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The Impact of the Water Framework Directive on Diffuse Pollution Control: the Case of Ditch Network Maintenance in Finnish Forests

*Minna Pappila & Lea Halonen**

Abstract

The Water Framework Directive sets the aim to achieve and maintain the good status of surface and ground water by 2015. In general the water quality has improved in Finland during the last centuries but especially diffuse pollution is still a problem. Ditch network maintenance is a typical example of a source of diffuse pollution where cumulative effects of several projects are the main cause of water pollution. This article examines Finnish regulation concerning ditch network maintenance and evaluates how well it meets the aim of achieving and maintaining the good quality of surface waters. The article highlights that while Finnish legislation seems to work relatively well for individual projects, there are flaws in the law and in practice that do not enable authorities to take cumulative effects properly into account. The results suggest that the Water Framework Directive has not yet been quite comprehensively implemented into Finnish legislation.

1. Introduction

1.1 The aim and the method

Finland is one of the swampiest countries in the world and extensive ditching has considerably changed our water systems during the last fifty years. In this article we will scrutinize Finnish regulation on ditching from the viewpoint of the Water Framework Directive[1] (hereinafter WFD) and diffuse pollution control.

The WFD principally determines the water policy in the EU nowadays. The directive adopts a holistic approach to water protection and puts ecosystem stability at the centre of water policies.[2] The WFD represents a radical shift in water management within the EU by governing waters on a river basin basis. The WFD establishes environmental objectives of which the most important is the aim to *achieve* and *maintain* the good status of surface and ground water by 2015 (article 4). 'Good status' includes both 'good ecological status' and 'good chemical status'. The objective of preventing further deterioration of the status of a body of surface water is binding on authorities and must be applied while considering the permissibility of a single project: an authority shall not grant a permit if the project could lead to the deterioration of the status of the water.[3]

* Postdoctoral researcher Minna Pappila and PhD candidate Lea Halonen, both at Law School, University of Eastern Finland.

[1] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for community action in the field of water policy.

[2] Jans & Vedder (2012): European Environmental Law: After Lisbon, 4th edition, Europa Law Publishing, p. 392, Lee, M. (2009): Law and Governance of Water Protection Policy. In Scott, J. (ed): *Environmental Protection, European Law and Governance*, Vol. XVII/3, 27–55, Oxford University Press, p. 29.

[3] Court of Justice of the European Union states in the Weser dredging case (C-461/13) that Member States are required — unless a derogation is granted — to refuse authorisation for an individual project where it may cause a deterioration of the status of a body of surface water or where it jeopardises the attainment of good sur-

The holistic environmental objectives and the requirement to prevent deterioration also apply to diffuse pollution.[4] In Finland, ditch network maintenance is a typical example of a source of diffuse pollution: pollutants flow from a relatively large area as a result of several DNM and other projects. Diffuse pollution is typically governed by a variety of means – often by also using instruments other than binding rules or permits.[5] In Finland the governance of ditching consists of both statutes and soft law instruments, thus combining the typical point-source pollution approach (legally binding regulations such as permits) and the diffuse pollution approach (mainly soft law). However, the WFD and its obligations concern activities that require a permit and others that do not.

The aim of this article is to scrutinise the instrument mix of Finnish water protection regulation of forest ditching. We analyse the instrument mix from the viewpoint of one of the main objectives of the WFD: to achieve and maintain the good status of surface water.[6] We will therefore ask the question: does the current regulation of ditch network maintenance *enable* and *obligate* authorities to ensure good status of surface waters? Even if the meaning of 'good status' is complex and vague, we consider that it is possible to use it as a criterion for evaluating legislation, as we are only scrutinising the fulfilment of the aim on a general level, i.e. the permitting and other regulatory instruments.

Our article is part regulatory research and part evaluation research: we will first and foremost look at regulation[7] from the viewpoint of potential effectiveness.[8] Our starting point for this study is that the design of regulation and its implementation by public authorities are central to ensuring the effectiveness of regulation.[9] Thus, evaluating potential effectiveness means exploring the regulation for its potential to ensure the

face water status or good ecological potential and good surface water chemical status by the date laid down by the directive.

[4] Diffuse pollution means pollution which is caused by the release of pollutants from a range of activities on land that individually may have little effect on the water environment, but cumulatively can have a significant impact across a (river) catchment.' SEPA (Scottish Environment Protection Agency) (2014): The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), A Practical Guide, Version 7.1, 2014, p. 9.

[5] Usually it is burdensome to control the impacts of diffuse pollutants by command and control instruments. See Gunningham, N. & Sinclair, D.: Policy Instrument Choice and Diffuse Source Pollution. Journal of International Law, 2005, vol. 17, no. 1, 51–81, p. 52–54. See also Howart, W. (2011): Diffuse Water Pollution and Diffuse Environmental Laws Tackling Diffuse Water Pollution in England, Report by the Comptroller and Auditor General, HC 186, Session 2010-2011, 6 July 2010. JEL 23:1, 129–141, p. 130.

[6] WFD art. 4(1)(a). We also take into consideration the obligation to prevent the deterioration of surface water bodies (art. 1).

[7] We understand the concept of regulation broadly in the sense of the ''sustained and focused attempt to alter the behavior of others according to defined standards or purposes.'' See Black, J.: Critical reflections on regulation. Australian Journal of Legal Philosophy. 27/2002, 1–35, p. 20. The concept of regulation thus contains not only the activities of state intervention but also private regulations, i.e. self-regulation.

[8] There are multiple meanings of effectiveness and it is defined in various ways for different purposes. Effectiveness is typically understood as the extent to which the policy goals associated with the body of legislation are achieved. McGrath C. (2010), Does Environmental Law Work? How to Evaluate the Effectiveness of an Environmental Legal System (Lambert Academic Publishing, Saarbrücken, p. 45–46.) In terms of the main lines of regulatory research in Finland, see Kokko, K. T.: Methods of Environmental Law in Finland. Scandinavian Studies in Law 59 (2014), 285–319, p. 300.

[9] We do not intend to deprecate the potential impact of self-regulation, such as voluntary forest certification systems on water quality. However, when there is need to ensure that sufficient water protection methods are in use in a DNM project, an authority must have the opportunity to forbid a project or to require more efficient water protection methods. A voluntary forest certification standard is of no help in such cases. In addition, the most widely used forest certification system in Finland, PEFC, does not add anything new to water protection requirements regarding DNM projects.

set targets. We look at the whole water protection instrument mix of DNM projects.[10] This article will contribute to the discourse on the regulation of diffuse pollution and cumulative effects. Our conclusions will also bring some of the flaws in Finnish legislation related to the implementation of the WFD to the discussion.

As research material we have used legislation and other regulation, research literature, river basin management plans (RBMPs) and programmes of measures (POMs), and a sample of drainage notifications from three regional environmental authorities. We also sent an enquiry by e-mail to all Centres for Economic Development, Transport and the Environment (hereinafter ELY Centres)[11] supervising DNM projects.[12]

In part two we shall first introduce the Finnish legislation and soft law concerning DNM. In part three, relevant water protection instruments will be analysed from the perspective of their potential effectiveness in ensuring the good status of surface waters. The relevance of river basin management plans (RBMP) and programmes of measures will be scrutinised in particular. Part four is for discussion and conclusions. However, we shall first describe the research topic from a social and environmental viewpoint.

1.2 Finnish forest drainage in a nutshell

Ditching has a long history in Finland as almost one-third of Finland's land area consists of peatlands. Forest ditching started in Finland in the early 20th century.[13] Due to mechanisation, active state policy and subsidies, ditching intensified in the 1960s and reached its peak in 1969.[14] Now over half of Finland's peatland, about 4.7 million hectares, has been drained for forestry.[15] As a whole the drainage has considerably increased the amount of productive forest land and the growing stock.[16] However, while the water quality in general has improved significantly in Finland during the last decades, the quality of small water bodies has not improved due to the impact of agriculture and forestry.[17] Also, many small-scale water habitats have become endan-

[10] By also scrutinising non-state regulation we employ a polycentric view of law. The Finnish regulation of DNM is clearly polycentric and pluralistic. See Halonen, L. (2013): Ojitusilmoitusvelvollisuus metsäojitusten vesiensuojelun hallinnan keinona (The Duty to Notify on Forest Ditching as an Administrative Control Mechanism of Water Protection). *Ympäristöjuridiikka* 2/2013, 30–61 and Halonen, L. (2015): Metsätalouden vesiensuojelusuositukset metsäojitusten sääntelykeinona (Silvicultural Water Protection Guidelines as a Regulatory Instrument). *Oikeus* 2/2015, 177–201.

[11] ELY Centres (*Elinkeino-, liikenne- ja ympäristökeskus* in Finnish) also act as supervisory authorities for water and environmental protection permits. Read more about ELY Centres here: http://www.ely-keskus.fi/en/web/ely-en/environment.

[12] Inquiry/ELY Centres 2015. An inquiry concerning e.g. notifications, cumulative effects and utilised databases was sent to the officials of ELY Centres responsible for ditching notifications. Ten responses from different ELY Centres were received in April–May 2015.

[13] Peatlands are also used for agriculture and peat is harvested for different purposes. METLA (Metsäntutkimuslaitos /The Finnish Forest Research Institute): Finland – the Peatland Capital of the World. [http://www.metla.fi/tutkimus/suotutkimus/tausta-en.htm]

[14] Pajula, H. (2010): Maankuivatustoiminta ja sen kehittämistarpeet. (Drainage operations and the need to develop them) *Suomen ympäristökeskuksen raportteja* 15/2010. [https://helda.helsinki.fi/bitstream/handle/10138/39778/SYKEra_15_2010.pdf?sequence=1], p. 8.

[15] METLA (n 13).

[16] METLA (Metsäntutkimuslaitos/Finnish Forest Research Institute): State of Finland's Forests 2012. Based on the Criteria and Indicators of Sustainable Forest Management. [http://www.metla.fi/metinfo/sustainability/].

[17] HE 120/2004 vp. Hallituksen esitys Eduskunnalle laiksi vesienhoidon järjestämisestä, laiksi ympäristönsuojelulain muuttamisesta ja laiksi vesilain muuttamisesta sekä maasta toiseen ulottuvien vesistöjen sekä kansainvälisten järvien suojelusta ja käytöstä tehdyn vuoden 1992 yleissopimuksen vesivaroja ja terveyttä koskevan pöytäkirjan hyväksymisestä ja laiksi sen lainsäädännön alaan kuuluvien määräysten voimaansaattamisesta (Government Bill (draft law) on the Act on Water Resources Management), p. 8.

gered in Finland, largely due to forestry and forest ditching.[18]

Forest ditching has been a significant part of the state's forest policy and the stable wood supply in Finland. Currently, the state provides subsidies for private forest owners to increase the willingness to conduct ditch network maintenance.[19] The maintenance operations are needed to sustain the drainage capacity. Ditch network maintenance is normally done every 20–40 years.[20] Typically, ditch network maintenance is conducted annually on about 50–60 000 hectares.[21]

Ditch network maintenance may cause harm to the ecological but also the chemical status of water bodies. DNM is a typical example of diffuse pollution: the effects of a single project will not usually deteriorate the waters. However, the cumulative effects from forestry and DNM can be considerable and especially vital on otherwise clean headwaters such as streams, springs, ponds and small lakes.[22] Strain on the water system is the main side effect; the load of suspended solids, increase in nutrition levels (the concentrations of Mn, Ca, Mg) and acidity in stream waters may occur due to ditching.[23] The load of suspended solids (sediment) in the water and the bottom of lakes, rivers and smaller waterways is the most harmful environmental effect of ditch network maintenance.[24] Suspended solids may make water turbid or cause silting of the bottom, which has negative impacts on species composition.[25] The release of nutrients is usually highest during the first one to three years after ditch network maintenance operations, but on the whole, negative effects may continue for over twenty years.[26] In Finland the environmental effects of DNM creates a risk with regard to the aim of achieving and maintaining the good quality of surface waters.[27]

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[18] Raunio, A., Schulman, A. & Kontula, T. (2008): Suomen luontotyyppien uhanalaisuus – Osa 1: Tulokset ja arvioinnin perusteet (Assessment of threatened habitat types in Finland – Part 1: Results and basis for assessment). *Suomen ympäristö* 8/2008. https://helda.helsinki.fi/handle/10138/37930, p. 64–66. In Southern Finland 67.6 % of the habitat types of inland waters and shores are threatened. Id., p. 258–259.

[19] The state financial support for new ditches ended in the 1990s. Since then pristine peatlands have hardly been drained for forestry purposes.

[20] Äijälä O., Koistinen A., Sved J., Vanhatalo K. & Väisänen p. (toim.) (2014): Hyvän metsänhoidon suositukset – Metsänhoito (Best practice guidelines – Forest management). Publications of Metsätalouden kehittämiskeskus Tapio, p. 175.

[21] In 2012 ditch network maintenance was conducted on 52,000 hectares. See METLA (Metsäntutkimuslaitos/Finnish Forest Research Institute) (2013): Metsätilastollinen vuosikirja 2013 (*Finnish Statistical Yearbook of Forestry* 2013). http://www.metla.fi/julkaisut/metsatilastollinen-vsk/tilastovsk-sisalto.htm, p. 104, Nieminen, M., Ahti, E., Koivusalo, H., Mattsson, T., Sarkkola, S. & Laurén, A. (2010): Export of suspended solids and dissolved elements from peatland areas after ditch network maintenance in south-central Finland. *Silva Fennica* 44(1): 39–49. http://www.metla.fi/silvafennica/full/sf44/sf441039.pdf, p. 40.

[22] Hiltunen, T., Jämsén, J., Joensuu, S., Heikkinen, K. & Vuollekoski, M. (2014): Opas metsätalouden vesiensuojelun suunnitteluun valuma-aluetasolla (A guide for river basin-level planning of water protection in forestry). Jyväskylä 2014, p. 8.

[23] Åström, M., Aaltonen, E.–K. & Koivusaari, J. (2002): Impact of forest ditching on nutrient loadings of a small stream—a paired catchment study in Kronoby, W. Finland. *Science of The Total Environment*, Volume 297, Issues 1–3, 127–140, p. 128.

[24] Nieminen and others (n 21), p. 48.

[25] Past drainage has permanently changed a number of streams and deteriorated spawning places of fish. Sutela T., Olin, M., Vehanen, T. & Rask, M. (2007): Hajakuormituksen vaikutukset järvien ja jokien kalastoon ja ekologiseen tilaan (The effect of diffuse pollution on the fish stock and ecological state of lakes and rivers). *Kala- ja riistaraportteja* nro 411. Finnish Game and Fisheries Research Institute. Helsinki. [http://www.rktl.fi/www/uploads/pdf/raportti411.pdf].

[26] Joensuu J. & Rissanen K. (2002): Vanhojen uudisojitusten aiheuttamat vesistövaikutukset. Selvitys Metsähallituksen vuosina 1979–1980 ja 1989–1990 toteuttamista uudisojituksista (The effects of old drainage projects on waters. Report on the first-time ditching by Metsähallitus in 1979–1980 and 1989–1990). *Metsähallituksen metsätalouden julkaisuja* 44, p. 69.

[27] Various water protection methods have been developed to decrease the harmful effects of DNM. See Joensuu & Rissanen (n 26), p. 65. There are no statistics on

2. Regulation of water protection in DNM projects

2.1 Permits, notifications and subsidies

The Water Act (587/2011) regulates various construction projects in water bodies but also water as a natural resource. It includes general rules of ditching, and it also regulates ditching projects in the case of pollution in water areas (generally the Environmental Protection Act (527/2014) regulates water pollution control). The Act on Water Resources Management (1299/2004) in turn is the main Act regulating the plans, programmes and procedures required by the WFD (see figure 1).

The Water Act applies to ditching and the use and maintenance of ditches (Water Act 5:1). A ditching project is called into question if the project includes either digging new ditches or making old ditches deeper or wider than they were originally.[28] The maintenance of ditches only refers to projects including measures that aim at restoring the status after original ditching.[29]

According to chapter 5 of the Water Act, either a permit or prior notification is required for ditch drainage projects. For 'minor ditch drainage', neither is necessary.[30] Ditching, or the use and maintenance of ditches, are subject to a permit if it may cause environmental pollution in a water area (Water Act 5:3).[31] Basically, changes caused by the project should always be considered environmental pollution, if the changes would result in the deterioration of a water body as defined in the WFD.[32] Permits are issued by Regional Administrative Agencies.[33] The permissibility of the project is typically assessed by using the 'weighing of interests' method: section 4, chapter 3 of the Water Act prohibits allowing a

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the realisation of concrete water protection measures. See Ympäristöministeriö (Ministry of the Environment) (2013): Vesienhoidon toimenpiteiden suunnittelu vuosille 2016–2021. Metsätalous (Planning of water management measures for 2016–2021. Forestry.). 10.6.2013. Metsätalous- ja turvetuotantotiimi. http://www.ymparisto.fi/vesienhoito/opas, p. 12. It seems that at least some water protection measures are carried out on most of the ditch maintenance areas. See Metsäkeskus (Finnish Forest Centre) (2014): Talousmetsien luonnonhoidon laadunseuranta – raportti. (Quality control of nature management in commercial forests – a report). http://www.metsakeskus.fi/sites/default/files/luontolaatu_2013.pdf, p. 6.

[28] In addition, if draining is otherwise made more effective than it was originally when the ditches were first made, or ditches have evolved into natural-like state. Halonen 2013 (n 10), p. 42.

[29] As a judicial concept, ''the maintenance of ditches'' only includes activities which do not exceed the rights obtained for original ditching activities (otherwise the activity in juridical sense should be considered as ditch drainage). As a silvicultural concept, ''the maintenance of ditches'' includes all activities needed to restore the hydrological status suitable for timber growth (i.e. digging new ditches or making old ditches deeper or wider). The silvicultural meaning of ditch network maintenance is thus broader than its judicial meaning. In this article the abbreviation of DNM (ditch network maintenance) refers to the silvicultural meaning.

[30] There are no clear rules what ''minor ditch drainage'' is. The government bill concerning the Water Act refers to a small surface area of drainage, be it drainage of a field plot or a smallish forest patch. HE 277/2009 vp. Hallituksen esitys Eduskunnalle vesilainsäädännön uudistamiseksi (Government bill for revising the water legislation), p. 93. Halonen, however, notes that within the framework of the Water Act, the need for a permit must be evaluated according to the *effects* of a project. A smallish ditch network area, of course, indicates but is not a guarantee of minor environmental effects. Halonen 2013 (n 10), p. 41.

[31] A permit is also needed in the case of structural changes in a water body; e.g. lowering the water level or affecting the water stream.

[32] The Weser dredging case (C–461/13) states that unless a derogation is granted, deterioration is relevant if the status of at least one of the quality elements falls by one class, even if it does not result in a drop in classification of the body of surface water as a whole. For a more detailed discussion of the case see, Jääskinen, N. (2014): Advocate General's Opinion 23 October 2014, Case C-461/13, Bund für Umwelt und Naturschutz Deutschland e. V. v Germany. http://eur-lex.europa.eu/legal-content/FI/TXT/HTML/?uri=CELEX:62013CC0461&rid=4.

[33] The State Regional Administrative Agency (*Aluehallintovirasto* in Finnish) makes decisions on permits pursuant to the Environmental Protection Act and the Water Act. Environmental protection authorities of municipalities issue environmental permits for smaller projects.

permit for a project causing more harm than benefit.[34] In practice, a single DNM project hardly ever exceeds the permit threshold.[35] Therefore, in reality DNM projects are not actively governed directly by permits.[36]

A duty to make a prior *notification* to a supervisory authority[37] applies to all but minor ditch drainage projects (Water Act 5:6).[38] Notifications must be sent to ELY Centres[39] no later than 60 days prior to undertaking a ditch drainage project.[40] The notification must include a description of the project and its environmental impacts.[41] An ELY Centre has to advise the project leader to apply for a permit if need be. Ditching notifications do not result in an administrative decision. In practice, if deficits are noticed, the supervisory authority contacts the project leader with a written statement and urges them either to improve the water protection measures or to apply for a permit. If a permit is needed, all necessary water protection measures are defined in permit conditions.[42] Even if permits are in fact hardly ever required, the potential need for a permit (Water Act 3:2) is in practice being used as a way to impose water protection measures in every DNM project.[43]

Finnish water legislation does not include specific standards on best available practices or techniques that would set the necessary water protection measures for ditching. The Water Act only includes a general obligation to minimise

[34] Weighing of interests means that before allowing the permit, the benefits and harms of a single project are identified, valued and weighed. This means that when conducting weighing of interests, the environmental effects of a project may result in prohibiting the permit if they are weighed more substantial than the benefits (e.g. monetary value). See Soininen, Niko: Ympäristöoikeudellisen intressivertailun systematisointia (Systematisation of Environmental Comparison of Interests). Lakimies 1/2012, 102–124, p. 105–109. About the legal status of RBMPs in weighing of interests within the decision-making of the State Regional Administrative Agency see also Kauppila, J. (2014): Vesienhoitosuunnitelma ja lupaharkinta – Osa II: Lupakäytäntöä neljältä toimintasektorilta (River Basin Management Plan and Permit Consideration – Part II: Practice With Regard to Four Sectors of Activity). *Ympäristöjuridiikka* 3–4/2014, 69–116, p. 95–96.

[35] No permits on drainage projects were issued by State Regional Administrative Agencies between 2011 and 2014. In recent decades there have been a few cases where ditch drainage projects have been licensed. This is mostly due to the fact that ditch maintenance projects are deliberately conducted not to exceed the permit threshold.

[36] This also means that currently the public has no opportunities to take part in decision-making concerning single DNM projects because permits are rarely required and therefore the opportunities to participate included in a permission procedure do not come about. Ympäristöministeriö (n 27), p. 4.

[37] Notifications are also being increasingly used in the field of environmental protection regulated by the Environmental Protection Act. For example, a growing field of activities that previously required an environmental permit is now being supervised by means of notifications (i.e. registration).

[38] According to the report of the Ministry of the Environment, it was not considered sensible to extend compulsory notification to all ditch network maintenance cases. See Ympäristöministeriö (Ministry of the Environment) (2012): Uudistunut vesilaki 2011. Keskeinen sisältö ja tärkeimmät muutokset. (The new Water Act. The core of the Act and the most relevant reforms). *Ympäristöministeriön raportteja* 1/2012 [http://www.ym.fi/download/noname/%7BD53693D8-3926-4EB6-8897-C323928D5E21%7D/32131], p. 46. Therefore the obligation to send a ditch notification does not apply to ditch *maintenance* projects (in the judicial sense). According to the notifications that we scrutinised, about half of all DNM projects include digging new ditches. In almost all projects, ditches are made deeper and/or wider and more effective than they were originally. Therefore, ditching notification is compulsory in most cases. See also subnote 30.

[39] ELY Centres (*Elinkeino-, liikenne- ja ympäristökeskus* in Finnish) act as supervisory authorities for the Water and Environmental Protection Act. Read more about ELY Centres here: http://www.ely-keskus.fi/en/web/ely-en/environment.

[40] After receiving the notification, an ELY Centre has 60 days to investigate the notification. If an ELY Centre does not react in 60 days, the ditching project may be initiated.

[41] Environmental impacts refer at minimum to the impacts supervised by the Water Act (i.e. pollution of water bodies or structural chances of water systems). In practice this concept is interpreted in a broader sense to refer also to impacts on biodiversity in general. See Halonen 2013 (n 10), p. 48–49.

[42] The Water Act 3:10.

[43] Inquiry/ELY Centres 2015.

the negative effects of projects affecting water areas if it does not incur unreasonable costs (Water Act 2:7).[44] This provision sets a general duty to minimise harmful effects and to use all reasonable water protection measures.[45] The wording of the aforementioned general duty is, however, open to various interpretations.[46] While legislation offers flexible phrasing, soft law instruments provide more concrete guidance for water protection in case of ditch network maintenance projects.

Soft law includes, among other things, forest certification schemes[47] and the best practice guidelines developed by Forestry Development Centre Tapio (Tapio hereinafter).[48] Tapio's best practice guidelines for water protection include more specific instructions on water protection measures and techniques.[49] While the Water Act does not include any standards on best available techniques or practices of water protection, the guidelines also provide concrete guidance (soft law) for authorities applying the law.[50] Legally non-binding guidelines possess a rather strong foundation as a regulatory instrument of silvicultural water protection.[51]

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[44] This provision also applies to projects that do not require a permit, yet the provision is not suited for utilising administrative compulsion and therefore its role in *preventing* water pollution is more guiding than imperative. Halonen 2013 (n 10), p. 46–47.

[45] Most of the water protection measures (e.g. silt pits and sedimentation pools) generally used in DNM are very cheap and thus expenses should not become unreasonable in typical DNM cases.

[46] Vihervuori points out that in order to become binding this stipulation should be concretised in a permit process by permit conditions. Vihervuori, P.: Vesitaloushankkeet. (Water management projects) In Kuusiniemi (ed.): *Ympäristöoikeus (Environmental law)*. Juva 2001, 785–915, p. 832.

[47] The predominant voluntary forest certification system in the country, the Finnish PEFC, requires water protection measures to be taken as part of ditch network management work. The PEFC requires that a protection plan must be drawn up and sent to regional environmental authorities (i.e. the ELY Centre). The Finnish FSC – another forest certification system – has somewhat more stringent requirements for water protection, but the FSC does not cover large areas in Finland and its influence in terms of practical DNM is therefore limited. Metsähallitus has its own guidelines for water protection in state-owned forests (Metsähallitus is a state-owned enterprise that operates in the administrative sector of the Ministry of Agriculture and Forestry. It governs both nature protection areas and state-owned forests. See more at: http://www.metsa.fi/web/en/managementandadministrationsystem). All the above-mentioned instruments have in general somewhat higher standards than legislation, but PEFC does not have any special criteria concerning water protection of DNM projects (see criterion 18). See Finnish PEFC group certification standard PEFC FI 1002:2009. Ryhmäsertifioinnin kriteerit metsäkeskuksen tai metsänhoitoyhdistyksen toimialueen tasolla. [http://www.pefc.fi/media/Standardit%202008_09/PEFC%20FI%201002_2009%20Ryhmasertifioinnin%20kriteerit%2009112009.pdf]. The role of forest certification is not analysed in more detail, because they are not relevant from the viewpoint of this article which scrutinises the possibilities and duties of *authorities* to ensure the good status of surface waters.

[48] The best practice guidelines of Tapio strongly define the concept of sustainable forest management in Finland. Developing and updating the guidelines has continued for decades. In 1994, environmental aspects were introduced to the guidelines for the first time. These national guidelines are made in close cooperation with research institutes and other stakeholders such as forest owners, the forest industry and NGOs. Äijälä and others (n 20) p. 8.

[49] Joensuu S., Kauppila M., Lindén M. & Tenhola T. (eds.) (2013): Hyvän metsänhoidon suositukset – Vesiensuojelu (Best practice guidelines for forestry – Water protection). Publications of Metsätalouden kehittämiskeskus Tapio. Guidelines disseminate information of best available techniques and measures of water protection and are chiefly aimed at forest professionals who plan ditch network maintenance projects for forest owners. Along with guidelines introducing the best practices and measures of water protection, there are also guidelines introducing the practices of planning the silvicultural activities in a river basin area. Hiltunen and others (n 22).

[50] *Määttä* has conducted a detailed analysis of the status of soft law documents in Finland. See Määttä, T. (2005): Soft law kansallisen oikeuden oikeuslähteenä. Tutkimus oikeudellisen ratkaisun normipremissin muodostamisen perusteista ympäristöoikeudessa (Soft Law as a Source of Law in National Legal Decision-making: A Study in Formulating the Norm Premise in Environmental Legal Decision-Making). *Oikeustiede – Jurisprudentia* XXXVIII, 337–459.

[51] Hujala, T., Pykälä, J. & Tikkanen, J. (2007): Decision-making among Finnish non-industrial private forest

In addition to binding regulations, there are also economic incentives (state subsidies) within the regulatory instrument mix of silviculture.[52] State-based incentives chiefly encourage forest owners to undertake certain silvicultural activities, such as ditching and forest road construction.[53] State subsidies are targeted at private forest owners.[54] Subsidised activities are considered important for the Finnish economy, as they aim to secure a stable wood supply for the Finnish forest industry.

Financial support can be granted if the project meets the requirements set in the Temporary Act on the Financing of Sustainable Forestry (34/2015, also Temporary Act). The Act stipulates that the *best available and affordable water protection methods and constructions* must be used in financed DNM projects. However, it seems that this stipulation does not exceed the conditions set in the Water Act (art. 2:7), but it clarifies and concretises article 2:7 of the Water Act as it concerns ditch network maintenance. The Temporary Act also requires that the work should be done according to the best professional practices, which means, according to the preparatory materials of the Act, Tapio's best practice guidelines, for example.[55] The Finnish Forest Centre (the Forest Centre hereinafter) grants the subsidies and supervises the subsidised projects via the notifications of completed, subsidised forest work. As a result, legislation on state subsidies at least strengthens the role of soft law in forest governance, and in this case, also in water governance. The legislation of state subsidies also strengthens the supervision of DNM projects, but appears not to bring about higher standards for water protection of DNM projects. The Forest Act does not include any stipulations on water protection of ditching projects.[56]

owners: the role of professional opinion and desire to learn. *Scandinavian Journal of Forest Research*, vol. 22, issue 5, 454–463. Until the 1990s the environmental recommendations of Tapio were largely neglected, but their status is nowadays relatively high among forest professionals. Attitudes have changed mostly because of changes in Finnish forest legislation, education and the general opinion towards more biodiversity-friendly forestry, which were in turn partly due to international and local NGO campaigns, raising awareness of declining biodiversity, and joining the EU. Keto-Tokoi, p. (2006): Varhaiset luonnonhoitosuositukset eivät toteutuneet käytännön metsätaloudessa (The early recommendations for nature management have not be fulfilled in forest practices). In Jalonen R. et al. (eds.): *Uusi metsäkirja (New Book on Forests)*, Gaudeamus, Helsinki, 102–106, p. 102, 106. See also Halonen 2015 (n 10), p. 197–198.

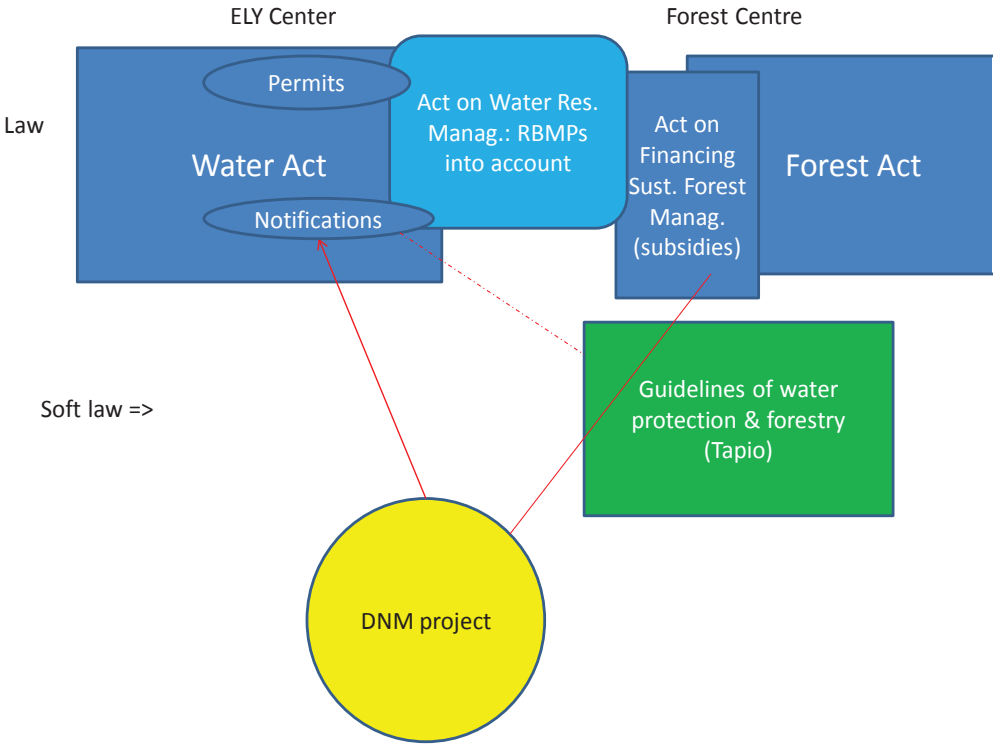
[52] In 2014, EUR 59 million was used for measures safeguarding wood production (such as DNM, building or maintaining forest roads) in private forests. See [http://stat.luke.fi/mets%C3%A4nhoito-ja-mets%C3%A4nparannusty%C3%B6t-kustannukset-2014_fi].

[53] Subsidies may be considered problematic from the point of view of the 'polluter pays' principle. However, the Finnish system of subsidies has been established according to the European Union Guidelines for state aid in the agricultural and forestry sectors and in rural areas 2014 to 2020 (2014/C 204/01). Subsidies guarantee that project leaders (i.e. private forest owners, usually) use professional planners. This is likely to lead to a more environmentally friendly result. Most of the subsidies go towards planning costs. See [http://www.metsakeskus.fi/tuki-kunnostusojitukseen#.VRveYGOGd3s].

[54] State owns 24 %, firms 8 %, municipalities 2 % and parishes 1 % of forests. The remaining 65 % of Finnish forests are owned by private individuals. See [http://www.metla.fi/tiedotteet/metsatilastotiedotteet/2013/metsamaan_omistus2011.htm]

[55] HE 138/2014 vp. Hallituksen esitys eduskunnalle kestävän metsätalouden määräaikaiseksi rahoituslaiksi sekä laeiksi kestävän metsätalouden rahoituksesta annetun lain ja kiinteistön yhteisomistajien osallistumisesta metsätalouden rahoituslainsäädännössä tarkoitettuun toimenpiteeseen annetun lain kumoamisesta sekä kestävän metsätalouden rahoituslain kumoamisesta (Government Bill on the Temporary Act on the Financing of Sustainable Forestry), p. 31.

[56] The main objective of the Forest Act is to regulate forest logging. Apart from key forest habitat stipulations, forest legislation does not require any water or other environmental protection measures. The Forest Act also includes a regulation on timberline forests in Lapland and a disused provision on delineating protection zones in erosion-prone areas.



2.2 The role of RBMPs and POMs

The WFD sets the objectives for water quality but it also includes a river basin planning system, as regional river basin management plans (RBMPs) and programmes of measures (POMs) are an integral part of the WFD.[57] The fundamental idea behind the WFD is to look at the whole river basin area in terms of water management planning (including cumulative effects); therefore, it could also be a potential instrument to govern diffuse pollution. The WFD does not directly regulate ditch drainage, but RBMPs and POMs include desirable measures for drainage and DNM.

The WFD requires the establishment of certain regulatory instruments as mandatory and calls them '*basic measures*'.[58] In Finland the basic measures set in POMs are those required by Finnish legislation.[59] In the case of ditch drainage, the basic measures of water protection include measures and techniques put into practice at the level of single projects.

The WFD also enables the use of *supplementary measures*. Article 11 states that supplementary measures must be included in the programmes if the basic measures are not sufficient in order to meet the established environmental objectives. The use of supplementary measures is only optional to the extent that the environmental objectives are likely to be met by the basic measures.[60] The supplementary measures for water protection in ditch network maintenance include water protection structures on a river basin scale (e.g. overflow wetland areas).[61] The

[57] Lee (n 2), p. 29–30. See also Grimeaud, D. (2004): The EC Water Framework Directive – An Instrument for Integrating Water Policy. *RECIEL* 13 (1), 27–39, and Futter M. N. and others (2011): Forests, Forestry and the Water Framework Directive in Sweden: A Trans-Disciplinary Commentary. *Forests* 2, 261–282, p. 262.

[58] Article 11(2).

[59] The POMs provide an overview of the specific measures to be taken, in order to contribute to the achievement of the environmental objectives (art. 11).

[60] Article 13(2) and (4). See also Howart (n 5), p. 132–133.

[61] In current RBMPs and POMs, basic water protection measures regarding DNM projects are confusingly listed

planning of silvicultural activities on river basin scale, which aims at recognising sensitive areas and planning measures needed to limit the loading of harmful substances from the catchment[62], is also listed as a supplementary measure. Planning on the river basin scale may improve water protection measures in vulnerable areas and it helps to take cumulative effects of various forest management projects into account. River basin-scale planning is currently governed by soft law and it is an entirely voluntary activity and still relatively rare. The plans are usually drawn up by the Forest Centre.[63] These plans are not binding and the authorities do not have the power to implement river basin planning without the consent of land owners.[64]

A closer look at the RBMPs and POMs in Finland shows that they include many desirable measures and activities concerning DNM.[65] The measures mainly consist of actions such as further developing guidelines and forest certification standards, increasing advice and education, enhancing water protection planning of various projects, and improving the implementation of existing standards such as PEFC. In addition, there are concrete regional targets for various water protection measures: e.g. 300 water protection structures, intensified water protection planning on 28,000 hectares, and advising 4 200 forest owners annually. In RBMPs there are also desirable numbers of water protection measures for different waterways.[66]

From a legal perspective, RBMPs and POMs do not oblige any measures to be taken *per se*.[67] They only introduce potential instruments for governance on catchment areas. The legal status (i.e. legal force) of RBMPs and POMs in Finland is regulated generally in the Act on Water Resources Management. It stipulates that state and municipal authorities shall give *due consideration* in their operations to the water resources management plans approved by the government, *as appropriate*.[68] Sectoral legislation includes more accurate provisions of the legal relevance of RBMPs. Both the Water Act and the Environmental Protection Act require that a permitting authority must *take RBMPs into account* in the permit consideration process. As POMs are treated as a part of the RBMPs in Finland, their legal status is consistent

under the title ''supplementary measures''. This is, however, due to terminological confusion as in the first Finnish RBMPs and POMs, terminologies were not consistent with the WFD. In the proposals for new POMs, basic water protection measures of DNM projects are already labelled as basic measures, including slit pits, sedimentation pools and small scale overland-flow, for example. See e.g. Ehdotus Isojoen- Teuvanjoen alueen vesienhoidon toimenpideohjelmaksi vuoteen 2021 (A proposal for a POM in the Isojoki-Teuvanjoki region), 72; Luonnos Kyrönjoen vesistöalueen vesienhoidon toimenpideohjelmaksi vuoteen 2021 (A draft of a POM for Kyrönjoki water basin), 98; at [http://www.ymparisto.fi/fi-FI/Vesi/Vesiensuojelu/Vesienhoidon_suunnittelu_ja_yhteistyo/Vesienhoito_ELYkeskuksissa/EtelaPohjanmaa_Pohjanmaa_ja_KeskiPohjanmaa/Toimenpideohjelmat/Toimenpideohjelmat_ja_toimenpiteiden_tot%2812815%29].

[62] Hiltunen and others (n 22), p. 4

[63] Hiltunen and others (n 22).

[64] Nevertheless, as mentioned, the status of authority-based soft law – such as the best practice forest management guidelines of Tapio – is strong.

[65] The measures for achieving good water status are similar to the RBMPs of different river basins. Plans are available here: [http://www.ymparisto.fi/fi-FI/Vesi/Vesiensuojelu/Vesienhoidon_suunnittelu_ja_yhteistyo/Vesienhoitoalueet].

[66] See e.g. Kymijoen-Suomenlahden vesienhoitoalueen vesienhoitosuunnitelma vuoteen 2015 (the RBMP of the Kymijoki-Suomenlahti region). *Ibid*.

[67] , HE 120/2004 vp (n 17), p. 50.

[68] Section 28 of the Act on Water Resources Management. For more on the legal status of the RBMPs and POMs in Scandinavian countries, see *Baaner* (Baaner, L.: Programmes of Measures under the Water Framework Directive - A Comparative Case Study, 2011:1, 31–52, p. 35) and *Ekelund-Entson* & *Gipperth* (Ekelund-Entson, M. & Gipperth, L. (2010): Mot samma mål? – Implementeringen av EU:s ramdirektiv för vatten i Skandinavien. Juridiska institutionens skriftserie Handelshögskolan vid Göteborgs universitet, Skrift 6. http://www.vattenmyndigheterna.se/Sv/nyheter/2011/Pages/mot-samma-mal.aspx).

with the legal status of RBMPs.[69] The legal relevance of RBMPs has, however, been growing in the national legal praxis lately.[70]

3. Evaluation of water protection instruments

As for water protection, the effects of a single ditch network maintenance project are rarely so severe that the status of water quality in a surface water body would deteriorate. Nevertheless, as mentioned in the introduction, the cumulative effects of several DNM projects in the same area may lead to the deterioration of water quality, especially the status of a small water body or area, such as a spring, rivulet, pond or lake. There are, however, legislative flaws that make the evaluation of cumulative effects vague or ineffective.[71]

The permit threshold and conditions of the Water Act always concerns a single project. It is not possible to obligate several projects to apply for a permit together.[72] The other projects or the effects of other projects can only be taken into consideration through the condition of the receiving water body or area. This means that only the project that is expected to exceed the threshold limit of pollution can be required to apply for a permit. While the exceeding of the permit threshold is estimated through the condition of the receiving water body, it is possible to take the cumulative effects into account in the permit consideration process of a single project. However, in practice it is hard to show and legally prove which project exceeds the threshold limit if there are several projects planned or going on in the same river basin area.[73] This may result in cumulative effects not being taken into consideration in the permit consideration process.

The declarative nature of ditching notifications means that notifications are not suitable for supervising the cumulative effects, either. Notification enables the supervisory authority to get information about single DNM projects for further supervision[74] but it does not lead to an administrative decision.[75] This means that the supervisory authority does not have the powers to prohibit someone's project or to oblige someone to apply for a permit on the basis of other notifications in the same river basin area.[76] Moreover, notifications do not include a binding time limit for carrying out the notified DNM work.[77] The flexible time limit hinders the supervision of the effects of single projects, as well as the cumulative effects of various projects in particular. ELY Centres may only try to negotiate and persuade the project leaders to carry out their projects in a way that negative cumulative effects will be minimised.[78]

The sectoral environmental legislation with the separate supervisory responsibilities also makes the assessment of cumulative effects problematic. For instance, ELY Centres do not get information on forest loggings as they are not the supervisory authorities of forest management, and the Forest Centre does not have the competence to consider water protection measures

[69] Section 12 of the Act on Water Resources Management.

[70] See e.g. KHO 2014:176 (A decision of the Supreme Administrative Court) and KHO 20.8.2010/1869. The Weser dredging case (C–461/13) will increasingly raise the legal status of RBMPs.

[71] The need for considering cumulative effects has also been recognised in the government bill on the Water Act. According to the preparatory materials, appropriate evaluation (of the negative effects of DNM) would require the evaluation of the effects of drainage together with other projects within the same river basin. HE 277/2009 vp (n 30), p. 93.

[72] *Ibid.*

[73] Halonen (n 10) 2013, p. 55–56.

[74] HE 277/2009 vp (n 30), p. 55–56.

[75] Due to their declarative nature, authorities have no powers to set direct obligations.

[76] Halonen (n 10) 2013, p. 54.

[77] Usually it is written in a notification that the work will be completed within two years, e.g. 2016–2017.

[78] HE 277/2009 vp (n 30), p. 57.

while overseeing forest loggings because forest legislation does not include stipulations on water protection.[79]

The granting of state subsidies for forestry and DNM projects does not take the problem of several concurrent or consecutive projects into consideration, either. The granting of state subsidies has a single project point of view and the Temporary Act on the Financing of Sustainable Forestry only emphasises the *best water protection methods instead of water quality*.[80] As a result, it is not the task of the Forest Centre to supervise water quality; its responsibility is only the quality of proposed water protection measures of a single DNM project.

Along with the legislative flaws, the technical systems for identifying the problematic cumulative effects are still inadequate and not in use in all ELY Centres.[81] Currently there is no comprehensive database (geographical information system, GIS) that would enable the ELY Centres to efficiently evaluate the effects of two or more DNM projects *and* other projects such as extraction of peat.[82] Some ELY Centres use the VESTY water project database (*vesistötyötietojärjestelmä*), but it only includes certain kinds of information concerning changing water environment (ditching, building dams, etc.) – it does not incorporate other polluting projects. It would also require further development in order to properly serve the surveillance of cumulative effects.[83] There have been plans to facilitate the situation by creating a new geographic information system and also by using the existing systems more efficiently.[84] Currently there is no comprehensive GIS that could be used nationwide for mapping and controlling water polluting projects.

It seems clear that Finnish water legislation does not sufficiently enable authorities to take *cumulative effects* into account while aiming at maintaining the good water status. This justifies the question whether Finnish legislation is consistent with the obligations of the WFD. It can be concluded that the Water Act succeeds in setting a broad framework for water protection regulations of ditching projects. The prior notification is a sensible instrument for supervising *single* DNM projects, but the Water Act fails in setting concrete norms or detailed rules of water protection for DNM projects while they are typically not governed by permits.[85] This is a typical challenge of regulating diffuse pollution by command and control instruments.[86] Economic instruments and soft law do not help the authorities to take the cumulative effects into account either. The WFD and the RBMPs, and especially POMs, which include concrete measures for water protection, could improve the water protec-

[79] According to a Swedish estimate, clear cuts should not exceed 30 % of the total forest land so as not to cause negative effects of nitrogen leakage to water courses. Ring, E., Löfgren, S., Sandin, L., Högbom, L. & Goedkoop, W. (2008): Skogsbruk och vatten. En kunskapsöversikt. Skogforsk, redogörelse nr 3, 2008. http://www.skogforsk.se/PageFiles/73616/Redog%C3%B6relse%203-2008-low.pdf, p. 40.

[80] The system of state subsidies neither includes incentives for taking the effects of several projects into account nor encourages river-basin level planning, for example. The only rule is that the minimum area that can be awarded the maximum amount of compensation (75 % of costs) is five hectares. This is the only stipulation that could be considered an incentive towards slightly larger ditching units and may lead to the planning of larger areas at a time, thus enhancing the planning of the most cost-effective water protection measures.

[81] Inquiry/ELY Centres 2015.

[82] As supervisory authorities of environmental permits of peat extraction, ELY Centres do know about peat production areas, but without a GIS, information may be scattered.

[83] Inquiry/ELY Centres 2015.

[84] Ympäristöministeriö (n 27), p. 15–16.

[85] While there is no prevalent practice of permitting ditching projects, (judicial) challenges may come along to specify and concretise the rate of environmental protection (i.e. water pollution) necessary in a concrete case.

[86] E.g. Gunningham and Sinclair (n 5), Gunningham, N. & Grabosky, P.: Smart Regulation. Designing Environmental Policy. Oxford University Press 2004.

tion of diffuse pollution. But it seems that there are certain flaws that make it difficult to take the obligations of RBMPs (and POMs) into consideration if DNM projects are considered.

According to Finnish law, the obligation to take RBMPs (and POMs) into consideration only concerns administrative activities. The actual obligations of a single project must be based on legal norms of e.g. the Water Act or the Environmental Protection Act.[87] The aims and measures mentioned in RBMPs (and POMs) are thus not directly binding on authorities. They are partly guidelines and they partly – as with water qualifications – serve as evidence of water quality. All in all, the practice of taking RBMPs into account has not yet become established. This might partly be due to the somewhat unclear implementation of article 4 of the WFD into Finnish legislation.[88]

The question arises as to what the range of activities of authorities concerning DNM projects falling within the term 'shall give due consideration in their operations to the RBMPs' or within the legal relevance of RBMPs laid down in sectoral legislation is.[89] The Water Act stipulates that the permitting authority must *take RBMPs into account* in the permit consideration process, but as we have already mentioned, ditching projects are rarely governed by permits.[90] The obligation to take RBMPs into consideration is also 'binding' in the ruling of state subsidies according to the Temporary Act on the Financing of Sustainable Forestry[91], while the Act on Water Resources Management stipulates that state authorities shall give *due consideration* in their operations to the RBMPs approved by the government, *as appropriate*. All in all, the vague formulations "due consideration" and "into account" are questionable in the light of the WFD.

Based on the requirements of the Temporary Act, the Forest Centre should always call for the water protection measures, which are considered basic measures in WFD.[92] But could the Forest Centre also require supplementary measures of POMs, if there is a risk of deterioration of the status class of a surface water body? The legislation of state subsidies does not include special provisions when taking the RBMPs and POMs into account in the ruling of state subsidies. The decision-making of an authority must be based on the Temporary Act, whereas POMs should merely be 'taken into account'. The Forest Centre always considers a single project at a time. As a result, there is a great risk that the Forest Centre does not and cannot require supplementary measures defined in POMs when ruling on a subsidy of a single project.[93] In addition the Forest Centre

[87] HE 120/2004 vp. (n 17), p. 50.

[88] Nevertheless, the Finnish authorities are obliged to prevent the deterioration of water bodies and the national provisions of the Environmental Protection Act and the Water Act should be interpreted in the light of the WFD.

[89] As Baaner (n 69, p. 36) points out, 'the question seems not only to be the degree to which the programmes as such are binding for the authorities, in the way that non-compliance with its measures can be legally reviewed and sanctioned. It seems just as relevant to consider what kinds of activities or decisions can be bound by or guided within the established national legal frameworks.'

[90] Nevertheless, the water quality objectives should impact the consideration of the permit threshold. When an ELY Centre receives a ditching notification, it considers whether a permit is needed or not. The potential problem is, as described earlier, that the ELY Centre does not have the powers to estimate the cumulative effects when supervising the DNM projects.

[91] According to law, the state subsidy can be granted if the preconditions of water protection set in the Temporary Act on the Financing of Sustainable forestry are met.

[92] According to the Temporary Act (article 15), the *best available and affordable water protection methods and constructions* must be used in financed DNM projects. The financed projects have to be in accordance with other regulations such as the stipulations in the Water Act (article 6).

[93] It seems that the Forest Centre does not have powers to require supplementary measures, e.g. creating new wetlands or intensified planning unless the criteria of best available practice are met, which are single project-based water protection measures.

does not supervise water quality – it only monitors the sufficiency of proposed water protection measures of a single DNM project according to the stipulations of the Temporary Act.[94]

In Finland, it is possible to receive state financing for water protection measures, e.g. for wetlands serving water protection in the river basin.[95] However, it is apparent that Finnish forest authorities do not have the legal authority to call for supplementary water protection measures defined in POMs, even in cases where a risk of deterioration in the status class of surface waters occurs,[96] if the costs of a supplementary measure would not be "affordable" for a single DNM project.

It should also be taken into account that in Finland the classification of water bodies according to the requirements of the WFD currently includes only larger water bodies.[97] The European Commission points out that Finland has 'set relatively high size thresholds for the delineation of water bodies, excluding a large number of water bodies. Finnish authorities have clarified that areal coverage of water bodies is 86 % for all Finnish lakes and about 90 % for rivers and 100 % for coastal waters.' In addition, the Commission notes that 'it is not clear how the current size thresholds have been set to ensure the fulfilment of the WFD, i.e. if the excluded water bodies are effectively protected and how.'[98] The intention is to widen the scrutiny at a later date to smaller lakes and rivers in future plans, but due to the huge number of headwaters and small forest streams, it will probably never be possible to include all headwaters into RBMPs and POMs. The effects of forest management typically arise in headwaters and smaller water bodies.

If a water body does not have a status class and an objective in a RBMP – as is often the case with small water bodies affected by DNM – the relevance of RBMP may be, in practice, smaller as there is no defined status or objective which should be taken into account. Even in these cases the obligation of the WFD to prevent further de-

[94] This includes overseeing that the notification has been sent to the ELY Centre, which in turn takes water quality into account. HE 138/2014 vp (n 68), p. 31.

[95] The state subsidies can be granted for establishing water protection structures for DNM which serve a river basin area (article 21 of Temporary Act on the Financing of Sustainable Forestry). However, the state subsidy system of the Temporary Act does not cover the costs of intensified ditch network planning. The planning costs may be covered by Metsähallitus. Hiltunen and others (n 22), p. 9

[96] The supplementary water protection measures cannot be required by the Water Act either, if the costs would be unreasonable for a single DNM project. If a single project requires a permit, it is possible to forbid the project altogether.

[97] See e.g. Toimenpideohjelma/Häme, Etelä-Savon pintavesien hoidon toimenpideohjelma 2010–2015. According to the guidance document of the European Commission, 'Member States have flexibility to decide whether the purposes of the Directive, which apply to all surface waters, can be achieved without the identification of every minor but discrete and significant element of surface water as a water body.' (European Commission (2003): Common Implementation Strategy for the Water Framework Directive. Guidance Document No. 2, Identification of Water Bodies. Produced by Working Group on Water Bodies. Directorate General Environment of the European Commission, Brussels. https://circabc.europa.eu/sd/a/655e3e31-3b5d-4053-be19-15bd22b15ba9/Guidance%20No%202%20-%20Identification%20of%20water%20bodies.pdf, p. 12.) According to the Commission, recognising even small headwaters as surface water bodies in RBMPs and POMs could cause too much of an administrative burden. Still, if a 'small element' of surface water is significant for achieving the aims of the WFD, it must be taken into consideration. According to Lassaletta and others (Lasseletta L., García-Gómez H., Gimeno B.S. & Rovira, J.V. (2010): Headwater streams: neglected ecosystems in the EU Water Framework Directive. Implications for nitrogen pollution control. *Environmental Science and Policy* 13 (2010) 423–433, p. 431), due to this discretion of Member States, too little attention is currently paid to headwater streams.

[98] European Commission (2012): Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans. Member State: Finland. Brussels 14.11.2012, SWD (2012) 379 final. http://ec.europa.eu/environment/water/water-framework/pdf/CWD-2012-379_EN-Vol3_FI.pdf, p. 9.

terioration remains.[99] This obligation, however, is not considered as binding and restricting as a determined water quality status in an RBMP in practice.[100] This practice should be reconsidered, particularly following the decision of the Court of Justice stating that 'the obligation to prevent deterioration of the status of bodies of surface water remains binding at each stage of implementation of Directive 2000/60 and is applicable to every surface water body type and status for which a management plan has or should have been adopted.'[101] Thus the lack of quality status should not result in neglecting the obligation to prevent deterioration in the status of waters.

4. Conclusions

DNM projects are *prima facie* regulated as a point-source project; either a permit or a ditching notification to environmental authorities is required. However, a significant part of the Finnish water protection regulation of DNM is a mix of various non-binding instruments, as was shown above. This is typical for the regulation of diffuse pollution. The most relevant *substantial* regulations of DNM consist of voluntary guidelines and state subsidies. However, the effectiveness of these soft law and financial instruments require that legislation sets out a clear framework for supervising (notifications) and steering (the potential need of a permit and the obligation to minimise negative effects) DNM projects.

Based on the analysis of legislation and other sources, it seems that the environmental and forest authorities run into challenges when taking the effects of several concurrent or consecutive projects on water quality into account. Based on the scrutinising of existing regulation and examined notifications, it seems that current legislation *does enable* and oblige authorities to require water protection measures of a single project to some extent.

In general, Finnish legislation seems to work relatively well for individual DNM projects in areas where other diffuse pollution is not high or where the receiving water body is not especially sensitive. As a rule, a single project will adhere to Tapio's guidelines and its environmental effects will normally not be excessive. Nevertheless, flaws in the law (e.g. the difficulty to take the cumulative effects into account in the permit consideration process, the vague status of notifications, the weak legal status of RBMPs and POMs) and in practice (e.g. the lack of a comprehensive GIS) *do not enable* authorities to take cumulative effects properly into account. Legislation does not adequately enable the authorities to protect water quality if there are a) several DNM projects, b) a DNM project and other forestry projects (logging, ploughing, fertilising) or c) a DNM project and other kinds of water polluting activities such as peat production within the river basin area. Therefore, we return to the typical problem of diffuse pollution: accumulation. The consequences in the light of the obligations and objectives of WPD might be undesirable, especially if several DNM projects are carried out in the same river basin within the space of a few years.

It seems that in Finland the implementation of the obligation to prevent deterioration and the aim to maintain good water status (article 4 of the WFD) has been executed via legislation (e.g. conditions for permit consideration) and RMDPs and POMs, yet the functionality of both means is questionable in the case of cumulative effects

[99] At the moment the obligation is not implemented in Finnish legislation, per se. But the permit threshold of Water Act (article 5:3) has to be interpreted according to the WFD and the obligations of the article 4.

[100] Kauppila 2014 (n 34), p. 69. Kauppila has scrutinised the role of RBMPs in granting environmental permits. According to this research on permit-granting in different sectors, the status class and the objective are more binding.

[101] The Weser dredging case (C-461/13). See also subnotes 3 and 33.

of several DNM projects. Supplementary measures of POMs are practically optional in the case of DNM, but there could be a need for the obligation to carry out these measures in order to prevent the deterioration of surface waters in vulnerable areas, for example. As a result, the implementation of WFD has not yet helped to incorporate a truly holistic view that would enable and demand the consideration of the cumulative effects of diffuse pollution. The WFD has the greatest impact in cases where the water quality standards have been set in a RBMP. When a water body has not been classified, the effect of the WFD is much smaller.[102]

Relatively light-touch monitoring of DNM projects are unavoidable, as every ELY Centre receives hundreds of ditching notifications every year. However, there should be a requirement and a possibility to take cumulative effects into account even in cases where a single DNM project would not harm the environment. One possible solution to emphasising the river basin approach could be to strengthen the role of the Temporary Act on the Financing of Sustainable Forestry. The state subsidies on forestry could be targeted at river basin planning instead of emphasising the numerous economic aims of the Temporary Act, for example.[103] A more detailed local river basin plan could specify the requirement of a POM.

Part of the above-mentioned governance problems could be eased by developing a comprehensive nationwide geographical information system where all water polluting projects would be marked.[104] Other remedies are needed, too. The number of employees in the ELY Centres has been cut in recent years and currently all ELY Centres have insufficient staff to mark the notifications into a GIS and to go through notifications thoroughly.[105] An electronic ditching notification could help with the checking of notifications, and possibly more coordinated collaboration between the ELY Centres and the Forest Centre could be beneficial as both authorities check the same DNM projects, even though they do it from different viewpoints.

It is evident that the consideration of the effects of several concurrent projects on water quality is not addressed well enough in current national legislation, even if the problem has been acknowledged. This may lead to the deterioration of the quality of especially small water bodies and accelerate the decline of endangered water habitats and species.

5. Acknowledgements

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[102] Kauppila 2014 (n 34), p. 69.

[103] The Temporary Act could be amended to require the river basin-based water protection measures when they are deemed necessary in a POM.

[104] The more detailed information of diffuse pollutants could help the permit consideration process.

[105] Enquiry/ELY Centres 2015.