



D3.3. Presenting alternative governance structures *University of Gothenburg*

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Scientist responsible for this deliverable: Lena Gipperth

Authors: Jakob Björkqvist (UGOT), Lena Gipperth (UGOT), Helle Tegnér Anker (UCPH), Lasse Baaner (UCPH), Janne Seppälä (AALTO), Ari Ekroos (AALTO)

Other contributors: Sara Kymenvaara

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Preface

This report is a part of Work Package 3, The legal framework and the market, of Bonus CHANGE, and more precisely, task 3.3: Presenting alternative governance structures. The purpose of the report is to identify and analyse barriers and driving forces for introducing alternative antifouling techniques for leisure boats, and to propose alternative governance approaches and structures that could facilitate the overarching objective of less toxic antifouling methods on leisure boats in the Baltic Sea. The legal framework for applying such measures is a key issue. The alternative governance approaches and structures (regulatory options) presented in this report consist of both possible measures for authorities and other relevant actors to take using the existing regulation, as well as possible regulatory changes for governments to consider, for minimising the use of toxic paints.

Alternative Governance Structures - Regulatory options towards less toxic antifouling practices

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1. Introduction

The legislation related to antifouling paints and practices addresses a range of different actors and has varying legal implications on different regulatory levels. In this report we analyse and discuss regulation of antifouling paints for leisure boats in Denmark, Finland and Sweden, including relevant EU legislation.¹ All three countries appears to apply a somewhat fragmented or patchy approach to the separate matters related to antifouling paints, including environmental quality (e.g. water quality), chemical products (e.g. authorisations or restrictions) and waste handling.

This report aims at identifying and analysing regulatory options, meaning both possible measures for authorities and other relevant actors to take using the existing regulation as well as possible regulatory changes for governments to consider, for minimising the use of toxic paints. These regulatory options are divided into three categories: Those concerning 1) environmental quality regulation, 2) regulation of biocide antifouling paints and 3) regulation of the activities of boat owners and marinas. Possible measures are discussed regarding these categories and a tax on biocidal antifouling paints is also presented as an alternative governance approach. The legal framework and possibilities for applying the discussed measures, as well as the interplay between public and private regulation, are focal issues in this chapter.

2. Regulatory perspectives, levels and targeted actors

Regulating antifouling paints may take its point of departure in different regulatory settings. First of all, a distinction can be drawn between *public law* and *private law arrangements*. Whereas the public law arrangements are the responsibility of relevant authorities at international, EU, national and local level, private law arrangements rely on private parties, e.g. private marinas or boat clubs. In this section, we mainly focus on public law.

A vast array of public (environmental) law addresses antifouling paints from *different regulatory perspectives*. This includes in particular the *product perspective* focusing on the marketing, availability and use of antifouling paints. Another regulatory perspective focuses on different *polluting activities*, e.g. the activities of boat owners or marinas when handling antifouling paints, painted boats or contaminated sediments. A third regulatory perspective takes its point of depar-

¹ This report builds on Kymenvaara, S., Tegner Anker, H., Baaner, L., Ekroos, A., Seppälä J. & Gipperth, L. 2017. Regulating antifouling paints for leisure boats – a patchwork of rules across three Baltic Sea countries. Nordisk miljörettslig tidskrift 2017:1. Within the project three national reports of the national legal framework have been elaborated as well as a report on the EU legal framework, all available at: <https://law.handels.gu.se/forskning/skriftserien>.

ture in the *environmental quality*, e.g. water quality, setting relevant environmental objectives and quality standards as well as identifying relevant measures to achieve the environmental objectives, e.g. by reducing the presence of toxic or harmful substances in the aquatic environment. Finally, supervision and enforcement is an important cross-cutting issue that has to be taken into account.

Thus, there are a number of different regulatory options for addressing the adverse effects of antifouling paints. Hence, there is a wide range of actors – from the boat owner to several different authorities – that should be taken into account when considering how to regulate antifouling paints and practices. Product regulation is to a high extent subject to EU legislation with the purpose to ensure not only environmental protection, but also the functioning of the internal market within the EU, e.g. in the Biocidal Products Regulation applicable to various aspects of antifouling paints. Environmental quality regulation is also subject to EU legislation with the purpose to ensure a minimum level of environmental quality e.g. of the aquatic environment, as laid out in the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD). However, national authorities play an important role as regards the implementation and operationalisation of such environmental quality standards. The regulation of different polluting activities is to a large extent determined at national level, although some EU legislation also exists. Furthermore, local authorities may play an important role by the setting of local regulations as well as in relation to supervision and enforcement.

The simplified figure below displays these different *levels*, and their main subjects of regulation. The legal framework and some of the regulatory options for enhancing the protection of the Baltic Sea are discussed in the following sections.

	<u>Environmental quality</u>	<u>Polluting products</u>	<u>Polluting activities</u>
<u>European Law</u>	<div style="border: 1px solid black; padding: 2px;">Environmental objectives and quality standards</div>	<div style="border: 1px solid black; padding: 2px;">Authorization of biocidal substances</div> <div style="border: 1px solid black; padding: 2px;">Prohibition of organotin compounds (TBT) on ships</div>	
<u>National Law</u>	<div style="border: 1px solid black; padding: 2px;">Environmental objectives and quality standards</div> <div style="border: 1px solid black; padding: 2px;">Programmes of measures</div>	<div style="border: 1px solid black; padding: 2px;">Authorization of biocidal paints and their use</div>	<div style="border: 1px solid black; padding: 2px;">Restrictions on antifouling activities like painting, scraping etc.</div> <div style="border: 1px solid black; padding: 2px;">Waste management regulation</div>
<u>Local Regulation</u>			<div style="border: 1px solid black; padding: 2px;">Restrictions on antifouling activities like painting, scraping etc.</div> <div style="border: 1px solid black; padding: 2px;">Waste management regulation</div>

3. How can environmental quality regulation be used?

The Water Framework Directive (Directive 2000/60/EC) (WFD) and the Marine Strategy Framework Directive (Directive 2008/56 EC) (MSFD) establish the legal frameworks for regulation of ecological and chemical water quality in large parts of the Baltic Sea. The extent to which these frameworks support addressing of toxin spread from antifouling paints depends, however, on the national implementation.

Thresholds for chemical water quality are established by the Directive on Environmental Quality Standards (Directive 2008/105/EC) (EQSD), also known as the Priority Substances Directive. It sets out the environmental quality standards (EQS) for substances in surface waters and establishes the categories “priority substances” and “hazardous priority substances”, the latter being of particular concern. The only antifouling substance that is identified as a hazardous priority substance is TBT, while diuron and cybutryne (Irgarol) remain classified as priority substances. Copper and zinc are not classified at EU level in the EQSD. However, it is possible for national authorities to address these substances in the national implementation of the WFD. Hence, Sweden has since 2016 established general limit values for copper and zinc, and also decided on general measures to avoid exceeding these limits in the new programme of measures (PoM).

The antifouling substances that are identified as hazardous or priority substances at EU-level are no longer approved for use in antifouling paints. For using environmental quality regulation to limit the use of antifouling paints or otherwise handle problems caused by the presently used paints, a main issue is thus to what extent the presently approved substances are addressed at national level. Another issue concerns the legal effect of the environmental objectives. These are legally binding on national authorities when taking decisions about permit for new and expanded activities etc. Thresholds set by national authorities would thus affect the authorisation of antifouling paints. Most antifouling activities are however not subject to permit requirements. In order to fulfil the objectives of the directives, Member States nevertheless do need to take measures also to avoid further pollution from non-permit activities if the environmental status regulated by thresholds are affected.

The environmental quality regulations provide a setting for addressing antifouling paints if this is recognised as an important environmental quality issue or parameter. Not only the setting of relevant environmental quality objectives or standards, but also the identification of relevant measures to address pollution by antifouling paints is important. Thus, the PoMs of the River Basin Management Plans (RBMPs) and marine strategies provide an option for identification of relevant measures, e.g. the establishment of wash-down areas in marinas, and possible mechanisms to operationalise such measures. In general, however, this

will rely on the initiative of the relevant authorities to what extent such measures are being implemented or not, as the RBMPs and marine strategies are not directly binding upon private parties.

4. How can regulation of antifouling paints be used?

4.1 Introduction to the regulation of biocide antifouling paints

The production, sales and use of antifouling paints is to a large extent regulated at EU-level. Antifouling paints are chemical products, containing chemical substances, which are generally regulated in the REACH Regulation (Regulation 1907/2006/EC). As antifouling paints are biocidal products, which is chemical products intended to control any harmful organisms, they are specifically regulated by the Biocidal Products Regulation (Regulation 528/2012/EU) (BPR). In addition, organotin substances, like TBT, are prohibited on all boats.² It is not even allowed to visit a port in a EU Member State with a boat having any layers of organotin antifouling. Old layers of organotin paint must thus, be removed, or sealed with a coating that stops the leaching of the organotin substances.

The BPR establishes rules for authorisation of active substances at EU-level by the European Chemicals Agency (ECHA) and authorisation of biocidal products, e.g. antifouling paints, at national level.³ Even though the product authorisation is to be done at national level, the regulation defines how the product authorisation shall be performed. However, due to the transitional provisions of the BPR, there is not as yet any absolute requirement for Member states to adopt an authorisation procedure according to the BPR. A consequence of the transitional rules is that the provisions regarding product authorisation has not yet been interpreted by the Court, which alone has the final say on the interpretation of European law. It is not possible to predict with certainty how the Court will interpret the provisions. Therefore, it is neither possible to say exactly how large a Member State's leeway regarding product authorisation, and thus its possibility to restrict the availability of antifouling paints, will be.⁴ The following discussion however describes that it is clear that the Member States will be given some margin of appreciation regarding the national product authorisation and a possibility to derogate from the mutual recognition rules e.g. with reference to environmental protection concerns. It also presents an analysis of arguments and

² Regulation 782/2003/EC; International Convention on the Control of Harmful Anti-fouling Systems on Ships.

³ BPR Art. 42. Antifouling paints are specified as product type (PT) 21.

⁴ Moreover, the technical guidance documents provided by the European Chemicals Agency ECHA, intended to explain how the risk assessment and product evaluation is to be performed, are not completed. This makes it even more difficult to make predictions on the exact interpretation of the rules regarding product authorisation.

possible openings for a restrictive authorisation approach. Nevertheless, as the main purpose behind the BPR is to harmonise the legislation on biocide products, it seems that the Member States' leeway will be rather limited.

4.2 Grounds for refused or limited authorisation

Introduction

In this section, some of the major grounds for Member states to either refuse authorisation or to grant limited authorisations for antifouling paints are identified and discussed. The Baltic Sea with its brackish water is a particularly sensitive environment,⁵ and is also classified by the International Maritime Organization (IMO) as a Particular Sensitive Sea Area (PSSA) since 2005⁶ which means that there is a need to consider local environmental circumstances in the product authorisation in order to protect the Baltic Sea. The following thus explores the Member States' possibility to consider this in the product authorisation procedure. Moreover, the scientific findings produced by the Bonus CHANGE project show that several biocide-free antifouling methods work very well in the Baltic Sea. There are also recent findings indicating that many of the biocide paints authorised for use in the Baltic Sea have much higher copper content and copper leaching rate than necessary for antifouling performance, i.e, to deter fouling organisms.⁷ An unclear issue is, however, to what extent it will be possible for Member States to, in the authorisation procedure, consider the need for using a biocide antifouling paint in relation to available alternative non-biocidal antifouling methods. Article 17.5 of the BPR states that the use of biocides in general shall be limited to the necessary minimum but it seems unclear if this should affect also the product authorisation. It also seems unclear if a Member State can take account of any unnecessarily high toxicity in proportion to the fouling pressure. These aspects are thus explored in the following sections.

Consideration of local environmental circumstances

To start with, under the authorisation procedure of the BPR, Member States will be able to consider local environmental circumstances, as the authorisation is to be grounded on a risk assessment of the planned use of a product.⁸ As the Baltic Sea is a specifically sensitive environment, where the fouling pressure is also relatively low, this means that a biocidal paint planned for use in the Baltic Sea may not be authorised even if the same paint is fully acceptable in e.g. the North Sea. Regarding antifouling paints, the risk assessment based on the planned use

⁵ Magnusson, K. & Norén, K. (2012), The sensitivity of the Baltic Sea ecosystems to hazardous compounds. BaltSens Project. Swedish Chemicals Agency. PM 9/12.

⁶ <http://www.imo.org/en/OurWork/Environment/PSSAs/Pages/Default.aspx>

⁷ These findings result from the BONUS CHANGE project but are not yet published.

⁸ Regulation 528/2012, Annex VI, sections 13-14, 37-38.

thus provides the basis for a national leeway concerning product authorisation. Member states like Sweden and Denmark, with coastlines facing both the strictly marine waters of the North Atlantic and the brackish waters of the Baltic Sea including the Kattegat, thus cannot per se authorise a paint for use along all of the coastline. Some paints will only be possible to authorise for use along the coasts facing the marine waters. Geographically differentiated authorisation will be possible as an authorisation may be conditioned.⁹ Such conditioned authorisation is already in place in Sweden, distinguishing three geographical areas along the Swedish coastline with differentiated authorisation of AF paints.

Consideration of excessive toxicity

The environmental risk assessment shall evaluate if the product has any *unacceptable effects* on the environment.¹⁰ A product may thus pass the environmental risk assessment even if it has harmful effects on the environment, as long as these effects are not unacceptable. The efficacy test will be passed as long as the product deters fouling satisfactorily in the environment where it is intended to be used, as this test do not consider if the product is more potent than needed.¹¹ Consideration of any unnecessarily high toxicity is thus not included under these two tests. However, every decision in a product authorisation procedure shall be based on an integrated conclusion, where all separate tests performed are weighted towards each other.¹² It is not clearly expressed if this integrated conclusion shall include consideration of unnecessarily high toxicity. However, one of the principal aims of the BPR is to ensure a high level of protection for human and animal health and for the environment.¹³ It is furthermore expressed in the BPR that the use of biocides should be limited to the necessary minimum,¹⁴ and that reaching a more sustainable use of biocides is a target behind the BPR.¹⁵ The Commission has moreover pointed out that the product authorisation and conditions given to authorisations can be tools for minimising the risks connected to the use of biocides and thus promoting a more sustainable use.¹⁶ Based on this, it should not be excluded that the integrated conclusion enables consideration of the unnecessarily high toxicity mentioned above.

Consideration of available biocide-free alternatives

⁹ Regulation 528/2012, Art. 22.1.

¹⁰ Regulation 528/2012, Art. 19.1.b, subparagraph (iv).

¹¹ Regulation 528/2012, Art. 19.1.b. See also Annex VI para. 51-52, 77; The efficacy test is further described in ECHA (2017) Guidance on the Biocidal Products Regulation: Volume II Efficacy – Assessment and Evaluation (Parts B & C), Version 1.0, pp. 239-249.

¹² Regulation 528/2012, Annex VI para. 78.

¹³ Regulation 528/2012, Art 1.

¹⁴ Regulation 528/2012, Art 17.5. See also the preamble, para. 38.

¹⁵ Regulation 528/2012, Art 18.

¹⁶ COM(2016)151.

Another issue to be assessed during a national authorisation procedure is if the availability of biocide-free alternative antifouling methods can be used as an argument for non-authorisation or limited authorisations. Concerning biocidal products containing active substances that are considered candidates for substitution according to Art. 10 BPR, a comparative assessment shall be performed in accordance with Art. 23 BPR. This means that the benefit from using the biocidal substance in question is compared to the availability and effectiveness of other biocides and biocide-free methods for controlling the target pests.¹⁷ The only active substance approved for antifouling products that is considered a candidate for substitution is Medetomidine.¹⁸ As the comparative assessment explicitly concerns products containing active substances that are considered candidates for substitution, a comparative assessment is not obligatory regarding the evaluation of products based on other active substances, such as any of the copper-based approved substances. A restrictive interpretation of Art. 23 implies that a comparative assessment should only be performed regarding products containing candidates for substitution, and that such an assessment is not possible regarding e.g. any copper-based paints. The statement in the preamble saying that “In the course of granting or renewing the authorisation of a biocidal product that contains an active substance that is a candidate for substitution, *it should be possible* to compare the biocidal product with other authorised biocidal products, non-chemical means of control and prevention methods” supports this interpretation and that the comparative assessment is only intended to be possible regarding such products. The availability of biocide-free methods thus does not seem to be a legitimate argument for restricting the availability of biocide paints based on copper or any other active substance except Medetomidine. Another possible interpretation is that the integrated approach discussed above also enables a wider comparative assessment for products containing other active substances. This interpretation can be supported by the aim to provide a high level of protection for the environment and to reach a more sustainable use of biocides. In general various arguments can be balanced quite freely in authorisation procedures. However, the wording of the BPR explicitly linking consideration of biocide-free methods to candidates for substitution rather supports the more restrictive interpretation.

Consideration of Environmental Quality Standards

The availability of biocidal paints could also be restricted with specific reference to Environmental Quality Standards (EQSs). Annex VI paragraph 67 of the BPR provides that a biocidal product may not be authorised if its use would undermine the achievement of aims set in the Water Framework Directive (WFD), the

¹⁷ Regulation 528/2012/EU, Art. 23. See also the preamble paragraph 15.

¹⁸ Commission Implementing Regulation 2015/1731/EU.

Priority Substances Directive or the Marine Strategy Framework Directive (MSFD). This indicates, for an example, that if a boat mainly navigates on waters where there is a set limit for copper content for the water to reach good environmental status under the WFD, and the EQS for that water is set to good environmental status, a paint containing copper should not be authorised for use on that boat if the limit is exceeded. **As limit values for copper and zinc are established by Member States, there is a possibility for Member States to bring up a more restrictive product authorisation approach by recognising low limit values.** The Swedish competent authority has established different limit values for copper and zinc regarding Baltic Sea waters and the Swedish west coast.¹⁹ If the limit values for the Baltic Sea would be exceeded, paints containing these metals should not be authorised for use in the Baltic Sea. A problem here is that the copper- and zinc content in waters may vary locally and measurements are also performed for smaller water bodies. The limits may thus be exceeded in some parts of the Baltic Sea but not in other parts. On the contrary, biocide paints are at present authorised for use in rather large areas, e.g. the Swedish West Coast or the Swedish Baltic Sea coast. If products are to be restricted with reference to EQSs, these different geographical designations must be made compatible and clearly defined. This could possibly be done through separate authorisation conditions for every water body, or through evaluation of water bodies in groups. This could present some problems. For an example, many leisure boats may be used in larger areas and it could thus be considered unreasonable to authorise a paint for use in one or a smaller group of water bodies where the limit is not exceeded and refuse authorisation for use in adjacent water bodies where the limits are exceeded. Nevertheless, it can be concluded that a Member State may affect the conditions for product evaluation by recognising low limit values for copper and zinc in their coastal waters. Exactly how such limit values can impact on product authorisation is yet uncertain, but exceeded EQS for biocidal substances is an argument for restricting the use of anti-fouling paints containing such substances, which have to be weighted towards other arguments for and against authorisation.

4.3 Imposing conditions for an authorisation

A product can be authorised with geographical restrictions on its use. The BPR guidance list some examples of conditions and restrictions (risk management measures) that can be part of an authorisation.²⁰ Geographical restrictions is not explicitly mentioned in the lists, but the lists are also non-exhaustive, and it fol-

¹⁹ Bioavailable value, annual average ($\mu\text{g/l}$) of 1) copper is 2,6 for the West Coast and 0,87 for the East Coast and for zinc 3,4 for the West Coast and 1,1 for the East Coast.

²⁰ BPD guidance pp 23f, 25, 27, 28, 30f, 38, 74. Note that this guidance will be replaced by ECHA with a new Biocidal Products Directive (BPD) guidance <https://echa.europa.eu/guidance-documents/guidance-on-biocides-legislation>.

lows already from the fact that a product shall be evaluated and authorised for the planned use, that such geographical restrictions is possible. Painting a boat that mainly navigates in the North Sea and painting a boat which mainly navigates in the Baltic Sea is accordingly two different uses. The lists in the guidance document explicitly mention altered product formulation, i.e. lowered concentration of active substance or exchanging a substance for a less hazardous one, as possible conditions. Based on this, it should also be possible to e.g. grant authorisation on the condition that the concentration of copper, or the leaching rate, is reduced. A prerequisite for imposing all requirements and restrictions is that it is scientifically justified.

A major problem that has been identified by CHANGE is that many boats on the Swedish east coast are painted with west coast paint, which is believed to partly depend on the availability of west coast paints in stores at the east coast. It is therefore an important question if it would be possible to restrict not only where a paint is allowed to be used but also where a paint can be sold. This is only possible if it can be regulated through the conditions of the product authorisation. Restrictions on how the product can be sold, i.e. limited container size and warnings, instructions and labels on the container, are mentioned as admissible conditions in the guidance document for product authorisation.²¹ Authorised active substances are furthermore subject to the condition that the products containing the substances must be provided together with protective gloves.²² This supports that products can be authorised with various conditions on sales arrangements. However, it remains uncertain if the condition that a west coast paint could only be sold in stores on the west coast would be accepted, as it would interfere with the functioning of the internal market by limiting market access. It would thus counteract one of the principal purposes behind the BPR.

4.4 How can a Member State refuse or limit authorisation through mutual recognition?

When an applicant has applied for authorisation of a product in one Member state, or when authorisation has already been granted in that Member state (the reference Member State), it is possible to apply for mutual recognition in other Member states (the Member States concerned) according to Arts. 32-36 BPR.²³ The main rule is that a Member State shall authorise the product under the same terms and conditions as it is being, or already is, authorised in the reference

²¹ BPD guidance pp 23f, 25, 27, 28, 30f, 38, 74.

²² See e.g. Commission Implementing Regulation 2016/1088/EU; Commission Implementing Regulation 2016/1090/EU; Commission Implementing Regulation 2016/1089/EU.

²³ Indeed, a granted authorisation in one Member state excludes a new national authorisation procedure in another Member state. The only option for the applicant in such case is thus to apply for mutual recognition, Art 29.4 BPR.

Member State, Art 32.2 BPR. However, a Member State concerned has some possibilities to refuse or limit an authorisation. Such an exception must be justified on the grounds of e.g. protection of the environment or that the target organisms are not present in harmful quantities. A thorough description of the grounds for the exception must be presented to the applicant by the Member State concerned. If the Member State concerned do not manage to reach an agreement on the exception with the applicant within 60 days, the Member State concerned must inform the Commission, which will then decide on whether the exception can be accepted or not. The Commission must make its decision within 90 days from being notified by the Member State concerned.²⁴

Under the mutual recognition procedure, the Member State concerned has to show that an exception, i.e. non-authorisation or limited authorisation, is justified. This should be compared to the ordinary national authorisation procedure, where the risk assessment has to show that authorisation is justified²⁵. It thus seems to be more difficult for Member States to refuse authorisation through mutual recognition than under the ordinary national authorisation procedure. This is also in line with the purpose of the mutual recognition procedure, which is to facilitate market access.²⁶ The Member State concerned furthermore has a very short time frame to produce the argumentation for the exception. Moreover, as applicants may apply for (primary) authorisation in any Member State, an applicant may choose a state with a rather lenient authorisation approach and subsequently apply for mutual recognition in Member States with a more restrictive approach. To successfully restrict the use of the most hazardous products in the Baltic Sea by derogation from mutual recognition, the competent authorities in the Baltic Sea Member States thus must be prepared to present thorough scientific justification for such derogation within those very short time frames.

5. How to regulate boat owners and marinas

5.1 Regulating activities or their environmental impact?

A boat painted with antifouling paint causes leaching of antifouling biocides such as copper and zinc when in contact with water, thus both during use and when kept at its berthing place, e.g. in a marina. Except this, there are several other activities performed by boat owners and marinas that potentially lead to release of polluting biocides from antifouling paints. Concerning the boat owners, these activities are mainly related to hull maintenance, such as sanding, scraping and high-pressure hosing of the boat hull. The relevant activities regarding marinas mainly relate to the marina providing, or not providing, the infrastructure need-

²⁴ Regulation 528/2012/EU, Art. 37.

²⁵ Regulation 528/2012/EU, Art. 17 and 29-31.

²⁶ See the preamble to Regulation 528/2012/EU, paragraph 3.

ed for boat owners to perform antifouling practices with a minimum negative impact on the environment. Such infrastructure may consist of e.g. wash-down pads with water treatment and proper waste management facilities.

The national regulation of these activities and their environmental consequences may target either the activity directly through e.g. explicit prohibitions on certain activities, or target the consequences through e.g. prohibition to cause pollution or liability for remediation and clean-up of contaminated sediments. Both of these types of regulations are used in the three countries, where the activities of boat owners and marinas are, in varying ways, regulated mainly through general environmental protection regulation. This includes e.g. the Swedish general rules of consideration, imposing requirements not to cause any damage to the environment and to handle waste and wastewater properly, and general harbour regulations in Denmark. Local regulations also exist in some areas, particularly in Finland, laying down more detailed requirements on some issues.

A system that targets environmental impacts has the advantage that it targets all possible boat owner activities and that it is hence not easily evaded. In the case of Sweden, there is a general requirement for boat owners to conduct all activities (e.g. hull maintenance) in a way that minimise the discharge of polluting substances from antifouling paints to the environment, based on the general rules of consideration in the environmental code. This requirement is however not dependent on the activities alone. An activity is only illegal if its impact on the environment is not insignificant in the individual case. The consequence of this is that a specific action must actually have a negative impact on the environment for a municipality to enforce the boat owner's obligations. One option that could potentially enhance the municipalities' possibilities to enforce the obligations of boat owners may be to establish complementary requirements directed at the actual *activities*, e.g. an explicit requirement to always use a protective foil on the soil when sanding and scraping the boat. A system which targets the actual actions, irrespective of its impact on the environment, can be found in Germany.²⁷

The national requirements on marinas can also be regulated through targeting either activities or environmental impacts. Activities in marinas can be addressed, by explicit requirements to e.g. establish wash-down pads with water treatment and provide adequate equipment for otherwise minimising the discharge of polluting substances as a result from boat owners antifouling practices. Other requirements that could be considered is a ban of high-pressure hosing boat hull, since such activity is very intrusive to the paint film and decreases

²⁷ Koroschetz, Bianca, Solér, Cecilia, Mäenpää, Emma, Material and institutional infrastructures' impact on sustainable consumer practice - exploring the case of leisure boat maintenance practices in the Baltic Sea, (still unpublished), p. 20.

paint longevity and second year performance and at the same time is a source of pollution to the environment. Such ban would decrease the incentives to require marinas to invest in expensive wash pads with water treatment. However, it would not be necessary to require such measures e.g. when biocide-free antifouling techniques are used for all boats at the marina or when the number of boats at the marina is very limited.

The Swedish system addresses the environmental impact of a marina's activities which makes it more flexible compared to direct regulation of the activities. It therefore has the potential to impose requirements for the right measure at the right place under the right circumstances. However, it puts a large responsibility on the supervision and enforcement authorities, as they have to define what causes too much harm to the environment and what does not.

The regulation in the three countries provide examples of rules targeting both the activities directly, and their environmental consequences. Both of these models have advantages and disadvantages. The examples from the three countries show that the existing regulation establishes a high level of protection for the environment, which may be fully adequate if enforced. A problem, however, seem to be that the regulation is not sufficiently enforced.

5.2 Imposing a permit requirement for marinas

The enforcement of marinas' responsibilities may very well be improved without any regulatory changes through increased efforts from the supervising and enforcing authorities. There are potent instruments available for enforcement of the rules. An example from Sweden is that the responsible authority (a municipality) can issue an injunction at a marina to take certain measures if the activity contributes to the transgression of an EQS, or otherwise cause harmful effects on the environment. An injunction may also be imposed under penalty of a fine.²⁸ If such enforcement instruments were used by authorities to a higher degree than at present, it would possibly put pressure on marinas and boat clubs to take measures for reducing the negative environmental impact from antifouling practices.

A further step regarding municipalities' supervision and enforcement of the responsibilities of marinas and boat clubs would be to establish a permit requirement for such activities. This would oblige municipalities to consider EQS legislation before granting permission to the activity. If the activity can be expected to add further to any exceeded limits, permission should be refused. Hence, in every place where the copper or zinc limits are exceeded, a marina should have to re-

²⁸ For court cases regarding injunctions on marinas, see e.g. MÖD 2006:28 and Land and Environment Court of Appeal, case number M 11499-16.

quire that all maintenance work is conducted in a way that do not release any paint residues into the environment.

A permit requirement could also lead to requirements on marinas to take certain measures as a condition for a permit to be granted. Such measures could include e.g. establishment of wash-down pads and in-water brush-washers. As requirements of such measures would not be necessary if no biocide paints are used at a marina, marinas and boat clubs may even be inclined to promote or require that boat owners choose biocide-free antifouling techniques, or in other ways govern the choices of boat owners so that the actual source of pollution is reduced.

5.3 Targeting antifouling practices by regulating waste

Paint residues, sludge and other assembled materials from the cleaning of hulls must be collected and due to the high concentration of hazardous substances must be treated in accordance with the rules for hazardous waste. This encompasses, inter alia, the transport and disposal of the waste by authorised companies. The municipalities are the relevant authorities on waste management, in all three countries. In most municipalities, chemical waste like dust and scrapings from leisure boats will have to be delivered by the boat owner or the marina at municipal waste facilities.

The field studies conducted within CHANGE however shows that these types of wastes are many times not handled properly. One identified reason for this is lacking waste reception infrastructures. Where such infrastructures exist, more boat owners tend to handle their waste properly. One option for better waste management could thus be to require marinas to establish reception facilities for these wastes. A similar requirement on marinas exist in the Port Reception Facilities Directive,²⁹ which handles *ship-generated waste*. However, the term *ship-generated waste* as defined in the directive do not include scrapings, paint rests, fouling materials or waste water from high-pressure hosing of boat hulls.³⁰ As the directive is a legislative act at EU-level, including these wastes in the directive is not easily done.

Another option could be to require facilities for reception of paint containers, paint rests and scrapings in a permit requirement for marinas. Such reception facilities would not necessarily be more advanced than the facilities that are required at present, why this requirement could be imposed without putting any significantly larger burden on marinas. These facilities would not be needed, and should therefore not be obligatory, if no boaters at the marina use antifouling paints. The requirement could thus work as an incentive for marinas to adopt

²⁹ DIRECTIVE 2000/59/EC.

³⁰ What is included in the term is defined through Marpol 73/78 Annex 1 regulation 1, Annex IV regulation 1, Annex 5 regulation 1.

codes of conduct which demand boaters to use biocide-free antifouling techniques or require the same in berth-place rental contracts.

5.4 Regulating antifouling practices through codes of conduct, tenancy contracts and marina regulations

Requirements regarding the activities of boat owners and marinas may not only be established through public law, but also through private law arrangements. For boat owners' activities, this includes e.g. codes of conduct at boat clubs and marinas and berth rental contracts between the boat owner and the marina. Policies established by national or regional boat owner associations, as well as land tenancy contracts between the land owner, usually a municipality, and the marina, could possibly target both the activities of marinas and boat owners.

There are some examples of such private law arrangements present. The supervision and enforcement of the requirements established through such instruments may be more effective than the public supervision and enforcement of public law requirements. A condition for this to be the case is however that appropriate sanctions exist, e.g. fines, expulsion from the boat club or marina or losing the right to a berth.³¹

The regulatory options regarding public law in relation to the private law arrangements mainly concern how public law can create incentives for the involved actors to establish the above discussed instruments. One way to achieve this could be through better enforcement of liability for contaminated land and sediments towards both land owners and marinas. As concluded by Kymenvaara et. al., the potentially high costs for handling clean-up of contaminated soil and sediments may function as an incentive for land owners to include clauses that transfer liability for contamination to the boat club or marina in land tenancy contracts. These actors would then also be incentivised to establish requirements on the individual boat owners in order to avoid contamination.³² Another option would be through increased supervision and enforcement of the marinas' responsibilities in general, as well as possibly imposing a permit requirement for marinas as discussed in section 5.2 above.

5.5. Supervision and enforcement

Several authorities at national, regional and local level are involved in supervising and enforcing the regulation related to antifouling. Furthermore, there are

³¹ Koroschetz, Bianca, Solér, Cecilia, Mäenpää, Emma, Material and institutional infrastructures' impact on sustainable consumer practice - exploring the case of leisure boat maintenance practices in the Baltic Sea, (still unpublished), p. 19ff.

³² Kymenvaara, Sara; Tegner Anker, Helle; Baaner, Lasse; Ekroos, Ari; Gipperth, Lena; Seppälä, Janne, Regulating antifouling paints for leisure boats – a patchwork of rules across three Baltic Sea countries, *Nordic Environmental Law Journal*, 2017:1, p. 29.

many different actors to supervise, including paint manufacturers, retailers, harbours, marinas and not least individual boat owners. Supervising and enforcing the regulation is therefore a complex and resource-demanding issue, in particular regarding individual boat owners. The task to supervise and enforce therefore must be distributed on the authorities with the best possibilities to successfully fulfil the task. Local authorities may not have the sufficient resources, and national authorities may be too far away. Nevertheless, the inspections campaigns carried out by the Danish Environmental Protection Agency to control what paints are used by boaters provide an example how supervision and enforcement can be exercised successfully.

There however seem to be a general shortfall regarding supervision and enforcement. It could therefore be considered if marinas, boat clubs and boat owner associations can play a larger role in this area. These actors could function as complementary supervisors of public law requirements, e.g. harbour regulations. They could also develop and supervise their own requirements in instruments such as codes of conduct or berth rental contracts. To support the development of such requirements regulatory incentives could be used, such as potential liability for clean up or remediation of contaminated sites.

6. Is a tax on biocide paints an option?

The results from the Bonus CHANGE research show that there are several available biocide-free antifouling methods that work very well. The project has also shown that boaters' awareness and consideration of the negative environmental impact caused by biocide paints is not enough for them to choose biocide-free methods. For such choice to be made, there must be a match between several different factors, such as available infrastructures, the boaters' life-style, willingness to spend time on maintenance and the cost. Even if the cost is just one of many factors influencing the boaters' choice, adjusting the cost for biocide paints by imposing a tax might be the little nudge needed for some boaters to instead choose a biocide-free method. The legal possibilities and difficulties to implement such a tax is hence discussed in this section.

Imposing a tax on biocide paints to induce boat owners to choose biocide-free antifouling techniques may be acceptable from an EU-law perspective. That is, as long as it is designed to meet a row of requirements defined in the TFEU. First of all, the tax must be charged as part of the internal tax system in the Member State. Otherwise, it will be perceived as a charge with equivalent effect to a customs duty, which is not allowed. Furthermore, the tax must not be discriminatory between imported and domestic products. Another requirement is that differentiated fiscal treatment of different biocide paints must be grounded on "objec-

tives which are themselves compatible with the requirements of the Treaty and its secondary legislation”,³³ such as environmental protection, which is recognised as a legitimate ground for tax differentiation.³⁴ A tax also must comply with the state aid rules.

If all the requirements above on how the tax is constructed are met, it would be possible to establish a tax on biocide paints. However, the issue of designing the tax in a suitable way still remains. A tax would not result in neither an absolute prohibition of certain paints, nor an absolute governing effect towards the use of environmentally “better” paints.

To start with, if a tax shall direct boat owner’s into purchasing less toxic paints, it has to be decided how *less toxic* should be defined. If a tax does not fully consider the complexity of the varying risk for different paints, it might have the effect that it could promote more toxic paints. For an example, if it is proportional only to the copper content of paints, it could promote paints with low copper content and high zinc or other added substances. The aggregate risk of such paint might be higher than a high-copper paint. If the tax instead would be proportional only to the quantity of paint, boat owners might choose to buy paints with higher toxicity and paint less or dilute the paint themselves. A crucial aspect is thus to define criteria for tax calculation that will have the result that if boat owners avoid paints with the higher amount of tax, the total risk or total pollution caused by antifouling paints will be reduced.

There are moreover some other possible side-effects that might arise. A tax on all biocide paints would possibly promote biocide-free paints such as silicone based paints, which might not be preferable. Another issue is that results from CHANGE show that some boaters use paints that are not allowed for leisure boats. If paints are to be taxed, paints that are only allowed for ships over 12 m length should also be taxed to avoid that more boaters use such paints.

Boating is an overall relatively expensive activity. The antifouling paint only constitutes a minor part of a year’s total expenses. It could therefore be questioned if and to what extent a tax would affect boat owners’ choice of antifouling technique. However, even if the expenses related to antifouling is a small part of the total expenses, a tax on paints would be an advantage for alternative antifouling techniques.

³³ C-213/96 Outokumpu, para. 30.

³⁴ C-213/96 Outokumpu, para. 31-32.

7. Conclusions

The regulation of antifouling paints and practices addresses many different actors and decision processes on varying regulatory levels. Nevertheless, it seems that the legal framework is not used to its full extent to prevent pollution from leisure boats by anti-fouling substances. Thus, there still might be some options within the existing regulatory framework to address the harmful effects of toxic antifouling substances.

From an environmental quality perspective, national limit values for relevant antifouling substances both obliges the relevant authorities to act and also give them wider possibilities to. It appears that antifouling paints have only to a limited extent been addressed as an important environmental issue in the RBMPs and marine strategies, at least in Denmark and Finland. Thus, there might be a potential for an increased focus on antifouling paints in the environmental quality regulation, both as regards environmental quality standards and the programmes of measures.

As regards the availability of antifouling products on the market – and possible (geographic) restrictions on the use of certain products, the EU legislation lays down a harmonised framework for national authorisation procedures. It seems, however, that it is not clear to what extent the Biocidal Products Regulation actually leave any room for manoeuvre at national level, e.g. to restrict the use of harmful products in sensitive areas such as the Baltic Sea.

Central actors are the boat owner, who uses the antifouling paints, and marinas and boat clubs, where activities related to antifouling are performed. In general, these actors cannot be directly obliged by environmental quality legislation in the form of RBMPs and marine strategies (and their associated PoMs). Nevertheless, the PoMs can be suitable for identifying appropriate measures to be taken by the local authorities to address antifouling issues in marinas. Environmental protection law and waste law addresses these actors directly, but smaller leisure boat marinas and boat clubs are generally excluded from permit requirements and also to some extent from extensive waste management requirements.

Similarly, environmental protection law and waste law puts a responsibility on boat owners regarding antifouling activities and waste management, but the actions of individual boat owners are generally overlooked by supervision and enforcement authorities. It must, however, be kept in mind that supervision of individual boat owners is resource demanding. Regarding the activities of boat owners and marinas, the regulatory problem thus rather seems to be related to supervision and enforcement than to lacking legislation. Further direct regulation of these actors' activities may therefore not be the perfect answer leading to better environmental protection.

Nevertheless, it is possible that in particular the use of local regulations or harbour regulations could be strengthened as regards e.g. maintenance activities (scraping, washing etc.) with the purpose to minimise the contamination of soil and water. Another alternative could be to encourage marinas, boat clubs and boat owner associations to develop codes of conduct and berth rental contracts that require boat owners to reduce their use of antifouling paints, handle waste properly, consider the environment during maintenance work etc.

Liability for contamination and clean up could work as an incentive to promote such development. Improved supervision and enforcement of marinas' and boat clubs' responsibilities could also create such an incentive. This could be further strengthened through a general permit requirement for leisure boat marinas, which sets conditions on antifouling activities and waste management for a permit to be granted.

Whether economic incentives or disincentives, e.g. an environmental tax on biocidal paints, is an option depends on the EU legal framework and in particular the prohibition on discriminatory internal taxes. Furthermore, alternative governance approaches could be considered further. This includes options for certification or eco-labelling of e.g. marinas promoting sustainable antifouling practices. Similarly, information campaigns etc. are also relevant options.