic de 293 402 tonnes en 2009 à 176 721 tonnes en 2018, dont 82 % étaient des produits chimiques figurant sur la liste OSPAR PLONOR⁵. Moins de 1 % (en poids) des produits chimiques rejetés contiennent des substances LCPA ou des substances qui sont candidates à la substitution.

⁴ "Aliphatiques" et "aromatiques" sont définis dans la méthode d'analyse de référence (Accord OSPAR 2005-15). Dans ce contexte, "aliphatiques" et "hydrocarbures dispersés" signifient la même chose.

⁵ La liste OSPAR de substances/préparations utilisées et rejetées en mer qui sont considérées comme ne posant que peu ou pas de risque pour l'environnement (PLONOR)

La Recommandation OSPAR 2005/2 fixe les objectifs environnementaux pour la réduction des produits chimiques figurant sur la LCPA d'OSPAR et précise que « d'ici le 1^{er} janvier 2010, les Parties contractantes devront éliminer les rejets, dans la zone maritime d'OSPAR, des produits chimiques d'offshore qui sont sur la LCPA ». Les rejets de tels produits chimiques ont été supprimés progressivement d'ici 2014, et à l'exception d'un rejet accidentel de 3 kg en 2016 au Royaume-Uni, il n'y a eu aucun autre rejet de produits chimiques figurant sur la LCPA.

La Recommandation OSPAR 2006/3, telle qu'amendée par la Recommandation OSPAR 2019/2, fixe les objectifs environnementaux pour la cessation par l'industrie de l'offshore des rejets de produits chimiques d'offshore qui sont ou qui contiennent des substances ayant été identifiées comme étant candidates à la substitution⁶ d'ici 2026. On a constaté une réduction de 28 % des rejets de ces substances au cours des dix dernières années.

La suppression progressive des produits chimiques figurant sur la LCPA et la réduction de la quantité de produits chimiques de substitution rejetés sont révélatrices du succès des mesures OSPAR.

d. Emissions atmosphériques

Les émissions atmosphériques sont stables ou en baisse

Les émissions atmosphériques ne sont pas régulées par les mesures OSPAR. Toutefois, les émissions atmosphériques provenant des activités pétrolières et gazières offshore sont notifiées tous les ans par les opérateurs. Les émissions dans l'atmosphère ont généralement diminué ou sont restées relativement stables pour la période 2009-2018, avec une diminution de 27 % des émissions de méthane, de 16 % du SO₂, de 8 % du CO₂ et des NO_x, alors que les émissions de nmCOV avaient diminué mais sont revenues depuis aux niveaux de 2009.

Introduction

This report provides an assessment of the discharges, spills and emissions to the environment from Offshore Installations in the OSPAR Maritime Area for the period 2009 – 2018 as well as providing a comparison of trends over the past 10 years.

The purpose of this report is to assess increasing or decreasing trends in the quantity of such discharges, spills and emissions in light of the level of oil and gas activity in each Contracting Party's area and the OSPAR Maritime Area as a whole with the aim to demonstrate the effectiveness of OSPAR measures. Trends have been assessed using expert judgement and not by statistical analyses. The data and trends reported in this report will be used for the OSPAR Quality Status Report due for publication in 2023.

This report does not seek to assess the impact to the environment of these discharges, spills and emissions.

This assessment is based on annual data submitted by Contracting Parties and compiled by the Secretariat and, following examination by the relevant subsidiary bodies, published by the Commission. Part A of the

⁶ Sauf les produits chimiques pour lesquels, malgré des efforts considérables, l'on peut démontrer que cela n'est pas réalisable pour des raisons techniques ou de sécurité. La démonstration de ces raisons devra inclure une description des efforts.

report contains data specifically for the reporting year (2018). Part B of the report contains cumulative data from 2009 to 2018. Data used in this assessment report are the best available data at the time the report has been written and is subject to uncertainties in the measurement required by individual Contracting Parties.

With regards to quality assurance of the data, Contracting Parties use their own QA/QC procedures for the data submitted to the Secretariat. Transparency and harmonisation of the reported data are achieved through the use of:

- harmonised sampling and analysis procedures;
- accredited or accepted laboratories;
- harmonised data collection format; and
- review by an Expert Assessment Panel.

It is, however, recognised that data collection and methodologies vary across Contracting Parties due to national preferences or other obligations. Where possible this is identified within the report.

1.1 Programmes and Measures

The Offshore Oil and Gas Industry Strategy (Offshore Strategy) sets the objective of preventing and eliminating pollution and taking the necessary measures to protect the maritime area against the adverse effects of offshore activities so as to safeguard human health, conserve marine ecosystems and, where practicable, restore marine areas that have been adversely affected.

The Offshore Strategy further declares that the OSPAR Commission will implement this Strategy progressively, following on from, and consistent with, the commitments made in other OSPAR Strategies, insofar as they apply.

The Offshore Strategy provides that OSPAR will address the programmes and measures:

- a. needed to prevent, control and eliminate pollution under Annex III of the OSPAR Convention; and
- b. to be adopted under Annex V of the OSPAR Convention following the identification of relevant human activities.

In doing so, the Offshore Strategy requires the OSPAR Commission to:

- collect information about threats to the marine environment from pollution or from adverse effects from offshore activities;
- establish priorities for taking action; and
- establish and periodically review environmental goals to achieve the Offshore Strategy's objectives.

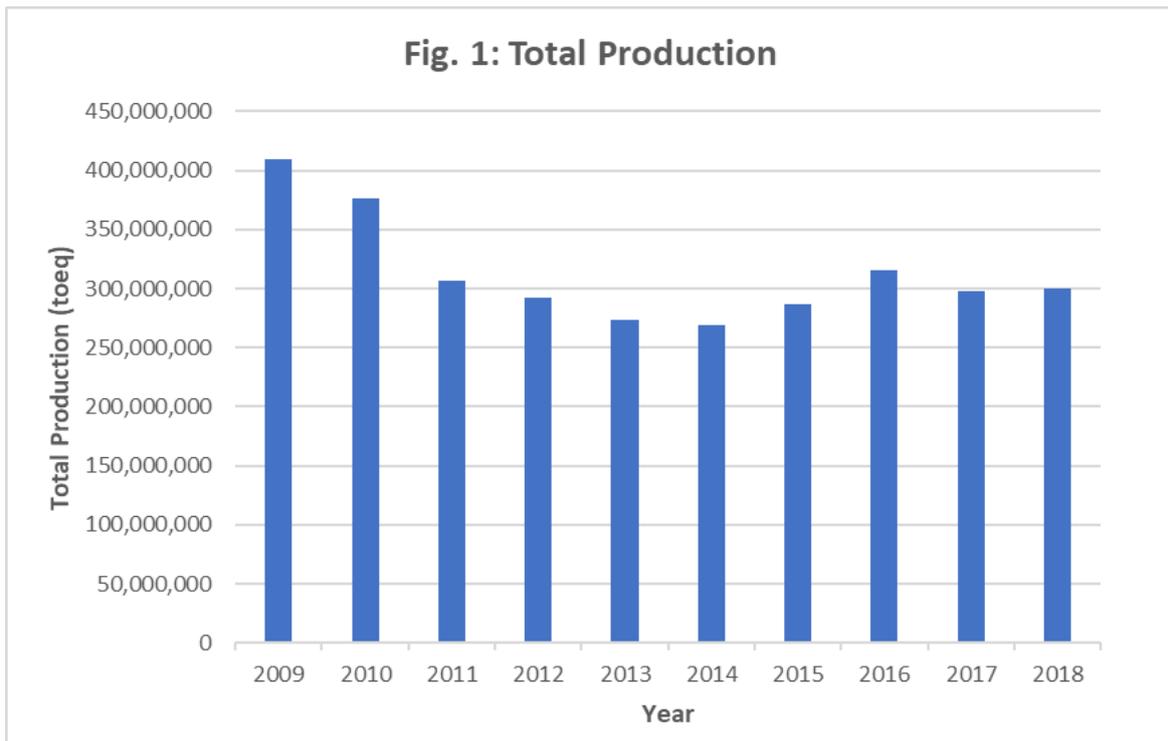
As part of this process, the OSPAR Commission should develop and keep under review programmes and measures to identify, prioritise, monitor and control the emissions, discharges and losses of substances which could reach the marine environment, and which are likely to cause pollution. Regular reporting is therefore required in order to review progress towards the targets of the Offshore Strategy.

Since 1978, discharges and waste handling from offshore oil and gas installations have been addressed and regularly reported under the former Paris Convention and under the OSPAR Convention. Since the beginning of the 1990s air emissions from these installations have been reported as well. Most measures relevant for the annual report applicable under the OSPAR Convention can be found in Appendix 1.

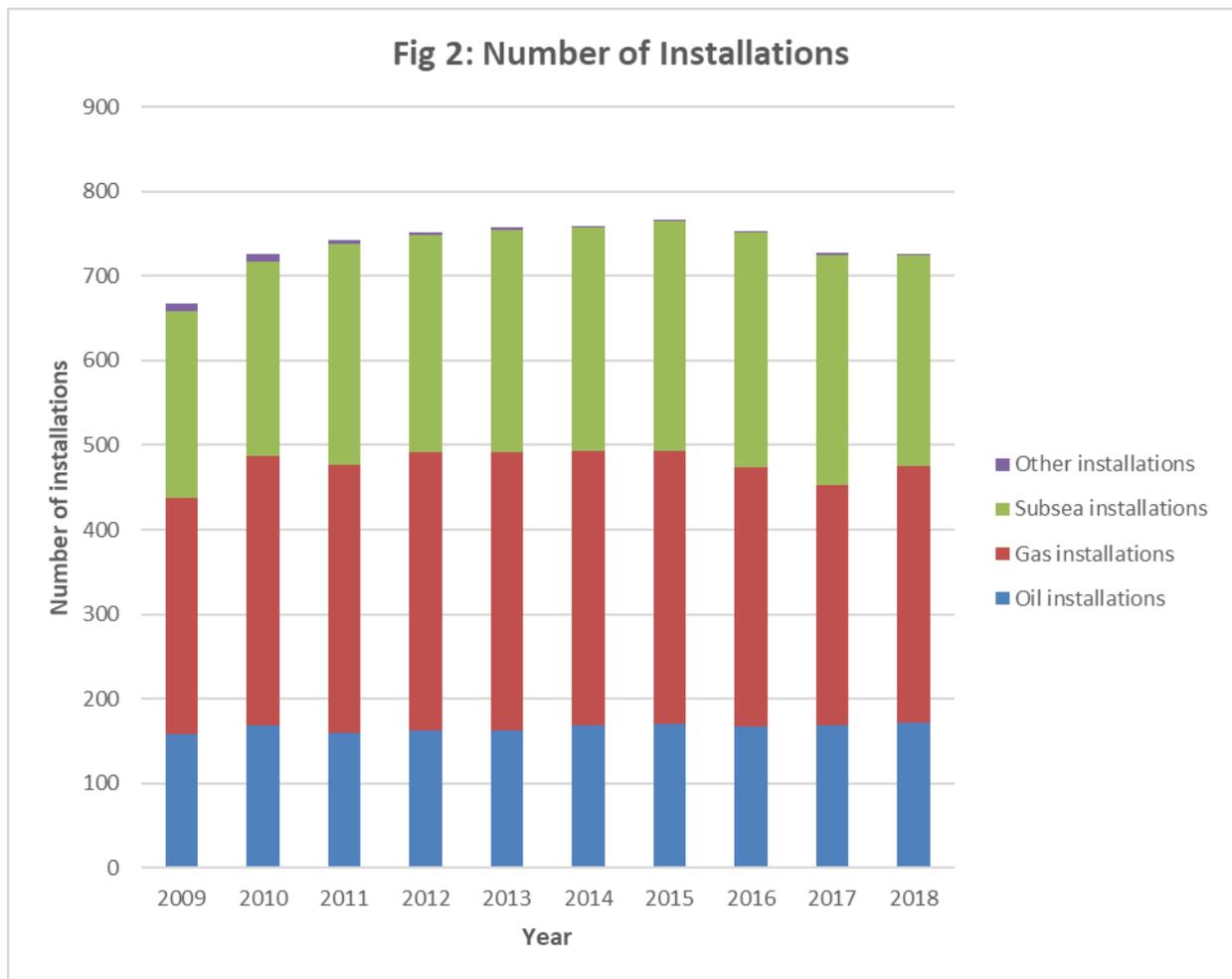
Setting the Scene

2.1 Level of Activity

The production of hydrocarbons decreased by 27% over the ten-year period of 2009 to 2018 (see Fig. 1), though production picked up in 2015-2016, before levelling off. The increased production over 2015-2016 was primarily due to increases in Irish, Norwegian and UK production of 560%, 14% and 31% respectively which offset reductions by other Contracting Parties. The significant increase in Irish production was due to the Corrib subsea field commencing production.

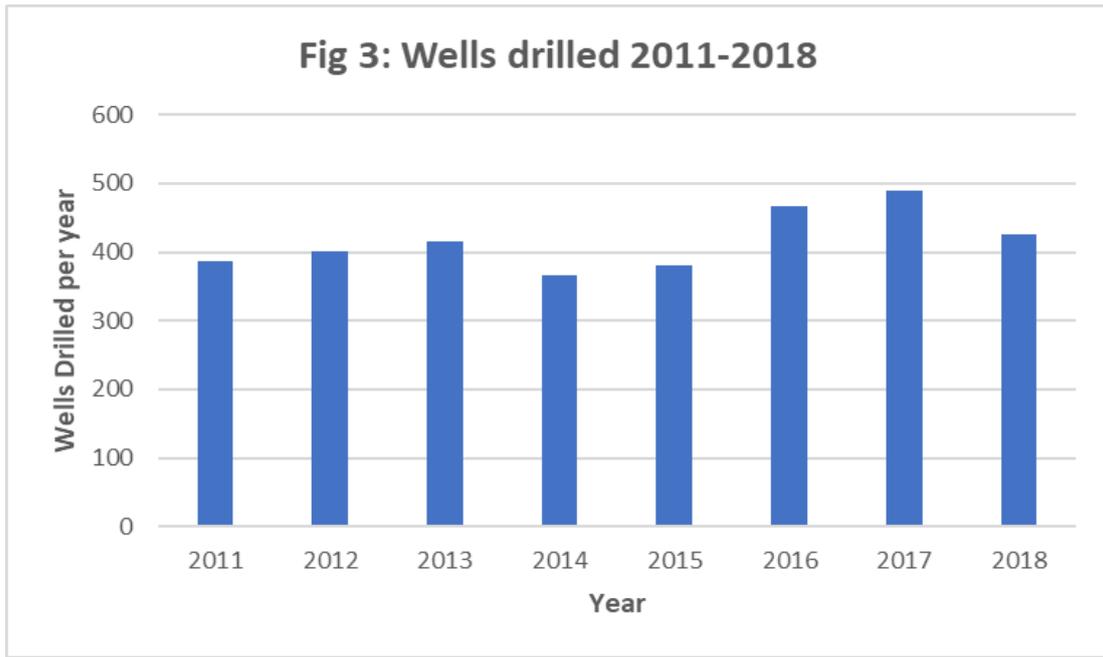


The number of installations with emissions and discharges reported in the OSPAR maritime area increased over the period 2009-2018. In 2015 there were 766 installations, up from 668 installations reported in 2009. The majority of new installations over the period are subsea developments from which discharges are likely to be very limited and which are tied back to host installations. The number of installations then decreased by 5% to 726 installations in 2018 due to cessation of production and decommissioning activities, primarily driven by the downturn in the industry. The change in the number of installations with emissions and discharges over the period 2009 to 2018 is shown in Figure 2.

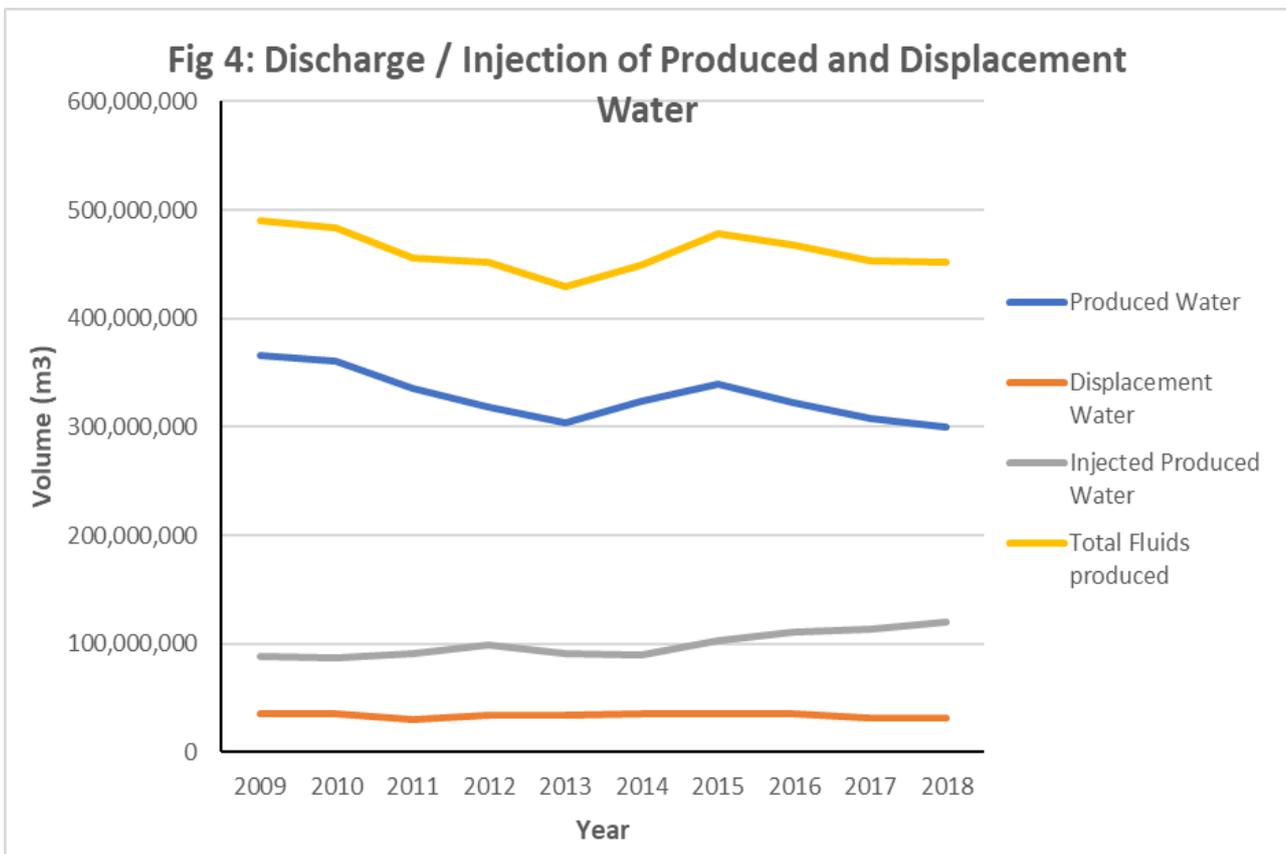


Drilling activity has, despite the downturn during 2013-2015, increased over the period from 386 wells drilled in 2009 to 429 wells drilled in 2018, with a peak of 490 wells drilled in 2017. While the number of wells drilled has increased over the period, most of wells drilled are development wells rather than exploration & appraisal wells. There has been a decline in drilling activity in Ireland and the Netherlands, while activity in Norway and the UK has remained relatively stable over the period with some annual variation.

The number of Mobile Offshore Drilling Units operating within the OSPAR maritime area varies year on year, which has typically been around 40-80; currently there are approximately 50 operating.



Over the period 2009-2018 trends in total produced and displacement water produced have been in gradual decline from a total of 490 million cubic metres in 2009 to 451 million cubic metres in 2018, an 8% decrease. While total discharges of produced and displacement water have decreased by 18%, the amount of produced water being re-injected, in order to avoid discharging dispersed oil, chemicals and other naturally occurring substances has increased 36% over the ten-year period. This increase represents nearly 27% of produced and displacement water being reinjected in 2018 compared to 18% in 2009 (see Fig. 4). Over the past 10 years the number of installations injecting produced or displacement water has increased since 2009 from 59 installations up to 70 installations in 2018.



Oil Discharges & Spills

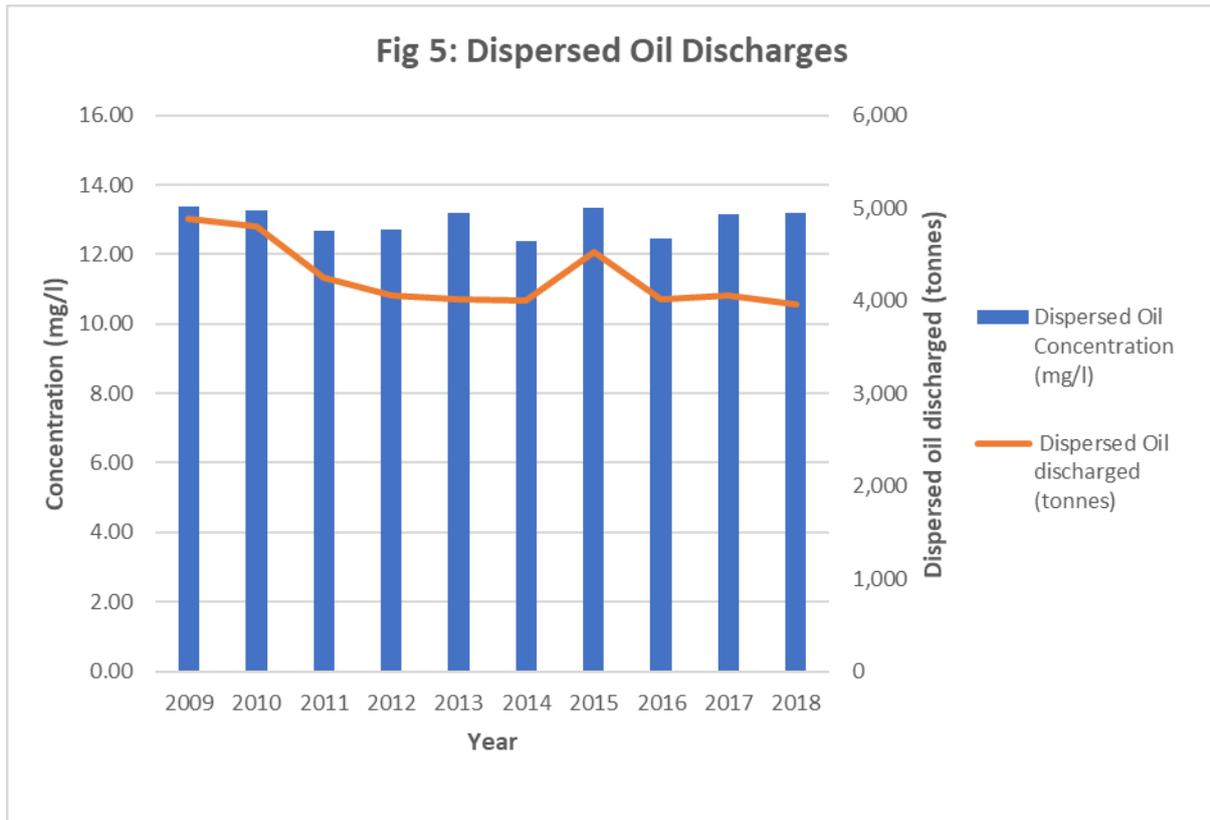
3.1 Discharges of oil to sea

Dispersed oil is discharged into the OSPAR Maritime Area in accordance with OSPAR Recommendation 2001/1 (as amended) which seeks to limit the concentration of dispersed oil in produced and displacement water discharges to no more than 30 mg/l. The Recommendation also called for a reduction in the total oil discharged into the sea in 2006 by 15% compared to the equivalent discharge in the year 2000, which has been achieved. The concentration of dispersed oil is determined in accordance with the OSPAR reference method⁷.

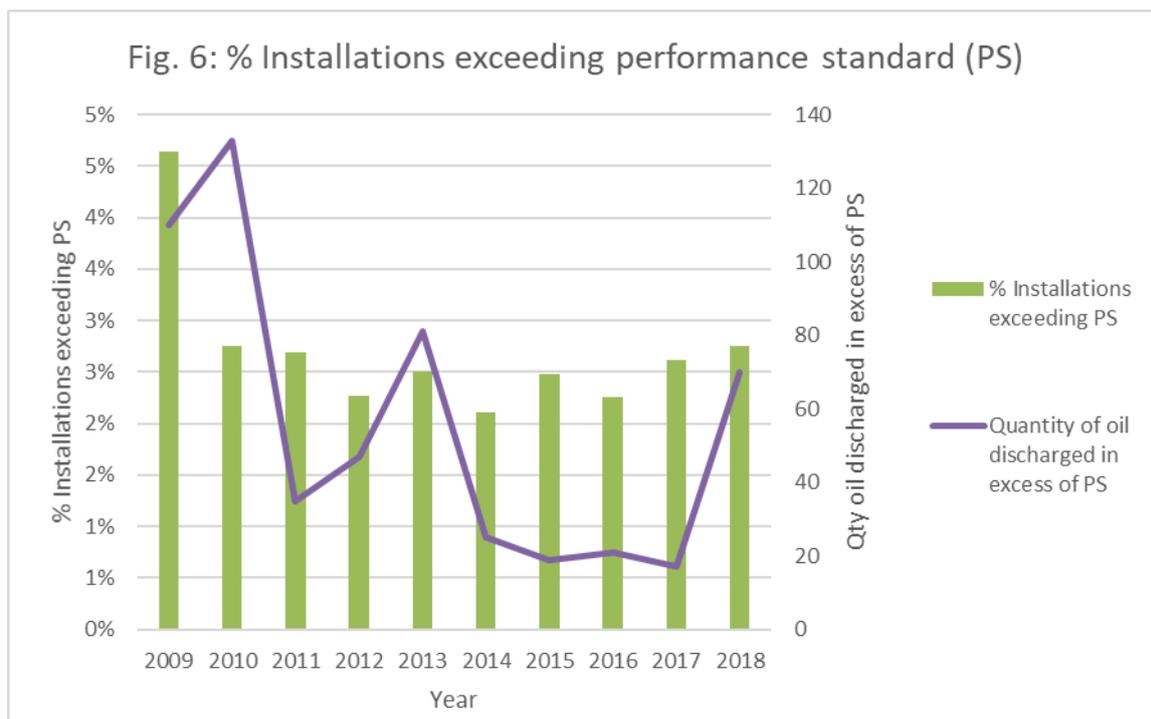
The total quantity of dispersed oil discharged with produced and displacement water was 3957 tonnes in 2018 which is a 19% decrease from 2009. This is largely due to decreases in produced water volumes being discharged as installations produce less fluids while dispersed oil concentrations remain steady.

The quality of produced water being discharged has remained largely steady from 2009 to 2018 ranging from an OSPAR average of 12.4mg/l to 13.4mg/l as shown in Figure 5. It should be noted however that the UK has a higher average dispersed oil concentration of 16.1mg/l in 2018 which is offset by lower average concentrations in other Contracting Parties. This is largely due to the UK having older installations with limited capability to retrofit better produced water treatment technologies to deal with large produced water volumes.

⁷ OSPAR Agreement 2005/15 <https://www.ospar.org/convention/agreements?q=2005-15&t=32281&a=7458&s=>



Recommendation 2001/1 sets a performance standard for the discharge of dispersed oil in produced water of 30mg/l calculated as a monthly average. While the majority of installations in the OSPAR maritime area meet the performance standard, a number of installations exceed this performance standard on an annual basis. Over the period 2009 – 2018, the total number of installations exceeding the performance standard (PS) has decreased from 31 in 2009, shortly after the new reference method came into effect, down to 20 in 2018 (see Fig. 6). It should also be noted that for some installations with a high uptime of produced water reinjection (PWRI), that when PWRI system is not available, produced water may be discharged in excess of the performance standard. This is generally for very short periods of time, however should they exceed the performance standard for the year they are still included in this report.



The total quantity of hydrocarbons discharged in excess of the performance standards had decreased by 84% over the period 2009-2017, however increased again in 2018 primarily due to the performance of one installation in the UK with sand and other process issues. This has resulted in an overall 36% decrease over the ten-year period. It should be noted that the quantity of dispersed oil discharged in excess of the performance standard equates to less than 2% of the total dispersed oil, discharged in the OSPAR region.

Installations exceeding the performance standard tend to vary from year to year and are mainly as a result of a change in operations, e.g. new wells coming online, malfunctions in separating equipment. Contracting Parties with installations exceeding the performance standard of 30 mg/l on an annual basis have reported the reasons for exceeding the performance standard as well as plans for improvements. In cases where exceedances occur, Contracting Parties take steps to ensure a return to compliance of such installations.

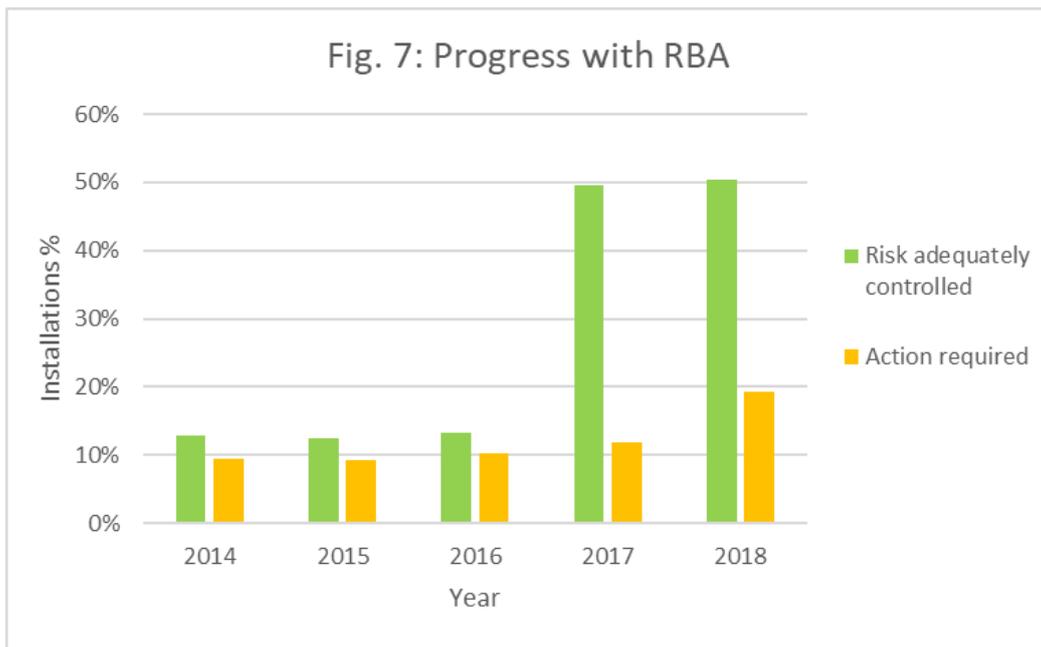
While part of the decrease will be attributable to the change in analytical method, part of the decrease is likely to be as a result of improvements in performance by some installations. It should also be noted that of the 20 installations discharging in excess of 30mg/l during 2018, only 4 installations discharge greater than 2 tonnes of dispersed oil during the year and over 90% of the oil discharged in excess of the performance standard is from just 5 of the 20 installations.

Contracting Parties also report the dissolved oil content (as represented by BTEX⁸ components) in produced water and displacement water discharges. OSPAR does not regulate for these as they rapidly biodegrade in seawater once discharged. The total quantity of BTEX discharged has remained largely the same over the ten-year period with an average of approximately 4 800 tonnes discharged annually. It should be noted however that there is a large uncertainty in the BTEX analysis due to the infrequent sampling frequency (bi-annual) by most Contracting Parties.

⁸ BTEX = Benzene, Toluene, Ethylbenzene and isomers of Xylene.

3.2 Risk-based Approach

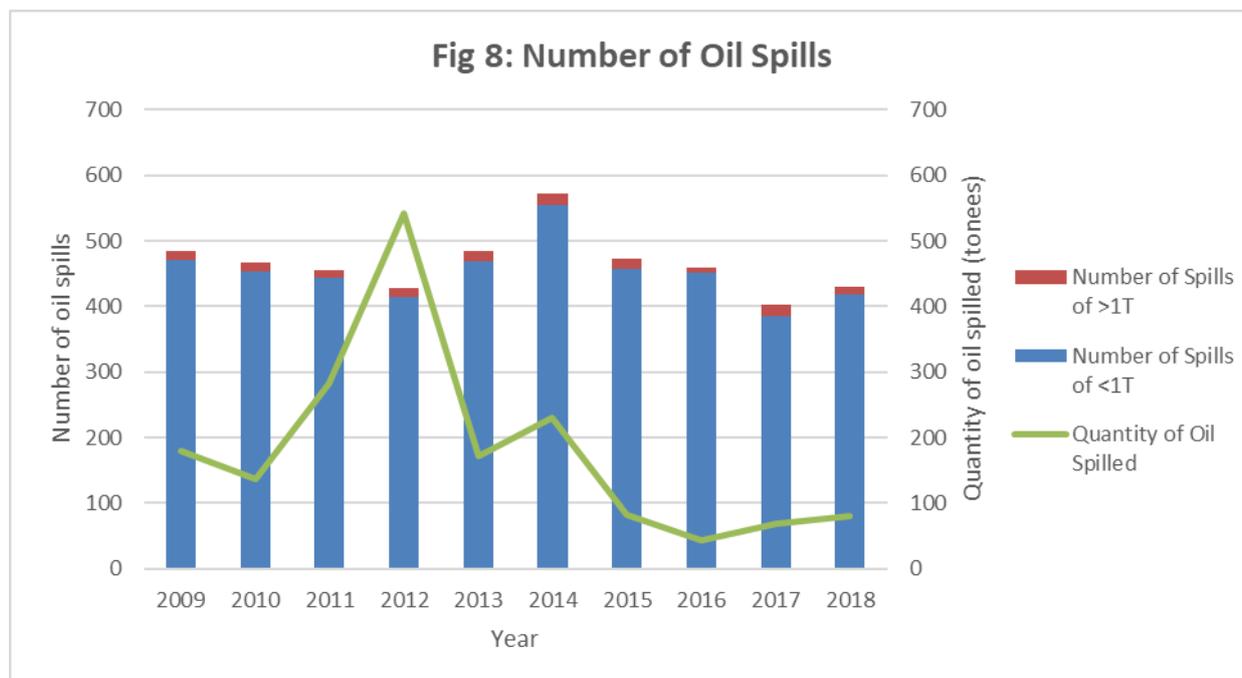
In 2012, OSPAR Recommendation 2012/5 for a risk-based approach to the management of produced water discharges from offshore installations was adopted. Contracting Parties provided OIC with implementation plans in 2013 and the majority commenced assessments in 2014 with the Recommendation due to be fully implemented by 2018. To date, of the 234 installations still included within the RBA process, 218 have been assessed, with 50% of installations determined to have their discharge adequately controlled, 19% requiring further action to be taken and the remainder still awaiting the outcome of an assessment (Fig. 7). Each Contracting Party undertakes the RBA in accordance with one of the recognised approaches as set out in the guidance to the Recommendation.



3.3 Spills of oil to sea

Over the period 2009-2018, the number of accidental spillages of oil to sea varied widely with 2014 having the highest number of spills (572) and 2017 having the lowest (402). There is no particular trend in the number of spills being reported.

The total quantity spilled each year is variable with a high of 541 tonnes in 2012 when a single large spill in the UK contributed approximately 400 tonnes to the total and a low of 44 tonnes in 2016. In 2018, oil spills contributed less than 2% (wt) of the dispersed oil discharged or spilled to the OSPAR maritime area (see Fig. 8). There has been a downwards trend in the quantity of oil spilled annually, though as was the case in 2012, a single large event can negatively impact that trend.



*Note: Up to 2017 Norway reported spills in m³ rather than tonnes

3.4 Discharges of organic phase fluids and organic phase fluids contaminated cuttings

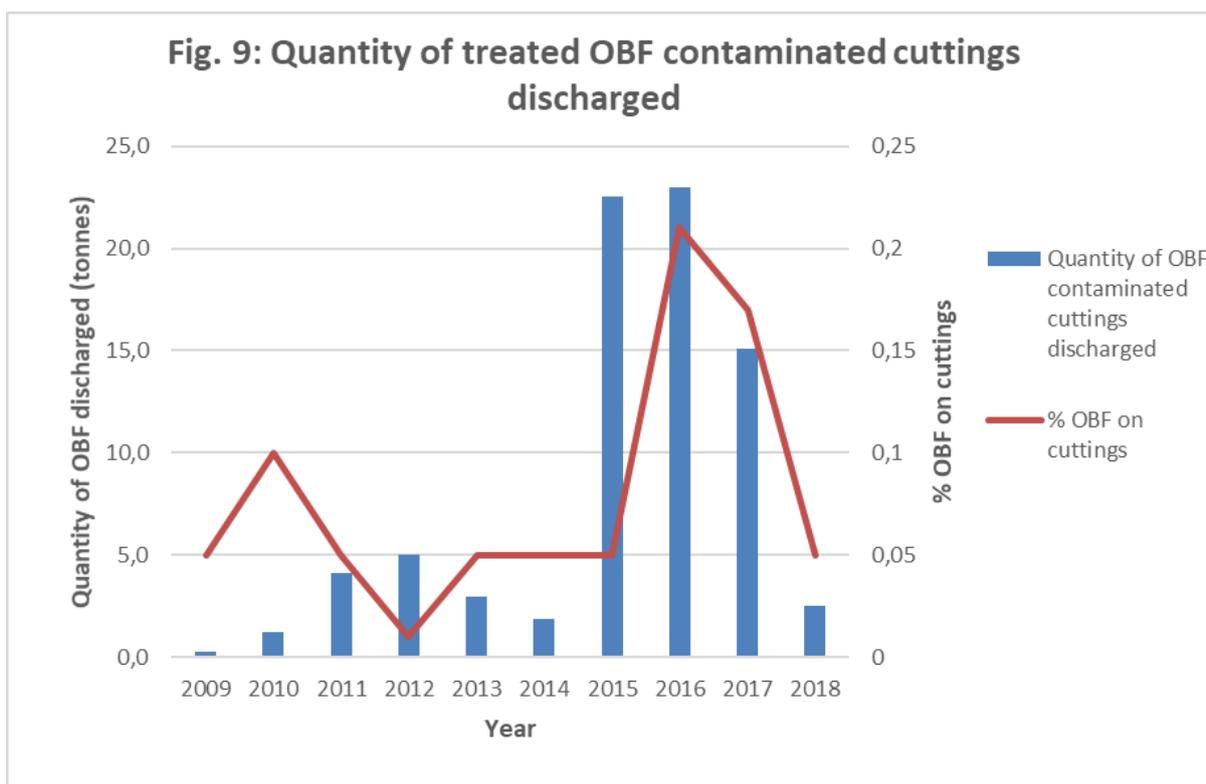
OSPAR Decision 2000/3⁹ aims to prevent and eliminate pollution by the use and discharge of OPF and OPF-contaminated cuttings¹⁰ and by prohibiting the discharge of cuttings contaminated with OBF¹¹ at a concentration greater than 1% by weight on dry cuttings and by other measures.

With the availability of new thermal desorption treatment technologies, which enables the 1% concentration limit to be achieved, there has been an increase in the use of these techniques offshore, particularly in the UK. Through the use of these technologies there has been an increase in the discharge of thermally treated OBF contaminated cuttings, however all discharges have been significantly lower than the 1% concentration performance standard (see Fig. 9).

⁹ OSPAR Decision 2000/3 - <https://www.ospar.org/convention/agreements?q=2000%2F3&t=32282&a=7458&s=>

¹⁰ OPF = Organic-phase Drilling Fluids

¹¹ OBF = Oil-based fluids



Chemicals

4.1 Chemical Use & Discharge

Since 2001 the use and discharge of chemicals have been covered by a number of OSPAR measures as listed in the Appendix 1.

In this report the term *substitution chemical* refers to chemicals which are or contain substances that are candidates for substitution, according to OSPAR Recommendation 2006/3. This includes chemicals or substances which are:

- on the OSPAR LCPA,
- inorganic with LC_{50} or EC_{50} less than 1 mg/l,
- have biodegradation less than 20%, or
- meets two of three criteria
 - biodegradation less than 60%,
 - BCF larger than 100 or $\text{Log } P_{ow} \geq 3$, or
 - LC_{50}/EC_{50} less than 10mg/L.

Chemicals that are considered to 'Pose Little or No Risk' to the environment are referred to as PLONOR chemicals. Chemicals that are considered to be PLONOR are detailed on the OSPAR PLONOR list <http://www.ospar.org/documents?d=32939>.

Chemicals that are neither PLONOR nor candidates for substitution include those that are:

- inorganic with LC_{50} or EC_{50} greater than 1 mg/l,

- Ranking chemicals, which includes substances ranked according to OSPAR Recommendation 2000/2 and don't fall into another category.

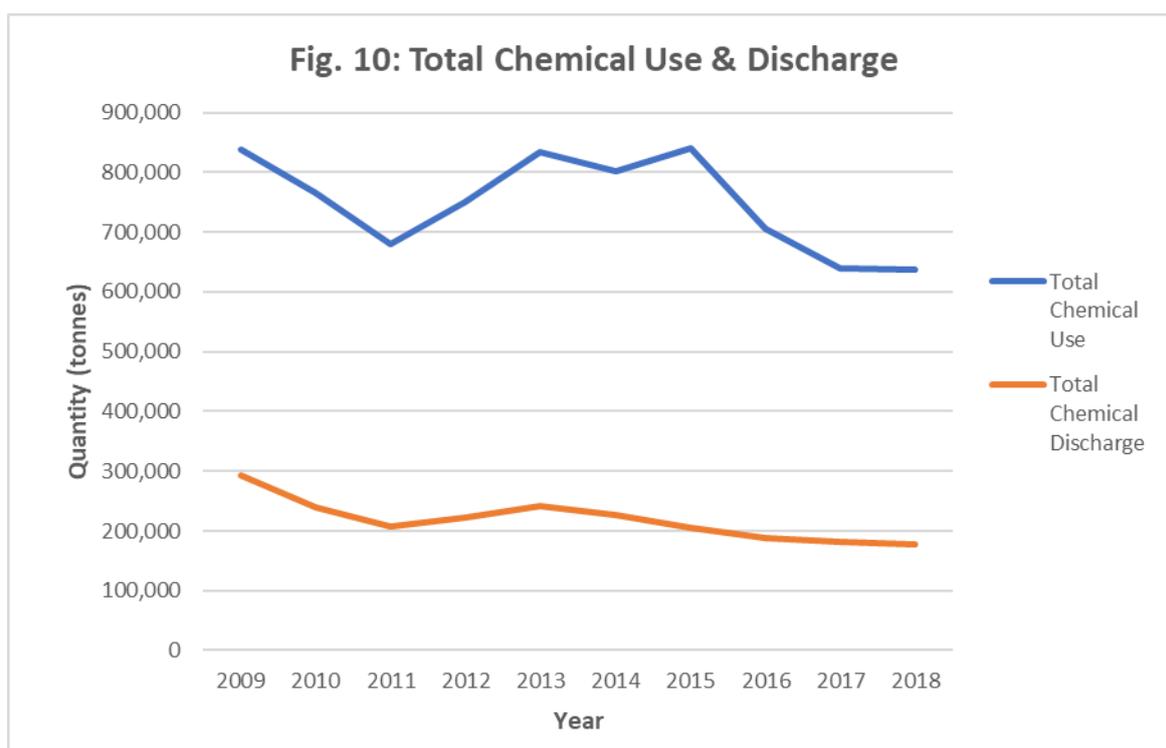
For the purposes of this report these latter two chemical groups are combined and referred to as 'Ranking'.

The goal of OSPAR Recommendation 2006/3 was for discharges of substitution chemicals to be phased out by 1 January 2017, although an exception can be made for chemicals with no identified alternative. While there has been a 28% reduction in the discharge of such substances, the goal of phasing them all out has not been fully achieved, and the deadline has been extended.

The goal of OSPAR Recommendation 2005/2 was that the discharge of chemicals on the OSPAR LCPC would be phased out by 1 January 2010. This was met by 2014 other than for an accidentally permitted discharge of 3kg in the UK in 2016.

Total use of chemicals between 2009 and 2018 has decreased overall by 24%, though there was an increase over the 2012-2015 period. Total discharge has also declined over the ten-year period by 40% (see Fig. 10).

Chemical use and discharge related to production operations are estimated to have remained relatively stable over the 2009-2018 period and the variation in use and discharge will be largely due to the level of drilling activity, which varies year on year. It is not currently possible to provide more detailed information on this as the required level of resolution in the data is not available.



Chemicals Used

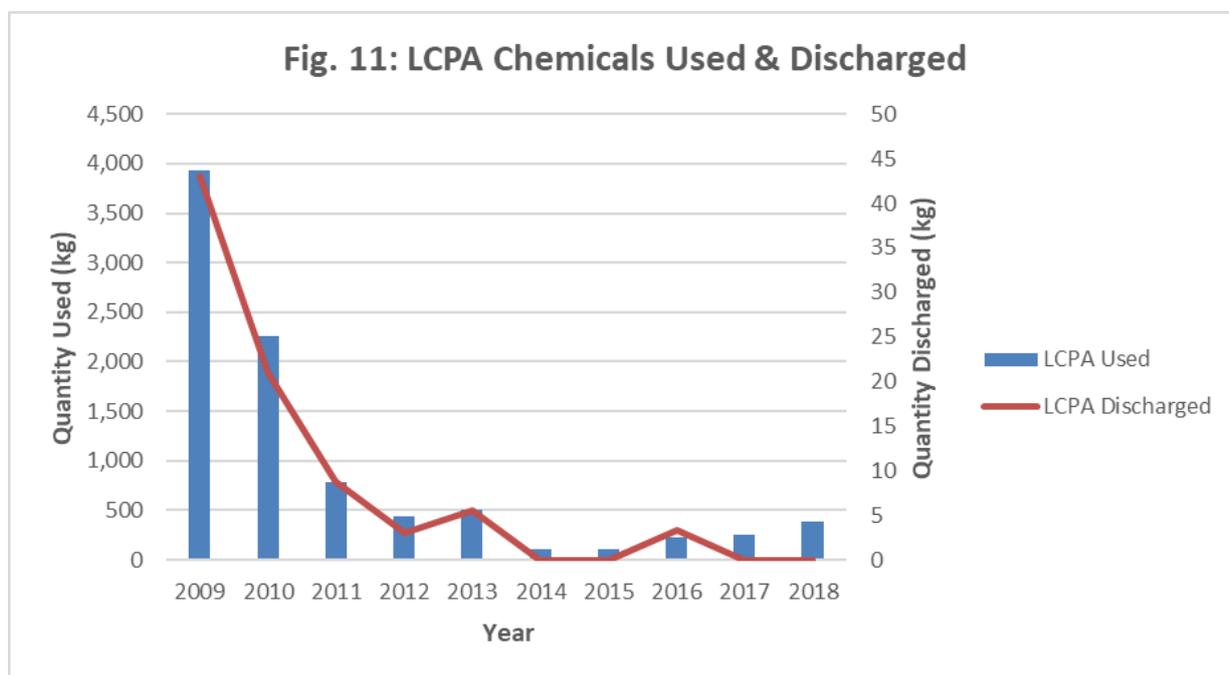
The total quantity of chemicals used offshore has decreased from 838 111 tonnes in 2009 to 637 797 tonnes in 2018 of which 69% (wt.) are on the PLONOR list and less than 2% (wt.) contained substances which are candidates for substitution.

Chemicals Discharged

The total quantity of chemicals discharged into the sea has decreased from 293 402 tonnes in 2009 to 176 721 tonnes in 2018 of which 82% (wt.) are on the PLONOR list and less than 1% (wt.) contained substances which are candidates for substitution.

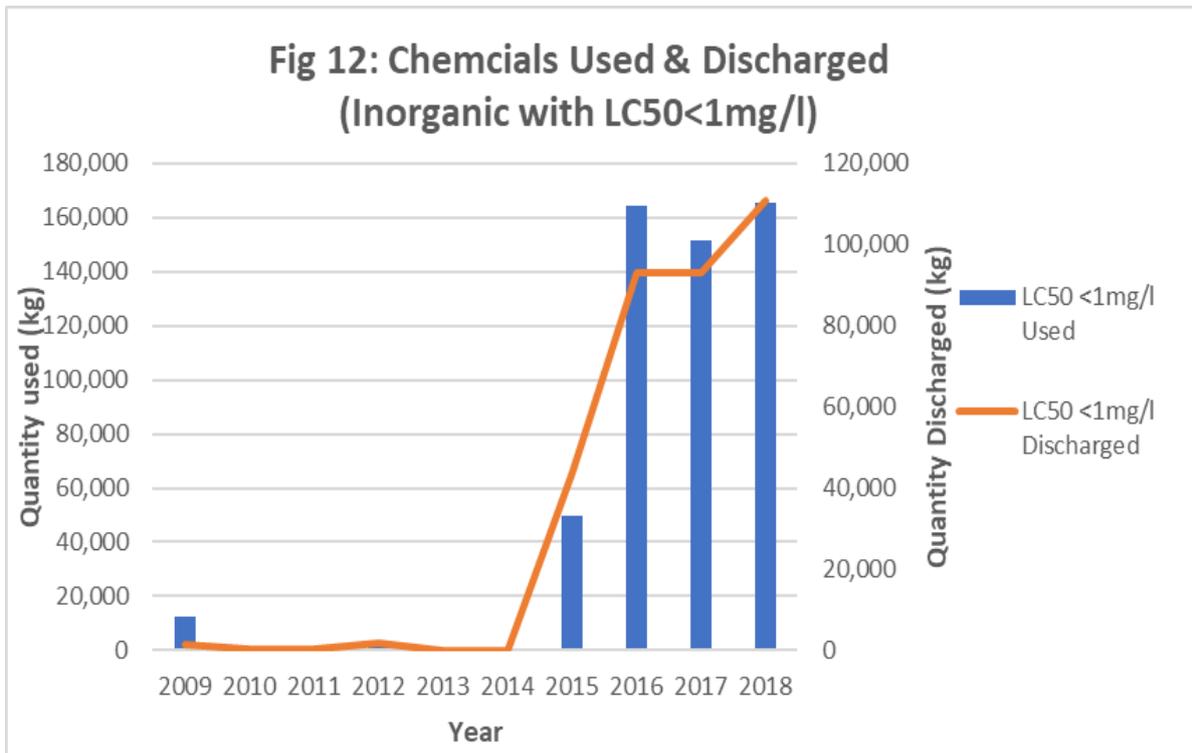
Substitution chemicals

The amount of LCPA substances used has continued to decrease over the 2009-2018 period from 3 929 kg in 2009 to 384 kg in 2018, similarly the amount discharged has decreased from 43 kg in 2009 to 0 kg by 2014 (Fig.11).

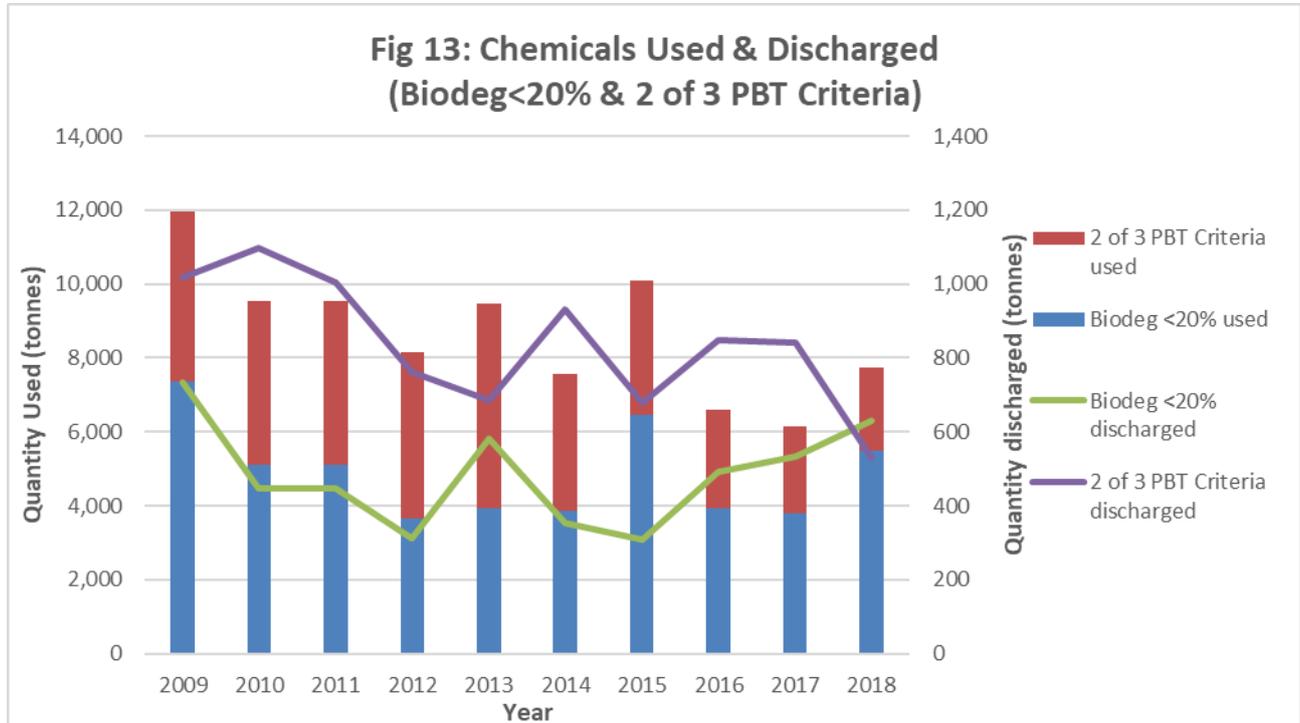


The discharge of chemicals containing substances that are candidates for substitution decreased from about 1 755 tonnes in 2013 to 1 269 tonnes in 2018, a 28% decrease.

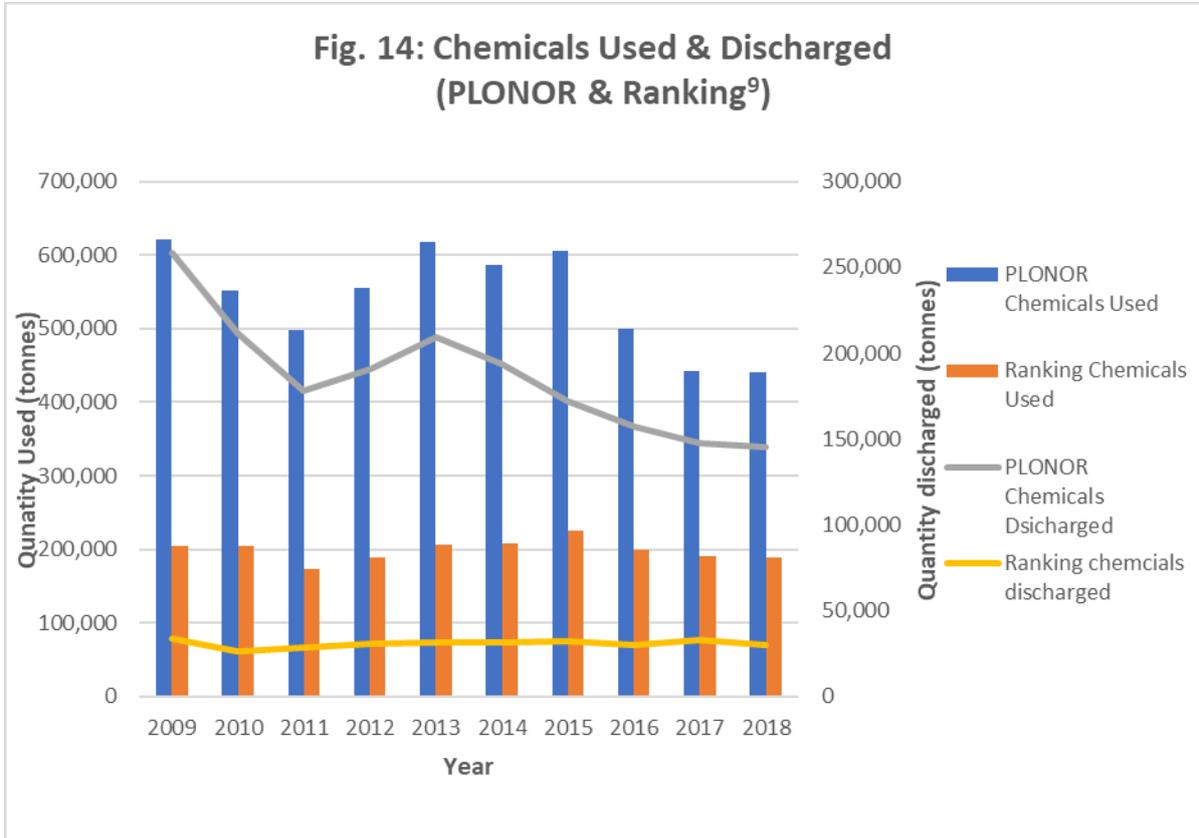
There was a significant increase in the amount used and discharged of inorganic chemicals with an LC₅₀ or EC₅₀ < 1 mg/l as Norway reclassified sodium hypochlorite from a 'Ranking' category in 2015 (see Fig. 12). Denmark similarly reclassified sodium hypochlorite in 2016.



The use of substitution chemicals with a biodegradation of <20% or that meet 2 of 3 PBT criteria has decreased from 11 959 tonnes in 2009 to 7 739 tonnes in 2018, a 36% reduction. Similarly discharge of these substitution chemicals has decreased from 1 753 tonnes to 1 162 tonnes, a 35% reduction (see Fig. 13).



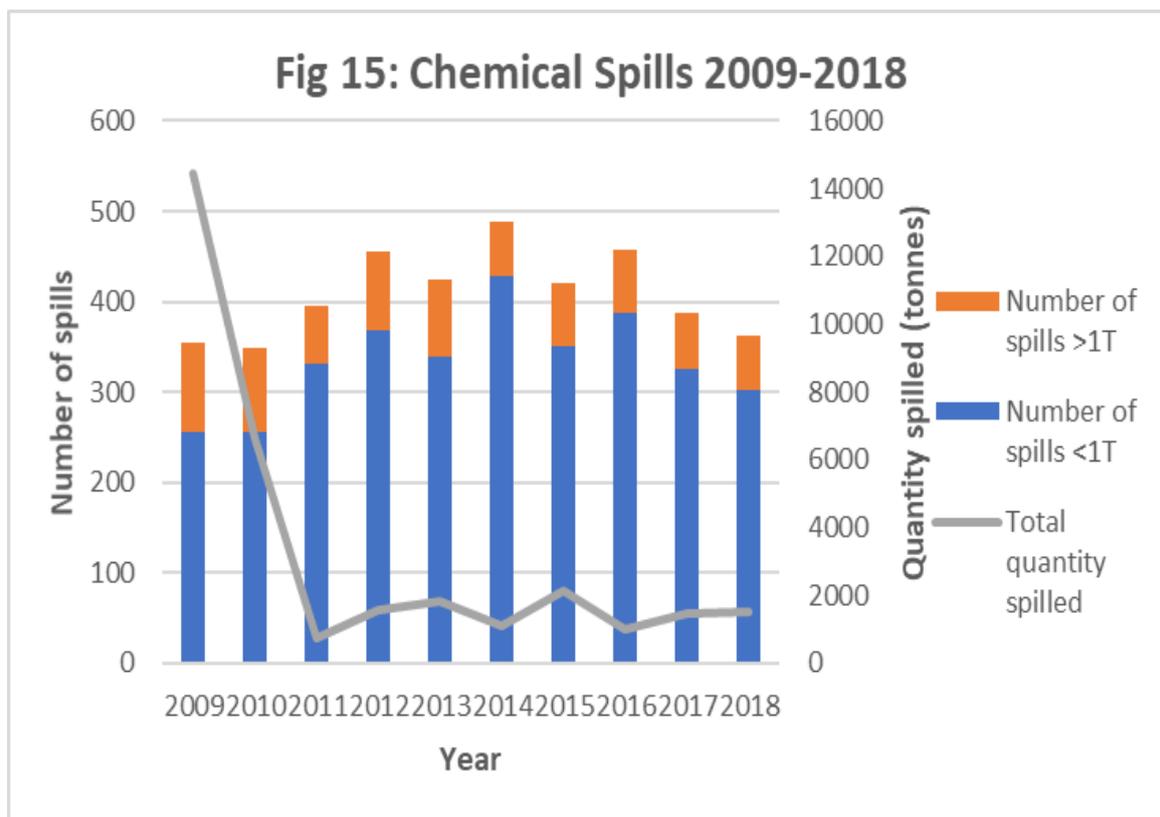
The use and discharge of Ranking¹² chemicals has decreased by 8% and 10% respectively between 2009 and 2018. The use and discharge of PLONOR chemicals has decreased 29% and 44% respectively over the same period (see Fig.14) It is not entirely clear if this is mainly due to an overall reduction in use and discharge or a change in categorisation of chemicals off the PLONOR list.



4.2 Chemical Spills

In addition to planned discharges, 1 509 tonnes of chemicals were accidentally spilled in 2018 compared to a high of 14 464 tonnes in 2009 and a low of 728 tonnes in 2011 (see Fig. 16). There is a decreasing trend in the number of chemical spills from 2014 onwards, however the quantity spilled is variable with no real trend over the 2009 – 2018 period. Of the chemicals spilled in each year the vast majority (97 - 99%) were on the PLONOR list or were Ranking chemicals.

¹² Ranking chemicals being the combination of inorganic chemicals with LC50 or EC50 greater than 1 mg/l and ranking chemicals, which includes substances ranked according to OSPAR Recommendation 2000/2 and don't fall into another category.



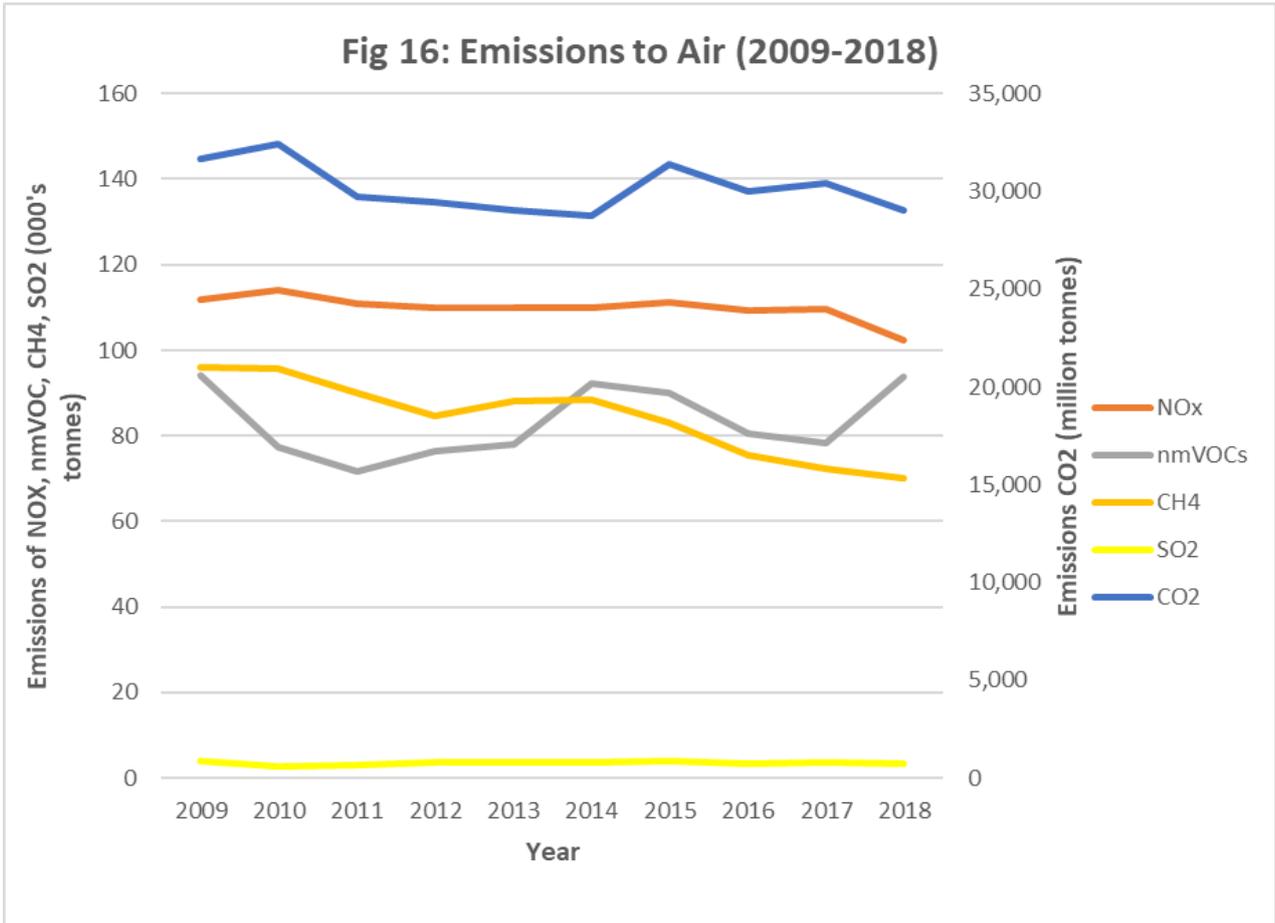
*Note: Up to 2017 Norway reported spills in m³ rather than tonnes

Emissions to air

Atmospheric emissions are not covered by OSPAR measures or harmonised OSPAR measuring methodologies, but are regulated by EU measures or national regulations. Consistency in quality of the data reported have undoubtedly improved over the past few years, particularly with regard to CO₂ emissions which are independently verified as part of the EU ETS Directive.

A decreasing trend of all releases into the atmosphere had been identified over the 2009-2018 period, with the following trends noted:

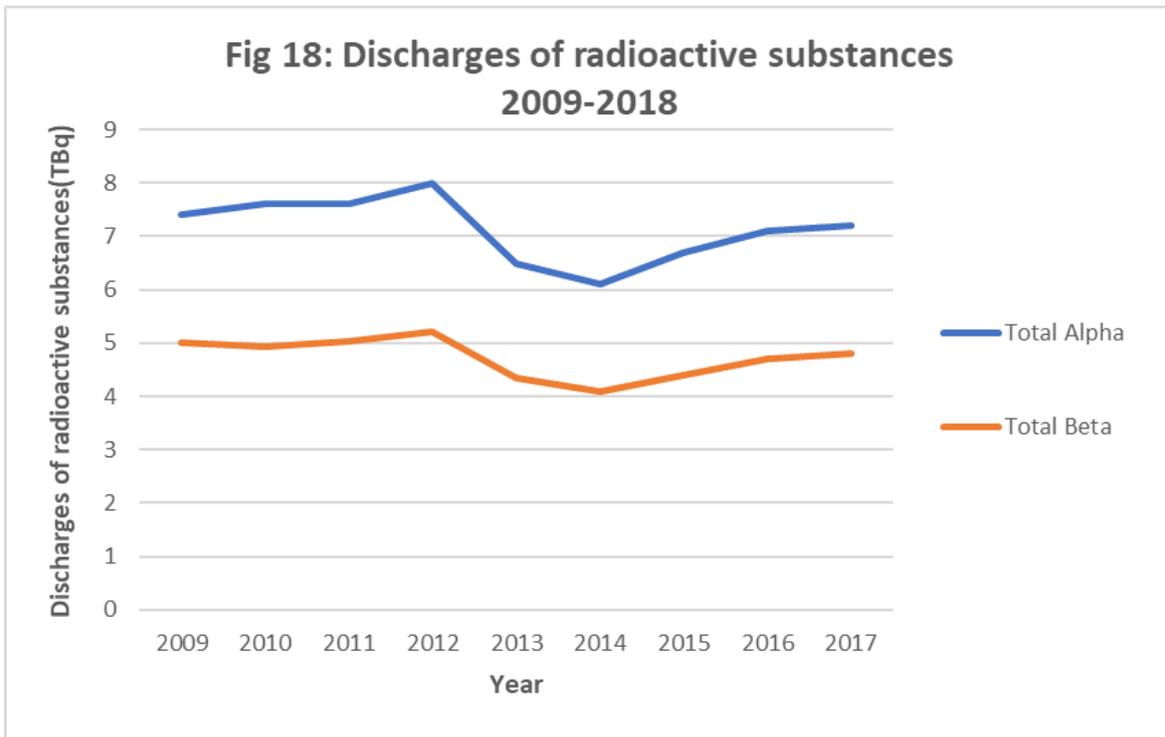
- CO₂ emissions having decreased by 8.3% between 2009 and 2018 with decreases in most Contracting Parties partly offset by a 4% increase in Norway;
- NO_x emissions trended downwards by 8.5% from 2009-2018, predominantly in Denmark, the Netherlands and Norway where national measures to control NO_x are in place. UK emissions remained static;
- Methane emissions having decreased 27% over the 2009-2018, predominantly in Norway, the Netherlands and Germany;
- nmVOC emissions have seen only a minor reduction of 0.3% over the 2009-2018 period with significant decreases in Netherlands, Denmark and Germany offset by increases in the UK; and
- SO₂ emissions have decreased 16% between 2009 and 2018 with decreases in Denmark and the Netherlands offset by increases in UK.



In interpreting these changes, one must take into account factors which have a direct influence on atmospheric emissions, such as ageing fields requiring a higher consumption of energy (e.g. additional compression), and the consequent depletion of available gas for fuel, which may require additional usage of diesel for power generation which leads to increased atmospheric emissions. These factors may partly distort the effect of any EU or national measures taken to reduce air emissions.

Discharges of radioactive substances

Pending updated figures from the Radioactive Substances Committee.



OSPAR Measures associated with Offshore Oil and Gas industry

Discharges contaminated with oil

PARCOM Recommendation 86/1 of a 40 mg/l Emission Standard for Platforms¹³;

OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations (as amended);

OSPAR Recommendation 2012/5 for a risk-based approach to the Management of Produced Water Discharges from Offshore Installations;

OSPAR Reference Method of Analysis for the Determination of the Dispersed Oil Content in Produced Water (OSPAR Agreement number: 2005-15).

Use and discharge of drilling fluids and cuttings

OSPAR Decision 2000/3 on the Use of Organic-phase Drilling Fluids (OPF) and the Discharge of OPF-contaminated Cuttings;

Guidelines for the Consideration of the Best Environmental Option for the Management of OPF-Contaminated Cuttings Residue (OSPAR Agreement number: 2002-8).

Chemicals used and discharged offshore

OSPAR Decision 2000/2 on a Harmonised Mandatory Control System for the Use and Reduction of the Discharge of Offshore Chemicals (as amended);

OSPAR Recommendation 2005/2 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Contain Added Substances, Listed in the OSPAR 2004 List of Chemicals for Priority Action;

OSPAR Recommendation 2006/3 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Which Contain Substances Identified as Candidates for Substitution (as amended);

OSPAR Recommendation 2010/3 on a Harmonised Offshore Chemical Notification Format (HOCNF) (as amended);

OSPAR Recommendation 2017/1 on a Harmonised Pre-Screening Scheme for Offshore Chemicals

¹³ PARCOM Recommendation of a 40 mg/l Emission Standard for Platforms, 1986 was revoked for produced water only by OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations. However, this measure is still applicable in relation to ballast water, drainage water and displacement water from offshore installations.



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