

NÆRINGSLIVETS  
**NOx-fond**

# **The Norwegian NOx Fund – Experiences gained so far**

**Sveinung Oftedal**

# **NOx tax in Norway from 2007**

## **Fiscal NOx tax**

- Fiscal NOx tax 1<sup>st</sup> of January 2007 of 1,9 € per kg NOx
- Engines exceeding 750 kW, boilers over 10 MW and flaring are subject for taxation

## **Environmental Agreements 2008–2010 and 2011-2017**

- On the 14<sup>th</sup> of May 2008, 14 business organizations and the Ministry of the Environment signed the Environmental Agreement on NOx. Approved by ESA 15. July 2008.
- The NOx-Agreement was prolonged to 2017 on 14. December 2010. Approved by ESA 19. May 2011.
- The Business Sector's NOx Fund has to fulfill the obligations in the Agreement

# Affiliation

- Affiliation to NOx Agreement makes enterprises entitled to exemption from fiscal NOx tax
- All enterprises subject to NOx tax may be affiliated, both foreign and Norwegian
- 648 affiliated enterprises by December 2010.
- 528 have affiliated for the periode 2011-2017 by 20<sup>th</sup> of May
- Over 1700 registered ships

# The Business Sector's NOx Fund

- Affiliated enterprises pay to the NOx Fund per kg NOx emitted
  - Oil and gas producers pay € 1,4 per kg
  - All other sectors pay € 0,5 per kg (e.g. fishing, offshore supply vessels, ferries, airlines, cargo, railways, land based industry)
- The Fund has about € 50 mill. available for NOx reducing measures each year
- 530 applications has been granted support or are verified, giving NOx reductions of about **23 000** tons from 2008 until 2011

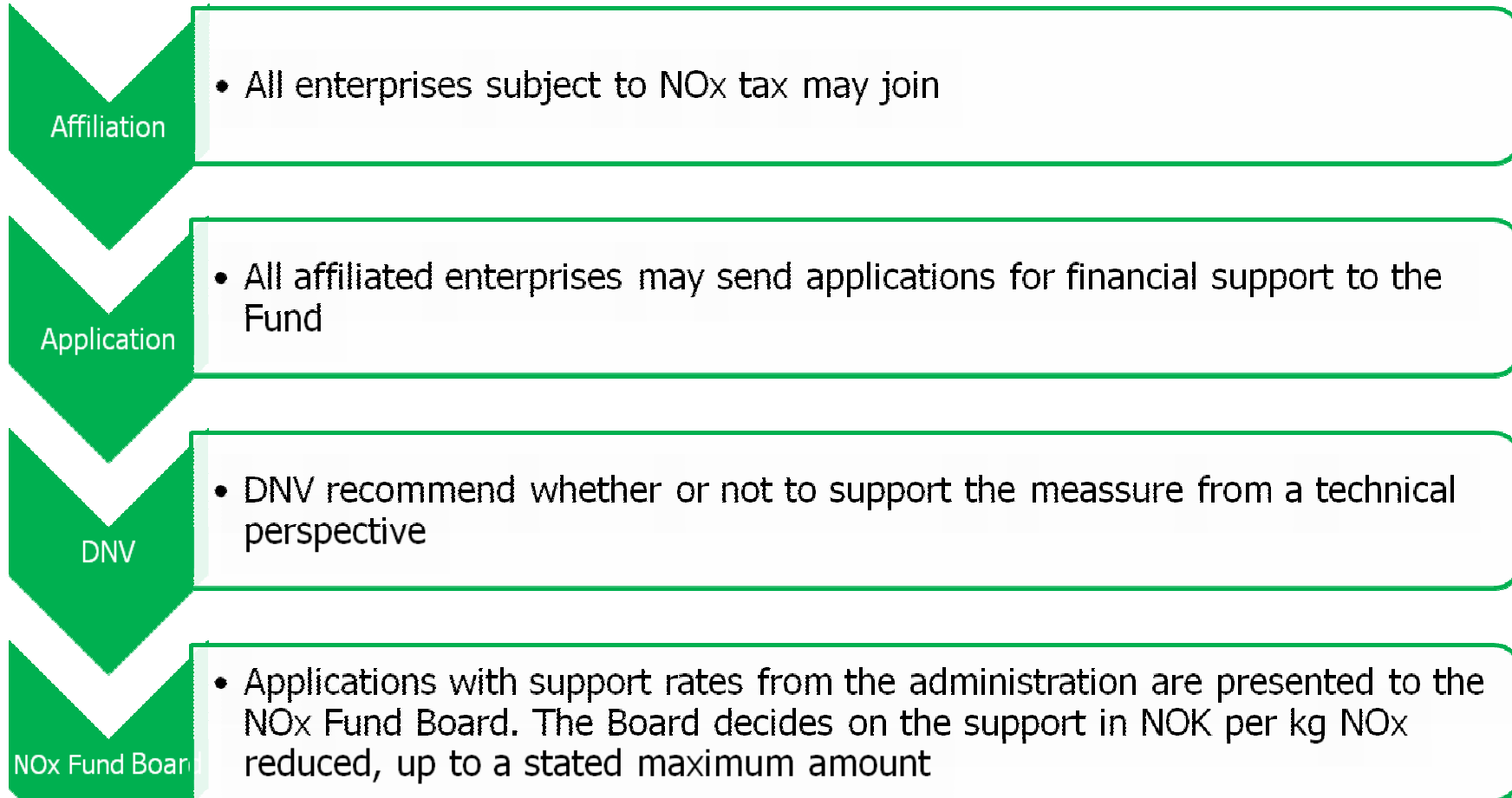
# Application for support

- Affiliated companies send applications for financial support to the Fund
- DNV come with a recommendation whether or not to support the measure from a technical perspective
- Applications with support rates from the administration are presented to the NOx Fund Board. The Board decides on the support in NOK per kg NOx reduced, up to a stated maximum amount

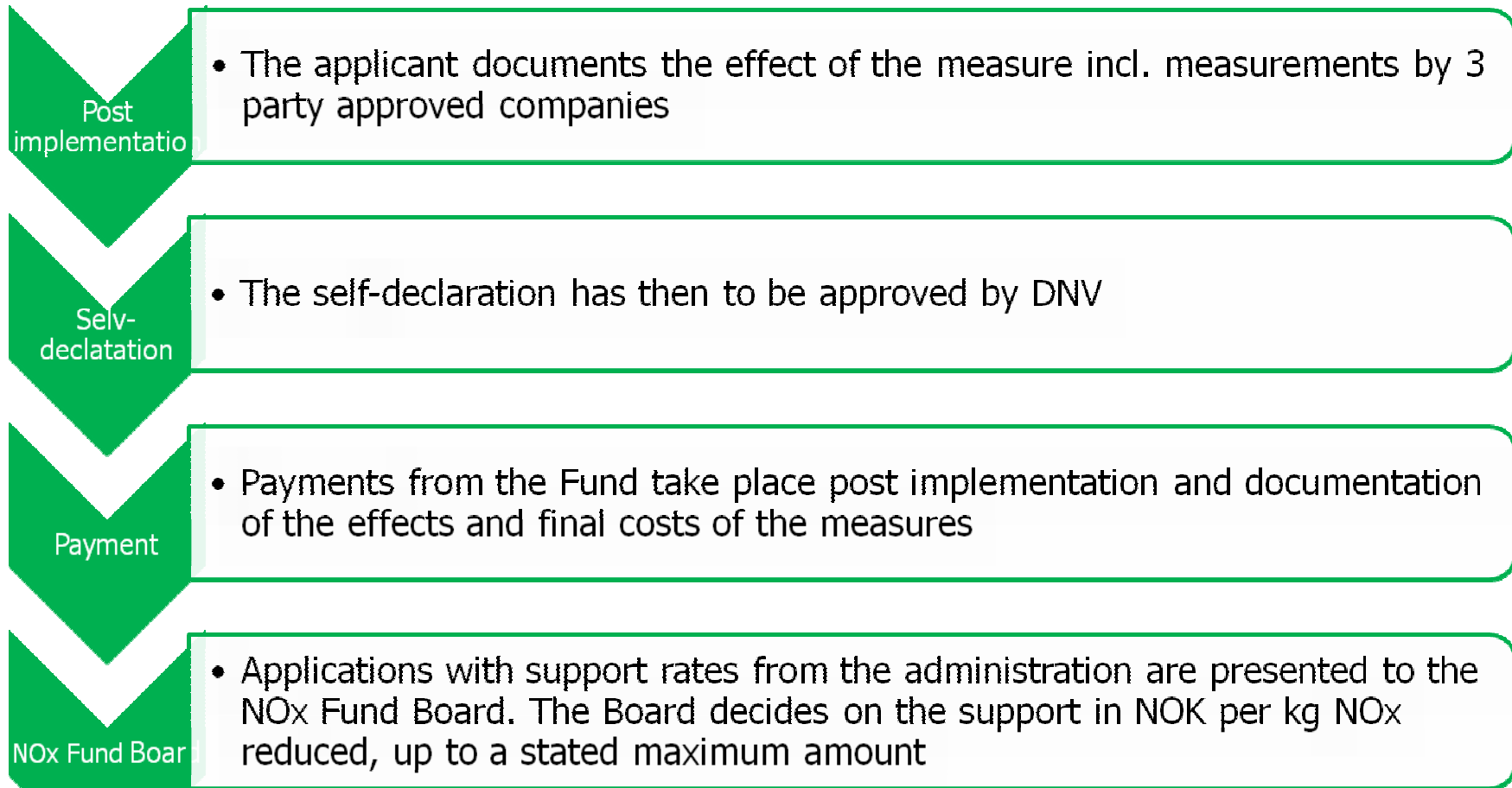
# Verification of measures

- The applicant documents the effect of the measure incl. measurements by 3 party approved companies
- The self-declaration has then to be approved by DNV
- Payments from the Fund take place post implementation and documentation of the effects and final costs of the measures
- Average cost of approximately € 515 000 in support per measure

# Application for support



# Verification of measures





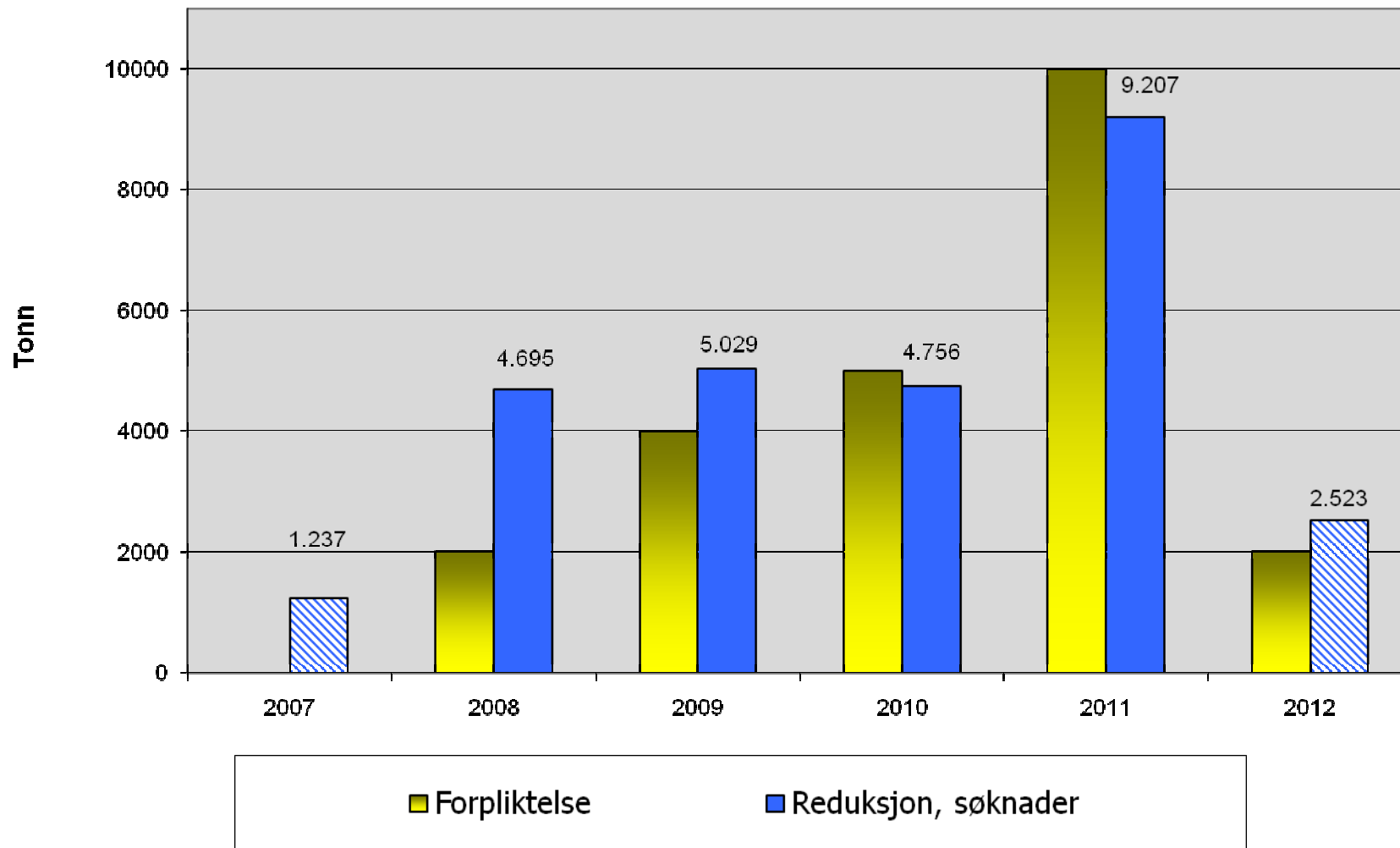
# NOx- commitments

- Emissions should come below **98 000** tons by the end of 2011. Implicated reductions of 31 000 tons when we started.
- **14 000** tons comes from improved data and updated forecasts
- About **19 000** tons in actual reduction,
  - 1000 tons in 2006/7
  - 2000 tons in 2008
  - 4000 tons in 2009
  - 5000 tons in 2010
  - 7000 tons in 2011



2011 – 2017 **16 000** tons

# NOx reductions compared with commitments



# How to get NOx effect:

Fuel consumption x emission factor

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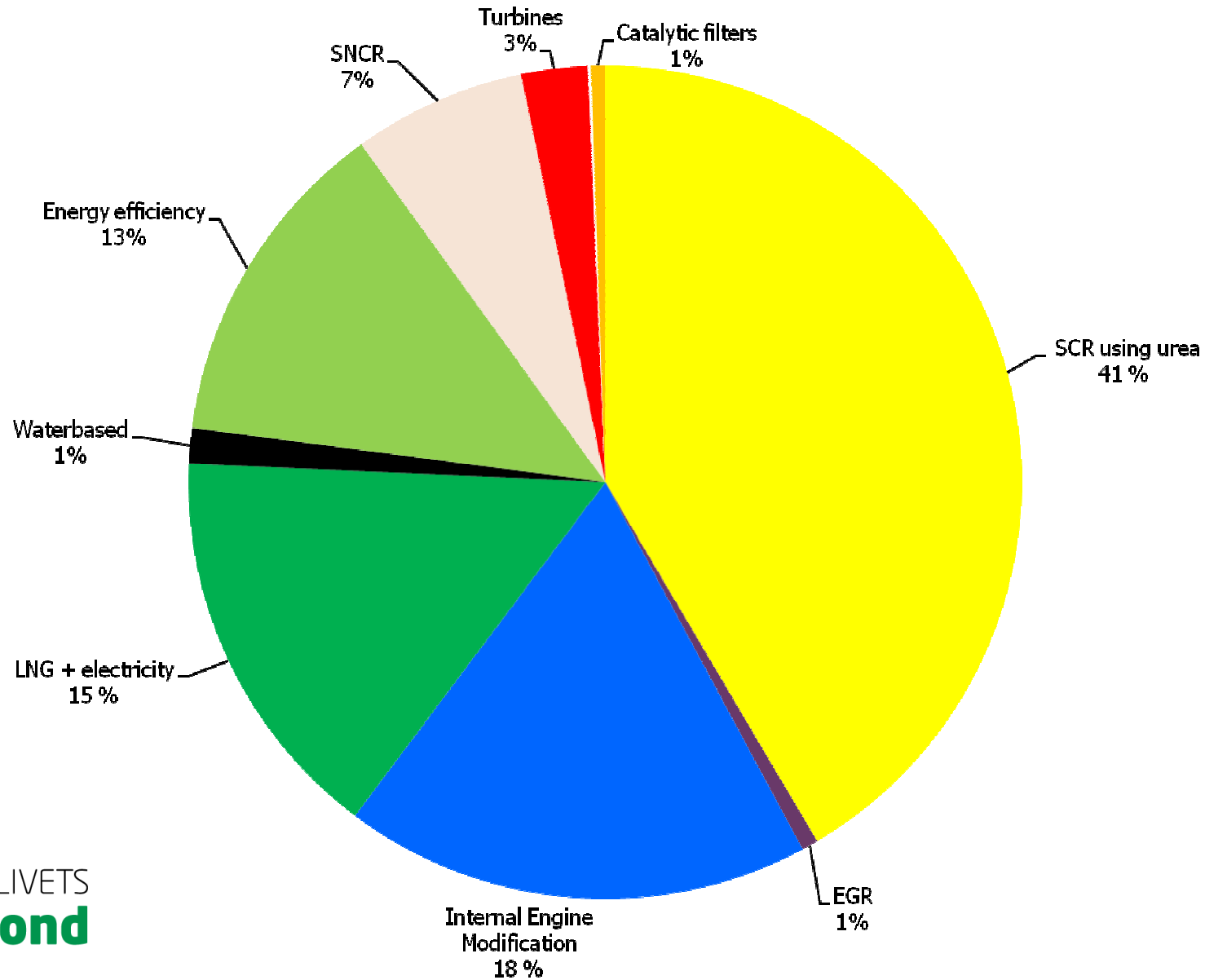
NOx emission in kilos



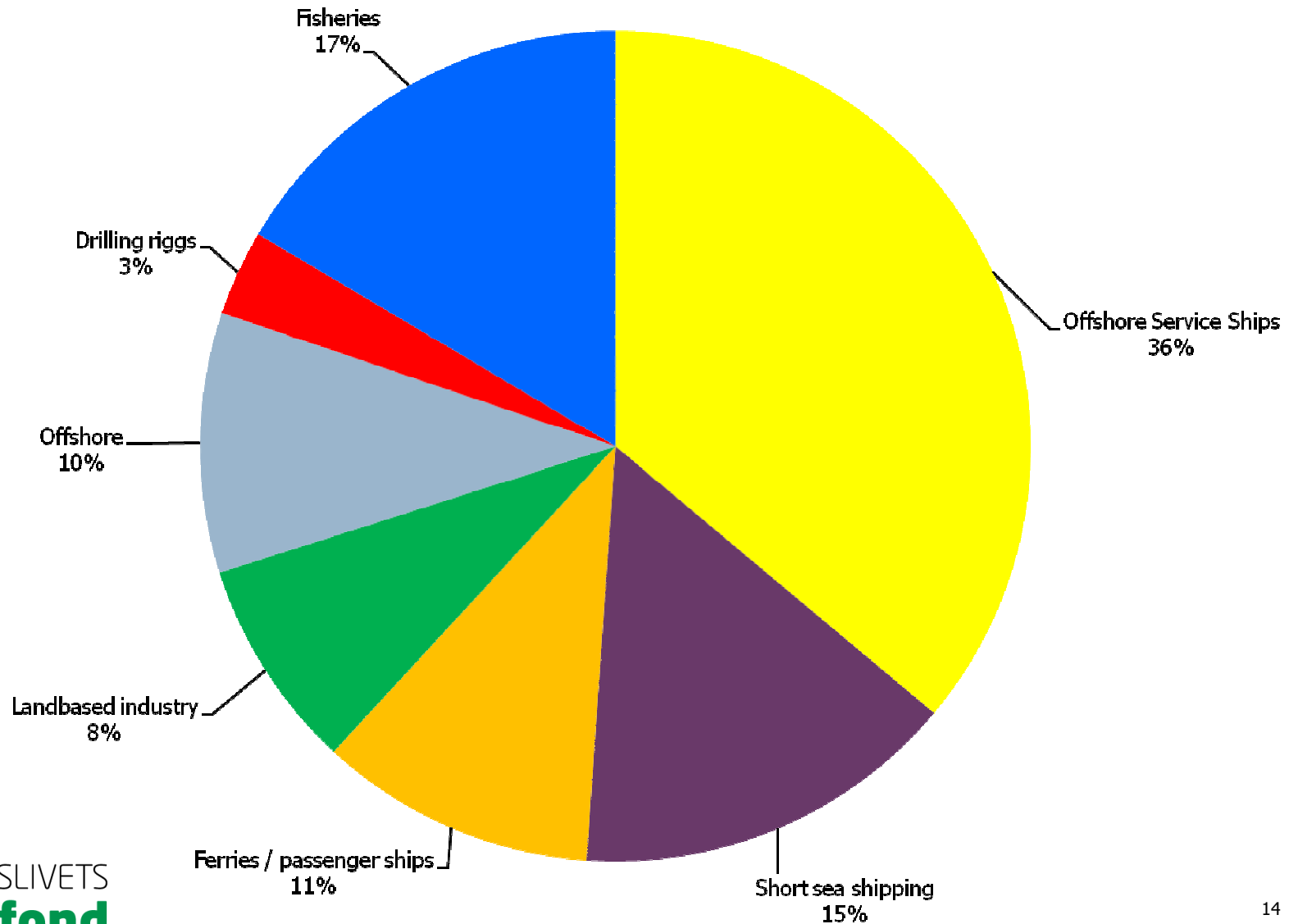
# Support rates projects (2011-2017)

- Support to cover additional costs of investing in gas/LNG propulsion in shipping (up to 80 % of investment cost and up to **€ 44** per kilo NOx reduced) in 2011 – 2015
- Other measures could receive up to 80 % of investment cost and up to **€ 28** per kilo NOx reduced
- Support possible also for infrastructure for LNG from 2011
- Improved support rates for LNG has resulted in more LNG applications

# NOx-reduction - various measures



# NOx-reduction by sectors



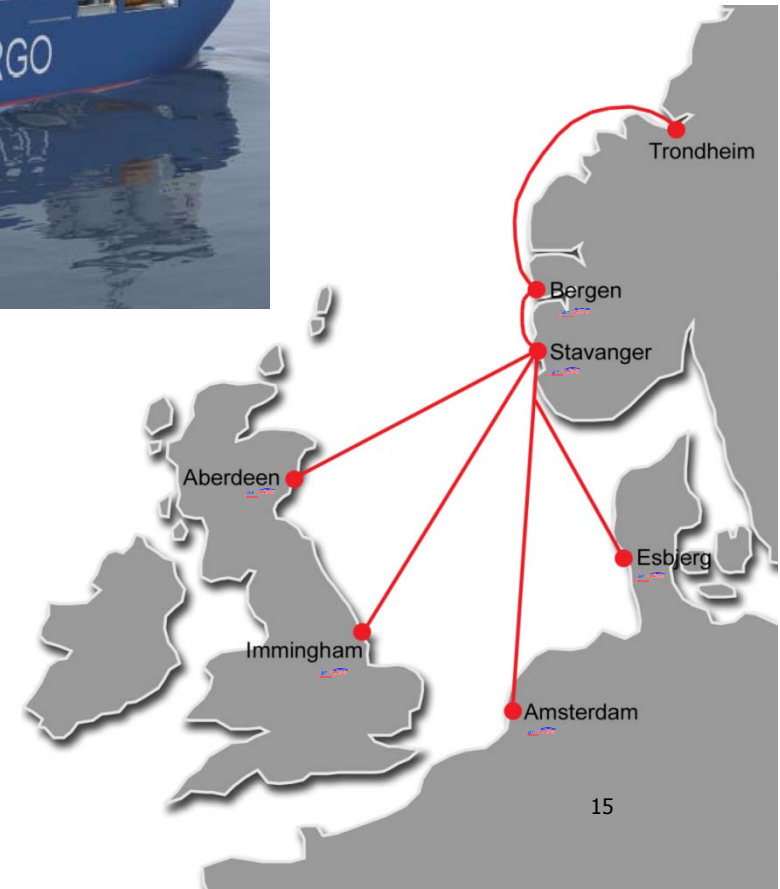
# Gas propulsion

Sea-Cargo revised contract from diesel to gas in May 2008



- 2 ships on stream in 2011 granted support for the additional cost of gas propulsion
- Granted € 6,5 mill for reductions of 200 and 146 tons NO<sub>x</sub>
- - 92 % NO<sub>x</sub>, -23 % CO<sub>2</sub>, zero emissions of SO<sub>x</sub> & Particulate

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# LNG conversion (Dual Fuel)

## Tarbit Shipping AB – MT BIT Viking

- NOx reduction in 2011  
479 tons (- 85%)
- Support € 5,5 mill.  
(75% of cost)
- € 12,5 per kilo NOx reduced
- Supplier:  
Wärtsilä, Sweden





# 2 new ferries from Fjord Line

- Daily sailings between **Bergen-Stavanger-Hirtshals**
- Comes into service in 2013
- Reductions of 2 x 321 tons of NOx
- Granted 2 x € 10 mill (80 %)
- € 41 per kg NOx reduced
- Suppliers: MAN and Cryo



# 33 ships planned converted or built using LNG propulsion

- In 2008 only 3 ships except ferries were based on LNG
- The NOx Fund has granted support to 32 ships, converted to gas or new buildings. 17 will be sailing in 2011, another 5 in 2012. 11 more have applied for support after 2012.
- In 2008 only 3 % of maritime fuel sold in Norway was LNG. In 2016 it can be 16 %
- By 2020 DNV and MARINTEK expect 1/3 of maritime fuel in Norway could be LNG

# Thank you!

For more information, please go to:

[www.nho.no/nox](http://www.nho.no/nox) or

[www.nho.no/nox/english](http://www.nho.no/nox/english)

