Nordisk Miljörättslig Tidskrift

Nordic Environmental Law Journal

2015:1

www.nordiskmiljoratt.se

Nordisk Miljörättslig Tidskrift/Nordic Environmental Law Journal 2015:1
ISSN: 2000-4273
Redaktör och ansvarig utgivare/Editor and publisher: Gabriel Michanek
Webpage http://www.nordiskmiljoratt.se/omtidskriften.asp (which also includes writing instructions).

Content

Introduction

Gabriel Michanek, editor

The thirteenth issue of Nordic Environmental Law Journal includes four articles with quite disparate topics. The first is written by Jan Darpö and Yaffa Epstein: *Thrown to the Wolves – Sweden Once Again Flouts EU Standards on Species Protection and Access to Justice*. Due to the Habitats Directive, Swedish administrative courts have continuously disapproved decisions allowing licensed wolf hunting, issued by the Swedish Environmental Policy Agency (SEPA). However, as a result of a recent decentralisation of decision making, from SEPA to the county boards, the hunting decisions are no longer possible to appeal to a court. According to the authors, this legal obstacle contravenes EU law.

In the second article – *The Setting of Progressive Energy Efficiency Performance Standards for Products through the Ecodesign Directive* – Carl Dalhammar discusses the potential to set standards that induce "technology forcing", i.e. standards requiring technology going beyond what is currently available on the market. The author examines different legal design options to set progressive energy standards and discusses the advantages and drawbacks with applying stricter standard-setting.

The third article is written by Julie Gjørtz Howden: *Aspects of Sovereignty and the Evolving Regimes of Transboundary Water Management.* State sovereignty is often considered an impediment to common management of international watercourses. However, the author discusses new perspectives on how the principle can contribute to progressive development in the management of internationally shared resources.

The fourth article is *Pollution of the Marine Environment by Dumping: Legal Framework Applicable to Dumped Chemical Weapons and Nuclear Waste in the Arctic Ocean*, authored by Alexander Lott. The purpose of the paper is to establish the rights and obligations of the Arctic States in connection with sea-dumped chemical weapons and nuclear material under international law of the sea, international environmental law and disarmament law. The paper analyses the possibilities to minimize adverse effects on the Arctic marine environment under the applicable legal framework. Lott argues for an environmental impact assessment to be conducted prior to a remediation, due to the risks with such operations.

Thrown to the Wolves – Sweden Once Again Flouts EU Standards on Species Protection and Access to Justice

Jan Darpö and Yaffa Epstein***

Abstract

Controversy continues over the return of the wolf to the Swedish landscape. Decisions to allow the licensed hunting of Sweden's fragile wolf population in violation of the EU's Habitats Directive have repeatedly been quashed by the Swedish administrative courts. In response, the law was changed: it is no longer possible to appeal those decisions to the courts. This article examines the decision to make impossible the judicial review of Sweden's implementation of EU species protection law in light of the Aarhus Convention and in light of the EU law principles of useful effect and effective judicial protection. We conclude that while the access to justice requirements of the Aarhus Convention are likely fulfilled, the fact that Sweden's hunting decisions pursuant to the Habitats Directive are no longer reviewable by a court contravenes EU law.

Introduction

The return of the wolf to the Swedish landscape has generated seemingly endless controversy in Sweden, both in the media and in the courts. Licensed hunting seasons for wolves have been planned every year since 2010, except for 2012. In 2010 and 2011, the hunting seasons were decried by environmental non-governmental organizations (ENGOs), but their legal challenges were dismissed for lack of standing. Following legal developments at the EU level and further legal challenges by Swedish ENGOs, injunctions were granted against the 2013 and 2014 hunting seasons, and they were eventually declared invalid by the Swedish administrative courts. Determined to permit licensed hunting whether or not legally justifiable, the Government changed the system for decision-making in order to disallow appeals to a court. If this change is allowed to stand, it will have the effect of not only removing hunting decisions from review by Sweden's judiciary, but also make it impossible for the CJEU to review Sweden's compliance with EU law through a preliminary ruling.

This article will examine the legal situation for Swedish wolves and analyse to what extent EU law prevents a Member State from evading judicial review of its application of EU environmental law.

Background

Decisions on licensed hunting 2009–2010 and 2013–2014

Wolves are listed in Annex IV of the Habitats Directive (92/43/EEC) and are therefore strictly protected according to its Article 12. Derogation from strict protection may only be made according to the requirements set out in Article 16.1. First, there must be no satisfactory alternative, and derogation must not be detrimental to the maintenance of populations of the species at fa-

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vourable conservation status (FCS). Additionally, one of five enumerated additional conditions must be met. The fifth of these, lettered e, is a catch-all provision worded as follows:

> to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species listed in Annex IV in limited numbers specified by the competent national authorities.

It is under this last provision, as implemented in Swedish hunting law, that licensed hunting is allowed in Sweden. The Swedish environmental protection agency (SEPA) authorized hunting seasons both in early 2010 and again in early 2011 with a bag limit of 27 and 20 wolves respectively. Several environmental ENGOs appealed these decisions; however, the appeals were thrown out because the organisations were found not to have standing under Swedish law. The European Commission also objected, initiating an infringement proceeding against Sweden in January of 2011 on the grounds that the licensed hunting allowed by SEPA was neither sufficiently selective nor limited.[1] As a result of the Commission's action, no hunting season was held in 2012.

However, the pressure from the farmers' and hunters' organisations increased and despite the Commission's warnings, SEPA decided to allow a hunting season in early 2013, with a bag limit of 16 wolves. But in the meantime, CJEU's judgement in the Slovak Brown Bear case had begun to influence the jurisprudence of the Swedish administrative courts concerning hunting decisions. In that case, the CJEU ruled that national courts must, to the extent possible, interpret national procedural rules in such way so as to allow ENGOs standing to appeal national implementation of EU environmental laws.[2] In the summer of 2012, Sweden's Supreme Administrative Court confirmed that the national standing laws must be interpreted to allow public interest lawsuits challenging administrative decisions made under hunting legislation if the same criteria for ENGO standing to appeal decisions made under Environmental Code are met: the association must have nature or environmental protection as its primary purpose, as well as be non-profit, have at least 100 members or otherwise be able to show that it has "support from the public", and have been active in Sweden for at least three years.[3] Thus, when SEPA decided to allow licensed hunting in 2013, the ENGOs were able to appeal. The Stockholm Administrative Court of Appeals granted an injunction, and later ruled that – as the Commission had earlier argued in its reasoned opinion – the hunt was neither sufficiently selective nor limited to meet the requirements of the Habitats Directive's narrow derogation allowances of Article 16.1(e).[4]

In the month following the administrative court's decision, June of 2013, a letter from a number of the researchers at Skandulv – the Scandinavian wolf research project – claimed that the Scandinavian wolf population had reached FCS. This conclusion was based on the claim that the number of wolves was estimated to have reached 300 in Sweden and 30 in Norway, and that their genetic status had been improved by the successful relocation of one pair of wolves from the north of Sweden to central part of the country. The Government concluded that FCS was in-

[1] Reasoned opinion about the wolf hunt, European Commission 2011-06-17, case No 2010/4200, see www.jandarpo.se/Övrigt material, however only available in Swedish.

[2] C-240/09 *Slovak Brown Bear* (2011), p. 51.

[3] The *Kynna wolf case*; Supreme Administrative Court, decision 2012-06-28 in case No 2687-12 and Stockholm Administrative Court of Appeal, judgment 2013-02-07 in case No 4390-12).

[4] Stockholm Administrative Court of Appeal, decision 2013-02-06 in case No 746-13 and judgment 2014-11-14 in case No 3273-13.

deed reached, and that a favourable reference population value (FRP) for the wolf should be set between 170 and 270 wolves. SEPA exercised its discretion to set the FRP within that range, choosing the maximum of 270 wolves, which was reported to the Commission in the end of the year according to Article 17 of the Habitats Directive.[5] Thereafter, SEPA authorized a hunting season with a bag limit of 30 wolves to begin in February 2014. This hunt was to be "limited and controlled" and targeted at reducing the wolf population in those counties that had the most wolves. SEPA's decision allowed the affected counties to decide in which wolf territories hunting would take place, with the restriction that particularly genetically valuable wolves should not be killed. According to SEPA, the licensed hunting season would contribute to the general public's increased tolerance for wolves and other carnivores, thus benefiting the affected species. Environmental organizations balked at this explanation and once again appealed the hunting decision. The Stockholm Administrative Court granted an injunction, effectively putting an end to the 2014 hunting season before it began. Its judgement came in the end of the year, confirming that the hunt was in breach with the Habitats Directive.[6] The court did not agree with SEPA that the directive allows for measures aiming at "lowering the density of the wolf population", but accepted the aim "reduce the socio-economic consequences" of the existence of wolves. However, it did not find that the licensed hunt was a useful means of obtaining such an effect, nor did it find any good reasons for why the chosen wolf territories were suitable for that purpose. In addition, the court argued that a hunting bag limit of 30 animals could not be regarded as "a limited number". Accordingly, SEPA's decision was found disproportionate in relation to its stated aim and was quashed.

The 2015 licensed hunting season

Unsurprisingly, farming and hunting organizations opposed the courts' new ability to injunct and annul hunting decisions that did not comply with EU law, decrying the court's actions as a "circus" and threat to democracy. More surprisingly, the Government – with the support from a majority in the Parliament – also reacted against ENGO standing with a proposal that made hunting decisions non-appealable in court. This proposal would move decision-making authority from SEPA to the country administrative boards (CABs). Under Swedish law, decisions made by CABs are appealable only to SEPA, but no further, whereas decisions originally made by SEPA can be appealed to the administrative courts. In response, the Commission opened a second infringement proceeding against Sweden in July of 2014, arguing that a system in which hunting decisions cannot be appealed in court contravened both the Aarhus Convention and the principle of useful effect (*effet utile*) with regards to the Habitats Directive.[7]

The Swedish Government nevertheless decided to go forward with its plan to delegate responsibility for hunting decisions to the CABs. In October, SEPA released its new national management plan for wolves for 2014–2019. This plan divided Sweden into three administrative districts. Within the central administrative district, which hosts the majority of Sweden's wolves, hunting

[5] One year earlier, in the fall of 2012, SEPA reported 380 animals as FRP to the Commission, to which the Minister of the Environment, Lena Ek, immediately responded in media that a number of 180 was sufficient.

[6] Stockholms Administrative Court, judgement 2014-12-23 in the cases No 30966-13 and 598-14.

[7] Formal notice about judicial review of hunting decisions, European Commission 2014-07-01, case No 2014/2178, see www.jandarpo.se /Övrigt material, however only available in Swedish.

decisions would be made by the CABs.[8] Each county would decide how many wolves could be killed, so long as the decision complied with the Swedish hunting regulation.

Three CABs approved licensed hunting seasons to begin early 2015. The first two of these, Värmland and Örebro, allowed for bag limits of 24 and 12 wolves, respectively. As required by the hunting regulation, they enumerated justifications for their decisions, which included protecting livestock and elk, and enabling the Swedish tradition of using off-leash hunting dogs. They also noted the potential for improving the public attitude towards wolves themselves, as SEPA had previously argued. They further argued that hunting was the most appropriate solution, because moving the wolves away from human inhabited areas would be prohibitively expensive. A third county, Dalarna, authorized the hunting of 8 wolves, using the justification that wolves in the vicinity of inhabited areas caused unease, and thus were a threat to public health (as permitted by Article 16.1(c) of the Habitats Directive). However, this decision was rejected by SEPA on appeal. Dalarna issued a new decision, again permitting the hunting of 8 wolves, this time mirroring the justifications used by the other CABs.

The decisions from Värmland, Örebro and Dalarna were appealed by the ENGOs to SEPA. As the decisions complied with the national wolf plan, SEPA affirmed them. Despite the ban on appeals, the ENGOs challenged SEPAs decisions at the administrative court. The Karlstad Administrative Court injuncted the decisions, as it found it doubtful that the ban was in line with EU law. The Värmland and Örebro CABs and the hunters' associations appealed to the Göteborg Administrative Court of Appeals, which accepted the ban on judicial review of hunting decisions on the grounds that "there does not exist any EU law principle that goes beyond what is granted the public concerned according to the Aarhus Convention".[9] This decision was in turn appealed by the ENGOs to the Supreme Administrative Court, which granted leave to appeal on the question of whether the ban is in breach with EU law. However, the court did not injunct the hunt and, by the end of January, a total of 42 wolves were shot in the three counties. This is significantly more than in any year prior.

Controversial issues

Licensed hunting under Article 16.1(e) Habitats Directive

The Swedish hunting regulation's provisions regarding under what conditions licensed hunting may be allowed are based on the Habitat Directive's Article 16.1(e) and state that licensed hunting may be allowed if there is no other satisfactory solution and it will not be detrimental to the maintenance of the species' conservation status. Further, the hunt must be appropriate, considering the population's size and composition, and must proceed selectively and under strictly controlled conditions.[10]

The question whether licensed hunting is allowed under Article 16.1(e) has proved controversial in many countries with a substantial wolf population, not least in those Member States where the species is rather recently re-established. We have debated this issue in other articles and will not develop it further here.[11]

[8] Nationell förvaltningsplan för varg. Förvaltningsperioden 2014–2019 (December 2014).

[9] Göteborg Administrative Court of Appeals, judgement 2015-01-15 in cases No 129-15 and 130/15.

[10] Hunting Regulation 1987:905 sections 23c and 23d.

[11] See Darpö, J: *Brussels Advocates Swedish Grey Wolves.* (SIEPS Policy Analysis 2011:8) and Epstein, Y & Darpö, J: *The Wild Has No Words* (JEEPL 2013 p. 250), both available on www.jandarpo.se/In English. See also Epstein, Y: *Population-Based Species Management across Legal Boundaries: The Bern Convention, Habitats Directive, and the Gray Wolf*

Some short remarks are nevertheless useful. The Swedish debate on licensed hunting has largely focused on how many wolves there are in Sweden. However, genetic considerations may be even more important. Until 2013, there had been a common understanding that the wolf population had not reached FCS according to the Habitats Directive. The main reason for this was that the population was quite inbred due to a lack of connectivity with neighbouring populations. In the fall of 2013, the Government, relying on the aforementioned Skandulv letter, announced that the population had reached FCS. It's beyond our area of expertise to enter into this discussion about the genetic status of the wolf population, but it should be noted that the Skandulv letter has been called into question by others in the scientific community. Among other objections, it was criticized on the grounds that Skandulv's conclusions were based on the assumptions that migrant wolves that had not reproduced in Sweden would do so and thus contribute to genetic diversity in the Scandinavian wolf population. Further, Skandulv's report discussed what numbers of migrant wolves and total population were needed to maintain a population that was already at FCS, not those needed to reach FCS. The most recent evaluation from SEPA found that the Scandinavian wolf population needs at least 2,5 immigrants per five-year period (a wolf generation) and a total of 270 wolves in order to reach and maintain FCS. We are currently not even close to the necessary immigration rate.[12] Therefore, the key issue when considering whether FCS is reached is the genetic status of the wolf population rather than the number of animals in Scandinavia.

As noted, the Swedish regulation on licensed hunting largely mirrors the wording of Article 16.1(e), with one significant exception. Instead of "limited extent" and "limited numbers", it uses the term "appropriate, considering the population's size and composition". One can therefore question the formal implementation of that provision of the Habitats Directive, especially as it pertains to derogation from a strict protection scheme which must be interpreted narrowly.[13] Even so, the controversy mainly concerns when derogation from strict protection is actually allowed. Licensed hunting in Sweden is essentially a type of management hunting, which is often considered not to be allowed for species that are strictly protected under the Habitats Directive, rather this is regarded as something that can only be done to Annex V species according to Article 14. The legal basis for licensed hunting of wolves in Sweden can therefore be regarded as weak. Indeed, support for the position that management hunting of strictly protected species may be allowed in limited circumstances can nevertheless be found in the guidelines of the network Large Carnivores Initiative of Europe (LCIE) from 2008.[14] However, although it is true that those guidelines constitute "best practices" on a general level according to the EU Commission,[15] this cannot be said about everything that is written in the document. The LCIE guidelines are often referenced in the wolf debate as they suggest the possibility of management hunting of strictly

in Scandinavia. (Georgetown International Environmental Law Review 25:4 2013 p. 549).

[12] This assumption is made in the national wolf plan and is based on a report from Michael Bruford, professor of ecology at Cardiff School of Biosciences. If the number of wolves in the Scandinavian population is instead 370 wolves, the rate of immigration of 1 animal per wolf generation suffices.

[13] C-342/05 *Finnish wolf case*, p. 25.

[14] Guidelines for Population Level Management Plans for Large Camivores in Europe. A Large Camivore Initiative for Europe report prepared for the European Commission. Ed. Linell & Salvatori & Boitani L. Final version July 2008, see pages 28 and 31.

[15] European Commission, Note to the Guidelines for population level management plans for large carnivores (2008).

protected species, irrespective of whether FCS of the population is reached or not. However, from a legal perspective, there are also strong arguments for the opposite position, i.e. that management hunting is not allowed for strictly protected species, especially if the population does not have FCS.

One argument for this opposite conclusion is that the Commission has not followed LCIEs guidance in this respect in its infringement case against Sweden, despite the active involvement of the network in the case.[16] Another is the fact that SEPA's hunting decisions for 2013 and 2014, which were expressly based on the LCIE guidance, all were quashed by the Swedish administrative courts. In doing so, the Stockholm Administrative Court of Appeals explicitly questioned whether management hunting was acceptable for a strictly protected species. Furthermore, the CJEU, which is of course the ultimate interpreter of EU law, has not yet announced its position on the matter. This is vital to note in any sound legal analysis, as guidance documents and even decisions from the Commission are only "soft instruments" of EU law and can never replace the statements from the court in Luxembourg.[17] It would not be very surprising, however, if the CJEU disallowed management hunting of strictly protected species outright, as such hunting counters the general scheme and purpose of the Habitats Directive. The fear that the CJEU would reach this conclusion is probably one of the main reasons why the Swedish authorities who currently authorize such hunting – both SEPA and the CABs – are opposed to the idea of the national courts seeking a preliminary ruling on the matter. A Swedish court may nevertheless refer the question to the CJEU, as the judgement from the Stockholm Administrative Court to quash the 2014 licensed hunt has been appealed by the SEPA. Although the Administrative Court of Appeals is not legally obliged to ask for a preliminary ruling, they still have the opportunity, and the resulting legal certainty would surely be welcomed by all who are currently grappling with this issue. It is, however, more probable that such a request will be made from our neighbours in the east. In the beginning of 2015, Finland held a licensed hunt of 17 wolves, out of a population of half the size of the Swedish.[18] In contrast with our system, those decisions are appealable to the administrative courts and some cases have already been processed in the first instances. As the Finnish system for judicial review is so much faster than the Swedish, the Supreme Administrative Court in Helsinki will soon have to take a stand on whether licensed hunting of a strictly protected species is allowed under Article 16.1 of the Habitats Directive. If the answer is not clear, they are, in contrast with Stockholm Administrative Court of Appeals, obliged according to Article 267 TFEU to ask for a preliminary ruling from the CJEU.

Access to justice and the Aarhus Convention

Both Sweden and the EU are signatories to the Aarhus Convention. This convention aims to improve the democratic legitimacy of decision-

[16] The chair of the LCIE, Luigi Boitani, wrote to the Swedish Government in December 2010 and February 2011, expressing his support for the licensed hunt, as it could be based on all of the derogation grounds in Article 16.1. At that time, the network did not have any member with a legal background.

[17] This is something that also the Commission emphasizes in different communications, see for example reasoned opinion 2011-10-28 in infringement case No 2006/4643 against Sweden concerning the implementation of the Water Framework Directive (paras 32–33, 38, 52, 54, 57 and 64). Here, the Commission states that its own guidelines can only contribute to the understanding of an EU law provision when it is not possible to reach a conclusion about its purpose through literal, historic or systematic interpretations.

[18] A quota of 29 wolves was set by the Government, whereafter the Finnish Wildlife Centre awarded permits for 24 wolves and 17 were shot.

making in environmental matters through providing access to information about environmental issues, the opportunity to participate in the decision-making itself and access to legal procedures to appeal decisions concerning the environment. The Convention's provisions on access to legal remedies are contained in its Article 9. According to Article 9.2, the public concerned has a right to appeal permitting decisions for certain larger activities, which are listed in an appendix, as well as other activities that have a "significant effect" on the environment. Further, Article 9.3 states that members of the public must be able to challenge acts or omissions of public authorities and private persons that violate national environmental laws, either in court or in administrative proceedings. Article 9.4 requires that legal remedies must be adequate, effective, fair, equitable, timely and not prohibitively expensive.

In its formal notice from July 2014, the Commission argued that a system in which hunting decisions cannot be appealed to a court violates Article 9.3 of the Aarhus Convention. The Government disputed the Commission's claims, responding that the system of decision-making by the CABs with the possibility of appeal to SEPA meets the requirement to provide a system for appeals because both were independent administrative bodies. Thus, according to the Government, litigants have the equivalent opportunity to get an independent review as they would have if they were able to appeal to an administrative court.

In our view, the commission's argument that Sweden is in violation of the Aarhus Convention fails. Article 9.3 of the Aarhus Convention requires that the public "have access to administrative or judicial proceedings to challenge acts and omissions by private persons and public authorities which contravene provisions of its national law relating to the environment". Thus, Article 9.3 expressly mentions *administrative appeal* as a sufficient remedy. Although there is an effectiveness criterion in Article 9.4 which is relevant, the ability to appeal to SEPA probably meets those requirements. It may seem odd that an authority both issues guidelines to subordinate authorities on how to apply the law, and reviews the decisions made by those authorities according to those guidelines. However, this is quite common within Swedish environmental law and hardly anything that makes the system incompatible with the Aarhus Convention. The public concerned do have access to justice rights to make an administrative appeal; ENGOs have standing to seek review by SEPA in accordance with the case law of the Supreme Administrative Court and CJEU. The appeals procedure is reformatory, meaning that SEPA rules on the merits of the case and is free to make any new decision it finds suitable according to the law. The procedure is also effective in that the appeals body can injunct any hunting decision if it finds reason to do so. And even if one can question the formal independence of SEPA as an authority under the Government – the constitutional guarantees for this are confined to decisions concerning the exercise of authority against individuals and the application of law, not regulations[19] – it is firmly rooted in Swedish administrative traditions that the Government should not intervene in the authorities' decision-making in individual cases.

Further, there is nothing in the decisions of the Aarhus Convention's Compliance Committee that indicates that the Swedish system of administrative appeal is not in line with Article 9.3. The Committee has not so far expressly dealt with this issue, but its reasoning in other access to justice cases does not lead to a contrary conclusion. Most of the cases concern standing rights,

[19] Chapter 12, section 2 of the Swedish Constitution, regeringsformen (2011:109).

and here the Committee has stated that the Convention does not require "actio popularis", but it must not be impossible for the public concerned to challenge administrative decisions and omissions.[20] Also, the scope of the review on appeal shall include both the formal and the substantive legality of all kinds of decisions according to both national and EU law.[21] With regards to Article 9.4, the Committee has stated that the requirement about independence and impartiality also is relevant in administrative appeals. In addition, it is vital that the appeals body can actually stop the challenged decisions from taking effect. This criterion is one of the reasons for why a Parliamentary Ombudsman often fails to meet the requirements of Articles 9.3 and 9.4, as his or her power commonly is restricted to disciplinary actions in the aftermath of decision-making procedures.[22] Furthermore, the Compliance Committee has emphasized that the appeals procedures should not be too lengthy and that there should be an equality of arms between the parties.[23] In some situations, the latter cannot be said about the appeals procedure for hunting decisions, as persons who carry a "civil right or obligation" according to ECHR always can go to court according to general administrative law principles in Sweden. However, this kind of "inequality of arms" can only occur in specific situations when the authorities decide on protective hunting, and never concerning licensed hunting.[24]

So, if we only were to discuss national procedural law on the environment and the Aarhus Convention, we could probably put an end to the analysis here, concluding once again that "trees do not have standing", at least not in Sweden.[25] We argue, however, that Sweden's closed system of decision-making, which does not allow for review of its implementation of EU law by the EU courts, violates the principle of effectiveness. The ineffectiveness of this system is apparent: the Parliament decides that the wolf population in Scandinavia has reached FCS and sets a limit for the total population size at 170–270 animals. Based on this decision, the Government orders SEPA to draw up a national wolf management plan, a task which SEPA is obliged to fulfil. The power to decide on licensed hunting is given to the CABs, within the boundaries set by the Parliament and the Government's decision. Any decision from the CABs which is in line with the national wolf plan is confirmed on appeal by the SEPA. This could be described as a system without any legal flaws, if it were not for the fact that the original decision by the Parliament is highly questionable from the perspective of EU law. Thus, the system is impotent in that sense that it does not allow any redress for breaches of the Habitats Directive. Therefore, we must continue our analysis. The result is of importance not only to the future of wolves in Sweden, but, importantly, to understanding the relationship between the EU and its Member States.

[20] Se for example *C/2005/11 (Belgium)*, paras 35–37, *C/2006/18 (Denmark)*, paras 29–31, *C/2011/63 (Austria)*, para 51, also *The Aarhus Convention – An Implementation Guide*. UN/UNECE, 2nd ed. 2013, p. 206.

[21] *C/2010/48 (Austria)*, para 66, *C/2008/33 (United Kingdom)*, para124, *C/2011/63 (Austria)*, paras 52–53, also *Implementation Guide*, p. 207. It is worth noting that in this context, "national law" means both Member State law and EU law on the environment, see *C/2008/18 (Denmark)*, para 59, reiterated in the Report 2008-05-22 to the 3rd Meeting of the Parties (ECE/MP.PP/2008/5. para 65).

[22] Se e.g. *C/2011/63 (Austria)*, paras 58–61, also *Implementation Guide* p. 209f.

[23] See *Implementation Guide*, p. 209ff.

[24] If a Sami village applies for protective hunt on a brown bear which prey on their reindeers, this surely concerns the village's civil ECHR rights, therefore the authority's rejection of the application can be challenged in administrative court (Section 3 of the Administrative Procedure Act, 1986:223).

[25] See Darpö, J: *Biological Diversity and the Public Interest.* From de Lege 2009 (Yearbook of the Faculty of Law, Uppsala Universitet), p. 201.

Access to Justice under EU law

Strict protection according to Article 12 of the Habitats Directive clearly has direct effect under EU law. This means that the requirements in that provision have precedence to Member States' laws and that national authorities and courts are obliged to set aside – "disapply" – conflicting rules. This state of affairs is self-evident for most lawyers concerning free movement of goods and services, labour law, social security, and other areas where there are distinct bearers of the rights that are expressed in EU law. However, acknowledgement of direct effect in matters pertaining to environmental law, which often concerns "diffuse" interests, has occurred somewhat more slowly, at least on the Member State level. This is despite the fact that the CJEU has clarified in its jurisprudence that environmental provisions of EU law can also have direct effect.[26] Many of these cases were brought not by individuals, but ENGOs.[27] The final confirmation that these organisation are rights bearers with respect to EU environmental law came in C-115/09 *Trianel*, in which CJEU states in paragraph 48 (our italics):

> It follows more generally that the last sentence of the third paragraph of Article 10a of Directive 85/337 must be read as meaning that the 'rights capable of being impaired' which the environmental protection organisations are supposed to enjoy *must necessarily include the rules of national law implementing EU environment law and the rules of EU environment law having direct effect*.

ENGOs may thus represent the environmental interest, not only if EU law provisions have been implemented in national legislation, but also when they have direct effect. Whether this also leads to the conclusion that ENGOs should have standing in national courts is – in our view – a somewhat different issue, which relates more closely to the principle of legal protection under EU law, or the "useful effect" (*effet utile*) of the provisions in question.

The development of case law concerning access to justice in environmental matters in the Union has been rapid since accession to the Aarhus Convention. In a series of judgements, CJEU has clarified that ENGOs should have the ability to challenge the authorities' actions and omissions concerning the environment.[28] However, most of these cases concern Article 9.2 of the Aarhus Convention. When it comes to Article 9.3, there is a limit to the impact of the Convention in EU law, expressed in the C-240/09 *Slovak Brown Bear* case. Here, CJEU made clear that it is a Union law obligation for the national courts to interpret "to the fullest extent possible" the national standing rules in order to enable ENGOs to challenge administrative decisions that may be in breach of EU environmental law. It should thus be noted that the national courts are not required to set aside procedural rules barring ENGO standing. In other words, Article 9.3 of the Aarhus Convention does not have direct effect. The extensive impact that the *Slovak Brown Bear* has had in the Member States can instead be explained from the fact that most legal systems use "open provisions" or mere jurisprudence when defining the public concerned and its standing rights. In many situations, it is therefore possible for the national courts to use the "so as to enable" formula in order to grant standing. In fact, this was what happened in the Swedish courts after 2012

[26] See Darpö, J: *Article 9.2 of the Aarhus Convention and EU law. Some remarks on CJEUs case law on access to justice in environmental decision-making*. JEEPL 2014 p. 367.

[27] For example C-44/95 *Lappel Bank (RSPB v. UK)*, C-435/97 *WWF*, C-165-167/09 *Stichting Natuur en Milieu*.

[28] See the case law data base of the Task Force on Access on Justice under the Aarhus Convention, http://www.unece.org/env/pp/tfaj/jurisprudenceplatform.html.

when the ENGOs challenged the hunting decisions.[29] However, this formula has no effect on provisions which are "closed", such as Section 58 of the Hunting Regulation, which expressly says that there is no appeal from SEPA's decisions. One cannot interpret those words as meaning that there may be standing to appeal to court, quite the contrary.

We therefore have, on the one hand, strict rules on the protection of species at the Union level which have direct effect in the Member States, and, on the other, a national standing rule that bars ENGOs from challenging administrative decisions applying those provisions. Of course one can argue that in this situation the impact of EU law in the Member State depends upon whether the national procedural law allows for such an action or not. In our view, this does not hold true, especially if one considers CJEU's past jurisprudence on access to justice in environmental decision-making. One can just imagine what the court would say about a legal order where the legislature in a Member State has actively barred ENGO standing with the aim of preventing the national courts from invalidating decisions that violate EU law. In our view, this amounts to an "inverted detective story", where you know the answer from the beginning, but the thrilling part is to discover the road leading up to it. We think the solution lies in the principle of effective legal protection under EU law, as expressed in Article 19 TEU.

The principle of effective judicial protection

To begin with, it should be emphasized that the Union does not generally concern itself with the administrative method by which the Member States choose to implement EU law. Brussels would probably react only if it can be showed that the competent authorities do not have the means or competence to fulfil the common obligations.[30] Accordingly, that the Swedish government delegates the power to decide on licensed hunting to the CABs is relatively uncontroversial.

Instead, the discussion concerns whether the principle of useful effect in relation to strict protection under the Habitats Directive requires that derogation decisions can be brought to national courts. Here we have a conflict between the procedural autonomy of the Member States and the principle of legal protection of EU law. Surely, one can imagine that provisions with direct effect may not have impact in certain situations, but the limits are set by, first, the principle of equivalence and, second, the principle of effectiveness.[31] The meaning of the last principle was elaborated upon by Advocate General Sharpston in her opinion in C-263/08 *DLV* (our italics):[32]

> Finally, I add that, in my view, the result would have been the same had there not been a specific provision such as Article 9 of the Aarhus Convention or Article 10a of Directive 85/337, as amended. The case-law of the Court contains numerous statements to the effect that Member States cannot lay down procedural rules which render impossible the exercise of the rights conferred by Community law. Directive 85/337, which introduces a system of environmental assess-

[29] The Supreme Administrative Court has even expanded this attitude to situations which only involves national environmental law, such as forestry. See the Änok case in the data base of the Task Force on Access to Justice, mentioned in footnote 28.

[30] This can be illustrated by C-301/12 *Cascina di Prini* (2014), see para 43.

[31] See e.g. C-201/02 *Delena Wells* (2004), para 67 or C-240/09 *Slovak Brown Bear* (2011), para 48.

[32] C-263/08 *DLV* (Celex 62002CC0201), para 80. Sharpston referred to the cases C-430/93 and C-431/93 *Van Schijndel and van Veen*, para17, C-129/00 *Commission v. Italy*, para 25, C-432/05 *Unibet*, para 43 and C-222/05–C-225/05 *van der Weerd*, among others. Statements like these can also be found in other cases concerning EU law on the environment, e.g. C-416/10 *Križan* (2013), para 85.

> ment and confers rights, *would be stripped of its effectiveness if the domestic procedural system failed to ensure access to the courts*. The present case is clear proof that, given that access to justice is made impossible for virtually all environmental organisations, such a measure would fall foul of the Community law principle of effectiveness.

Thus, according to Sharpston, the public concerned has a right to go to court, irrespective of whether or not there is such a possibility expressed in EU secondary law. Today, this principle can be inferred from the second subparagraph of Article 19(1) TEU, stating that Member States shall provide remedies sufficient to ensure effective legal protection in the fields covered by Union law. This provision was introduced with the Lisbon treaty in order to underline the importance of domestic judicial remedies.[33] In this context, it should be noted that Article 19 TEU does not – in contrast to Article 47 of the European Charter – mention "rights", just effective remedies. So even without far-reaching redefinitions of what constitutes such rights, we can safely presume that the principle of effective judicial protection is based on EU primary law. When EU environmental laws are implicated, CJEU's statement about ENGOs as rights bearers can be added, as this, in our view, is generally applicable. This means that the Member States must provide ENGOs with the ability to challenge administrative decisions and omissions concerning provisions of EU law, be they nationally implemented or having direct effect. This conclusion is also in line with the general development of CJEU's environmental jurisprudence, as well as the general system of EU law. A contrary approach would lead to a situation in which legal provisions with direct effect would be "hanging in the air", largely dependent upon whether the Member States provide effective remedies. Moreover, the reasons given in other situations against the primacy of EU law, e.g. the principle of legal certainty, are not relevant concerning access to justice possibilities. Despite what sometimes is said in the Swedish wolf debate, the substance of law is evidently not impacted by the fact that an administrative decision can be reviewed by the national courts.[34] In sum, we consider it quite unlikely that CJEU will accept Sweden's attempt to dodge judicial review.

The request for preliminary ruling as a keystone of the judicial system

There is yet another reason for why the CJEU will most probably strike down a legal order in which administrative decisions relating to EU law cannot be challenged in court. The distribution of responsibility between CJEU and the national courts requires that citizens have the ability to go to the latter in order to challenge decisions and omissions under EU law. Only in very particular circumstances will the citizens be able to go directly to CJEU according to Article 263(4) TFEU. This system presupposes that the national courts can request a preliminary ruling from the CJEU, being the main road for those who are concerned by EU law to test its validity and to challenge decisions taken under it. This is not the place for discussing access to justice in environmental matters by way of direct action in CJEU, but the

[33] See Brakeland, JF: *Access to justice in environmental matters – development at EU level*. The article is published in Gyoseiho-kenkyu, 2014, No 5, an anthology of contributions at the conference Towards an effective guarantee of green access, held at Osaka University in Japan in March 2013. All contributions in the anthology are in Japanese, although Brakeland's article is also available in English on the link http://greenaccess.law.osaka-u.ac.jp/wp-content/uploads/2014/05/arten-brakelandup.pdf See also Jans, JH & Vedder, HHB: *European Environmental Law*. Europa Law Publishing, 4th ed. 2012, p. 183.

[34] For an interesting discussion along these lines, see C-72/12 *Altrip* (2013), paras 21–31.

stinginess from the court in that respect – recently illustrated by the joined cases C-401/12 P to C-403/12 P *Vereiniging Milieudefensie et al* (2015) – can at least partly be explained from the Court's emphasis on national remedies.[35] CJEU has consistently held that one must regard the EU legal order as a complete system of remedies and procedures designed to ensure judicial review of the legality of Union acts, taking into account both direct action in accordance with Articles 263 and 277 on the one hand, and indirect action actions according to Article 267 on the other.[36] The Article 267 proceedings have also been described as a "keystone" in the judicial system by setting up a dialogue between CJEU and the courts of the Member States with the object of securing uniform interpretation of EU law, thereby serving to ensure its consistency and full effect.[37]

In the Swedish wolf debate, the judgements in the Dutch cases mentioned above were presented as something very new and clearly showing that EU law does not require access to courts. Our conclusion is quite the contrary; these judgements only repeat what was said in the *Slovak Brown Bear* – that Article 9.3 of the Aarhus Convention does not have direct effect – as well as illustrate the Janus face of CJEU, stressing that the Member States must provide the public concerned with access to the national courts.

However, in order to make the legal system of the EU work, those national bodies which constitute the final instance of review must be accepted as courts or tribunals according to Article 267 TFEU. Without going very deep into this question, we can safely assume that SEPA will not be regarded as such a body. The Swedish tradition of very independent authorities is quite uncommon in most other Member States and from a Union perspective, national agencies are regarded as parts of the government. Furthermore, in our view, when SEPA decides cases on appeal, it clearly does not meet the criteria of being a permanent body with members who are protected against external intervention or pressure liable to jeopardise their independence, or as CJEU phrases it:[38]

> Those guarantees of independence and impartiality require rules, particularly as regards the composition of the body and the appointment, length of service and the grounds for abstention, rejection and dismissal of its members, in order to dismiss any reasonable doubt in the minds of individuals as to the imperviousness of that body to external factors and its neutrality with respect to the interests before it (…). In order to consider the condition regarding the independence of the body making the reference as met, the case-law requires, inter alia, that dismissals of members of that body should be determined by express legislative provisions (…).

This case concerned whether the Danish Teleklagenævnet (Telecommunications Complaints Board) met the criteria of being a court or tribunal according to Article 267, which CJEU answered in the negative. As Teleklagenævnet is a specific appeals board which is regulated by law and has permanent members, it goes without saying that SEPA will also fail the test. Accordingly, SEPA

[35] See Bogojević, S: *Judicial Protection of individual applicants revisited: Access to Justice through the prism of judicial subsidiarity*. Yearbook of European Law 2015, p. 1.

[36] See for example C-362/06 P *Markku Sahlstedt* (2009), para 43, C-583/11 P *Inuit Tapiriit Kanatami* (2013), paras 90–106, C-274/12 P *Telefónica* (2013), paras 52–60.

[37] CJEU 2014-12-18; Opinion 2/13 on whether the EU's accession of the European Convention of Human Rights would be compatible with Treaties (ECLI:EU:C:2014:2454), para 176.

[38] C-222/13 *Teleklagenævnet* (2014), para 32, see also C-522/C-506/04 *Wilson* (2009), para 53 and Joined cases C-464/13 and C-465/13 *Europäische Schule München* (2015), para 72.

will not be allowed to ask for a preliminary ruling from the CJEU. Therefore, a basic ingredient in the system of effective legal protection according to Article 19(1) TEU is lacking as the system is closed off from the influence of CJEU.[39] In our view, it is very unlikely that CJEU will accept such a legal order, particularly when it governs one of the core obligations of the Union's environmental law, that is, the protection of species. Finally, one can also wonder if even the Swedish government would appreciate a system in which SEPA would be accepted as an Article 267 body, as it would trigger an obligation for the agency to ask for preliminary rulings, being the final instance on appeal.

Conclusions and final words

To conclude, we find that the procedural order for appealing wolf hunting decisions in Section 58 of the Swedish Hunting Regulation meets the requirements of Article 9.3 of the Aarhus Convention. On the other hand, the ban on appeals to a court most likely violates the principle of judicial protection and is therefore illegal under EU law. This finding can be based on Article 19(1) TEU, given the particular relevance concerning environmental decision-making through Article 9.3 of the Aarhus Convention. Surely, the lack of clarity in the matter at least requires the Supreme Administrative Court to seek a preliminary ruling from the CJEU. If that court does not choose to do so, there is, as always, the potential for the lower administrative courts to request a preliminary ruling under Article 267 in future cases concerning protective or licensed hunts. After all, this ability of the lower courts to challenge the Supreme Courts' standpoints on controversial issues has proved to be quite effective in the implementation of EU law in Sweden (cf C-142/05 *Mickelsson & Roos* and C-617/10 *Åkerberg Fransson*).

And finally, some words should be said about the politics of the wolf issue. In our view, it is difficult to understand the previous government's reasoning in introducing the ban on appeals. In 2013, after the ENGOs were granted standing in the wolf cases, the Commission seemed to suspend pursuing its infringement proceeding against Sweden, trusting the national courts to apply EU law. The Swedish government then changed its administrative procedure in order to make it impossible to seek judicial review in a national court. This attitude does not show any developed "Fingerspitzengefühl" for how the bureaucracy in Brussels works. Instead, the politicians seem to be untroubled by the fact that we now have two ongoing infringement cases concerning the wolf hunt, one on the substance and one on the lack of access to justice. Perhaps they have faith that the new commissioner Karmenu Vella from Malta will be more reluctant to act or that the upcoming evaluation of the Habitats Directive will lead to reformed provisions. They may be mistaken in both aspects. As for the first question, a renewed reasoned opinion about the licensed hunt in substance was issued from Brussels no more than two weeks ago.[40] The Commission now claims that Sweden has failed to show that the Scandinavian wolf population has FCS. Furthermore, by allowing a licensed hunt in 2010, 2011, 2013, 2014 and 2015, Sweden has established a systemic practice which infringes the Habitats Directive. In particular, the hunts failed to meet the requirements in Article 16(1)

[39] There are cases where CJEU has accepted such "closed" systems, but they concern very particular situations which are regulated by international agreements and where the competence of the Union is unclear (see Joined cases C-464/13 and C-465/13 *Europäische Schule München* (2015)).

[40] Additional reasoned opinion about the wolf hunt, European Commission 2015-06-19, case No 2010/4200, see www.jandarpo.se/Övrigt material, however only available in Swedish.

because no other satisfactory alternatives have been considered and the hunts have not been undertaken under strictly supervised conditions, on a selective basis and to a limited extent. Sweden has also failed to demonstrate that hunting would not threaten the growth of the local wolf population to reach a FCS.

The second assumption, that the EU may choose not to require the strict protection of wolves in the future, is based on a misunderstanding of the legal status of the Habitats Directive. This directive aims at implementing the EU's international obligations under the Bern Convention, which also requires the strict protection of wolves. Norway is also a party to the Bern Convention, but has not agreed to comply with the Habitats Directive. The Bern Convention is substantively quite similar to the Habitats Directive, but the situation for wolves in Sweden and Norway differs greatly. The difference lies in the fact that while we in Sweden have the Commission and the CJEU to oversee our compliance with international obligations, the Bern Convention lacks an effective compliance mechanism. Thus, no supranational body supervises Norwegian wolf management; this is the main reason for why there are 30 wolves in that country, to be compared with 320 in Sweden (50 live in the bordering area).

Be that as it may, the new Swedish government – the Social Democrats and the Green Party – has reached an agreement on the wolf issue. The availability of access to justice shall be investigated and a scientific evaluation shall – once again – be undertaken to determine the conservation status of the wolf population. It is too early to predict the result, but just some weeks ago, Skandulv – the research centre that has advocated the government's policy on licensed hunting from the beginning – was assigned to be one of the two research groups going through the scientific state-of-affairs of the Scandinavian wolf populations' conservation status, despite the protests from the ENGOs on the matter.[41] So, for now at least, there is nothing new under the sun in Sweden.

[41] The other group is led by the US-American ecology professor Scott Mills at College of Natural Resources at North Carolina State University.

The Setting of Progressive Energy Efficiency Performance Standards for Products through the Ecodesign Directive

*Carl Dalhammar**

Abstract

The European Union (EU) sets mandatory energy efficiency standards for appliances and other energy-relevant products through the Ecodesign Directive. The standards set so far have improved energy efficiency in a very cost-effective way. The main aim of the Directive is to remove the worst performing products from the market. There is a discussion on the potential to set more progressive legal standards in order to more rapidly improve the energy efficiency of products, or even induce 'technology forcing', which can be defined as standards requiring technology that goes beyond what is currently available on the market. This contribution examines different legal design options to set progressive energy standards and discusses the advantages and drawbacks with applying stricter standard-setting. The European ecodesign standards for vacuum cleaners are analyzed as they provide a recent example of standards with elements of technology forcing.

Keywords: Energy efficiency, eco-design, MEPS, eco-design directive, technology forcing

1. Introduction

A number of policies and regulations have been introduced to deliver energy efficiency and reduced greenhouse gas emissions at the EU and national levels.[1] They include carbon and energy taxes, emission trading, green and white certificates, and energy labeling. One well-tested policy approach is the setting of mandatory standards for the energy efficiency of appliances, such as dishwashers, TVs, and electric motors. Such binding standards can be found in virtually all OECD countries, with the most progressive standards usually set in the United States (US), Japan, or the European Union (EU).[2] These regulations are usually referred to as minimum energy performance standards (hereafter MEPS).[3] Improved energy efficiency brings several benefits, such as industrial productivity, energy security, less air pollution, and reduced greenhouse gas emissions.[4] Several studies have indicated that binding standards for buildings, vehicles and products are the most cost effective policy options for quickly reducing energy use and the release of greenhouse gases;[5] in some cases stan-

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[1] National policies are required in order to reach the 20-20-20 targets; for a summary of member state targets see: http://ec.europa.eu/europe2020/pdf/targets_en.pdf [2015-03-20].

[2] For an overview see P. Waide, International comparisons of product policy, Report, 2013, Coolproducts: Brussels.

[3] MEPS can be defines as "*legally enforced thresholds for an individual product or group of products, set at a level to exclude a proportion of the worst performing products in the marketplace*", see M. Ellis, Experience with energy efficiency regulations for electrical equipment, Report, International Energy Agency, 2007, p. 18.

[4] International Energy Agency, Capturing the multiple benefits of energy efficiency, report, 2014.

[5] International Energy Agency, Energy technology perspectives, 2010; McKinsey & Company, Pathways to a low-carbon economy, 2009; J.Thema et al., The impact of electricity demand reduction policies on the EU-ETS: modelling electricity and carbon prices and the effect on

dards brings energy savings that are more or less "free" as it costs little for manufacturers to reduce energy consumption of appliances.[6] Pricing policies such as taxes and trading schemes are also important in the long term in order to reach energy and climate targets, but pricing policies will not lead to quick improvements in all sectors as they do not directly address various market barriers,[7] whereas energy efficiency standards quickly reduce energy use.[8] Sachs states that MEPS for products and fuel efficiency standards have been the main drivers for energy efficiency in the US so far: "*Although information disclosure, financial incentives, and other softer alternatives to regulation play a vital role in reducing energy demand, these should be viewed as complements to efficiency regulation, rather than replacements*."[9]

In the EU, binding energy efficiency standards are set through Regulations for specific product groups, which are adopted under the Ecodesign Directive.[10] Recent evaluations indicate that the Directive has reduced electricity use in a very cost effective way.[11] As the main life cycle impacts from most energy related products are related to energy needed during usage[12], setting mandatory energy efficiency standards can lead to significant energy savings (cf. section 2.1.2); according to some estimates the potential for reducing greenhouse gases under the Directive until 2020 is similar in scope to the savings under the EU-ETS.[13]

But MEPS may not greatly reduce the total energy use associated with use of appliances, due to so-called "rebound effects": as appliances become more energy efficient we can afford to use them more, or use the monetary savings to purchase other stuff.[14] Further, both the quantity and variety of products are increasing and the growth of single households increase the number of products per capita. Globally, the use of electricity for information and communications technology (ICT) and consumer electronics (CE) has been growing more than 7% annually since 1990 and many products also grow in size. Even taking into account foreseen significant energy efficiency improvements, electricity consumption by appliances is projected to increase by

industrial competitiveness, Energy Policy 60, 656–66, 2013.

6 B. Boardman, Achieving energy efficiency through product policy: the UK experience. Environmental Science and Policy 7(3), 2004, 165–76. Studies have established that the payback of energy efficiency programs is usually much greater than the investments, cf. Ellis supra note 3, p. 20–22

7 For a discussion on market barriers see C. Stenqvist, Industrial energy efficiency improvement – the role of policy and evaluation. Doctoral Dissertation, Lund University, 2013.

8 Cf. McKinsey & Company, supra n.5; J. Thema et al., supra n.5.

9 N. Sachs, Can We Regulate Our Way to Energy Efficiency? Product Standards as Climate Policy, 65 Vanderbilt Law Review, 2012, 1631–1678, p. 1633.

10 Directive 2009/125/EC of the European Parliament and of the Council 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, OJ 2009 L 298/10.

11 ECOFYS, Economic benefits of the EU Ecodesign Directive, Report, 2012; CSES/Oxford Research, Evaluation of the Ecodesign Directive, Final Report to the European Commission, 2012.

12 This is because electricity production – especially when based on the burning of fossil fuels – is often associated with substantial environmental impacts, such as air pollution and the release of greenhouse gases.

13 ECOFYS, supra n. 11, p. 5; European Commission, Less CO2: Ecodesign is as important as the Emissions Trading Scheme, available: http://ec.europa.eu/enterprise/magazine/articles/sustainable-industry-innovation/article_11045_en.htm [2015-06-01]. Note that a direct comparison is difficult as the scope of both pieces of law will change. The EU-ETS is currently not delivering to its potential because of several problems, for an overview see e.g. CarbonWatch, What's needed to fix the EU's carbon market?, Policy Brief, July 2014; S. van Renssen, Policy watch: Carbon market rescue, Nature Climate Change 5, 297–299, 2015.

14 It is estimated that rebound effects in the developed world will mean that at least 30 % of energy efficiency gains will be "swallowed" by increasing consumption. For an overview see J. Jenkins et al., Energy emergence: Rebound and backfire as emergent phenomena, Report, The Breakthrough Institute, 2011.

250% by 2030.[15] Since it is not politically acceptable to stop consumers from buying more and larger appliances, nor easy to curb current lifestyle trends, we may need to set even more stringent energy efficiency standards for appliances in order to curb the growing need for electricity. While the level of "progressiveness" of the current standards set vary between product groups, the main focus of standards set under the Ecodesign Directive so far have been to exclude the poorest performers from the market, and implicitly to trigger diffusion of better performing products. Therefore many researchers believe that there are opportunities to set stricter standards without increasing costs for manufacturers or consumers. Stricter standards, together with quicker updating of outdated standards, could lead to more rapid energy savings.[16]

But we face some problematic issues here. The Ecodesign Directive is not necessarily the best instrument to promote progressive standards; instead we could make use of other policies such as energy labeling, consumer subsidies and public procurement in order to promote the best performing products. Secondly, a relevant question is how more stringent can be set in practice. A most fundamental question is whether MEPS should be used to induce so-called 'technology forcing' – which can be defined as a regulatory standard that cannot be met with currently available technology?[17] Technology forcing has sometimes been successfully induced through environmental law,[18] but is quite controversial. Some researchers argue against the use of MEPS standards to induce technology forcing for appliances as they may act as a barrier for innovation.[19] Other studies conclude that technology forcing entail both promises and risks.[20]

The topic of MEPS and progressive standard setting has received very limited attention by legal scholars.[21] This contribution will therefore investigate the case for more progressive standard-setting under the Ecodesign Directive. *The issue is quite topical as recent research in both the EU and the US indicate that MEPS could be more progressive as the cost of energy efficient products decrease more rapidly than estimated;*[22] the costs for the most energy efficient products are reduced quite quickly, which means that more stringent standards would not be costly for consumers. More stringent MEPS can thus make both environmental and economic sense.

The next section outlines the main elements of the Ecodesign Directive, the estimated potentials savings, and the methods applied for standard-setting. This is followed by a discussion on the shortcomings of the directive in setting progressive standards, and potential ways to address these shortcomings. Section three outlines how binding standards could best interact with other instruments for energy efficiency in a policy mix, and provides examples of progressive stan-

[15] OECD/IEA, Energy Use in the New Millennium: Trends in IEA Countries, 2007, Paris; OECD/IEA, Gadgets and Gigawatts: Policies for Energy Efficient Electronics, 2009, Paris.

[16] CLASP, Estimating potential additional energy savings from upcoming revisions to existing regulations under the ecodesign and energy labelling directives: a contribution to the evidence base, Report, 2013; H.-P. Siderius, The role of experience curves for setting MEPS for appliances, Energy Policy 59, 2013, 762–772.

[17] D. Gerard and L. Lave, L., Experiments in technology forcing: comparing the regulatory processes of US automobile safety and emissions regulations, Int. J. Technology, Policy and Management, Vol. 7, 2007, 1–14, p. 1.

[18] Id.

[19] Sachs, supra note 9, p. 1665–1667.

[20] K. Lane, K. et al., The role of technology-forcing standards and innovation to dramatically accelerate product energy efficiency, Proceedings of the ECEEE 2013 Summer Study.

[21] An exemption is Sachs, supra n. 9. Sachs argues against technology forcing MEPS, and therefore does not elaborate on legal options for setting more stringent standards.

[22] Siderius 2013, supra n. 16; Van Buskirk, R. D. et al., A retrospective investigation of energy efficiency standards: policies may have accelerated long term declines in appliance costs, Env Research Letters 9(11), 2014.

dards and technology forcing in environmental product law. This is followed by a discussion on options for setting more progressive standards. The current media backlash against some MEPS is also discussed. Section four analyses the recently adopted ecodesign standards for vacuum cleaners to provide an example of how the issue of progressive standard-setting has been dealt with for a specific product group. The paper ends with some concluding remarks.

2. The Ecodesign Directive

2.1 Key elements of the directive

The Ecodesign Directive provides a framework for setting ecodesign requirements for energy-related products. Its initial scope included "energy-using" products, but this scope was extended to include all "energy-related" products in 2009. This means that not only energy-using products (TVs, dishwashers, boilers etc.) are within the scope of the Directive but also products such as windows, insulation material and water-using appliances. Vehicles are however excluded.[23] The Directive can in principle be used to regulate a vast number of life cycle aspects, but energy efficiency is the key focus. The directive was considered a necessary piece of regulation as other policy approaches (e.g. energy labels, eco-labels and consumer information) were not enough to encourage cost-efficient design solutions among producers.[24]

The main objective of the Directive is to ensure free movement on the Internal Market (i.e. within the EU) of products in compliance with the MEPS, and simultaneously contribute to energy security and climate mitigation.[25] The Directive is a so-called framework directive. It does not create binding requirements for products by itself but provides a framework, which allows for setting compulsory ecodesign requirements – so-called implementing measures (IMs) – for various product groups through Commission regulations (comitology). All manufacturers and importers that import or sell their products in the EU must comply with the rules. The actual requirements include the MEPS, but also include functional requirements, to ensure that all products are of sufficient quality. Voluntary undertakings (self-regulation) by industry are considered to be a valid alternative to mandatory MEPS under certain conditions.[26]

There are two types of mandatory product requirements, often referred to as "implementing measures" (IMs) (see Annexes I-II in the Directive):

1) *Specific requirements* set limit values for products, such as maximum energy consumption or water consumption during use. These are rather straightforward, although the process of measuring e.g. energy use may in practice be quite complicated;

2) *Generic requirements* do not set specific limit values. One example concerns mandatory information to consumers about how to use a product in an energy efficient way.

There are criteria for the development of implementing measures under the Directive (see Art. 15(5)). Set requirements should have no significant negative impacts on the functionality of the product and no adverse effects on health, safety and environment. Further, there should be no negative impact on users regarding the affordability of the product and its cost during its life cycle; no negative impact on competitiveness;

[23] Art. 1(3).

[24] Cf. Boardman supra note 6.

[25] The Directive is adopted under Art. 95 of the Treaty establishing the European Community [now Art. 114 in the TFEU]. Art. 6 of the Directive contains a free movement clause.

[26] Annex VIII.

no imposition of proprietary technology and no excessive administrative burden. While these criteria could in principle be very constraining for the possibility to set strict MEPS, it has been possible in practice to set MEPS for a wide array of product groups, and there have been no major legal battles over this issue.

Often requirements are set *in two tiers*: this means that a certain improvement of product performance must be in place by a certain date in the near future whereas a more stringent standard comes into force at a later date. This means that manufacturers have to improve product design in the short run, but have reasonable time to adjust to more stringent criteria. This is because manufacturers will need some time to undertake research and design, and adjust production; it is often costly to make design and production changes abruptly, whereas medium and long term changes can be aligned with product design cycles and investment decisions.

Standards are set through a complex legislative process.[27] A preparatory study with legislative proposals for each product group is performed by consultants, and discussed by various stakeholders. Legal proposals are usually changed several times before final MEPS are adopted.

2.1.1 Setting MEPS: MEErP and LLCC

When conducting preparatory studies consultants make use of the *Methodology for Ecodesign of Energy-related Products* (MEErP), a common methodology developed for performing life cycle assessments in the context of the Directive.[28] This involves a technical, environmental and economic analysis,[29] including: The selection a number of representative variants of the product; analyzing technical options for improving the environmental performance (conditions: economic viability, no significant loss of performance or usefulness for consumers); identify the best-performing products and technology available on the market. The consultants should also consider the performance of products available on international markets and benchmarks set in other countries' legislation. An impact assessment is always undertaken, with relevant calculations on issues such as energy saving potential and costs for industry.

Concerning energy consumption in use, the level of energy efficiency guiding MEPS is *the life-cycle cost minimum to end-users*, or 'least life cycle costs' (LLCC) for representative products; as stated in Art. 15 and the Annexes of the Directive. In Annex II it reads: "*Concerning energy consumption in use, the level of energy efficiency or consumption must be set aiming at the life cycle cost minimum to end-users for representative product models, taking into account the consequences on other environmental aspects.*" While life cycle costs may include disposal costs and other costs, in reality it is the 1) product purchase price and 2) the running electricity costs that are the main elements in the calculation, while other parameters may

[27] For more details about the process see C. Dalhammar, Promoting energy and resource efficiency though the Ecodesign Directive, Scandinavian Studies in Law Vol. 59, 147–179, p. 159–162.

[28] R. Kemna et al., MEErP 2011 Methodology Report: Methodology for Ecodesign of Energy-related Products: Final report prepared for the European Commission, 2011. The Directive also has rules on the methodology in Art. 15 and the annexes. The MEErP contains an EcoReport, a simplified MS Excel life cycle assessment (LCA) tool. It calculates impacts caused by a product during different phases of its life-cycle, i.e. production, use, and end-of-life. The required inputs for the EcoReport are a Bill of Material (BOM), energy consumption data, and economic data. The EcoReport delivers environmental impact indicators and Life-Cycle Cost (LCC) as outputs.

[29] For details about the process see P.J.S. Siderius and H. Nakagami, A MEPS is a MEPS is a MEPS: comparing Ecodesign and Top Runner schemes for setting product efficiency standards, Energy Efficiency 6:1–19, 2013.

be neglected.[30] Typically, in most cases, the most energy efficient products are more expensive to purchase than the less energy efficiency (average) products, but have smaller operating expenses during their lifetime. By combining these two costs, we get the LLCC for a given product.

Several jurisdictions around the world set MEPS for products, including the US, Australia and Japan. Siderius and Nakagami recommend that the EU applies one important element of the Japanese Top Runner scheme: that the actual best-performing product on the market serves as benchmark for standard-setting, rather than the application of LLCC. This would allow for the introduction of stringent standards at an earlier date.[31] There are significant differences in different jurisdictions when it comes to the methods for setting requirements, and the stringency of product standards. Waide recommends that the EU should more consistently monitor the requirements applied in other markets.[32]

2.1.2 Estimated energy savings from MEPS set under the Directive

Estimated savings from the 12 first regulations are provided in the table below. These savings are calculated up until 2020. Savings accumulate over the years as old products are substituted for new, more efficient ones.[33]

Adopted regulations	**Estimated savings (yearly by 2020)**
Standby and off mode losses, electric & electronic equipment	35 TWh
Simple set top boxes	9 TWh
Domestic lighting	39 TWh
Tertiary sector lighting (office and street)	38 TWh
External power supplies	9 TWh
Televisions	43 TWh
Electric motors	135 TWh
Circulators	23 TWh
Domestic refrigeration	8 TWh
Domestic dishwashers	2 TWh
Domestic washing machines	1.5 TWh
Fans	34 TWh
= 376 TWh = 14% of the electricity consumption of the EU in 2009	

Table 1. Expected savings under the first 12 implementing measures adopted under the Ecodesign Directive in combination with energy labelling.[34]

Electric motors stand out as the product group with the highest savings; it is expected that regulations can save about 5 % of the current EU electricity use. Significant savings are also expected from MEPS entering into force in the near future. Especially important are regulations for heating systems, which can save more electricity than electric motors, and regulations for ventilation.

We may conclude that the potential of eco-design standards to reduce energy use and CO2 emissions is significant. Even if there will be some rebound effects (see section 1), eco-design

[30] This is discussed in Siderius supra note 16; Kemna et al. supra note 28.

[31] Cf. Siderius and Nakagami, supra note 29, p. 15–16.

[32] Waide, supra note 2, p. 3, 8.

[33] There is an ongoing project that aims to provide detailed data on savings from eco-design and labeling, see R. Kemna, Ecodesign impact accounting: Part 1 – Status Nov. 2013, Report to the European Commission, May 2014.

[34] These are estimates made by the European Commission, mainly based on: P. Bertoldi and B. Atanasiu, Electricity consumption and efficiency trends in European Union Report, Joint Research Centre, 2009.

standards can help stabilize energy use, or even decrease energy use in developed countries.[35] It is crucial that we set standards as quickly as possible, and make them stringent, in order to stabilize energy use; if standards are delayed, consumers will keep on purchasing inefficient appliances until regulations enter into force, wasting energy.

2.2 The stringency of standards: main shortcomings of the Directive and possible improvements

The savings projected from the MEPS substantial but still they constitute only the "low-hanging fruits". Standards could most likely be more stringent without additional costs for consumers.[36] While the use of the LLCC methodology should ensure the best life cycle costs for consumers in theory, this is only correct under certain assumptions. A risk is that the LLCC is used in a rather "static" way, and there are several issues connected to the use of the LLCC. First of all, the price premium for the best products may not be related only to energy efficiency. Producers can often charge a premium for top performing products, and make a premium profit on the top segment of the market, but this is not primarily due to the fact that the product is energy efficient.[37] Instead, it tends to be other functions that consumers are willing to pay extra for. This means that that the purchase cost for consumers is not necessarily a good benchmark for setting standards in all cases. Further, we may find that the most energy efficient products cost more than less energy efficient models, but we also know that the consumer price for energy efficient equipment decreases rapidly over time when the numbers of units increase, as the costs of manufacturing of new product models goes down quickly. Thus, by using so-called "learning curves", which makes use of estimations for how quickly the costs on new product models will go down, we can set stricter standards without risking that the consumer prices will be very high. Therefore, Siderius argue that applying "learning curves" – showing how quickly the costs for top performing products decrease over time – should be used in the setting of standards: if we can assume that the costs for top performing products will decrease rapidly in the near future, it is possible to set stricter standards. He shows that at least twice the energy savings for driers and refrigerator-freezers could be gained, compared to the current approach, by applying learning curves in calculations. He also argues that in some cases product price calculations may have to be complemented by other methods. This goes for products under rapid technological change where the price has little correlation with the energy efficiency, such as TVs where LED technology has recently been introduced. Then it may make sense to enter into agreements with producers on a reasonable legal standard.[38]

Thus the price difference between the average product and the top performers tend to be treated as "static", whereas in reality the price for top performers tend to decrease every year due to learning effects. This typically means that we should be able to set stricter standards than we do because the least life cycle costs for top performers will be lower every year.

A second problem is that the LLCC calculations may mean that we set strict standards too

[35] There are some signs that electricity use may decrease in OECD countries, cf. E. Toulouse et al., Energy consumption of household appliance and electronics by 2030: a modelling and forecasting exercise for France, paper, proceedings from the ECEEE2015 Summer Study. In developing countries the electricity use is expected to rise.

[36] Cf. Siderius 2013, supra note 16, and van Buskirk et al., supra note 22.

[37] Siderius, supra note 16, p. 763.

[38] Siderius, supra note 16, p. 771.

far into the future, i.e. the manufacturers have several years before they must comply with standards. In the Japanese Top Runner scheme, it is possible to set stricter requirements earlier.[39] Siderius and Nakagami therefore recommend that the EU applies one important element of the Japanese Top Runner scheme: that the actual best-performing products on the market serve as benchmark for standard-setting, rather than the application of LLCC as the method.[40]

But the lack of stringency for some EU eco-design standards can be attributed to other factors as well. One is the lengthy legal procedures which make the process for standard-setting – and updating of existing standards – cumbersome. The time between the start of the preparatory study and the coming into force of the legal requirements is quite long:[41] For the first 12 regulations adopted, the time span varied between 3.5 and 6.7 years, with an average of almost 5 years. The reasons for the long processes include extensive stakeholder consultations, understaffing in the Commission, and limited funding provided to make preparatory studies compared to the US and Japan;[42] if there are deficiencies in the studies, the process will be delayed. The problem with the long process is that standards may not be able to keep up with technological developments, but also that it is cumbersome to update them when technological progress makes this possible and relevant. It also makes is harder to account for upcoming technologies. The preparatory study on TVs suffered from this problem:[43] it was not possible to take into account new emergent technologies, such as TV's based on LED technology which improves energy efficiency, when standards were set. This also means that the standards are sometimes "outdated" already when they enter into force, and manufacturers can too easily comply with them.

Another crucial weakness in the EU scheme is that the monitoring is an issue for the Member States[44], and the practices vary a lot throughout the EU.[45] Some member States have poor market surveillance and therefore there are a high number of non-compliant products on the Internal Market.

Thus, current standards could be more stringent, and they hardly act as drivers of innovation among the progressive manufacturers in most cases. We should acknowledge that the Directive is not explicitly intended to trigger eco-innovation, but rather to remove the worst product from the market. But even so, the standards could often be set tighter – and remove more products from the market – without the risk of significantly higher consumer prices, or the risk that some manufacturers would be forced out of the market.

There are several potential remedies to the problems identified above. Some actors stress the need to change the "least life cycle cost" methodology in order to allow the setting of stricter standards.[46] This would however require a change in the text of the Directive. The proposed use of 'learning curves' – i.e. making assumption that

[39] Id., p. 770.

[40] Cf. Siderius and Nakagami, supra note 39, p. 15–16.

[41] H.-P. Siderius, The ecodesign and energy labeling process – challenges and solutions, Paper, EuP Network, 2012. Another reason for delays can be that the consultancy reports are not of sufficient quality.

[42] Siderius, supra note 41; Waide, supra note 2.

[43] R.D. Huulgaard and A. Remmen, Eco-design Requirements for Televisions: How ambitious is the Implementation of the Energy-using Product Directive? Report, Danish Ministry of the Environment, 2012.

[44] See Art. 3 and 7 of the Ecodesign Directive. Art. 12 obliges Member States to cooperate, but this cooperation do not seem to be very advanced as yet.

[45] J. Krivošík and S. Attali, Market surveillance of energy labelling and eco-design product requirements, Report, ECEEE, 2014.

[46] D. Jepsen et al., Product-related top runner approach at EU level, Federal Environment Agency Umweltbundesamt, Dessau-Rosslau, 2011, p. 9–14; Cf. Siderius and Nakagami, supra note 29, p. 15–16.

the price of the best-performing products will quickly go down, which allows for stricter standard setting[47] – will probably not require any change of the legal text however. This is because the least life cycle cost (LLCC) concept stipulated in the Ecodesign Directive does not seem to set any impediments for assumptions used in calculations. When setting the LLCC standards, learning curves could be taken into account.

Siderius proposes several changes in the legislative process that could speed up the setting of standards, such as the use of stricter deadlines.[48] He also points out that the consultants contracted by the Commission to do the preparatory study must have right qualifications, otherwise the studies will be insufficient and this will delay the later steps in the legislative process.

3. Progressive standard setting and technology forcing

3.1 The importance of a policy mix

Before discussing the nature of technology forcing in product policy, it is important to point out that MEPS are not the only policy that can promote more efficient technologies. There are several other instruments that can be used to stimulate the development of new technologies, and/or promote market uptake of new technologies. The policy mix for product energy efficiency includes several policy instruments, most notably:

1) *Energy labeling*, which include:
   a. Mandatory regulation, where producers must label some product groups according to their environmental performance. EU demands this for a growing number of product groups including fridges and freezers and vacuum cleaners;[49]
   b. Voluntary labeling programs, such as the Energy Star[50] label.

2) *Eco-labeling*, which are voluntary, as manufactures choose if they want to apply for them or not. They include the EU eco-label as well as regional (the Nordic Swan) and national (e.g. Germany's Blue Angel) schemes. Eco-labels focus on several environmental aspects of a given product group, and energy efficiency is one criteria applied for eco-labeling of appliances.

3) *Public procurement*, which may promote more energy efficient appliances through technical descriptions and award criteria. Procurers can also apply life cycle costing (LCC) when deciding the most economically beneficial tender: by basing calculations on both purchasing and running costs (e.g. costs of electricity and maintenance), as opposed to only the price, more expensive products with lower running costs can be promoted.[51]

4) *Technology procurement and public procurement for innovation (PPI)*, which governments can make use of to trigger the development of new, more energy efficient products on the market. Typically, man-

[47] Cf. Siderius, supra note 16.
[48] Siderius, supra note 41, p. 8–12.
[49] Standards are set through regulations adopted under the Energy Labeling Directive; Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products, OJ 2010 L 153/1.
[50] For more information see http://www.eu-energystar.org/ [2015-03-20].
[51] The new EU procurement directive has an article devoted to LCC; see Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC, OJ 2014 L 94/65, Art. 68.

ufacturers can hesitate to develop better products if they are uncertain about the demand, and governments can make use of various tools (e.g. competitions with prizes, and/or a guarantee that a certain amount of new products will be sold through agreements with municipalities) to encourage the development of new products. For instance, the US and Sweden has successfully used procurement to induce the design of more energy efficient appliances such as fridges and freezers.[52]

5) *Subsidies for consumers and industries*, which is used to increase the market uptake of energy-efficient products, which lead to larger market shares and – over time – lower prices for energy efficient products, due to economies of scale and learning effects. Subsidies have been applied for many product groups including heat pumps, windows and energy-efficient appliances.

6) *Taxes and charges for energy and electricity* may influence some consumers and businesses to invest in energy efficient products – in combination with labeling which help the consumer to identify such products – but generally have limited influence.

7) *R&D and demonstration projects* are used to trigger fundamental research into new solutions, but generally it takes several years until the solutions reach markets.

These policies are often applied simultaneously in a policy mix. The various policies can then interact and support each other in various ways, cf. figure 1.[53]

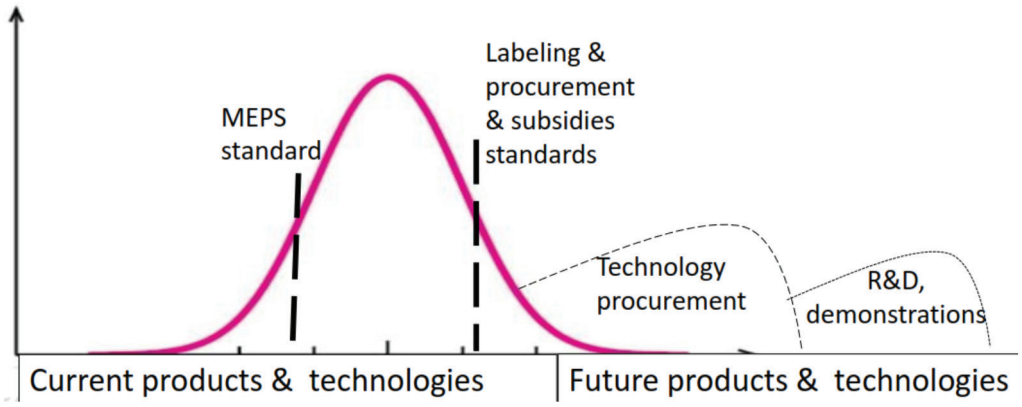

Figure 1. Interactions of policies for product energy efficiency

[52] For an overview of practices see C. Dalhammar and C. Leire, Miljöanpassad upphandling och innovationsupphandling som styrmedel, Rapport till Upphandlingsutredningen, chapter 5.

[53] See e.g. S. Birner and E. Martinot, Promoting energy-efficient products: GEF experience and lessons for market transformation in developing countries, Energy policy 33:14, 2005,1765–1779; Sachs, supra note 9; Boardman, supra note 6.

In the figure, the normal variation curve depicts an 'ideal' product group ('current products and technologies'): the worst performers (i.e. the least energy efficient products) are found at the left side, and the best performers to the right. If a mix of policies is enacted, MEPS will remove the worst-performing products from the market (the products left of the dotted line on the left side are no longer allowed in the EU), whereas eco-labeling, energy labeling and public procurement criteria can be set so only the best performers can comply (those to the right of the dotted line to the right). Over time, MEPS and labeling/criteria are strengthened, pushing all manufacturers to develop products with better environmental performance, pushing everyone to the right. This obviously works best if criteria in MEPS and labeling/procurement are coordinated, and in the best case updated simultaneously. Thus, *the main role of the mandatory standards set under the Ecodesign Directive is to make sure the worst-performing products are removed from the market. They currently provide limited incentives for the manufacturers with the best-performing products in most cases. This means that other instruments are required to stimulate eco-innovation among the front-runners*.

In order for this interaction to be optimal, the requirements of MEPS should be coordinated with those in labeling and procurement. Otherwise, we may run into problems. For instance, if requirements in energy labeling are not updated often enough, a product may get a high ranking though it does not comply with MEPS (if the MEPS are recently adopted) and is banned from the EU market. This would lead to confusion and undermine consumer confidence in the policies. For this reason, the Commission has started to coordinate the process of setting requirements in the Ecodesign and Energy labeling directives. But there is less coordination of MEPS and eco-labeling and procurement criteria.[54] A challenge is that some policies, such as MEPS, are mainly pursued at the EU level, whereas procurement and labeling schemes are mainly applied at the national level. This provides a challenge to proper coordination of policies.

If governments know that better performing products can be designed with current technologies, they can use technology procurement (cf. above) as a tool to encourage manufacturers to develop new products (and move towards 'Future products and technologies', cf. figure 1). In cases where there is need for more radical innovations, governments can support R&D (research and development), and demonstration projects to test new technology.

As stated above, there are several policies that can drive innovation. This seems to imply that mandatory standards set under the Ecodesign Directive do not have to be very progressive, as their main function is to get the worst performers off the market. Other policies could drive innovation. While this seems plausible in theory, there are some implications in practice. First of all, instruments like energy labeling and eco-labeling tend to work best for certain types of products, such as white goods. Other products, such as TVs, PCs, servers, and standby equipment, do not have the characteristics where consumers would typically care much about energy efficiency, nor be very influenced by labeling in their purchasing decisions.

Also in industry, there is often limited information and knowledge, leading to suboptimal choices of technology, such as the choice of pumps, motors and boilers. The success of energy efficiency programs in industry is a sign that there are various market barriers for uptake

[54] C. Dalhammar et al., Addressing resource efficiency through the Ecodesign Directive: A review of opportunities and barriers, report, Nordic Council of Ministers, 2014, p. 122.

of technologies, not least imperfect information among decision-makers.[55] Otherwise, some cost effective measures would probably be undertaken without policy interventions. This implies that we should consider strengthening these standards when possible. There is also a competition argument: some industries want more stringent standards, as they are afraid that Chinese and US companies may have an advantage if their domestic standards are more stringent.[56] The fact that some industries lobbied for stricter MEPS for electric motors during the EU legislative process is a clear indication that some standards should be more progressive.[57]

Another concern is that eco-labeling is much more successful in some countries than in others. Likewise, there are great variations in the use of public procurement and subsidies throughout the EU. Also, even in cases where labels and procurement can provide incentives for eco-design, they do little to trigger innovation among the worst performers, and stricter MEPS can lead to innovative activities to all firms exporting to the EU market.

Finally, it may be considered necessary to set much more stringent standards in the future, if such will be needed to contribute to the 2-degree climate target. *For these reasons, we should explore how to set more progressive MEPS, even if the importance of other policies should not be forgotten*. In some cases it may be more relevant to improve the use of other policies than to strengthen the MEPS, but this will probably depend quite a bit on the product group at hand. Ultimately, it may be necessary to induce innovative activities by setting more progressive standards in both mandatory and voluntary instruments.

3.2 Examples of progressive standard setting and technology forcing in product oriented environmental law

There is some common understanding regarding the design of environmental law and policy instruments, which can be discerned in academic literature.[58] First of all, legal standards should be so demanding that they require serious effort among producers to reach set targets. Further, industry should be granted reasonable phase-in periods. Set targets should also be technology neutral and expressed e.g. in terms such as emissions or energy efficiency standards, or recycling levels, but not promote any specific type of technology. Standards should also be transparent, and not provide benefits to incumbents on the market e.g. by introducing market barriers for new firms; they should not be designed so they benefit domestic firms either. Further, governments may involve industry in the policy process, e.g. in the purpose of finding cost-effective policies, but be careful so that industries does not have too much influence over the target setting, or manages to lobby for policies that favor certain industry groups.

'Technology forcing' can be defined as a regulatory standard that cannot be met with currently available technology.[59] Technology forcing has been applied in several areas of environmental law, such as air emissions, vehicle standards,

[55] Cf. Stenqvist, supra note 7.

[56] Speech by A. Chambris, head of EU Public affairs, DANFOSS, at the workshop "Ecodesign – are we done yet?", ECEEE Summer Study, 4 June 2015.

[57] E.g. Grundfos, Enormous Energy Savings to be lost if the EU does not take action: Efficiency legislation for industrial electrical motors, Position paper, July 2008.

[58] Cf. e.g. M. Porter and C. van der Linde, Toward a New Conception of the Environment-Competitiveness Relationship, The Journal of Economic Perspectives, Vol. 9(4), 97–118; A. Gouldson and J. Murphy, Regulatory realities, Routledge, 1998; N.A. Ashford, Government and Environmental Innovation in Europe and North America, in: K. Weber et al. (eds.), Towards Environmental Innovation Systems, Springer: Heidelberg, 2005, p. 159–174.

[59] Gerard and Lave, supra note 17, p. 1.

renewables obligations, chemical phase-out, the Montreal Protocol, cap and trade, and building regulations.[60] Some main conclusions from the studies are that: 1) the regulations must be flexible, which means that standards are set so industry does not focus solely on short term technology, and they should specify the goals but not the solution; 2) the regulation must be properly backed up by scientific arguments and strong government programs; 3) government agencies need to obtain information from industries on new and emerging technologies; this often requires fora for information exchange. Typically, setting technology forcing standards will be risky unless at least one technological trajectory is known by the policymaker.[61]

There are few clear-cut examples of technology forcing standards for product energy efficiency, where the regulator has been uncertain about whether industry can comply. We can however find several other examples in product related laws. One example concerns the Zero Emission Vehicle Mandate that was introduced in California in 1990. The aim was to stimulate environmental innovation in the motor industry by requiring that a certain percentage of the cars sold each year must be zero emission vehicles. The percentage was set to be at least 2% in 1998, 5% in 2000 and 10% in 2003. However, the Mandate was later revised and the required percentages were dropped, because the manufacturers could not deliver the required solutions. This does not mean that the policy was a failure, as it led to heavy investment in research and development for less polluting cars, which benefited the development of new technologies.[62] This example shows the difficulties in evaluating whether these kinds of laws are successes or not. The example also show the risk the legislator takes when setting technology forcing standards: *No legislator wants to back down from set policies as this would undermine the credibility of future efforts*.

In chemical policy we find examples of technology-forcing when chemicals are banned for certain uses. However, the legislator typically knows that existing substitutes exist, though the costs are not always certain. This was the case for ozone-depleting substances. Industry generally tends to underestimate the cost of compliance and costs of substitutes, and overestimate the costs for new alternatives, strengthening the case for bans.[63] But uncertainties on whether industry can find substitutes can lead to policymakers being reluctant to set stringent policies or apply bans. One way to solve this problem is to *provide exemptions*. For instance, in the case of the RoHS Directive, which bans the use of a number of heavy metals and flame retardants in electrical and electronic products, exemptions have been provided for certain components and materials, often with a set time limit.[64] An important principle is that exemptions should be limited in scope and duration, in order to achieve a gradual phase-out of hazardous substances as new innovations come about.[65] If the industry knows

[60] For an overview see e.g. K. Lane et al., The role of technology forcing standards and innovation to dramatically accelerate product energy efficiency, ECEEE 2013 Summer Study Proceedings, 2017-227; D. Gerard and L. Lester, Experiments in technology forcing: comparing the regulatory processes of US automobile safety and emissions regulation, Int Journal of Technology, Policy and Management Vol. 7(1), 2007, 1–14.

[61] K. Lane et al., supra note 60, p. 224.

[62] R. Kemp, Zero Emission Vehicle Mandate in California: misguided policy or example of enlightened leadership?, in: C. Sartorius and S. Zundel, Time strategies, innovation and environmental policy, Edvar Elgar: Cheltenham 2005.

[63] See e.g. European Environment Agency, Late lessons from early warnings: science, precaution, innovation, Report 2013/1; ChemSek, Cry Wolf, Report, 2015.

[64] Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, OJ 2011 L 174/88, Annex III and IV.

[65] Id., Recital 19.

exemptions are time limited they have incentives to do R&D to find substitutes.

When it comes to stringent requirements that certain percentages of products should be recycled, there has often been uncertainty on how much this would cost or whether this will have impacts on innovation. For instance, when the EU's end-of-life vehicle (ELV) Directive[66] was introduced, which introduced mandatory percentages for materials and energy recycling from cars and other vehicles, some industries claimed that the requirements for recycling were too stringent. They also claimed that there was a risk that manufacturers would use new materials and make the cars heavier in order to comply with recycling standards, which would lead to reduced fuel efficiency. This never happened, however, as it was actually possible to make cars recyclable without making them heavier. This shows how most potential conflicts are often technically solvable, as new technological solutions can solve the problems. The policymaker however needs to consult industries to ensure that such options exist, and whether industry can resolve conflicts within a reasonable timescale.

3.3 Arguments against technology forcing under the Ecodesign Directive

Sachs argues that MEPS should not be used for "technology forcing", as this would entail many risks.[67] He states that policymakers can know for certain that some innovation will take place, but not how much, and argues (p. 1666):

> "The approach taken in the United States and the EU of close consultation with industry to negotiate incremental improvements in the existing energy performance of products is quite sensible. If product standards were to become technology forcing, imposing requirements that no actor in the industry can currently meet, government runs the risk of blundering into costly and anticompetitive standards. Moreover, the implementation of product standards depends on manufacturer cooperation, and promoting incremental improvement helps to ensure that cooperation over the long term."

Sachs also provides an example of how regulation could hinder desired innovation: if stringent regulations on cell phones would have been introduced in 1999, it may have inhibited the rapid development of smart phones, as they tend to require more energy.[68] Legal standards set so far have not been a main barrier for innovation, but radical standards may actually pose a barrier to desirable innovation as manufacturers may choose not to pursue the development certain "risky" technologies which may entail long run benefits.

Sachs no doubt has a point. We could for instance imagine a situation where 3D printers were regulated now, and this would hamper future innovation. Still, we find few examples, if any, in practice were stringent legal standards seems to have hindered technological innovations. Further, it must also be a matter of how we regulate: if the law stipulates a stringent energy efficiency standard, or the phase-out of a chemical, and gives industry significant amount of time to adhere to the standards, such standards should be quite reasonable in most cases. Especially in cases where independent experts have been involved to provide input on expected future developments and the scope for technological innovations.

[66] Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles, OJ 2000 L 269/34.

[67] See Sachs, above n. 9, p. 1661–1664.

[68] Id., p. 1661.

3.3.1 The anti-regulation backlash in the US and the EU

One concern with stringent standards is that they may strengthen the media backlash against MEPS that we are currently experiencing in the US and the EU. While eco-design standards for energy efficiency have worked well for several decades in the US with little critique, this has recently changed.[69] A main driver for the critique against MEPS is the increasing calls for a 'hands-off' approach by government; urging governments to stay away from market intervention. *The ban against traditional light bulbs seems to have been a triggering factor for this critique*. While there are technically and economically viable alternatives to traditional light bulbs, they do not always satisfy consumers' preferences for lighting aesthetics, as they do not replicate the light consumers are used to. While this will no doubt change – new lighting products that better fulfil consumer preferences are rapidly entering the market, and the prices go down quite quickly – the ban of traditional light bulbs have been a more 'visible' government intervention than the regulations of e.g. TVs, dishwashers, and electric motors. Government regulations are seen as imposing on consumer sovereignty, disregarding the fact that new research discredits the idea that consumer choice influences the market offers; in reality, producers, governments and other actors exercise significant influences and strongly affect consumer preferences. Nevertheless, recent critique may lead to a 'spillover' effect, where more and more MEPS are questioned in the future.[70]

Also in the EU, MEPS have recently been questioned. This seems to coincide a lot with proposed standards for everyday products like hair dryers, vacuum cleaners and coffee machines. The British media – most notably newspapers that are critical of UK's EU membership – have been especially critical, claiming that the EU standards impose on consumer sovereignty. There are even 'scare' stories hinting that some types of products may be banned although it seems highly unlikely.[71] This has caused some caution among politicians, who wishes to take public and media concerns into account.[72] EU politicians have however criticized this media coverage as being 'populist'; former Commissioner Janez Potočnik has made a strong defense of the MEPS set under the Ecodesign Directive,[73] as have current commissioner Günther Oettinger.[74]

One concern with the potential introduction of more stringent MEPS is that more manufacturers will complain about the rules, possibly leading to increased criticism over MEPS, and increased media coverage. This could undermine the Ecodesign Directive's credibility.

3.4 Options for technology forcing under the Ecodesign Directive

In section 2.2 some methods for strengthening standards were outlined. They included: the use of 'learning curves' would allow for setting stricter standards for some product groups; using a Top Runner concept instead of the least life cycle cost (LLCC) approach would allow for an earlier introduction of more stringent standards, and; by reducing the long legislative process standards would not risk becoming obsolete

[69] Id., p. 1670 et seq.
[70] Id., p. 1675.
[71] E.g. The Telegraph, EU to ban high-energy hair dryers, smartphones and kettles, available: http://www.telegraph.co.uk/news/worldnews/europe/eu/11061538/EU-to-ban-high-energy-hair-dryers-smartphones-and-kettles.html [2014-10-25]
[72] ENDS Europe, Better public relations urged for under-fire ecodesign, ENDS Europe 7 November 2014.
[73] ENDS Europe, Potočnik slams 'lazy populism' over ecodesign, ENDS Europe, 6 June 2014
[74] Euractiv, Oettinger lashes out at 'anti-European' ecodesign campaigns, Euractiv 13 June 2014.

once they enter into force. All these measures could help setting more progressive standards, but probably have limited effect on triggering research into new technologies and induce technology forcing.

Below we outline some potential ways forward for setting even more stringent standards and induce innovation.

3.4.1 Several tiers further into the future

As was previously discussed, policymakers would like to set standards that are so strict that new technological innovations may be required, and where manufacturers would feel pressed to engage in research, but still do not want to be in a position where they may have to cancel legislation if it turns out that manufacturers can not comply. One method that could potentially remediate this problem, proposed by some stakeholders, would be to set requirements in more than two tiers, with checkpoints along the way.[75] This also means that industries are well "prepared" for future requirements. Currently, standards are typically set so that the first MEP standard, which is usually not very demanding, enters into force 1–2 years after the regulation is adopted (e.g. in 2015 for a regulation that is adopted 2014). Usually, 4–6 years after the adoption of a regulation a more demanding MEP standard comes into force (e.g. 2018 for a regulation enacted in 2014); this provides manufacturers with some time to comply with the standards and coordinate with their product development process and design cycles. An example for how this staged introduction of MEPS is done is given in section 4, for vacuum cleaners. This staged implementation of MEPS, with two tiers, provides manufacturers with a direct incentive to reach the short term MEP and more time to comply with the stringent standard. The stringent standard is however seldom very progressive: there are typically some products – though sometimes quite few – already on the market that complies. This means that it is almost certain that most – or all – manufacturers will be able to comply with the more stringent standard.

The idea with more tiers would be to *set a requirement even further into the future* (e.g. for 2022 for a MEP set in 2014), and thus *have a third requirement set*. By introducing 'checkpoints' along the way, the legislative process can be made more flexible: if it shows over time that the mandatory standard for 2022 is likely to be too demanding as technical innovation did not happen as expected, it can be made less stringent; if technological developments have meant that the standards are too easy to fulfil for manufacturers they can be strengthened. This would allow for more radical standard-setting that could provide impetus for companies to engage in innovation, but if it turns out those standards are too demanding or too lax they can be altered. This would require that 'checkpoints' are established at certain periods.

A benefit with this approach is that, currently, introduction and updating of standards is very cumbersome. This solution would provide some flexibility. The downside is that some industries would probably lobby against such measures as much power is provided to the body that is reviewing the standards. There would probably also be complaints that industry would not be able to foresee the long term requirements, reducing the certainty regarding future requirements. The counter-argument would be that industry gets more certainty as they know the long term benchmark and thus have a target that could guide innovative activities. One problematic issue concerns how the use of a third tier with a long term target would work under the LLCC methodology (cf. section 2.1.1). In principle, certain assumptions can be made that a long term target is consistent with the LLCC

[75] This solution has been proposed by interviewees in C. Dalhammar et al., supra note 54, chapter 9.

for the consumer, but there would probably be counter-arguments, with industries claiming that an ambitious target can increase the costs of appliances in the future. The estimated price of future energy/electricity would probably be very important in such a calculation.

3.4.2 Aspirational targets

A somewhat softer approach is the use of 'aspirational targets'.[76] An 'aspirational target' is a target for a future standard expressed in the law, which states that product manufacturers should strive for compliance with a proposed future standard. *While the target is not legally binding, it could encourage manufacturers to engage in research for new technology if certain incentives are in place*. For instance, the target may be applied to government procurement policies, so manufacturers whose products comply can have better chances to win future procurement contracts. Thus, the success of aspirational targets is strongly linked to the coordinated use of other instruments. In fact, if the coordinated use of various instruments is performed in good way, we could question if there is a need for aspirational targets. It may still make sense to list the aspirational target in law in some cases however, as: 1) the law will provide a clear benchmark for firms regarding which standards to aim for, especially if criteria applied in eco-labelling and procurement varies among countries and regions, and; 2) legal targets can have strong influence of industry work in e.g. standardisation.

3.4.3 Towards 'sufficiency' standards: Examples from the Energy Star criteria for TVs

Due to several factors – the increasing number of appliances being used, a growing world population, more single households, and larger appliances being designed – MEPS can probably only reduce the growth in energy consumption rather than reduce it, at least in developing countries. More radical approaches would be needed to remediate this situation. One such approach could be sufficiency: It has been proposed that we should apply a sufficiency approach in appliance policy. It would *imply that an absolute power consumption limit is set: appliances cannot use any more power regardless of product size or functionality being offered*. In principle, this means that larger appliances or appliances with more functions may not use more energy beyond a set limit. Looking at TVs, it is quite likely that a TV could cover a whole wall in a house in the near future if we extrapolate current trends.[77] A sufficiency approach would mean that large TVs must make use of new technologies, if they are to be allowed. The typical way to regulate TVs in various jurisdictions is that TVs are allowed to use more energy when they are larger in size, though there are limits for energy use within the size categories.[78] This 'linear' approach has usually been allowed also in eco-labeling and energy labeling. But in the latest standards for TVs found in the Energy Star (version 5.0), there are some differences. A linear approach is applied for smaller models but when TVs reach a certain size (Area>1 068.0 square inches), the energy requirement is virtually flat.[79] This means that screens above a certain size cannot use more energy than smaller TVs, requiring manufacturers to develop the technology. This also means that there is an upper energy limit for TVs; future TVs cannot use more energy even if they get bigger, if they want to apply the Energy Star.

[76] Cf. Lane et al., above n. 20, p. 225 et seq.

[77] See C. Calwell, Is efficient sufficient? The case for shifting our emphasis in energy specifications to progressive efficiency and sufficiency, Report: European Council for an Energy Efficient Economy (ECEEE), 2010, p. 20.

[78] Id., p. 22.

[79] Id. p. 20–25; "ENERGY STAR® Program Requirements Product Specification for Televisions. Eligibility Criteria. Version 5.3".

However, the Energy Star is a voluntary instrument. More demanding standards can be set in voluntary instruments than in binding regulations, because appliances that cannot comply with eco-labeling criteria will not be excluded from the market. Therefore sufficiency criteria may be difficult to apply in MEPS. However, *while a sufficiency approach may be considered extreme at the moment, it may be the only way to stem appliance energy use in the future*. This is due to the rebound effects discussed previously, coupled with a growing global population. Further, it has been claimed that for product groups like TVs the large models are usually bought by well-off consumers, which can probably pay for the expensive technology applied to make the large TV energy efficient even if it increases the price significantly.[80]

3.4.4 The future: Neutral or Plus products?

In the future, it may be possible to change the whole paradigm of MEPS, and demand products that are neutral or even PlusEnergy (i.e. products that generate more energy than they use). Due to the shrinking costs of solar technology and various technological breakthroughs, such developments are not unlikely for some products, like small consumer electronics. For instance, a product can be neutral or PlusEnergy if it can charge itself with solar power.

3.4.5 Concluding remarks

There is a lot we can do to set more progressive standards for product energy efficiency, and there are some options that are likely in the short term to induce research into new solutions. The use of several tiers with flexibility embedded in the process could be one way to trigger manufacturers to engage in new research. Other approaches, such as the enactment of sufficiency standards are probably not realistic in the short term, but may become viable in the long term if required to stem the rising use of energy associated with appliances.

Clearly, if we ambitiously make use of the voluntary instruments, the need for technology forcing legal standards is reduced. The new EU Procurement Directive encourages a more ambitious approach when it comes to sustainability criteria, and encourages life cycle thinking. It may form the basis for more ambitious procurement programs

4. The case of ecodesign standards for vacuum cleaners

Here, a short account of the recently adopted eco-design rules on vacuum cleaners will be provided, in order to supply an example of the issues explored in this contribution. There are many types of vacuum cleaners; here we will mainly focus on the so-called 'general purpose vacuum cleaners' which is the type of vacuum cleaner used in most households.

The Commission ordered a study on vacuum cleaners in 2007. The final report of the consultants was delivered in February 2009.[81] In the report, it was concluded that there were good reasons to regulate vacuum cleaners at the EU level: vacuum cleaners have – unlike many other product groups – become more energy-demanding (i.e. less energy efficient) over time. Many manufacturers use high energy use as a sales argument, as consumers often believe that high energy use equals good vacuuming function. But there is relatively little correlation between effect and vacuuming function and small energy-efficient vacuums may in some cases per-

[80] C. Calwell, Speech at the Workshop "Is efficient sufficient?", 18 may 2010, Brussels (arranged by the ECEEE).

[81] AEA Energy & Environment, Work on preparatory studies for eco-design requirements of EuPs (II) Lot 17 Vacuum cleaners, Final report, February 2009.

form better cleaning than large, high-voltage machines.[82] The consultants identified a number of potential technical improvements to improve the energy efficiency, including changes to designs and construction of fans, motors, and nozzles.[83] The consultants proposed two tiers of requirements, for 2011 and 2014 respectively.

The Commission made a proposal in 2011 with a proposed text for a Directive.[84] It included functional requirements (e.g. on vacuuming function and dust re-emissions) and requirements on annual energy consumption of vacuums in two tiers. The member states and other stakeholders however had several lines of critique: they wanted rules on noise levels, more stringent requirements on input power, and higher standards for dust re-emissions.

The Commission came up with a new legislative proposal in August 2012, with more elaborate criteria on e.g. noise and energy efficiency.[85] It also introduced clear targets on input power for vacuums. There it was stated that: From 1 January 2014 rated input power of vacuum cleaners should be less than 1 600W; from 1 January 2016 less than 1 200W. These numbers were less stringent than proposed by some EU member states and stakeholders. For instance, Germany had proposed that the requirements would be 1 400W in the first stage and requirements that are "significantly more ambitions than 1 000W" in the second stage.[86]

The regulations for eco-design requirements[87] and labeling[88] were introduced simultaneously in 2013. In the final adopted eco-design regulation it was stated that:[89]

- From 1 September 2014 rated input power shall be less than 1 600W, and
- From 1 September 2017 rated input power shall be less than 900W.

The Directive also contains rules related to functions such as noise, dust pick up capacity, motor operational lifetime (to avoid vacuums that break down early), and the durability of the hose.[90] The following discussion will focus on the target for input power discussed above.

In the end, the Regulation seems to have followed the industry's line on the short term target for 2014, which is not very stringent. The target for 2017 is definitely more stringent compared to vacuum cleaners on the market today. One reason for the strengthening of standards seems to be that *manufacturers did react to proposed legislation and started to make energy efficiency improvements, which means that more stringent requirements were considered feasible during the legislative process*. This effect – that producers react already when there are signals that legislation is forthcoming – is a quite common phenomenon in environmental policy.

So, how stringent is the actual requirements adopted? In a test by the German testers Stiftung

[82] Id., p. 3.
[83] Id., chapter 7.
[84] European Commission, Working Document on a possible Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for vacuum cleaners, Brussels 2011.
[85] European Commission, Working document on Implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for vacuum cleaners, 27 Aug 2012.
[86] Federal Environment Agency, Comments on the second working document on possible eco-design requirements and on the labelling document for vacuum cleaners, 7 Oct, 2011, p. 3.
[87] Commission Regulation (EU) No 666/2013 of 8 July 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for vacuum cleaners, OJ 2013 L192/24.
[88] Commission delegated Regulation (EU) No 665/2013 of 3 May 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of vacuum cleaners, OJ 2013 L192/1.
[89] Commission Regulation (EU) No 666/2013, Annex I.
[90] Id., Annex I.

Warentest of vacuums currently on the market, only three tested models using less than 900W cleaned well.[91] But since models that can pass the 2017 energy target are already on the market and performs well, the MEPS for 2017 is clearly achievable. This implies that the standards are somewhat challenging but can probably be reached by most manufacturers. Experts also believe that there is substantial improvement potential for vacuum cleaners,[92] and that a requirement in the range 700W-800W should be feasible.[93] In other words, the set MEPS are not really technology-forcing, though it will most likely provide quite a lot of impetus to manufacturers for research and development, which will possibly lead to new solutions.

The adopted requirements are a bit challenging but could have been a bit more stringent. The technical potential seems to be there to set more stringent standards, and induce more innovation, and it is unlikely that such requirements would raise the costs of vacuum cleaners to any significant extent in the future. A possible option could have been be to apply the additional, third tier further into the future as discussed previously (cf. section 3.4), and e.g. set a target for input power at 400W from 2020 onwards, to trigger more research. However, the need for stringent requirements is somewhat reduced due to the mandatory labeling requirements implemented at the same time as the eco-design requirements, which require manufacturers to include information about the vacuum cleaner's energy efficiency, cleaning performance, sound level, and dust re-emissions.[94] But it is uncertain to what extent consumers will actually read and act upon this information.

However, the timing to introduce more stringent requirements was not perfect in the case of vacuum cleaners, because the media backlash (cf. section 3.3.1) was especially strong in the case of vacuum cleaners. In a phenomenon dubbed 'Hoovergate', several news sources, have published several pieces criticizing the phasing out of vacuum cleaners with elevated power usage.[95] The criticism seems to be largely based on a false association of power usage with performance. British media has been especially critical, not least the part of media that are skeptical of EU membership.[96] The idea that bigger vacuum cleaners are better at cleaning seems to be the reigning one, although this myth was rejected in the preparatory study. The Commission has tried to set the record straight both through its own blog[97] and through commentaries in newspapers, and point out the benefits often neglected in the media debate: energy efficiency makes EU less dependent on energy import, and EU manufacturers can often benefit from the eco-design rules as they are good at quickly adopt measures to comply with high standards.

The vacuum cleaner example shows the complicated turns in trying to set a reasonable future standard to push manufacturers forward, but not set too high requirements. A third tier of requirements longer into the future could have

[91] See https://www.test.de/Staubsauger-im-Test-1838262-0/ [2015-04-10]; BBC, Vacuum cleaner debate hots up, BBC web 2 Sep 2014.
[92] BBC, above n. 91.
[93] Cf. Federal Environment Agency, above n. 86, p. 3
[94] These are found in Commission delegated Regulation (EU) No 665/2013, above n. 88.
[95] Cf. J. Hunter, Consumers sucked into media vortex again, CoolProducts blog, available: http://www.coolproducts.eu/blog/media-vortex [2015-04-13]
[96] Examples of critical news stories include: Mail Online, Now Europe wants to make it harder to clean your carpets with new rules BANNING powerful vacuum cleaners, November 3, 2013; Sunday Express, EU ban on vacuum cleaners is a blow to our freedoms, August 23, 2014; The Independent, This new EU law sucks more than my Hoover, August 24, 2014.
[97] See "Consumers will get better vacuums than ever before", available: https://blogs.ec.europa.eu/rebuttal/consumer-will-get-better-vacuum-cleaners-ever [2014-09-30]

provided impetus to technology forcing, but since there was significant backlash in media against the vacuum regulations, it may not have been the best time to try such an approach.

5. Concluding remarks

In this contribution we have discussed MEPS set under the Ecodesign Directive, and how they could be made more stringent and even induce technology forcing among industries. MEPS can provide a very cost-effective way to quickly cut energy use and greenhouse gas emissions. The media backlash experienced under the last couple of years however indicate that the EU should progress slowly and make some efforts to explain why implemented regulations are necessary to combat climate change, improve energy security, and save money for EU consumers.

There are several options for setting more stringent standards. More progressive legal standards are especially important if other instruments, such as eco-labeling and public procurement, do not provide enough incentives for innovation among manufacturers. If voluntary approaches work well, there is less need for progressive mandatory standard-setting.

What is most important is that we make use of new research on 'learning curves' and similar approaches to set more progressive standards. The evidence indicates that we can do so without increasing costs for consumers in most product groups. Such standards may not necessarily be technology-forcing, but will induce manufacturers to more quickly speed up the energy efficiency of their products. In the future, it may be necessary to set even more stringent standards, such as 'sufficiency' standards, to induce more radical innovations and induce technology-forcing. This is especially relevant if other energy and climate policies underperform.

Traditionally, the Nordic countries have lobbied for stringent MEPS. Generally speaking, Nordic manufacturers are hardly disadvantaged by strong requirements – if they are well thought through – as they tend to serve the top end of the market.[98] There are several ways in which Nordic countries can lobby for stricter MEPS. One strategy is to lobby for the use of 'learning curves' and the application for a third tier of requirements in regulations, as well as other ways to strengthen requirements. We can also push the market forward by using green procurement and technology procurement, when applicable, as this is an area where several Nordic countries have a strong performance. Better coordination among Nordic countries could be advantage. Pushing for higher standards in procurement and labeling will aid the market transformation, and will allow also for the application of stricter MEPS over time.

Another area where Nordic countries could improve concerns the coordination of EU Ecodesign requirements and energy criteria in the Nordic Swan label. The reviews and updating of the Swan criteria seems to have been lagging behind in some cases.[99]

6. Acknowledgements

This research was funded by the Swedish Energy Agency (Energimyndigheten) through the project "Promoting ecodesign for the advancement of innovation, competitiveness and environmental improvements", and by the Swedish Foundation for Strategic Environmental Research (MISTRA) through the research program "Resource-Efficient and Effective Solutions based on circular economy thinking" (REES).

[98] See e.g. Dalhammar et al., above n. 54, chapters 7 and 9. There is not much research on these issues, however.
[99] Id., chapter 5.

Aspects of Sovereignty and the Evolving Regimes of Transboundary Water Management

*Julie Gjørtz Howden**

Abstract

This article examines the principle of State sovereignty in international law and how this affects the management of shared natural resources, in particular international watercourses. As one of the most fundamental principles of international law, State sovereignty is often considered an impediment to common management of international watercourses as it creates focus on national segments of the resource and on defining each State's rights and entitlements to utilization. Through the study of alternative paradigms of State sovereignty, this article will endeavour to give new perspectives on how the principle can contribute to progressive development in the management of international shared resources.

Introduction

The principle of territorial sovereignty is a fundamental and constitutive principle of international law as it accords the sovereign State exclusive rights to exercise powers within the limits of its own territory as well as the right to prevent other States from doing the same. Possession of sovereign powers has traditionally been the one defining feature of the conventional subjects on the international legal stage, and the dynamic of exercising these powers is "an essential foundation of international relations".[1]

In the field of international watercourses, the upstream-downstream nexus creates an underlying conflict between the rights, needs and uses of the different watercourse States. In order to utilize the watercourse sustainably and optimally, and to secure the needs and rights of each, the involved States are compelled to enter into cooperation.

The central guiding principles when making decisions concerning the utilization of international watercourses are the principle of equitable and reasonable utilization and the obligation not to cause significant transboundary harm.[2] However, in recent times we are experiencing an increased focus on the interconnectedness of natural resources and how exaggerated use of one aspect or in one particular area of the resource can cause harm, not only to other States but also to the resource itself. In addition, growing threat from climate change in form of draught, flood, and pollution do not respect political borders. There is an increasing demand for more holistic management of international natural resources, with focus on the ecosystem approach or community of interest doctrine, which both invite

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[1] *The Corfu Channel Case*, ICJ (1949), 35.

[2] "The United Nations Convention on the Law of the Non-navigational Uses of International Watercourses", United Nations, 1997, Art. 5 and 7.

to more committing cooperation between the involved States. The idea of managing a transboundary resource as one unit without much regard to the boundaries drawn across it is an obvious challenge for the traditional conception of sovereignty. It creates and interesting dynamic between two areas of State concern: the interest of sustainable and optimal management of its natural resources, and the interest of protecting its sovereignty.

In this article, I argue that instead of focusing on the right of each State to utilize the water on its own territory in an equitable manner, the whole watercourse and the needs of all watercourse States must be taken into consideration and the watercourse managed as one unit. This form of management, through the community of interest doctrine or the ecosystem approach, presents new challenges for the conventional understanding of sovereignty.

The article is composed by three main parts: the first part consists of a short historic review of the principle of State sovereignty and an examination of its fundamental content, as well as a short introduction to the community of interest doctrine. In the second part I raise the claim that the traditional perception of State sovereignty is no longer in accord with today's reality, and present three fundamental reasons for this. Further, the third part confronts the role of State sovereignty in the management of international watercourses, and raises the question whether the traditional paradigm of sovereignty can be interpreted in a manner that encourages new and more engaged forms of management of these watercourses.

Part one: Short contextual review

The concept of the sovereign State was established through the Peace of Westphalia in 1648, which marked the beginning of a shift of legal paradigms from person-oriented to territory- oriented law.[3] Although this series of peace treaties did not establish peace throughout Europe, they did establish the basis for national self-determination and the beginnings of international law. The concept of the nation State was established, and its *raison d'être* was sovereignty over its own territory and in relation to other States.

The principle of State sovereignty has been interpreted and employed by the international courts in numerous cases concerning both territorial and executive sovereignty. In the 1927 *Lotus* case, where the question was whether Turkey had jurisdiction to sentence a French marine Lieutenant for a ship accident that took place on the high seas, the PCIJ declared that "[r]estrictions upon the independence of States cannot […] be presumed",[4] but that one important restriction was that power "cannot be exercised by a State outside its territory except by virtue of a permissive rule derived from international custom or from a convention".[5] The Court stated that "within these limits, [a State's] title to exercise its jurisdiction rests in its sovereignty", and concluded thereby that a State is free to exercise power on its own territory, as long as no rule of international law prohibits such activity. Since the Lotus case, the number of international norms and customary rules limiting State sovereignty has increased significantly, as a natural legal consequence of the obligation to respect the sovereignty of other States,[6] but the main rule

[3] Franz Xaver Perrez, *Cooperative Sovereignty: From Independence to Interdependence in the Structure of International Environmental Law* (The Hague: Kluwer Law International, 2000), 22; Rossana Deplano, "The Welfarist Approach to International Law," in *Critical International Law: Postrealism, Postcolonialism and Transnationalism*, ed. P. Singh and B. Mayer (New Delhi: Oxford University Press, 2014).

[4] *The Case of the S.S "Lotus"*, PCIJ (1927), 18.

[5] *The Case of the S.S "Lotus"*, (1927), 18.

[6] Antonio Cassese, *International law* (Oxford: Oxford University Press, 2005), 98.

from the Lotus case still carries deep resonance in traditional international law.

The field of international watercourses sheds a different light on the issue of sovereignty. When a shared water resource crosses the boundary between two or more States, each State's use of the water is depending on other States' use or misuse of the same resource. This interdependency creates new restrictions upon the sovereign powers of the State. Through international customary law, and now also through the United Nations Convention on the Law of the Non-navigational Uses of International Watercourses (UNWC), the current international rules of transboundary water management are those of equitable and reasonable utilization,[7] and avoidance of significant transboundary harm.[8] These norms compel watercourse States to enter into cooperation over the management of a shared watercourse,[9] and to take each other's needs and rights into consideration when planning and carrying out projects in the watercourse. The principles thus limit the free exercise of State sovereignty as they construct minimum legal frames for a peaceful co-existence of watercourse States.

International courts have repeatedly stated that territorial sovereignty should not be a guiding principle for the management of shared natural resources. In the River Oder judgment, the PCIJ established the idea of the "community of interest" in an international watercourse, the main features of which are "the perfect equality of all riparian States in the user of the whole course of the river and the exclusion of any preferential privilege of any one riparian State in relation to the others".[10] This judgment gave rise to the community of interest doctrine, which, in essence, views the watercourse as one economic unit to be managed by the watercourse states in common. The doctrine is a concretization of a conception of common management and is given concrete expression in an increasing number of international agreements.[11]

The ideas from the River Oder case were repeated by the ICJ in the Gabčikovo-Nagymaros judgment, where one of the main questions was whether Slovenia had violated international legal norms when unilaterally carrying out a project on the Danube river that was initially planned as a cooperation between Slovakia and Hungary. The Court first confirmed that the principles from the River Oder case had been strengthened for non-navigational uses of international watercourses, and further that "Czechoslovakia, by unilaterally assuming control of a shared resource, and thereby depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube […] failed to respect the proportionality which is required by international law".[12] Consequently, the ICJ strengthens equity as a guiding principle for international shared resources, and confirms that State sovereignty in this field is subject to more restrictions than in other fields of international law.

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[7] "The United Nations Convention on the Law of the Non-navigational Uses of International Watercourses", United Nations, 1997, Art. 5.

[8] "The United Nations Convention on the Law of the Non-navigational Uses of International Watercourses", United Nations, 1997, Art. 7.

[9] See also "The United Nations Convention on the Law of the Non-navigational Uses of International Watercourses", United Nations, 1997, Art. 8.

[10] *Case Relating to the Territorial Jurisdiction of the International Commission of the River Oder*, PCIJ (1929), 27.

[11] Stephen McCaffrey, *The law of international watercourses*, The Oxford international law library (Oxford: Oxford University Press, 2007), 155.

[12] *Case concerning the Gabcikovo-Nagymaros Project*, ICJ (1997), para. 85.

Part two: Traditional State Sovereignty today

The international legal arena is undergoing changes. Globalization and consequences of climate change draw up new lines for State responsibility and compel States to create different forms of cooperation. New technology has permitted the construction of immense dams and similar projects of water manipulation, which, together with transboundary impact of pollution, deforestation and draught, often leaves unilateral action vain and require States to cooperate closely in the management of international natural resources. On this background, there is reason to claim that the key elements of the traditional interpretation of State sovereignty, that is the exclusive right to exercise power its own territory and the right to exclude other from doing the same, no longer reflect today's reality in international water law. The claim is based on three main reasons:

Firstly, a traditional interpretation of the principle of State sovereignty might present a real obstruction to the common management of international watercourses. According to the interpretation deriving from the Lotus case, the principle of State sovereignty would accord a State the right to exploit its resources freely and without interference from other States, as long as no rule of international law restricts such utilization. A principle of State sovereignty with emphasis on exclusive territorial powers and restrictions only upon explicit consent would accord watercourse States an unlimited freedom to utilize the resources on their territory without regards to possible harm such use could bring to other States. According to Eyal Benvenisti, it is precisely the principle of sovereignty together with the allocation of jurisdiction by political borders that "have joined forces to preclude an efficient and sustainable use of transboundary resources".[13]

In the field of international water law, the exercise of State sovereignty has been a recurrent topic of discussion; although no authoritative body has cited sovereignty as a guiding principle for international water management and the ICJ has even declared that shared resources must be allocated on the basis of equity.[14] Although the principle of equitable and reasonable utilization and the obligation not to cause significant transboundary harm restricts the free utilization, there is no doubt that State sovereignty in many cases has given rise to arguments over rights and obligations on the expense of more fruitful and sustainable management. An example of this is the cooperation, or lack thereof, in the Tigris-Euphrates watercourse where all attempts to cooperate so far have stranded in disagreement over basic definitions and the interpretation and application of international legal principles.[15]

A traditional interpretation of the principle of State sovereignty does not correspond well to

[13] Eyal Benvenisti, *Sharing transboundary resources : international law and optimal resource use* (Cambridge: Cambridge University Press, 2002), 22.

[14] Stephen McCaffrey, "The Siren Song of Sovereingty in International Water Relations," in *A History of Water, Series 3, volume 2: Sovereignty and International Water Law*, ed. Terje Tvedt, Owen McIntyre, and Tadesse Kassa Woldetsadik (London: I. B. Tauris, 2015), 47. See *Fisheries Jurisdiction case*, ICJ (1974); *Case concerning the Continental Shelf*, (1985); *Case concerning the Gabcikovo-Nagymaros Project*, (1997); *Case Conserning Pulp Mills on the River Uruguay*, (2010).

[15] See Annika Kramer, Aysegul Kibaroglu, and Waltina Scheumann, *Turkey's Water Policy National Frameworks and International Cooperation* (Berlin, Heidelberg: Springer Berlin Heidelberg, 2011); Aysegul Kibaroglu, *Building a regime for the waters of the Euphrates-Tigris river basin* (London: Kluwer Law, 2002); Julie Gjørtz Howden, "Utilization of International Watercourses: Aspects of applicable international law and practice in the Tigris-Euphrates watercourse" (Bergen, 2012), Master thesis, Bergen Open Research Archive – https://bora.uib.no/.

the transboundary nature of international watercourses or other shared resources. It does not take into account the States' shared responsibility for protection and preservation of the resource. And instead of establishing such responsibility beyond the borders of the single State, the traditional paradigm of State sovereignty strengthens the political frontiers that divide natural resources.

Secondly, due to the complex nature of international water conflicts, the paradigm of the sovereign State as negotiator and decision-maker on the international level on behalf of its population, may not offer the most efficient or most democratic system for international resource management. Within a shared resource, utilization of water will necessarily be subject to negotiation where all relevant factors must be taken into regard. The participants in such negotiations are States, while water consumers are individuals and businesses. Sovereign States act as representatives for their respective domestic groups and organisations, which make their primary motivation for negotiating an agreement over the utilization of an international watercourse to secure the interests of their own groups. Hence conflict and competition over quantity and quality of water use will often occur between domestic groups or between transnational groups, and influence the external policies adopted by the States.

The democratic problem with this system is that relatively small high-interest groups, like agricultural or industrial lobbies, can acquire disproportionate influence over the decision-makers, on the expense of larger and less fortunate groups. These strong domestic interest groups can in many cases pressure both the negotiators of the actual treaty as well as "the legislature's attitude towards the treaty during the ratification process",[16] and thereby influence their country's attitude towards compliance with the treaty and reaction to breaches by other parties.

Moreover, the nature of political decision-making adds an essential aspect to this analysis. The State representatives negotiating international agreements, as well as the representatives who ratify them, are usually politicians, or engaged by politicians, and thereby vulnerable to popularity and public opinion. Although politicians explicitly have taken on the demanding task of managing natural resources in a long-term perspective, they are doubtlessly also influenced by the short-term aspects of elections, as well as by the financial support many political parties receive from small domestic interest groups. Balancing such contradictory interests can lead to less efficient management of the resource,[17] and could also result in agreements that might not take fully into account the needs and rights of smaller interest groups with strong proximity to the resource but meagre influential power, i.e. local communities.

The third reason why the traditional conception of State sovereignty is not reflecting the present reality is that the fundamental structures of international law are changing. As seen above, international law has traditionally been understood as a system where the State was restricted by international legal norms only upon explicit consent. Bruno Simma labels this system 'bilateralism', in which "international legal obligations […] exist at the level of relations between States individually".[18] Similarly, Ellen Hey describes

[16] Benvenisti, *Sharing transboundary resources : international law and optimal resource use*, 65.
[17] *Sharing transboundary resources : international law and optimal resource use*, 59.
[18] Bruno Simma, "From Bilateralism to Community Interest in International Law," in *Recueil des Cours 250*,

the traditional system as an inter-state pattern of international law.[19] This view on international legal relations is individualistic, since every obligation or process requires the consent of the involved States. It also corroborates the traditional subject/object doctrine of international law, where States are considered subjects and individuals are objects or addressees of norms and regulations. Although this positivist view of sovereignty and international law has been gradually abandoned during the last decades,[20] it is still a major issue at most international negotiations.

In contrast to this traditional legal pattern, stands the evolving ecosystem approach. This approach is "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way".[21] Instead of focusing on the territorial sections of a watercourse, the ecosystem approach obliges States to manage the ecosystem as one unit. The approach thus creates new premises for cooperation, and presents an obvious challenge for the traditional conception of sovereignty. This alteration in the basic structures of international law comes with the experience of climate change and the recognition of the holistic character of natural resources; political borders are artificial borders drawn across natural resources, and thereby not an optimal way to delimit cooperation and management. The ecosystem approach necessitates cooperation on the lowest appropriate level to ensure efficiency and equitability, and management that "involve[s] stakeholders and balance[s] local interests with the wider public interests" [22] because "[t]he closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation and use of knowledge".[23] To pursue their common interest of environmental protection and sustainable utilization of natural resources, States are encouraged to create cooperation schemes on both international and transnational levels where the main objective is common management instead of the definition of individual entitlements in the resource.

The ecosystem approach is but one example of an ideological change in international law, turning towards community structures and community values. It acknowledges that States have rights and obligations that are not exhausted by inter-state agreements, but also derive from the common, maybe even unidentified, values and interests that they have a natural engagement to realize on behalf of the international community as a whole.[24] This is particularly visible in en-

Recueil des Cours: Collected Courses of the Hague Academy of International Law (The Hague: Martinus Nijhoff Publishers, 1994), 230.

[19] Ellen Hey, *Teaching international law: state-consent as consent to a process of normative development and ensuing problems* (The Hague: Kluwer Law International, 2003).

[20] Rosalyn Higgins, "Conceptual Thinking About the Individual in International Law," in *International Law: a Contemporary Perspective*, ed. Richard Falk, Friedrich Kratochwil, and Saul H. Mendlovitz (Boulder and London: Westview Press, 1985); P. K. Menon, "The Legal Personality of Individuals," *Sri Lanka Journal of Intenational Law* 6, no. 127 (1994); Prosper Weil, "Le Droit International en quête de son indentité: cours général de droit international public," in *Recueil des Cours 237* (The Hague: Martinus Nijhof Publishers, 1992).

[21] "Decision V6 'Ecosystem Approach'", The Conference of the Parties to the Convention on Biological Diversity, 2000, UNEP/COP/5/23.

[22] "Decision V6 'Ecosystem Approach'", The Conference of the Parties to the Convention on Biological Diversity, 2000, Principle 2.

[23] "Decision V6 'Ecosystem Approach'", The Conference of the Parties to the Convention on Biological Diversity, 2000, Principle 2.

[24] See e.g. Ronald Dworkin, *Law's empire* (Cambridge, Mass.: Belknap Press, 1986); Simma, From Bilateralism to Community Interest in International Law; Bruno Simma and Andreas L. Paulus, "'The International Community: Facing the Challenge of Globalization'," *European Journal of International Law* 9 (1998); Hey, *Teaching international law: state-consent as consent to a process of normative development and ensuing problems*; Gleider I. Hernandez, "A Reluctant Guardian: The International Court of Justice and

vironmental questions, where responsibility for sustainable management and avoidance of transboundary and inter-generational harm is forcing the creation of new types of management. The traditional paradigm of State sovereignty restricts the development of this ideological turn in international law and is therefore no longer the accurate legal answer to the questions of the relationship between States.

Additionally, the traditional interpretation of the principle of State sovereignty does not reflect the constitutive development in international law. In recent times, the international legal personality of Non-Governmental Organizations and individuals enjoy increasing recognition.[25] NGOs are progressively taking part in international negotiations as observers or consultants, and play an important role in the making and interpretation of international law.[26] With regard to the status of individuals, it is becoming less controversial to consider them as independent participants in the international legal system.[27] The overarching idea is, as expressed by Brierly, that an expansion of the subjects of international law to include individuals may enhance the prospects for peace, because it will expand the range of interests to be considered in the settlement of disputes and counteract the pernicious tendency of governments to identify the interests of a few powerful individuals with the interests of the whole community.[28] This brings us back to the problem of democracy in the management of shared natural resources and the governing States' inclination towards favouring strong domestic interest groups. The act of according non-State actors more legal personality in international negotiations is thus not only in accordance with the modern development of international law, but also a means to secure a more just and sustainable use of shared natural resources. When the traditional paradigm of State sovereignty excludes other actors than States, it is a strong indication that the paradigm no longer reflects today's reality.

Part three: Alternative approaches to State sovereignty

In an environmental context, the traditional paradigm of State sovereignty has been deemed a possible impediment to optimal and efficient management,[29] since States might be reluctant to

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the Concept of 'International Community'," *British Yearbook of International Law* 83, no. 1 (2013); Andrew Hurrell, *On global order: power, values, and the constitution of international society* (Oxford: Oxford Universisty Press, 2007).

[25] See e.g. Higgins, Conceptual Thinking About the Individual in International Law; Menon, "The Legal Personality of Individuals."; Andrea Bianchi, "The Fight for Inclusion: Non-State Actors and International Law," in *From Bilateralism to Community Interest. Essays in Honour of Judge Bruno Simma*, ed. Ulrich Fastenrath, et al. (Oxford: Oxford University Press, 2011); Robert McCorquodale, *International law beyond the state : essays on sovereignty, non-state actors and human rights* (London: CMP Pub., 2011); Bosire Maragia, "Almost there: Another way of conceptualizing and explaining NGOs' quest for legitimacy in international law," *Non-State Actors and International Law* 2, no. 1 (2002); Anne Peters, "Membership in the Global Constitutional Society," in *The constitutionalization of international law*, ed. Jan Klabbers, Anne Peters, and Geir Ulfstein (Oxford: Oxford University Press, 2009); Steve Charnovitz, "Nongovernmental Organizations and International Law," *American Journal of International Law* 100, no. 2 (2006).

[26] "Nongovernmental Organizations and International Law."

[27] See e.g. Bianchi, The Fight for Inclusion: Non-State Actors and International Law; Jean-Marie Dupuy, *Droit International Public* (Paris: Dalloz, 1993); McCorquodale, *International law beyond the state : essays on sovereignty, non-state actors and human rights*.

[28] Quoted in Nehal Bhuta, "The Role International Actors Other Than States can Play in the New World Order," in *Realizing Utopia: The Future of International Law*, ed. Antonio Cassese (Oxford: Oxford University Press, 2012).

[29] See Karen T. Litfin, "Sovereignty in World Ecopolitics," *Merhson International Studies Review* 41, no. 2 (1997); Undala Alam, Ousmane Dione, and Paul Jeffrey, "The benefit-sharing principle: Implementing sovereignty bargains on water," *Political Geography* 28, no. 2 (2009).

enter into committing cooperation that restricts their inherent sovereignty. Here one must bear in mind however, that State sovereignty in relation to the utilization of international watercourses is *de jure* restricted by the principle of equitable utilization and by the no-harm obligation.[30] States also have a legal obligation to cooperate over the utilization of international watercourses, codified in UNWC Art. 8.

There is no doubt, as numerous treaties show, that the principle of State sovereignty is not *de facto* impeding States from entering into cooperation over shared natural resources, although a great number of these agreements are technical or regulate the mere co-existence of watercourse States and their utilization of the waters.[31] However, there seem to be a discrepancy between theory and practice in issues of environmental law. As numerous climate meetings and negotiations show, the big words and ambitions expressed by State representatives in advance often result in little or no concrete action because of the States' reluctance towards concluding binding agreements and compromise aspects of their sovereignty. In this regard there is no doubt that State sovereignty is an impediment to achieving optimal management, which gives reason to address the question whether the concept of State sovereignty must be interpreted differently – through other paradigms – to encourage more committed and invested cooperation over international natural resources, with focus on sustainability and optimal utilization of the resource. The following subsections will thus conduct an analysis of some of the alternative approaches to sovereignty offered by legal scholars and political scientists. The first two, sovereignty bargains and extended sovereignty, are more theoretical adaptations of the principle of State sovereignty that allows more flexibility when managing natural resources. The other two approaches, the concept of benefit sharing and the transnational conflict paradigm, demand a higher degree of participation and commitment from the involved States.

Sovereignty bargains

The term 'sovereignty bargains', introduced by Bruce Byers, describes a concept where "a state gives up some measure of control over its constituent bioregions and 'nations'".[32] The concept was later developed by Karen Litfin as a trade-off between the three constituent elements of sovereignty – autonomy, control and legitimacy.[33] For instance, sacrificing autonomy can enhance control, or "increased control may undercut a state's popular or international legitimacy".[34] Litfin further advocates that

> "[t]he claim that various interdependencies, including ecological ones, are modifying the practice – and perhaps even the meaning – of sovereignty does not warrant the conclusion that sovereign states are about to be replaced by some new form of political organization. Rather, states engage in sovereignty bargains in which they voluntarily accept some limitations in exchange

[30] "The United Nations Convention on the Law of the Non-navigational Uses of International Watercourses", United Nations, 1997, Art. 5 and 7.

[31] E.g. "Convention on cooperation for the protection and sustainable use of the River Danube", 1994; "Agreement between the government of the People's republic of Bangladesh and the government of the Republic of India on sharing of the Ganges waters at Farakka and on augmenting its flows", 1977; "Indus Waters Treaty", India, Pakistan, 1960; "Agreement on the protection of the Rivers Meuse and Scheldt", Belgium, France, Netherlands, 1994.

[32] Bruce Byers, "Ecoregions, State Sovereignty and Conflict," *Securiy Dialogue* 22, no. 1 (1991), 73.

[33] Litfin, "Sovereignty in World Ecopolitics."

[34] "Sovereignty in World Ecopolitics," 169–170.

> for certain benefits. The cumulative effect on these trade-offs, however, may be to alter the norms and practices of sovereignty by reconfiguring expectations regarding state autonomy, control and legitimacy".[35]

The main idea is that States will accept a limitation on their sovereignty if the benefit they receive from doing so is sufficiently significant. The positive benefit from cooperation will outweigh qualms about renouncing sovereign capability.

The idea of sovereignty bargains presupposes a multidimensional understanding of the concept of sovereignty, where sovereignty is being conceived more as a collection of norms and practices that can display variation and flexibility.[36] Or, according to Litfin, not as a fixed principle but rather "a field of meanings that are in constant flux".[37] Brad Roth advocates that sovereignty can be regarded as a set of presumptions for a pluralist order.[38] Both views are reminders of the fact that *de jure* and *de facto* sovereignty may sometimes act as two different concepts; while *de jure* sovereignty is a legal principle of indivisible and absolute authority, *de facto* sovereignty is the result of the States' interpretation of this principle, their actions in accordance with it.[39] The concept of sovereignty bargains thus focus on the latter – the actual exercise of sovereignty, and tasks and responsibilities associated with it. As Litfin points out, these tasks can be, and regularly are, separated.[40]

Sovereignty bargains can be formally encapsulated as international agreements or institutions.[41] In practice, the agreement is the most common manifestation of cooperation over international resources. This indicates that States may not be as intentional and conscious towards the concept of 'sovereignty bargains' as the term suggests.[42] When creating an institution for the management of a shared resource, member States will accept a trade-off of autonomy and control, and in some cases also legitimacy, in order to ameliorate the utilization of the waters and achieve common goals. A cumulative effect of such bargains may eventually be an alteration in the conception of sovereignty, and its norms and practices, by "reconfiguring expectations regarding state autonomy, control and legitimacy".[43]

Extended sovereignty – State consent as consent to a process

Ellen Hey describes two normative patterns of international law – the inter-state normative pattern, which is briefly described above, and the common interest normative pattern.[44] The latter suggests a different approach to the question of State sovereignty and State consent: Instead of considering State consent a prerequisite for the creation and binding nature of an international legal norm, the common interest pattern perceives State consent as consent to a process of normative development.[45] The thriving interactions and exchanges of the globalized world demands a different form of legal regulation for issues of common interest, and "as such issues

[35] "Sovereignty in World Ecopolitics," 170.
[36] Christopher Rudolph, "Sovereignty and Territorial Borders in a Global Age," *International Studies Review* 7 (2005), 4.
[37] Litfin, "Sovereignty in World Ecopolitics," 171.
[38] Brad R. Roth, "The Enduring Significance of State Sovereignty," *Florida Law Review* 56 (2004).
[39] Litfin uses the terms 'legal' and 'operational' sovereignty (Litfin, "Sovereignty in World Ecopolitics.")
[40] "Sovereignty in World Ecopolitics," 171.
[41] Alam, Dione, and Jeffrey, "The benefit-sharing principle: Implementing sovereignty bargains on water."
[42] Litfin, "Sovereignty in World Ecopolitics."
[43] "Sovereignty in World Ecopolitics," 170.
[44] Hey, *Teaching international law: state-consent as consent to a process of normative development and ensuing problems.*
[45] *Teaching international law: state-consent as consent to a process of normative development and ensuing problems*, 12–23.

are being addressed, it is becoming apparent that existing decision-making processes are intimately linked to the inter-state normative pattern and not attuned to the common-interest normative pattern where actors other than states may be directly affected by decisions taken".[46] A proposed response to the challenge of transboundary resource management is to view State consent not as consent to a specific rule of international law, but as consent to a process of normative development, "the outcome of which is undetermined at the time at which that consent is given".[47] States give their consent to an instrument of international law aimed at regulating the common interest, and in so doing they also commit to participate in the normative development and to accept its final outcome.

An example of such consent to a process of normative development is the European Court of Human Rights. The Court belongs to the common interest normative pattern as it engages in questions that concern humanity as a whole. When States ratify the European Convention on Human Rights, they do not only give their consent to specific rules of international law, but also to a process of legal development through the judgments of the ECHR. The Court's decisions are binding for its parties and contribute to the development of international law.

Most instruments seeking the regulation of common interests contain provisions that allow integration of evolving principles. An example can be found in the initial agreement between Hungary and Czecholsovakia over the Gabčikovo-Nagymaros-project which requires that the parties "while carrying out their obligations to ensure that the quality of water in the Danube is not impaired and that nature is protected, to take new environmental norms into considerations when agreeing upon the means to be specified in the Joint Contractual Plan".[48] By agreeing to take into consideration new environmental norms, Hungary and Czechoslovakia consented in practice to a process, the final outcome of which was not known to the parties at the time of the agreement. The softening of the principle of State sovereignty implied in this provision provides flexibility in the cooperation between the parties and the possibility of achieving a dynamic process where the original agreement can incorporate and deal with new development without revision of the agreement or the parties' explicit consent.

The elasticity of the common-interest pattern is what makes it suitable as guiding pattern for the management of international watercourses. This is especially important when watercourse States create a joint commission to manage the watercourse and carry out decisions on their behalf, the flexibility in the long-term consent will lead to a more efficient management of the resource since States agree on the overarching goals instead of the small steps. Additionally, providing a neutral commission with the competence to manage a watercourse in accordance with agreed principles and towards a common goal might also help neutralize domestic political pressure. On the other hand, it is clear that this form of government demands a great level of trust amongst the watercourse States and clear agreement on a common vision for the cooperation. This might be particularly challenging in water scarce areas where the threat of draught can lead to competition between watercourse States eager to satisfy their minimum needs.

[46] *Teaching international law: state-consent as consent to a process of normative development and ensuing problems*, 19.
[47] *Teaching international law: state-consent as consent to a process of normative development and ensuing problems*, 13.
[48] *Case concerning the Gabcikovo-Nagymaros Project*, ICJ (1997), para. 112.

Benefit sharing

One of the main objectives behind the Convention on Biological Diversity is "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources".[49] The concept of benefit sharing, as manifested in the convention, has gained increased recognition during the last decades, especially in the context of natural resource management. Alam et al. define the concept within a freshwater context as "the development of water uses in their 'optimal' locations, and the distribution of these benefits, rather than the water, to users across the basin".[50] Phillips et al. argue that benefit sharing "becomes the outcome of a process of issue-linkage",[51] where basic dilemmas like the complexity of common pool resources and the prospect of over-exploitation due to lack of regulation or non-compliance are considered. And it is when solving such fundamental dilemmas that the major benefits are to be found. The basic idea is that watercourse States, when negotiating the management of shared watercourses, can focus either on the allocation of rights or on the distribution of benefits.[52] Arrangements of benefit sharing will involve payment or compensation for benefits deriving from strengthened management.[53] For instance, Sadoff and Grey argue that "stewardship of headwaters and watersheds might entitle upstream riparians to share some portion of the downstream benefits that their stewardship helps to facilitate, and thus share the costs of that stewardship. Seen the other way around, if they did not protect the watershed it would impose costs on downstream riparians".[54] A scheme of benefit sharing could thus mean that some States must renounce some of their actual water use, or available water, in exchange for a monetary compensation from those States who put this water into its most efficient use.[55] At the other end of this process are three broad categories of benefits: security, economic development and environmental protection.[56]

Alam et al. recognize that the implementation of the benefit sharing principle centres on two aspects: "the countries' willingness to embrace their hydro-interdependency and […] the means they use to embed their mutual interest, or in other words, to frame their liability and vulnerability to one another".[57] The first aspect is clearly among the main motivations to establish cooperation over a shared watercourse; instead of competing over individual entitlements that are both limiting and potentially harmful, States must realize that their interests are best achieved by sharing the benefits from the water management. The other central aspect, the means the States choose to pursue their shared interests and benefits, is essential for the functioning of the cooperation, its duration and trust-building among the watercourse States. To ensure the equal sharing of benefits and for the cooperation

[49] "Convention on Biological Diversity", 1992, Art. 1.

[50] Alam, Dione, and Jeffrey, "The benefit-sharing principle: Implementing sovereignty bargains on water," 93.

[51] David Phillips et al., "Trans-boundary Water Co-operation as a Tool for Conflict Prevention and Broader Benefit Sharing", (2006), 173.

[52] C. W. Sadoff and D. Grey, "Cooperation on international rivers: A continuum for securing and sharing benefits," *Water International* 30, no. 4 (2005), 422.

[53] Owen McIntyre, "Benefit-sharing and upstream/downstream cooperation for ecological protection of transboundary waters: opportunities for China as an upstream state," *Water International* 40, no. 1 (2015), 50.

[54] Sadoff and Grey, "Cooperation on international rivers: A continuum for securing and sharing benefits," 423.

[55] A. Dan Tarlock and Patricia Wouters, "Are Shared Benefits of International Waters an Equitable Apportionment?," *Colorado Journal of Environmental Law and Policy* 18, no. 2 (2007), 527.

[56] Phillips et al., "Trans-boundary Water Co-operation as a Tool for Conflict Prevention and Broader Benefit Sharing", 174

[57] Alam, Dione, and Jeffrey, "The benefit-sharing principle: Implementing sovereignty bargains on water," 94.

to be advantageous for all States, the collective investments and benefit sharing must take place within clearly defined legal frames.

The transnational conflict paradigm

Benvenisti's transnational conflict paradigm offers yet another alternative to the Westphalian tradition, as it suggests that States are composed of many competing domestic groups that should be given more autonomy in the process of shared resource management. The paradigm looks through the veil of sovereignty and explains the sources and cures of international conflict and agreements.[58] The reason for this, Benvenisti explains, is that these domestic groups are often competing over the same resources and opportunities and that this competition is reflected in the States' external policies. As seen above, conflicts over the utilization of an international watercourse does not necessarily originate from disagreements between States, but in many cases rather "from transnational competition among rival domestic groups or even from collusion between several interest groups, all in an effort to capture a disproportionately larger share and externalize costs at the expense of other interest groups within those states, including future generations".[59] This makes international negotiations a two-level game where States consult both with each other and with their respective domestic actors, without having any guaranteed control over the process or the outcome. An example of the influence of such domestic pressure groups can be found in the Gabčikovo Nagymaros case. The second main questions in this case was whether Hungary could legally withdraw from the agreement because of pressure from domestic environmental groups. The possible environmental impact of the planned project had gained much negative attention in Hungary, and as a result of the "intense criticism which the Project had generated"[60] from various groups, the Hungarian government first decided to suspend the works at Nagymaros and later to abandon the project all together. The Court stressed the importance of international obligations at the expense of domestic pressure groups, and found that Hungary's unilateral withdrawal from the project was a breach of its treaty obligations.[61] Consequently, the pressure on the government from Hungarian interest groups eventually resulted in a violation of the country's international legal obligations.

The transnational conflict paradigm is constructed on a modern understanding of international law and its actors. It suggests that collective action problems are best solved on a transnational level, where groups and institutions are given an individual voice and opportunity to participate in law making and negotiations instead of being represented by their respective governments. The challenge for classic sovereignty rests in the fact that the paradigm redistributes power that is normally reserved States. Domestic pressure groups may thus achieve an individual voice and

[58] Benvenisti, *Sharing transboundary resources : international law and optimal resource use*, 49.

[59] *Sharing transboundary resources : international law and optimal resource use*, 49.

[60] *Case concerning the Gabcikovo-Nagymaros Project*, ICJ (1997), 25. On the influence of environmental groups and the domestic debate in Hungary see Lilliana Botcheva, "Focus and Effectiveness of Environmental Activism in Eastern Europe: A Comparative Study of Environmental Movements in Bulgaria, Hungary, Slovakia and Romania," *Journal of Environment and Development* 5, no. 3 (1996); Nick Manning, "Patterns of Environmental Movements in Eastern Europe," *Environmental Politics* 7, no. 2 (1998); Tamàs Fleischer, "Jaws on the Danube: Water Management, Regime Change and the Movement Against the Middle Danube Hydroelectric Dam," *International Journal of Urban and Regional Research* 17, no. 3 (1993).

[61] *Case concerning the Gabcikovo-Nagymaros Project*, ICJ (1997), 46. See also Benvenisti, *Sharing transboundary resources : international law and optimal resource use*.

a possibility to participate directly in the process of managing an international watercourse. This could prevent domestic political constraints to spill over to the international scene,[62] at the same time as it might ensure a closer connection between the decision-makers and the users of the waters.

Although the transnational conflict paradigm reduces the total power of the State, it might contribute to an increase of the effective sovereign power in areas other than international resource management. Moreover, as is the case with many of the alternative perspectives on sovereignty, the act of opening up for alternatives is itself an act of sovereignty. The power of the State is thus not lost but redistributed.

Conclusion

According to Benvenisti, we are left with two possibilities when choosing our fundamental approach to freshwater management: we can either invest in defining individual entitlements in order to ensure the market value of water as an object of trade, or we can "forgo such differentiation and develop alternatives to market transactions".[63] The community of interest approach, with its ruling vision of the unity of the watercourse and the demand for close cooperation and commitment amongst the watercourse States, might offer such an alternative to market transactions. When establishing a community of interest, the process of defining and trading individual entitlements of utilization is counterproductive to the very essence of the approach. The traditional, or archaic, understanding of sovereignty as freedom of action within territorial borders is, in spite of the obligation to take into consideration the rights of other States, an impediment to the optimal utilization of the watercourse. Hence, when committing to managing an international watercourse through the community of interest approach, States are also committing to an alternative understanding of State sovereignty.

Interpreting sovereignty within the community of interest approach must be in accordance with the inherent objectives of the approach, and facilitate the pursuit of common interests as well as the sustainable and optimal use of the resource. A first reflection is that long-term management of a natural resource demands much flexibility from the watercourse States and a certain dynamic in the agreements among them. Consenting to a process of development or management as described by Hey thus appears to be a constructive approach. Whenever watercourse States decide to establish a community of interest in the management of a shared watercourse, they agree on certain principles and norms that create the basis for the cooperation. These norms and principles become the framework within which explicit State consent to every decision is not required. The involved States have already agreed explicitly to the process of management. This approach to sovereignty ensures efficiency in managing the watercourse while also strengthening the community notion amongst the involved States.

A second reflection is that the community of interest among watercourse States is a means to realize the interest that these States share. As opposed to defining individual entitlements, the community of interest approach focuses on the benefits of close cooperation and the common and individual gains. When turning the focus away from individual entitlements and towards common interest, the benefits from common management become more apparent. Interests and benefits are similar in this regard since they both are significant motivating factors for the cre-

[62] *Sharing transboundary resources : international law and optimal resource use*, 47.
[63] *Sharing transboundary resources : international law and optimal resource use*, 25.

ation of the cooperation. Identification of shared interest is a first step towards the sharing of benefits from a community of interest cooperation, but when establishing a community of interest in a shared watercourse, the actors are sharing not only benefits, but also risks, expenses and environmental responsibility associated with such management.

In consequence, the principle of State sovereignty is not necessarily an impediment for common management of an international watercourse through the community of interest approach. However, this conclusion presupposes an alternative interpretation of sovereignty that is more adapted to the modern development of international law and to the issues of collective action and common pool resources. By moving away from individual entitlements and allocation of water quanta, watercourse States can use their sovereign powers to create more dynamic forms of water management where they consent to the process and the main principles and focus on the sharing of benefits and costs.

Pollution of the Marine Environment by Dumping: Legal Framework Applicable to Dumped Chemical Weapons and Nuclear Waste in the Arctic Ocean

*Alexander Lott**

Abstract

The Arctic seas are the world's biggest dumping ground for sea-disposed nuclear waste and have served among the primary disposal sites for chemical warfare agents. Despite of scientific uncertainty, the Arctic Council has noted that this hazardous waste still affects adversely the Arctic marine environment and may have implications to the health of the Arctic people.

The purpose of this manuscript is to establish the rights and obligations of the Arctic States in connection with sea-dumped chemical weapons and nuclear material under international law of the sea, international environmental law and disarmament law. Such mapping is important for considering options to tackle the pollution to the Arctic ecosystems and because there seems to be yet no such analysis across the legal fields carried out.

This paper aims first at identifying the scale and approximate locations of sea-disposed nuclear waste and chemical weapons in the Arctic Ocean. The analysis will further focus on ascertaining the possibilities to minimize their adverse effects on the Arctic marine environment under the applicable legal framework.

It will be argued in this manuscript that due to the corrosion of the chemical weapons and nuclear material containers, recovering, rather than confining this hazardous waste might be counterproductive as it might cause a sudden and widespread release of chemical agents or radionuclides when surfacing. In this regard, carrying out an environmental impact assessment prior to each such remediation operation would be necessary to determine the most suitable technique for minimizing or eliminating pollution.

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1. Introduction

From 1945 to 1985 hundreds of thousands of tons of chemical warfare agents were dumped at world oceans in addition to approximately 150 PBq of radioactive waste.[1] In particular, the fragile marine environment of the Arctic Ocean served as one of the main dumping grounds for disposing chemical and nuclear waste. Containers that hold the hazardous material are prone to corrosion. The exact effects of leakage on the Arctic marine environment and the associated legal implications to the Arctic Ocean littoral States are subject to controversy since it is very difficult to assess the impact of dumped chemical munitions and nuclear waste to a particular marine area.[2]

Yet, the magnitude of harm that the sea-dumped hazardous waste may cause to the local food chain and marine environment is illustrated

[1] J. M. Broadus, R. V. Vartanov. The Oceans and Environmental Security: Shared U.S. and Russian Perspectives. Washington DC: Island Press 1994, p. 126.

[2] M. R. Abbott *et al.* Ocean Dumping of Chemical Munitions: Environmental Effects in Arctic Seas. McLean: MEDEA 1997, p. 10–13. C. Behney *et al.* Nuclear Wastes in the Arctic: An Analysis of Arctic and Other Regional Impacts from Soviet Nuclear Contamination, OTA-ENV-623. Washington, DC: U.S. Government Printing Office 1995, p. 108.

by the sudden death of more than two million starfish washed ashore and thousands of other marine species that inhabited the polluted marine areas of the White Sea in 1990.[3] In addition, the Arctic States have noted with regard to sea-dumped hazardous waste that: "This is of particular concern in the Arctic because of the high level of consumption of lipid-rich wildlife foods by residents, resulting in a pathway of these contaminants to humans."[4] Thus, sea-dumped chemical warfare agents and nuclear matter may potentially also have adverse impacts on humans via food chain.[5]

In 1991 the eight Arctic States committed themselves under the Arctic Environmental Protection Strategy to a joint Action Plan of the Arctic Environmental Protection Strategy which included "cooperation in scientific research to specify sources, pathways, sinks and effects of pollution, in particular […] radioactivity […] as well as sharing of these data".[6] This was regarded as an initial priority.[7] The Arctic Council continuously addresses matters pertaining to sea-dumped hazardous waste in the framework of the Arctic Contaminants Action Program. This is necessary because radioactive contamination in the Arctic marine environment has been described as "a long-term, chronic problem".[8] In 2013, the Arctic Biodiversity Assessment concluded that: "Legacy contaminants and radioactivity from past military and other human activity have impacted and will continue to impact biodiversity in the region."[9] Hence, this paper addresses past, present as well as future dangers to the Arctic marine environment caused by anthropogenic pollution.

The aim of this manuscript is to establish the general legal framework applicable to dumped chemical weapons and nuclear material in the Arctic Ocean under the international law of the sea, international environmental law and disarmament law. Thus, the paper focuses on the rights and obligations of States in connection with sea-dumped chemical weapons and nuclear material as well as on the possibilities under the legal framework to minimize their adverse effects on the marine environment. In the course of the research, the author also addresses the relevant legal framework applicable to the recovering or confining of sea-dumped chemical weapons and nuclear material.

2. The Scale of Dumping Activities in the Arctic

The practice of dumping war remnants at sea commenced at a large scale pursuant to a decision made by the leaders of France, the Soviet Union, the United Kingdom and the United States under the framework of Article 3 of the 1945 Potsdam Agreement.[10] Subsequently, other

[3] S. S. Yufit, I. V. Miskevich, O. N. Shtemberg. Chemical Weapons Dumping and White Sea Contamination. – A. V. Kaffka (ed.). Sea-Dumped Chemical Weapons: Aspects, Problems and Solutions. Dordrecht: Kluwer Academic Publishers 1996, pp. 158–160.

[4] Declaration of the Protection of Arctic Environment. Arctic Environmental Protection Strategy 1991, Preface. Available at: http://www.arctic-council.org/index.php/en/document-archive/category/4-founding-documents (most recently visited on 20.05.2015). See also C. Behney *et al.* (See Note 2), p. 12.

[5] See also M. R. Abbott *et al.* (See Note 2), p. 10–7.

[6] Declaration of the Protection of Arctic Environment (See Note 4), Problems and Priorities 3.1.

[7] *Ibid*., Arctic Monitoring and Assessment Program – Actions.

[8] C. Behney *et al.* (See Note 2), p. 18.

[9] Arctic Council. Key Finding 5: Pollution from both long-range transport and local sources threatens the health of Arctic species and ecosystems. – Arctic Biodiversity Assessment, Conservation of Arctic Flora and Fauna 2013. Available at: http://arcticbiodiversity.is/the-report/report-for-policy-makers/key-findings#KF5 (most recently visited on 20.05.2015).

[10] T. Stock, K. Lohs. Introduction. – T. Stock, K. Lohs (eds.). The Challenge of Old Chemical Munitions and Toxic Armament Wastes. Oxford: Oxford University Press 1997, p. 4.

States also adopted this practice with regard to chemical weapons or nuclear material. In the Arctic Ocean, chemical weapons and nuclear material have been dumped only by the Soviet Union in areas that range from tens to hundreds of meters in depth.

The precise scope of dumping of chemical weapons by the Soviet Union from 1940s to 1980s at the Arctic Ocean is unclear. However, it has been established that the Soviet Union dumped in the Barents Sea and in the Kara Sea approximately 75 000 agent metric tons of mustard and lewisite; 40 000 agent metric tons of these chemicals into the White Sea; additionally around 2 000 agent metric tons of sarin and 30 000 agent metric tons of tabun in the Barents Sea and in the Kara Sea.[11] This amount is far greater compared to, for example, at least 220 000 tons of remnants of German chemical warfare (thus including the weight of the munitions body in addition to the chemical agent[12]) dumped by the Soviet Union, the United Kingdom and the United States in the Baltic Sea and Skagerrak.[13]

Notably, according to some estimates the rate of, for example, mustard gas leakage in the Baltic marine environment peaks in about 125 years after dumping.[14] It has been also argued that depending on the conditions, munitions in the North Sea and the Baltic Sea may be degraded in the period between five to hundreds of years.[15] However, it is also estimated in regards to dumped chemical munitions in the Arctic that the primary release period varies from 5 to 50 years.[16]

That implies that the dangers posed by the sea-dumped chemical weapons also to the Arctic ecosystems will remain relevant in the coming decades analogously to the Baltic Sea. In the Baltic Sea region, large-scale research projects have already been undertaken by the littoral States to locate and assess the sea-dumped chemical weapons in co-operation with the EU and the NATO.[17] Similar studies have been carried out in the Arctic.

With regard to the sea-dumped nuclear waste, the International Atomic Energy Agency (IAEA) estimated in 1991 that between 1949 and 1982 States dumped at the world oceans 46 PBq of radioactive material of which 42,31 PBq was disposed of at the North-East Atlantic.[18] Another IAEA estimate from 1989 sets the combined

[11] M. R. Abbott *et al.* (See Note 2), p. 2-2. J. Hart. A Review of sea-dumped chemical weapons, Presentation Paper: Greenwich Forum 2000, p. 7. For their characteristics in marine environment see N. Theobald. Chemical munitions in the Baltic Sea. – T. Missiaen, J.-P. Henriet (eds.). Chemical munition dump sites in coastal environments. Brussels: Federal Office for Scientific, Technical and Cultural Affairs (OSTC), Federal Ministry of Social Affairs, Public Health and the Environment 2002, p. 97.

[12] The German stockpiles included approximately 85 thousand tons of chemical agents out of which approximately 85 % were dumped at sea. B. T. Surikov. History. – E. K. Duursma (ed.). Dumped Chemical Weapons in the Sea: Options. Groningen: Drukkerij van Denderen BV 1999, pp. 4–5. T. Stock. Sea-Dumped Chemical Weapons and the Chemical Weapons Convention. – A. V. Kaffka (See Note 3), pp. 51, 53.

[13] See J. Beldowski *et al*. CHEMSEA Findings: Results from the CHEMSEA Project – Chemical Munitions Search and Assessment. CHEMSEA 2014, p. 11. Available at: http://www.chemsea.eu/ (most recently visited on 20.05.2015).

[14] P. O. Granbom. Dumped Chemical Ammunition in the Baltic: A Rejoinder. – Security Dialogue 1994(25), p. 107.

[15] N. H. A. Van Ham. Investigations of risks connected to sea-dumped munitions. – T. Missiaen, J.-P. Henriet (See Note 11), p. 89.

[16] M. R. Abbott *et al.* (See Note 2), pp. 5-1, 5-6.

[17] CHEMSEA Findings (See Note 13). NATO Science for Peace and Security (SPS) Programme. SPS Award Recommendation – Proposed Multi-year Project: Towards the Monitoring of Dumped Munitions Threat (MODUM), NATO Doc. PPC-N(2013)0054 2013.

[18] IAEA. Inventory of radioactive material entering the marine environment: Sea disposal of radioactive waste. Vienna: IAEA 1991, pp. 7, 13.

figure at 63 PBq.[19] The material was mostly enclosed in metal drums lined with a concrete and bitumen matrix.[20]

Yet, these estimates did not include data from the Soviet Union. Subsequent to the dissolution of the Soviet Union, the Russian Federation disclosed its 13 dumping sites in the Arctic Ocean, which according to the IAEA's 1993 estimate hold twice the amount of radioactive waste (90 PBq) as all previously known dumping sites in the world combined.[21] The primary dumping sites used between 1959 and 1992 are located in the Barents and Kara seas.[22]

According to the Russian official figures approximately 17,000 containers of nuclear waste were dumped at the Arctic Ocean in addition to 19 scuttled vessels with solid radioactive waste and 5 nuclear reactor compartments, 1 nuclear reactor, 1 container with shielding assembly of a nuclear icebreaker, 735 radioactive constructions and units as well as 3 nuclear submarines.[23] The Soviet nuclear submarine K-278 Komsomolets lies in the Norwegian Sea and is believed to be too deep (1 655 m) to be salvaged.[24] K-159 lies in the Barents Sea at a depth of 250 meters.[25] Another Soviet nuclear submarine K-27 was scuttled in 1981 off Novaya Zemlya – an Arctic archipelago that served as one of the primary nuclear test sites in the Soviet Union – lying 33 m beneath the surface of Stepovogo fjord.[26] The Norwegian specialists have not ruled out the possibility that more nuclear material has been dumped at the Arctic seas.[27] For many dumped structures the primary rate of radionuclide release has already passed whereas for some it is not expected before 2400.[28]

3. The Legal Framework Applicable to the Sea-Dumped Chemical Weapons and Nuclear Material in the Arctic Ocean

Establishing the legal framework applicable to sea-dumped chemical weapons and nuclear material is necessary in order to effectively tackle the pollution to the Arctic ecosystems. The applicable legal framework is a complicated combination of the law of the sea, environmental law, as well as disarmament law.

The 1982 United Nations Convention on the Law of the Sea[29] (UNCLOS) and its part XII (Protection and Preservation of the Marine Environment), in particular, serve as a foundation for research in the field. Thus, the Arctic States agreed under the 1991 Rovaniemi declaration to "[a]pply the principles concerning the protection and preservation of the Marine Environment as reflected in the 1982 United Nations Convention on the Law of the Sea, and, in accordance with the continuing development of international environmental law, to further strengthen rules in order to protect the Arctic" as well as to "[t]ake measures as soon as possible to adhere to the strictest relevant international standards within the conventions, to which the countries

[19] D. P. Calmet. Ocean disposal of radioactive waste: Status report. – IAEA Bulletin 1989(4), p. 47.
[20] *Ibid*., p. 17.
[21] J. M. Broadus, R. V. Vartanov (See Note 1), p. 126.
[22] *Ibid*., p. 135.
[23] Y. V. Sivintsev, V. L. Vysotskiy. Preparing Nuclear- and Radiation-hazardous Structures to Dumping, Long-term Storage and Ultimate Disposal at Sea. Actual Status of Shielding Barriers and Predictions of their Efficiency. КЭГ-210 (В3). Available at: http://www.iaea.org/OurWork/ST/NE/NEFW/CEG/documents/ws022010/eng/5.3VysotskySivintsevPaperEngl.pdf (most recently visited on 20.05.2015). For locations of nuclear waste dumping in the Arctic see C. Behney *et al.* (See Note 2), p. 7.
[24] L. Peter, Russia Explores Old Nuclear Waste Dumps in Arctic. BBC News 25.11.2013. Available at: http://www.bbc.co.uk/news/world-europe-21119774 (most recently visited on 20.05.2015).
[25] Y. V. Sivintsev, V. L. Vysotskiy (See Note 23), p. 3.
[26] *Ibid.*
[27] L. Peter (See Note 24).
[28] Y. V. Sivintsev, V. L. Vysotskiy (See Note 23), p. 14.
[29] United Nations Convention on the Law of the Sea, signed on 10.12.1982 in Montego Bay, e.i.f. 16.11.1994.

are parties, regarding discharges irrespective of origin."[30]

Furthermore, there is also a human rights dimension. Yet, in the case of Dr S. v. Federal Republic of Germany the European Commission of Human Rights concluded that a claim, according to which nuclear tests and dumping of radioactive waste at sea were contrary to the right to life and the right to liberty and security, was manifestly ill-founded with no appearance of a violation of the European Convention on Human Rights[31] on the facts of the case.[32]

3.1 The ban on dumping nuclear waste and chemical weapons at sea

At the time of large-scale dumping activities States were generally not legally prohibited from dumping nuclear material or chemical weapons at sea. Overall, it was regarded as a safe and sound technique for the disposal of hazardous waste.[33] A wide-range ban on dumping of hazardous waste at sea was stipulated under Article 5 of the 1974 Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft,[34] which was superseded by the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR).[35] Yet, this Convention did not apply to the Russian Arctic as the Soviet Union was not a State Party to this Convention and neither is the Russian Federation.

Under the 1972 London Convention[36] contracting States, including the Soviet Union, were prohibited only from dumping of high-level radioactive wastes or other high-level radioactive matter, defined on public health, biological or other grounds by the IAEA as unsuitable for dumping at sea. Additionally, according to the 1958 Convention on the High Seas[37] States Parties were at the time required only to co-operate in tackling the harmful effects of dumping of harmful substances.

Similarly, in accordance with Article 210 of UNCLOS, States must have laws and regulations in place to prevent, reduce and control pollution of the marine environment by dumping[38] and they are to take other measures as may be necessary to prevent, reduce and control such pollution.[39] Such laws, regulations and measures, no less effective in preventing, reducing and controlling pollution than the global rules and standards,[40] are to ensure that dumping is not carried out without the permission of the competent authorities of States.[41] Thus, UNCLOS

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[30] Arctic Environmental Protection Strategy 1991 (See Note 4), Protection of the Arctic Marine Environment, pp. i), ii).

[31] The Convention for the Protection of Human Rights and Fundamental Freedoms, signed on 4.11.1950 in Rome, e.i.f. 3.09.1953. See Arts. 2(1) and 5(1).

[32] See C. A. R. Robb (ed.). Human Rights and Environment. International Environmental Law Reports, vol. 3. Cambridge: Cambridge University Press 2001, pp. 708–709.

[33] See, e.g., J. R. McCullagh. Russian Dumping of Radioactive Wastes in the Sea of Japan: An Opportunity to Evaluate the Effectiveness of the London Convention 1972. – Pacific Rim Law & Policy Journal 1996, Vol. 5, No. 2, p. 402.

[34] Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, signed on 15.02.1972 in Oslo, e.i.f. 7.04.1974.

[35] Convention for the Protection of the Marine Environment of the North-East Atlantic, signed on 22.09.1992 in Paris, e.i.f. 25.03.1998.

[36] Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, signed on 13.11.1972 in London, e.i.f. 30.08.1975. See Arts. 4(1)(a) in combination with Annex I.

[37] Convention on the High Seas, signed on 29.04.1958 in Geneva, e.i.f. 30.09.1962. See Art. 25(2).

[38] Art. 210(1) of the UNCLOS.

[39] Art. 210(2) of the UNCLOS. See for the definition of 'pollution' in Art. 1(1)(4) of the UNCLOS, Art. 1(10) of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and Art. 2(1) of the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic.

[40] Art. 210(6) of the UNCLOS.

[41] Art. 210(3) of the UNCLOS.

does not provide for a ban on the dumping of chemical weapons or nuclear waste at sea. Instead, it links such matters with the development of global or regional standards under other legal instruments.

A voluntary moratorium on dumping of low-level radioactive waste at sea was imposed already in 1983 by the parties to the 1972 London Convention, but the United States had voted against this proposal and the Soviet Union abstained from voting continuing with its disposal activities in the Arctic seas until 1992.[42] The Soviet Union also dumped high-level radioactive waste at the Arctic seas subsequent to and thus in breach of the 1972 ban.[43] A total ban on radioactive waste disposal at sea, thus including low-level radioactive matter, was stipulated by the 1993 Resolution on Amendments to the Annexes to the London Convention 1972 concerning the prohibition of dumping radioactive wastes and other radioactive matter.[44] However, the Russian Federation chose to opt out from the ban on the sea-disposal of low-level radioactive waste.[45]

The overarching ban on the dumping of wastes and other matter at sea was first formulated in the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1996 London Protocol).[46] This ban is incorporated into the Chemical Weapons Convention[47] (CWC) through paragraph 13 of Part IV(A) of the Verification Annex, whereby States Parties are not allowed to destroy chemical weapons by means of dumping in any body of water. The eight Arctic States are parties to the 1993 CWC,[48] whereas three of them – the Russian Federation, the United States and Finland – are not parties to the 1996 London Protocol.[49]

Although the protection of the marine environment is not among the underlying characteristics of the CWC, the prevention of inappropriate destruction techniques may be seen in accordance with preambular paragraph 10 and Article I(2) of the CWC as one of the core obligations that the CWC imposes on States Parties. States Parties to the CWC are required to submit initial declarations to the Organisation for the Prohibition of Chemical Weapons (OPCW) in accordance with Article III(1)(a) and (b) in respect of chemical weapons under their jurisdiction or control.

Chemical weapons dumping sites in the Arctic seas are mostly situated in vicinity to the Russian coast.[50] In particular, the dumping site in the White Sea falls under the regime of internal waters due to the Russian straight baseline from the Kola Peninsula to the Kanin Peninsula (Art.

[42] J. M. Broadus, R. V. Vartanov (See Note 1), pp. 153, 135.
[43] See chronology of the Soviet Union's dumping activities in the Arctic in Y. V. Sivintsev, V. L. Vysotskiy (See Note 23), p. 3.
[44] Resolution LC.51(16) adopted on 12 November 1993: Amendments to the Annexes to the London Convention 1972 concerning the prohibition of dumping radioactive wastes and other radioactive matter. Available at: http://www.imo.org/KnowledgeCentre/ReferencesAndArchives/IMO_Conferences_and_Meetings/London_Convention/LCandLDCReports/Documents/Report%20of%20LC%2016%20November%201993.pdf (most recently visited on 20.05.2015).
[45] J. R. McCullagh (See Note 33), p. 408.
[46] 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, adopted on 17.11.1996 in London, e.i.f. 24.03.2006. See Art. 4(1).
[47] Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, signed on 13.01.1993 in Paris and New York, e.i.f. 29.04.1997.
[48] OPCW. OPCW Member States. Available at: http://www.opcw.org/about-opcw/member-states/ (most recently visited on 20.05.2015).
[49] IMO. Parties to the London Convention and Protocol. Status as of 15 September 2014. Available at: http://www.imo.org/OurWork/Environment/LCLP/Documents/Map%20of%20Parties%20Sept%202014.pdf (most recently visited on 20.05.2015).
[50] M. R. Abbott *et al.* (See Note 2), p. 2–3.

8 of UNCLOS).[51] However, it is also important to note that some dumping sites in the Arctic Ocean are located outside the limits of 12 nautical miles of the territorial sea. In the context of Article III(1) of the CWC, neither the Exclusive Economic Zone (EEZ) nor the continental shelf are zones of sovereignty,[52] which entails that States are not required to submit declarations to the OPCW in relation to chemical weapons dumped in these areas.

Each State Party was required to submit to the OPCW a declaration disclosing information on whether it had abandoned chemical weapons on the *territory* of other States.[53] The latter means that the EEZ, continental shelf and high seas are excluded from the scope of the provision. The declarations had to include also information about the location, type, quantity as well as the condition of the abandoned chemical weapons. Thus far, no confirmed chemical weapons dumping activities have been reported in areas under another State's jurisdiction.

3.2 Chemical Weapons Dumped in the Arctic Ocean prior to 1985

In accordance with Article III(2) and Article IV(17) of the CWC, a State Party to the CWC is not required to declare or destroy chemical weapons dumped at sea before 1 January 1985 or buried on its territory before 1 January 1977 and which remain buried. 'Dumped at sea' refers to chemical weapons dumped at all parts of sea (including territorial sea and archipelagic waters) except for internal waters that fall under a different category which addresses chemical weapons 'buried by a State Party on its territory'.[54] As the dumping site in the White Sea composes of mustard and lewisite which were dumped in the late 1940s and 1950s,[55] the Russian Federation is not required under the CWC to declare or destroy the chemical weapons dumped in the internal waters of the White Sea due to the 1977 cut-off date.

The 1985 cut-off date is relevant in regards to other dumping sites in the Russian Arctic. The 1985 cut-off date was included in the text of the CWC at the very last moment during its drafting and the rationale behind this remains obscure and has never been publicly explained.[56] There are no indications that the chemical weapons dumping sites in the Arctic Ocean would not precede that date.

Therefore, J. P. Zanders has argued that the coastal State may destroy such chemical weapons which have been dumped at sea prior to 1985 underwater by following only the rules applicable to the protection of the marine environment and the safety of divers.[57] Furthermore, J. P. Zanders maintains that: "The exemption of declaration and destruction requirements is extended to sea-dumped CW that have been recovered for whatever reason."[58] He concludes:

> "As a consequence, a state party may dispose of these weapons without notification

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[51] See map on the Russian straight baselines in the Arctic in W. V. Dunlap. Transit Passage in the Russian Arctic Straits. – Maritime Briefing 1996, Vol. 1, No. 7, p. 57.

[52] *Maritime Delimitation* (Guinea/Guinea-Bissau), Arbitral Tribunal, 14.02.1985, para. 124. Available at: www.untreaty.un.org/cod/riaa/cases (most recently visited on 20.05.2015).

[53] See Arts. III(1)(b)(iii) of the CWC, as well as paragraph 10 of Part IV(B) of the Verification Annex.

[54] See also 'Understanding on the Terms "Buried by a State Party on its Territory" and "Dumped at Sea", Annex, C-I/DEC.31, dated 16 May 1997. See OPCW. OPCW: The Legal Texts, The Hague: TMC Asser Press 2015, pp. 111–112.

[55] M. R. Abbott *et al.* (See Note 2), p. 2–6.

[56] W. Krutzsch, R. Trapp. A Commentary on the Chemical Weapons Convention, Dordrecht: Martinus Nijhoff 1994, p. 58.

[57] J. P. Zanders. Dealing with chemical weapons dumped in bodies of water. – T. Missiaen, J.-P. Henriet (See Note 11), p. 150.

[58] *Ibid.*, p. 149.

> of the Technical Secretariat [of the OPCW – A.L.] and might thus consider open-pit burning, land burial (including dumping in internal waters) or re-dumping at sea, or even storage on land. Re-dumping at sea might be subject to international environmental and maritime law (especially if the weapons were first moved onto land, e.g., for repackaging)."[59]

However, the CWC may also be interpreted differently by coming to the conclusion that this exemption applies only to such chemical weapons that remain dumped at the Arctic seas.

In this connection, the CWC does not explicitly address the obligations that might relate to such chemical weapons that have been dumped at the Arctic seas before 1 January 1985, but recovered from the sea or washed ashore thereafter. Therefore, the question posed by J. P. Zanders has particular relevance as he asks: "[B]earing in mind that the mere act of retrieval does not generate new responsibilities for states parties, can items that were totally exempt from the declaration and destruction obligations under the CWC become the subject of CWC regulations?"[60] In the opinion of the present author the answer should be affirmative.

In this context, the principal objective of the CWC has particular relevance. Article I(1)(a) of the CWC stipulates that: "Each State Party to this Convention undertakes never under any circumstances: (a) to develop, produce, *otherwise acquire*, stockpile or *retain* chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone" (emphasis added). Hence, in such circumstances, an Arctic Ocean littoral State would be required to destroy chemical weapons it owns or possesses in accordance with Article I(2) of the CWC. It thus follows that such recovered or discovered chemical weapons fall under the scope of Article III(1)(a) and (b) of the CWC, whereby they have to be declared and subsequently destroyed in accordance with either Part IV(A) or Part IV(B) of the Verification Annex, depending on whether they fall under the category of old chemical weapons.[61]

An Arctic littoral State that has made a declaration for recovered or discovered sea-dumped chemical weapons would be required, *inter alia*, to provide the general chemical weapons destruction plan and the detailed annual plans for destruction.[62] It would be also required to submit subsequent annual declarations.[63] Additionally, such State Party to the CWC would have to provide detailed facility information for each of its chemical weapons destruction facilities in order to assist the Technical Secretariat of the OPCW in developing preliminary inspection procedures for use at the facility.[64]

3.3. Reducing and Eliminating the Pollution Emanating from the Sea-dumped Nuclear Waste and Chemical Weapons

In spite of the lack of legal obligation for States to recover sea-dumped nuclear waste and chemical weapons dumped at sea prior to 1985 or in internal waters before 1977 under disarmament law, such requirement may derive from other legal instruments, *a priori* treaties that relate to marine environment protection. In this regard, Article 194(1) of the UNCLOS requires States to take all measures consistent with this Convention that are necessary to prevent, reduce and control

[59] *Ibid.*, p. 151.
[60] *Ibid.*, p. 152.
[61] OPCW. Note by the Technical Secretariat: Proposed Verification Measures for Old Chemical Weapons Produced Between 1925 and 1946, OPCW Doc. S/166/2000, para. 4.9.
[62] See para. 6 of Part IV(A) of the Verification Annex.
[63] See paras. 29 and 36 of Part IV(A) of the Verification Annex.
[64] See paras. 30–32 of Part IV(A) of the Verification Annex.

pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities. It also requires States to endeavour to harmonize their policies in this connection.

Additionally, in accordance with Article 197 of the UNCLOS, States need to co-operate globally and regionally for the protection and preservation of the marine environment, taking into consideration characteristic regional features. In this context, the Arctic States have stressed the importance of the 1986 IAEA Convention on Early Notification of a Nuclear Accident[65] for cooperation and exchange of information in the Arctic region.[66] Furthermore, the Arctic States have underlined that: "Further consideration should be given to the development of more specific measures, consistent within the international legal framework of IAEA procedures, for cooperation amongst Arctic countries to deal with emergencies caused by the accidental release of radioactive substances and to provide mutual assistance in the harsh Arctic environment."[67] In this connection, the eight Arctic States have also set an objective to adopt a legally binding agreement on international scientific research cooperation in the coming years.[68]

Furthermore, under Article 199 of the UNCLOS States are required to co-operate in eliminating the effects of pollution and preventing or minimizing the damage. The above-mentioned provisions stipulated in the UNCLOS, however, refer to duties of due diligence. The recovery of sea-dumped chemical weapons or nuclear material from the Arctic marine environment could thus be required under the UNCLOS only if it would be technically and financially feasible as well as safe for the concerned States.[69] This depends on whether the Arctic littoral States have viable means at their disposal.

The importance of cooperation, in the spirit of Principle 7 of the 1992 Rio Declaration,[70] has been stressed by the UN General Assembly as well as the International Law Commission in connection with matters pertaining to the dumped chemical weapons.[71] In 2010, the UN General Assembly acknowledged "the concerns about the potential long-term environmental effects related to waste originating from chemical munitions dumped at sea, including their potential impact on human health".[72] It invited States and organizations to cooperate and voluntarily share relevant information about the environmental effects of the chemical weapons dumped at sea.[73] The UN General Assembly and the IAEA have similarly stressed the importance of the prohibition on the dumping of radioactive wastes.[74]

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[65] Convention on Early Notification of a Nuclear Accident, adopted on 26.09.1986 in Vienna, e.i.f. 27.10.1986.

[66] Arctic Environmental Protection Strategy 1991 (See Note 4), International Mechanisms for the Protection of the Arctic Environment 4.5.

[67] *Ibid*., Actions 5.5.

[68] Arctic Council. Tromsø hosts 4th meeting of Scientific Cooperation Task Force. 12.11.2014. Available at: http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/952-tromso-hosts-4th-meeting-of-scientific-cooperation-task-force (most recently visited on 20.05.2015).

[69] J. C. Duursma. Legal Responsibility of States. – E. K. Duursma (See Note 12), p. 43.

[70] The United Nations Conference on Environment and Development, The Rio Declaration on Environment and Development 1992, Principle 7. Available at: http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (most recently visited on 20.05.2015).

[71] UN. Fourth Report on international liability for injurious consequences arising out of acts not prohibited by international law, UN Doc. A/CN.4/373, Art. 8

[72] UN. Cooperative measures to assess and increase awareness of environmental effects related to waste originating from chemical munitions dumped at sea, UN Docs. A/RES/65/149, p. 2 and A/RES/68/208, p. 3.

[73] *Ibid*.

[74] IAEA. Measures to Strengthen International Cooperation in Matters Relating to Nuclear Safety and Radiological Protection, IAEA Doc. GC(XXXIII)/RES/509. See also UN. General and Complete Disarmament, UN Doc. A/RES/48/75.

Furthermore, Article 194(5) of the UNCLOS stipulates that coastal States are required to adopt measures that are necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. In such case, the Arctic coastal States have to undertake necessary preventive measures concerning the marine environment, which may be threatened by the sea-dumped chemical weapons and nuclear material.

Although some research projects on the impact of sea-dumped chemical weapons to the Arctic marine environment and coastal regions have been undertaken,[75] the scientific uncertainty over their effects on the marine environment is still widely acknowledged.[76] The same applies to the environmental effects of sea-dumped nuclear waste.[77] In this connection, the precautionary approach has particular relevance. The importance of the precautionary principle in the Arctic has been underlined by the Arctic States, including the Russian Federation, in the *Guidelines for Environmental Impact Assessment (EIA) in the Arctic* in which it is stated that:

"This approach is particularly relevant in the Arctic, where baseline data are scarce and there are gaps in the understanding of the important ecological functions in the Arctic systems. The precautionary approach should therefore be encouraged when carrying out EIAs in the Arctic."[78]

Furthermore, the precautionary principle is incorporated into Article 3(1) of the 1996 London Protocol, according to which "appropriate *preventative* measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are *likely* to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects" (emphasis added). However, as the Russian Federation is not a State Party to the 1996 London Protocol and the *Guidelines for Environmental Impact Assessment (EIA) in the Arctic* entail only recommendations it is not legally bound under these instruments to follow the precautionary approach in respect of the sea-dumped chemical and nuclear waste.

Similarly, albeit the 1992 Rio Declaration underlines that "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation,"[79] it is not a legally binding document that the Russian Federation would be obliged to follow in regards to the hazardous material dumped at the Arctic seas. Nevertheless, it is reflective of the potential customary status of the precautionary principle. The International Court of Justice, nevertheless, has not considered the precautionary principle as part of customary international law.[80] Hence, absent of any legal obligation, the Russian Federation is not bound to follow the precautionary approach under international law in relation to its sea-dumped chemical weapons and nuclear material.

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[75] See M. R. Abbott *et al.* (See Note 2), pp. 8-2 – 8-33. See also L. A. Fedorov, Chemical Weapons in Russia: History, Ecology, Politics. Moscow: Moscow Center of Ecological Policy of Russia 1994.

[76] M. R. Abbott *et al.* (See Note 2), p. 10–13. See also T. Stock. Sea-Dumped Chemical Weapons and the Chemical Weapons Convention. – A. V. Kaffka (See Note 3), pp. 49, 58.

[77] See, e.g., C. Behney *et al.* (See Note 2), p. 108.

[78] Guidelines for Environmental Impact Assessment (EIA) in the Arctic: Arctic Environmental Protection Strategy. Helsinki: Finnish Ministry of the Environment 1997, p. 10. Adopted by the Arctic States, including the Russian Federation, in the Alta Declaration on 13.06.1997. Available at: http://library.arcticportal.org/1271/1/The_Alta_Declaration.pdf (most recently visited on 20.05.2015).

[79] Rio Declaration (See Note 70), Principle 15.

[80] P. Sands, J. Peel. Principles of International Environmental Law. Cambridge: Cambridge University Press 2012, pp. 223–226.

Yet, it is still principally possible to invoke the above-mentioned provisions in combination with Articles 194, 197 and 199 of the UNCLOS, for requiring States to confine chemical weapons and nuclear material cargo and ships in the marine environment. The 1991 Rovaniemi declaration has also set as an objective of the Arctic Environmental Protection Strategy to "identify, reduce, and, as a final goal, eliminate pollution."[81] The elimination of pollution emanating from hazardous waste might necessitate the recovery of sea-dumped chemical weapons or nuclear material. Options for carrying out such remediation were considered in the 1990s by Norway and the IAEA in respect of the sea-dumped nuclear waste in the Arctic.[82]

However, due to the corrosion of the chemical weapons and nuclear material containers as well as scuttled or sunk ships loaded with chemical weapons or nuclear material, lifting them might be counter-productive as it might cause a sudden and widespread release of chemical agents or radionuclides when surfacing.[83] This would be likely to cross the threshold of trivial or speculative harm and thus potentially involve a risk of causing significant transboundary harm in terms of Article 2(a) of the 2001 Draft Articles on Transboundary Harm[84] and transboundary impact as defined in Article 1(vii) of the 1991 Espoo Convention.[85]

The International Court of Justice has recognised "the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control" as part of international environmental law.[86] Furthermore, unlike with regard to the precautionary principle, the International Court of Justice has accorded a status of customary international law to the practice of carrying out an EIA.[87] This implies that although the Russian Federation has not ratified the 1991 Espoo Convention and is thus not obliged to carry out a transboundary EIA in the Barents Sea, White Sea or Kara Sea region under the conditions provided in the convention,[88] it should nevertheless carry out a general EIA prior to a possible remediation of the sea-dumped chemical weapons or nuclear material.

This also follows from the fact that the Russian Federation is a signatory State to the Espoo Convention which implies that it should refrain from acts that would defeat the object and purpose of the treaty in terms of Article 18 of the Vienna Convention on the Law of Treaties.[89] Thus, for that purpose as well as to comply with the international customary law the Russian Federation should carry out an EIA in order to conform to the general aim stipulated in Article 2(1) of the Espoo Convention. According to this provision the Russian Federation would need to take all

[81] Arctic Environmental Protection Strategy 1991 (See Note 4), Objectives 2.1 v).

[82] C. Behney *et al.* (See Note 2), pp. 32, 63–64.

[83] J. G. de Vries. Confinement of wrecked ships and chemical weapons cargo. – E. K. Duursma (See Note 12), p. 13. See also C. Behney *et al.* (See Note 2), p. 31.

[84] International Law Commission. Prevention of Transboundary Harm from Hazardous Activities. UN: 2005. See also P. Birnie, A. Boyle, C. Redgwell. International Law & the Environment. Oxford: OUP 2009, p. 142.

[85] Convention on Environmental Impact Assessment in a Transboundary Context, signed on 25.02.1991 in Espoo, e.i.f. 10.09.1997. United Nations Treaty Collection. The Status of the Convention on Environmental Impact Assessment in a Transboundary Context. Available at: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-4&chapter=27&lang=en (most recently visited on 20.05.2015).

[86] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1. C.J. Reports 1996, p. 226, para 29.

[87] See Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010, p. 14, para 204.

[88] See further T. Koivurova, V. Masloboev, A. Petrétei, V. Nygaard, K. Hossain. Transboundary EIA in the Barents Region. – Nordic Environmental Law Journal 2014, No. 3, p. 47.

[89] Vienna Convention on the Law of Treaties, signed on 23.05.1969 in Vienna, e.i.f. 27.01.1980.

appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities once it might be weighing on options to reduce or eliminate marine pollution emanating from sea-dumped nuclear waste or chemical weapons.

Therefore, albeit the Russian Federation would not be obliged to comply with the international standards stipulated in the Espoo Convention for carrying out an EIA, it should still carefully consider alternatives when deciding on environmentally sound techniques for recovering or confining the sea-dumped hazardous waste. This is ever more important as the recovery of sea-dumped chemical munitions has been characterised as a "high cost – high risk operation" that may cause the release of great amount of chemical agents in the marine environment or even casualties.[90] In light of the foregoing, sarcophaging, whereby the chemical weapons agents or nuclear material would be isolated from the marine environment,[91] may have potentially significant advantages over lifting the corroded containers and thus might be regarded in some instances as a more preferable, albeit still highly costly technique in the context of the precautionary approach.

4. Conclusion

The Soviet Union dumped in the White Sea, the Barents Sea and in the Kara Sea between 1945 and 1985 approximately 150 000 metric tons of chemical warfare agents (lewisite, mustard, sarin and tabun). Additionally, based on Russia's disclosed information the IAEA has estimated that 90 PBq of radioactive waste was dumped between 1959 and 1992 in the Barents and Kara seas. Thus, the Arctic Ocean dumping grounds hold twice the amount of radioactive waste as other previously known dumping sites in the world oceans combined.

The 1993 Chemical Weapons Convention prohibits the destruction of chemical weapons by means of dumping in any body of water. However, the Russian Federation is not legally obliged under this convention to declare or destroy the chemical weapons dumped in its internal waters and other maritime zones. Additionally, the overarching ban on the dumping of wastes and other matter at sea was stipulated under the 1996 London Protocol, i.e. subsequent to the dumping of chemical weapons at the Arctic seas.

Yet, the disposal of high-level radioactive matter at sea had been prohibited already under the 1972 London Convention. Such dumping operations were nevertheless carried out at the Arctic seas in breach of this ban. Nevertheless, the Russian Federation is also not legally bound to recover such nuclear waste.

However, the Arctic States declared in 1991 their objective in identifying, reducing and, as a final goal, eliminating pollution. In pursuance of this objective, the Russian Federation should carry out an EIA in case it might be weighing on remediation options in regard of the sea-dumped chemical weapons and nuclear waste. This would allow adopting the most suitable technique for eliminating or minimizing the marine pollution.

The sarcophaging of chemical agents and nuclear material in terms of eliminating or confining the chemical and radioactive pollutants in the Arctic marine environment might be regarded in comparison to recovering the corroded containers in many instances as a more viable, albeit expensive technique in the context of the

[90] Van Ham (See Note 15), p. 92.

[91] Such construction techniques may even result in the formation of artificial islands. See *Ibid*., p. 93. The coastal State has the exclusive right to construct artificial islands also in its EEZ. See Art. 60 of UNCLOS. For remediation options generally see also C. Behney *et al.* (See Note 2), pp. 68–72.

precautionary approach. It cannot be ruled out that this option may become of increasing relevance as the containers that hold the hazardous sea-pollutants further corrode.

The Arctic States enhanced their co-operation in scientific research on radioactivity in the Arctic Ocean under the Rovaniemi declaration of 1991. It is also a priority for the Arctic Council, which, in 2013, underlined the continuing impact of radioactivity on the Arctic biodiversity. However, there is still considerable scientific uncertainty as to the environmental effects of the sea-dumped chemical weapons and nuclear waste. In this regard, the 1982 UNCLOS provides a general legal framework for on-going research and cooperation aimed at protecting and preserving the Arctic marine environment. Further, the eight Arctic States are aiming at adopting soon a legally binding agreement on international scientific research cooperation which would be potentially relevant also to more effectively monitor and evaluate the risks associated with the sea-dumped chemical weapons and nuclear material in the Arctic.