

Consultative bodies acc. to list

Consultation – proposed Regulation concerning amendments to Regulations of environmental safety for ships and mobile offshore units

The Norwegian Maritime Authority (NMA) hereby circulates for review the proposed amendments to the Regulations on environmental safety for ships and mobile offshore units. The proposal involves separate rules regarding emissions to air and discharges to sea in the Norwegian world heritage fjords. The proposal includes, among other things, the same sulphur requirements as in emission control areas (ECAs) for the entire world heritage fjord area, stricter requirements for NO_x emissions, prohibition against the discharge of sewage, regulations on the use of exhaust gas cleaning systems and requirement for an environmental instruction.

Some of the amendments enter into force on 1 January 2019, whereas other amendments will be implemented gradually over several years in order to give the industry, local authorities and others a realistic opportunity to adjust and adapt to the new requirements. This will contribute to reducing the high readings of emissions to air and discharges of sewage and grey water to sea in the short term, while the full effect of the measures directed at emissions to air are expected to be reached in 2025. The proposed measures will help safeguard the world heritage status and at the same time take account of health and environment in the world heritage fjords.

Comments to the proposal can be submitted to the Norwegian Maritime Authority on e-mail to post@sdir.no by 14 September 2018. The consultation will also be published on our website www.sdir.no.

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1. The background for the proposal

In 2005, the West Norwegian Fjords, i.e. the five fjords the Nærøyfjord, Aurlandsfjord, Geirangerfjord, Sunnlyvsfjord and Tafjord, were inscribed on UNESCO's World Heritage List. Norway has thus taken on a particular responsibility for conserving these areas. In 2016, the Ministry of Climate and Environment assigned the Norwegian Maritime Authority (NMA), in close cooperation with relevant actors, the task of mapping emissions and discharges in Norwegian fjords with cruise traffic. The assignment was limited to the Geirangerfjord, Nærøyfjord and Aurlandsfjord.

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The NMA recently presented the results from the mapping in the report *“Discharges and emissions from ships in fjord areas with heavy cruise traffic”* of 5 May 2017. The results showed, *inter alia*, that the level of nitrogen oxides (NO_x) in the air is a periodic issue, depending on meteorological conditions and the number of ships. They also found instances of high levels of particulate matter (especially small particles) in the areas. In periods, the port calls also cause visual pollution in the form of visible smoke clouds consisting of particulate matter, NO_x, sulphur oxides (SO_x) and water vapour.

In the report, a number of measures were proposed, and in a letter dated 28 June 2017, the Ministry of Climate and Environment asked that the NMA in line with these recommendations work towards implementing measures applicable to all commercial traffic in the world heritage fjords, both local and international traffic, by the end of 2018.

At present, there is no separate regulation of the world heritage fjords as a result of their world heritage status. A precondition for inscription on the World Heritage List was that most of the world heritage site is situated in a national protected area, and that it is therefore ensured long-term protection. The world heritage fjords have status as "protected area" pursuant to the Nature Diversity Act, which applies regardless of the world heritage status. The world heritage status in itself does not lead to further protection of or other restrictions in the world heritage site.

World heritage sites shall have a high status in Norway, this is ascertained in Storting White Paper No. 35 (2012-2013); Future with foothold:

“The Norwegian level of ambition for honouring the commitments laid down in the Convention is high: The preservation of Norwegian world heritage areas shall be beacons for best practice for culture and nature management, cf. Storting White Paper No. 26 (2006-2007), The Government's Environmental Policy and the state of the Environment.”

The mapping report from the NMA showed that there is a need to change the regulating of emissions to air and discharges to sea in the world heritage fjords. We therefore propose special rules regarding emissions to air and discharges to sea in the Norwegian world heritage fjords. In the following, the proposal is explained in more detail. In connection with this work, Menon Economics were commissioned to perform a socioeconomic analysis – *Report Socioeconomic analysis of environmental requirements for vessels in the world heritage fjords – Menon – Publication No. 3/18 by Simen Pedersen, Iselin Kjelsaas and Peter Aalen*. This report will hereinafter be referred to as the Menon report. Menon was tasked with assessing various measures. We have taken a wide approach to the regulatory work, and have contacted industry players and other authorities. We have assessed several types of measures, but have for various reasons not pursued all the suggestions.

2. The purpose of the regulatory amendments

The purpose of the regulatory amendments is to reduce unwanted emissions to air and discharges to sea from ships in the world heritage fjords. Through the world heritage status, Norway has committed to taking care of the world heritage fjords. We expect that the proposal as a whole will reduce the number of days where the concentrations of NO_x and particle matter in the world heritage fjords are detrimental to health. We also expect that the measure will have a positive effect on the reputation of Norwegian fjords as travel destination, see the Menon report p. 6.

3. Legal basis for the regulatory amendments

We propose some amendments to general provisions in the Regulations of 30 May 2012 No. 488 on environmental safety for ships and mobile offshore units (Environmental Safety Regulations) and some new provisions only applicable in the world heritage fjords.

Norway has the right to regulate its own territorial waters¹.

¹ United Nations Convention on the Law of the Sea, 10 December-1982 No. 1 Multilateral, adopted on 10 December 1982 and entered into force on 16 November 1994. Norway ratified the convention on 24 June 1996.

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The legal basis for the proposal is sections 31 to 33 of the Ship Safety and Security Act. We propose placing the new provisions in the Environmental Safety Regulations. MARPOL has been implemented into Norwegian legislation by the Environmental Safety Regulations, and since the measures include topics that belong under MARPOL, it is logical to place the new provisions in the Environmental Safety Regulations. Some existing provisions will be amended, since there are amendments to existing requirements, in addition to laying down new requirements in separate provisions. We have also considered the possibility of drawing up separate “World Heritage Regulations”. In principle, it could sound good to gather all the rules applicable in the world heritage fjords in one location, but in practice, this becomes very complicated. This is because the legal basis for the various rules are under the jurisdiction of several different authorities, thus making it very demanding to gather them all in one set of regulations. We therefore opted to place the provisions in our legislation and to let other authorities take the responsibility for the regulations which are under their jurisdiction, e.g. the Norwegian Coastal Administration will take the responsibility for rules relating to speed restrictions in the world heritage fjords, if applicable. The municipalities’ responsibility for the ports is regulated in the Harbour and Fairways Act and the Pollution Control Act with appurtenant regulations.

It is set out in the various provisions whether they are only applicable in the world heritage fjords. The world heritage fjords are defined in new section 10a third paragraph.

4. Comments to the individual provisions

Section 9 first paragraph

In section 9 first paragraph, we propose an amendment to the wording to make it clearer that MARPOL’s sewage regulations are only applicable from Lindesnes to the Swedish border (in Norwegian sea areas south of Lindesnes (N 57° 58’8 E 7° 3’4) to the dividing line between Norway and Denmark (N 57° 10’3 E 7° 3’4) and into the waters from the dividing line to the Swedish border).

This means that ships of 400 gross tonnage and upwards or which are certified to carry more than 15 persons shall, as before, comply with MARPOL’s regulations on sewage in these areas.

The amendment makes it clearer that the rules in MARPOL Annex IV regarding discharge of sewage only apply only in Norwegian sea areas south of Lindesnes to the dividing line between Norway and Denmark and into the waters from the dividing line to the Swedish border. These rules set out that untreated sewage may only be discharged underway at a distance of more than 12 nautical miles from land.

For the remainder of the Norwegian coast, it is prohibited to discharge sewage into Norwegian sea areas closer than 300 metres from nearest mainland and islands for all ships engaged on both domestic and foreign voyages, cf. section 10 second paragraph of the Environmental Safety Regulations.-This proposal does not entail an amendment of current law.

The background for a stricter set of rules in the area from Lindesnes to the Swedish border was that the issues with eutrophication were significantly larger in this area. In the rest of the country, the discharge of sewage from ships was previously not considered a significant environmental issue. Based on increased ship traffic, in particularly increased cruise traffic both in the world heritage fjords and elsewhere, along with increased focus on the environmental issues related to the discharge of sewage from ships, the Ministry of Climate and Environment asked the NMA in a letter dated 4 July 2017 to work towards amending the requirements related to the discharge of sewage from ships along the coast north and west of Lindesnes by the end of 2018. The NMA will look into this assignment in a separate case.

Section 10 second paragraph

In section 10 second paragraph, we propose an amendment to the second sentence in order to make it clear that discharge from sewage treatment plants that satisfy the requirements of MARPOL Annex IV regulation 9.1 is not considered sewage. For ships with approved treatment plants, the sewage is treated chemically or biologically and is considered neutral, and there are no restrictions as to where it may be discharged.

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Nevertheless, the effluent shall not produce visible floating solids nor cause discolouration of the surrounding water, cf. MARPOL regulation IV/11.1.2.

Discharge from sewage comminuting and disinfecting systems, cf. MARPOL regulation IV/9.1.2, is prohibited. A corresponding prohibition applies to the discharge of sewage retained in a holding tank, cf. MARPOL regulation IV/9.1.3. This proposal does not entail an amendment of current law.

New section 10a *Special rules regarding discharge of sewage and grey water in the world heritage fjords*

We are proposing a provision with special rules regarding discharge of sewage and grey water in the world heritage fjords.

Section 10a first paragraph

We propose that for ships of 400 gross tonnage and upwards or which are certified to carry more than 15 persons it is not allowed to discharge sewage in the world heritage fjords. This corresponds to the scope of application for the sewage regulations in MARPOL.

It is proposed that the prohibition shall apply to ships engaged on both domestic and foreign voyages.

The reason for this proposal is that the addition of sewage into fjords could have detrimental effects. Since the bodies of water in fjords are largely enclosed, the replacement of water is low, especially the deep water. This leads to long retention times and little renewal and outflow of substances being discharged from ships or land. With this prohibition, we wish to reduce the discharge of sewage into the world heritage fjords and to increase the standing of the world heritage sites.

If these stricter sewage requirements are introduced, this will pose a challenge to the local traffic in the world heritage fjords. At the same time, stricter rules will incite the municipalities in the world heritage sites to establish sewage reception facilities. At present, there are no sewage reception facilities in the world heritage fjords.

Menon has estimated what it would cost to establish reception facilities in the world heritage fjords, and has focused on power dock technology. We have received feedback from the municipality of Aurland that the cost of establishing a reception facility and connecting this to the municipal sewage system will be far more reasonable. One alternative is to collect the sewage by a pump truck. However, sewage odour could be a problem when using pump trucks.

For smaller local vessels and ferries, the proposal will have financial consequences, as some of these have tanks for retaining sewage, whereas others do not. The vessels which up until now have been allowed to discharge sewage into the fjord 300 metres from nearest land, will now have to deliver sewage to land or go further out in the world heritage fjords to discharge it. We are planning to set up an exemption possibility for these vessel, which will give them the opportunity to adapt to the new requirements. This is explained in more detail below.

Section 10a second paragraph

MARPOL does not regulate the discharge of grey water. Section 10 first paragraph of the Regulations on environmental safety only prohibits the discharge of wash water and similar into "waterways". Ergo, the prohibition does not apply to seawater.

In section 10a second paragraph, we propose that ships of 2500 gross tonnage and upwards certified to carry more than 100 persons shall not be allowed to discharge grey water in the world heritage fjords.

For the purposes of the Regulations, grey water means wash water from dishwashing, washbasins and other sinks, showers, laundry, bathtubs and similar. Grey water is neither defined in MARPOL, the Environmental

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Safety Regulations nor in the Pollution Regulations². The proposed definition has been taken from the guidelines for the implementation of MARPOL Annex V in resolution MEPC.219(63) paragraph 1.6.2.

The background for the proposal is that the discharge of grey water may lead to algae bloom and other damage to the natural environment. We assume that the recreational value will increase and that the standing of the world heritage site will increase if the discharge of grey water is prevented. For the most part, cruise ships already have cleaning systems or tanks for temporary retention of grey water installed, but we have little information as to how the smaller ships are equipped. We know that several ships have systems that mix sewage and grey water, and for these ships, the regime for the discharge of sewage applies to the entire discharge. We propose to limit the prohibition against discharge of grey water to ships of 2500 gross tonnage and upwards which are certified to carry more than 100 persons, since the production of grey water increases substantially in relation to the number of persons on board.

Section 10a third paragraph

In section 10a third paragraph, we have defined the term “world heritage fjords”. It is worth noting that the coordinates stated define the actual sea area constituting the world heritage fjords. In the application³ from when Norway applied for world heritage status for the world heritage fjords, the given coordinates drew up four lines. These lines covered a larger sea area than shown in the maps, and have followed the application and the subsequent adoption of the world heritage site The West Norwegian Fjords. In order to set out a correct delimitation, we have stated the coordinates for the sea areas that constitute the world heritage fjords based on the maps included in the application.

Three maps that show the world heritage fjords are attached to the hearing.

Section 10a fourth paragraph

In section 10a fourth paragraph, we propose a legal basis for exemption. The Norwegian Maritime Authority may upon written application up until 2024 grant a time-limited permission to discharge sewage in the world heritage fjords to ships running a regular service on a public contract and to ships offering an established fjord cruise service. We are proposing the possibility for exemption in order to give companies on existing public contracts or with established businesses sufficient time to adapt to the new requirements. There are no reception facilities in the world heritage fjords, and the municipalities will need time to set up such facilities.

Section 13 second paragraph

We propose an amendment to section 13 second paragraph of the Environmental Safety Regulations, that changeover operations shall be carried out as quickly as possible, and at the latest within two hours, after the ship is securely moored or anchored inside a port area. The changeover shall be entered in the engine room log book.

The proposal is in line with the practice in the EEA.

Section 13 third paragraph

The sulphur content of fuel used when moored or anchored is currently regulated in section 13 of the Environmental Safety Regulations. The sulphur content of fuel oil used while a ship is securely moored or anchored in port shall not exceed 0.10% m/m. This is a particular requirement from the EU (the Sulphur Directive 2016/802/EU) which is implemented through the EEA Agreement and applies in all Norwegian ports.

In section 13 third paragraph, we propose a regulation for the use of exhaust gas cleaning systems in the world heritage fjords. We propose that ships using open loop exhaust gas cleaning systems in the world

² Regulations of 1 June 2004 No. 931 relating to pollution control (Pollution Regulations).

³ <http://whc.unesco.org/uploads/nominations/1195.pdf>

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heritage fjords must close down the exhaust gas cleaning system within two hours after the ship is securely moored or anchored. The exhaust gas cleaning system may be restarted up to two hours before departure. Closed loop exhaust gas cleaning systems and hybrid systems with the possibility to operate closed loop may be used freely.

The reason for limiting the use of open loop exhaust gas cleaning systems when moored or anchored is that open loop systems continuously take in water and use large quantities of water in order to “clean” the exhaust. When the ship is stationary at berth or anchor and at the same time operates the exhaust gas cleaning system, vast quantities of water are being used and discharged again in the same area. According to the Norwegian Environment Agency, this is unfortunate since it causes considerable stress on the fjord and the marine environment in the fjord. We will nevertheless allow the use of exhaust gas cleaning systems for two hours after arrival and two hour prior to departure, because the use of the cleaning system reduces the emission of sulphur and particle matter in the port area.

The use of exhaust gas cleaning systems is relevant for cruise ships and other new ships put into operation in the world heritage fjords. Local smaller vessels and Hurtigruten use low sulphur fuel oil and do not have exhaust gas cleaning systems installed.

Existing section 13 third paragraph becomes fourth paragraph.

The requirement for fuel with maximum 0.10% by weight sulphur content does not apply to ships in regular service when the stay in port is less than two hours, cf. section 13 new fourth paragraph. Section 14 of the Environmental Safety Regulations sets out the requirements for sulphur content of fuel oil for passenger ships in regular service in the EEA.

New section 14b Special rules regarding emission of sulphur oxides (SO_x) from ships in the world heritage fjords

We propose a new provision with special rules regarding emission of sulphur oxides (SO_x) from ships in the world heritage fjords.

In section 14b first paragraph, we propose that ships in the world heritage fjords shall use either fuel with a sulphur content not exceeding 0.10% by weight, or an approved exhaust gas cleaning system where the ratio between SO₂ (ppm) and CO₂ (% by volume) in the emission gas does not exceed 4.3.

In section 14b second paragraph, we propose that ships using an open loop exhaust gas cleaning system shall log the amount of wash water discharged from the exhaust gas cleaning system, indicated in m³/h.

The proposal is particularly relevant for the Geirangerfjord area, which is located outside the Emission Control Area (ECA) for the North Sea, which is applicable south of the 62nd parallel, cf. MARPOL regulation V/1.14.6.1 and VI/14.3.

Outside of the ECAs, the requirement for maximum sulphur content of fuel is 3.5% by weight (requirement from 1 January 2012). From 1 January 2020 a general requirement of max. 0.50% by weight sulphur content in fuel will apply.

In the ECA, the sulphur content of fuel oil used on board ships shall, from 1 January 2015, not exceed 0.10%. The Nærøysfjord area, including the Aurlandsfjord, is within the ECA. The Geirangerfjord area is situated north of the ECA.

It has been documented in two reports from both Rambøll and Menon that the cruise ships are in principle responsible for the SO_x emissions in the world heritage fjords. In the MENON report p. 58 para. 7.2, it is stated that “the cruise ships, which in principle have a gross tonnage of more than 25 000, are responsible for more than 90% of the SO_x emissions”.

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The world heritage status warrants laying down equivalent requirements for max. sulphur emissions in the Geirangerfjord area as within the North Sea ECA. The use of heavy fuel oil without any form of treatment results in heavy emissions of sulphur and particle matter. This is legal in the Geirangerfjord area at present, but it is unfortunate. The consideration for local air quality and public health, along with the fact that the visual pollution will increase if heavy fuel oil is used without any form of treatment, point towards making the requirements for sulphur emissions in the Geirangerfjord area more stringent.

An important premiss set out by Menon is that “[i]t is assumed that all vessels operating in an ECA have technology available making it possible to comply with the requirement that the sulphur content of fuel shall not exceed 0.10%”. Menon continues: “It is assumed that all cruise ships have the possibility to satisfy the requirement for limit values for the emissions without having to make more investments.”

The costs of laying down a requirement for max. 0.10% by weight sulphur content of the fuel used in the world heritage fjords will as such have little consequence for the cruise ships. The alternatives are using fuel oil with low sulphur content or using heavy fuel oil with an exhaust gas cleaning system (scrubber), or LNG or other fuel solutions in the long term.

Exhaust gas cleaning systems are used to remove sulphur oxides from the ship’s exhaust gas. The systems work by the exhaust gas from the ship’s machinery reacting chemically with the cleaning medium used by the scrubber system. The cleaning medium may be granulates or water. For cruise ships, the systems used are mainly wet scrubber systems with saltwater or freshwater. In such systems, the sulphur oxide in the exhaust gas will dissolve in the water, and sulphuric acid is formed. Wet scrubber systems can be divided into three main categories: Open Loop, Closed Loop and Hybrid. All three system categories work by the exhaust gas from the machinery being mixed with water. The main difference between them is whether seawater or freshwater is used.

New section 14c Special rules regarding emission of nitrogen oxides (NO_x) from ships in the world heritage fjords

In order to reduce the emissions of NO_x, we are proposing a new provision in section 14c of the Environmental Safety Regulations on special rules regarding emissions of nitrogen oxides (NO_x) from ships of 1000 gross tonnage and upwards in the world heritage fjords.

The emission of NO_x has been identified as a periodic issue in the world heritage fjords. The emission of NO_x may be reduced by using SCR catalysts (Selective Catalytic Reduction) or by e.g. exhaust gas recirculation (ECR).

The new provision is based on the tiers set out in MARPOL regulation VI/13, and the NMA proposes that the requirements be phased in as follows, regardless of year of construction:

- Tier I requirements to be satisfied within 1 January 2020
- Tier II requirements to be satisfied within 1 January 2022
- Tier III requirements to be satisfied within 1 January 2025.

The requirement related to NO_x emissions will have consequences for the companies, and this is discussed in the Menon report p. 43: “Feedback from the cruise industry and the NO_x Fund is that the indicated times for introduction of requirements are unrealistic. In order to have a real possibility to adapt to the requirements, the Tier II requirements should be phased in on 1 January 2020 at the earliest, and Tier III on 1 January 2025 at the earliest.” Our proposal gives the industry more time to adjust than the dates assessed in the recommendation from the Menon report by proposing to make the Tier II requirement applicable from 1 January 2022, whereas the report states that this may be introduced 1 January 2020 at the earliest. We believe that our proposed phase-in of the requirements for NO_x reductions gives the industry sufficient time to adapt.

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By setting a limit of 1000 gross tonnage and upwards, nearly all the smaller local vessels and vessels in regular service fall outside the scope, which was our intention as their contribution to NO_x emissions are of lesser importance in this connection.

New section 14d Requirement for environmental instruction for ships of more than 10,000 gross tonnage sailing in the world heritage fjords

We propose that ships of 10,000 gross tonnage and upwards sailing in the world heritage fjords shall have an environmental instruction specially adapted to operation in these areas. The environmental instruction shall ensure that the ship is operated as environmentally friendly as possible while in the world heritage fjords. We also propose certain minimum requirements for the content of the environmental instruction.

This provision has been proposed since parts of the challenges related to smoke and particles cannot be solved with concrete technical requirements. By requiring ships of 10,000 gross tonnage and upwards sailing in the world heritage fjords to have an environmental instruction, we will be able to register operational conditions and ensure that the ships operate as environmentally friendly as possible in the world heritage fjords. The NMA may request to be sent the information. The instruction will also be requested during supervision.

Administrative and financial implications

The proposals will apply to ships sailing in and out of the world heritage fjords, and to vessels sailing exclusively within the world heritage fjords. The proposal will entail changes and a need to adjust for the cruise industry and local industry players in the world heritage fjords. There are many considerations to balance. Some of the proposals are connected with tonnage limits, others are not. We have tried to weigh the considerations for reducing emissions to air and discharges to sea and the value of the world heritage status against the available cleaning technology for ships, as well as the consideration for industry players and tourism. The value of the various considerations was to a certain extent inevitably approximate. It is harder to estimate the value of a cleaner fjord and cleaner air than to calculate lost tourism income. The considerations must be weighed against each other, and a choice must be made.

In order to reach the goal of reducing the emissions to air and discharges to sea in the world heritage fjords we have proposed a number of measures, which we believe will collectively contribute to meeting this goal.

We propose that for ships of 400 gross tonnage and upwards or which are certified to carry more than 15 persons it is not allowed to discharge sewage in the world heritage fjords. The administrative and financial implications of the proposal for special rules for the discharge of sewage and grey water in the world heritage fjords are considered minor for the cruise ships, as most of these already have approved cleaning systems for sewage installed.

For smaller local vessels and ferries, the proposal will have financial consequences, as some of these have tanks for retaining sewage, whereas others do not. The vessels which up until now have been allowed to discharge sewage in the fjord 300 metres from nearest land, will now have to deliver sewage to land or go further out in the world heritage fjords to discharge it. We are proposing to set up an exemption possibility for these vessel, which will give them the possibility to adapt to the new requirements. The Norwegian Maritime Authority may upon written application up until 2024 grant a time-limited permission to discharge sewage in the world heritage fjords to ships running a regular service on a public contract and to ships offering an established fjord cruise service. We are proposing the possibility for exemption to ensure the industry time to adjust.

There will be a need to establish reception facilities ashore, which is the municipalities' responsibility. One alternative is to collect the sewage by a pump truck.

In section 10a second paragraph, we propose that for ships of 2500 gross tonnage and upwards certified to carry more than 100 persons, it is not allowed to discharge grey water in the world heritage fjords. The administrative and financial costs associated with the proposal are assumed to be small.

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In new section 14b, we propose special rules regarding emission of sulphur oxides (SO_x) from ships in the world heritage fjords. The cruise ships are already equipped to satisfy the sulphur requirements, and smaller vessels in the world heritage fjords as well as Hurtigruten already use fuel oil with a sulphur content of maximum 0.10% by weight. It is therefore assumed that the proposal will have very limited financial and administrative consequences.

We propose a new section 14c with special rules regarding emission of nitrogen oxides (NO_x) from ships in the world heritage fjords. More specifically, we propose a gradual phase-in of requirements for maximum NO_x emissions. As Menon discusses in their report, there will be high costs related to stricter requirements for NO_x emissions. For companies, the consequences will be as follows, cf. the Menon report p. 44:

“However, companies with ships not satisfying the requirements nor expected to do so within the year in question, will face a choice whether to convert the ship, reemploy vessels within the fleet, visit another Norwegian fjord or to drop Norway as a cruise destination.

[...]

In one of the interviews we have carried out, the conversion cost for converting to LNG technology (Tier III) was estimated to around 1 million NOK per megawatt, which in practice means investments of between 50 and 100 million NOK.

The proposed stricter requirements for NO_x emissions will also have socioeconomic consequences. Menon has estimated that the proposals will result in a loss of 250 million NOK over five years, divided between three destinations. Furthermore, Menon writes on p. 4: *“Dialogue with the cruise industry suggests that the investment costs related to adapting ships not currently satisfying the requirements are high, especially for adaptation to Tier III. The value of adapting to Tier II is also limited since the Tier III requirement will enter into force only five years later. Based on these assessments, and the fact that each of the cruise ships visits the world heritage fjords a limited amount of times per year, there is reason to believe that the requirements for max. NO_x emissions will have little triggering effect on NO_x reducing adaptations of the ships, which would not have taken place in the null alternative. This is supported by the fact that several industry players have commented that it is not very likely that they will invest in larger conversions of ships or engine to adapt to individual destinations. Based on this, we believe that the cruise companies’ likely response will be to partly reemploy vessels in their own fleet, partly visit other Norwegian fjords and partly redirect the cruise to a destination in another country.”*

Car ferries and smaller passenger vessels are expected to be “forced” to adapt to the requirements, among other things because they, to a larger degree than cruise ships, are bound to the fjords in question. The adaptation is expected to be carried out by earlier replacement of older vessels.

We expect that the measure will result in a percentage of the cruise ships choosing to no longer visit Norway and that there will thus be fewer cruise ship tourists visiting Norway. This loss is estimated at a current value of 250 million NOK. The preconditions forming the basis of the estimation are described in detail in the report. The loss may be reduced if a percentage of the lost cruise ship tourists choose to travel to Norway in other ways.

We also expect the cruise ship activity to Flåm and Geiranger to be reduced at the expense of increased activity in other Norwegian fjords. The destinations Olden/Loen, Skjolden and Åndalsnes, among others, are likely alternatives.

This distortion does not represent a socioeconomic loss, but an allocative effect of the measure.

Beyond lost tourism income, the measure will involve increased costs related to faster replacement of car ferries and smaller passenger vessels. The costs related to faster replacement of car ferries is expected to amount to 71 million NOK. The measure could also have negative implications for certain industry players.”

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With regard to positive effects of NO_x reductions, Menon writes the following:

“The value of reduced overall NO_x emissions from cruise ships, car ferries and smaller passenger vessels in Norway is estimated to have an overall socioeconomic value of 71 million NOK. Faster replacement and renewal of car ferries and smaller passenger vessels will also lead to reduced emissions of CO₂ and lower operating costs. These effects are valued at 15 and 20 million NOK respectively. We do not expect that the measure will trigger faster renewal of cruise ships or to affect their overall emissions of CO₂.

Beyond this, it is expected that the measure will eliminate the number of days where the concentrations of NO_x and particle matter in the world heritage fjords are detrimental to health. We expect that the measure will have a positive health-related effect, mainly for at-risk permanent residents in the areas in question. However, it is uncertain whether the measure could cause negative health-related effects in other Norwegian fjords expected to see increased cruise tourism.

The measure is also expected to have a positive effect on the standing of Norwegian fjords as travel destination, but it is uncertain how large the effect will be.”

The proposed requirement for NO_x reduction is the most ambitious and demanding proposal. We believe that it is realistic and predictable for the industry to set the requirements for max. NO_x emissions as we have proposed. Overall, the benefits related to implementing the regulations will surmount the costs.

Attachments:

- Proposed Regulation concerning amendments to the Regulations on environmental safety for ships and mobile offshore units
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- Chart showing the world heritage fjords
- Report *Pollution from ships in fjord areas with heavy cruise traffic, the Norwegian Maritime Authority, 5 May 2017*