

Response to Planning for the third cycle River Basin Plan 2021-2027 consultation

Comments by

Northern Ireland Environment Link

22nd June 2020

Northern Ireland Environment Link (NIEL) is the networking and forum body for non-statutory organisations concerned with the natural and built environment of Northern Ireland. Its 65 Full Members represent 190,000 individuals, 262 subsidiary groups, have an annual turnover of £70 million and manage over 314,000 acres of land. Members are involved in environmental issues of all types and at all levels from the local community to the global environment. NIEL brings together a wide range of knowledge, experience and expertise which can be used to help develop policy, practice and implementation across a wide range of environmental fields.

These comments are made on behalf of Members, but some members may be providing independent comments as well. If you would like to discuss these comments further we would be happy to do so.

Northern Ireland Environment Link
89 Loopland Drive
Belfast
BT6 9DW
P: 028 9045 5770
E: info@nienvironmentlink.org
W: www.nienvironmentlink.org

Northern Ireland Environment Link is a Company limited by guarantee NI034988 and registered with The Charity Commission for Northern Ireland NIC10107

This response applies to the whole of Northern Ireland.

1. What do you consider to be the most significant issues affecting the water environment?

NIEL believes the two most significant issues affecting Northern Ireland's water environment are Brexit and pollution.

- Brexit

As the consultation refers to in paragraph 1.5, one of the major questions facing our freshwater resources is what legislation will replace the Water Environment Regulations (Northern Ireland) 2017ⁱ – the legislation that transposes the Water Framework Directive (WFD), Directive 2000/60/ECⁱⁱ, into Northern Ireland law - when the UK leaves the EU. NIEL believes that as a minimum, the laws and policies that apply to Northern Ireland's freshwater resources should ensure NI complies with and meets all the targets of the WFD, including the classification of the island of Ireland as one ecoregion for the purpose of the WFD. This would then ensure the ongoing cross border co-operation that is essential in managing the three international river basins in Northern Ireland.

Related to this is the need to provide an alternative source of funding for the management of our freshwater resources given that it is likely the funding from the EU will no longer be available. DAERA, NI Water and eNGOs need to be properly funded to ensure they can contribute to meeting the targets in the WFD and better protect our water bodies. Also related to this is the lack of an independent body to monitor our waterbodies and the resources available to such a body. The question of how the compliance with the laws and regulations that apply to our freshwater bodies will be monitored and regulated is another very important factor that needs to be addressed as part of the review of the process of the UK leaving the EU. As is the case with other European laws, breaches of the WFD can be reported to the EU and would fall under the jurisdiction of the European Court of Justice (ECJ) which has the power to make rulings (in the form of court orders) and to impose fines on Member States who do not comply with EU law. We do not as yet know what mechanisms and processes will replace this. However, it is absolutely essential that there is a form of effective monitoring and regulation of the laws and policies that applies to Northern Ireland's freshwater bodies (and environment as a whole) which includes the power to compel adherence to those laws and to any court orders made and to impose fines which would be of a scale to act as an effective deterrent. NIEL would like to see the regulatory powers include a clear commitment to the adaptation of the

polluter pays principle, as outlined in the EU Environmental Liability Directiveⁱⁱⁱ (Directive 2004/35/EC) for example. This is explored in more detail in the following pages.

Nature Matters NI is a campaign led by a coalition of environmental organisations in Northern Ireland and is campaigning to ensure that the best Brexit possible for the environment is achieved. In order to achieve that the UK Government must make good on its commitments to nature and ensure that the laws and governance that protect the environment are at least as strong if not stronger when the UK leaves the EU.

Nature Matters is campaigning to:

- Maintain all existing legislation for species, habitats, protected areas, and the wider environment – this must be consistent with international best practice and aimed at reversing the shocking loss of biodiversity in Northern Ireland.
- Ensure we have strong and accountable environmental governance in Northern Ireland – this must replace the European Commission and European Court of Justice and guarantee that the laws we have are enforced.
- Maintain and extend the network of protected sites – these sites are needed to reach the global target of ensuring at least 17% of our land and 10% of our seas are well managed for nature by 2020.

As regards the longer term approach to the environment, after the UK leaves the EU, it is helpful to refer to the UK Government's 25 year plan for nature 'A Green Future'^{iv}, in which the former Prime Minister Theresa May said in the foreword^v

"When the United Kingdom leaves the European Union, control of important areas of environmental policy will return to these shores. We will use this opportunity to strengthen and enhance the protections our countryside, rivers, coastline and wildlife habitats enjoy, and develop new methods of agricultural and fisheries support which put the environment first."

In 'A Green Future' the UK government admitted that ^{vi}

"The natural world also underpins our nation's prosperity and wellbeing."

In 'A Green Future' the UK government made the following commitment:^{vii}

“We will also set gold standards in protecting and growing natural capital – leading the world in using this approach as a tool in decision-making. We will take into account the often hidden additional benefits in every aspect of the environment for national wellbeing, health and economic prosperity, with scientific and economic evidence to the fore.”

The UK government also committed in ‘A Green Future’ to

“Embed an ‘environmental net gain’ principle for development, including housing and infrastructure.”

“Take action to reduce the risk of harm from flooding and coastal erosion including greater use of natural flood management solutions.”^{viii}

NIEL believes these principles of natural capital should be applied to managing Northern Ireland’s water bodies and resources, as outlined in our response to question 5.

- Pollution

As Appendix 3 of the consultation makes clear, diffuse agricultural pollution is believed to be the primary cause of pollution in impacted river sites assessed during the period 2015 – 2018, using Soluble Reactive Phosphorus (SRP) concentrations as an indicator. Annual data on livestock numbers show increases between 2015 and 2018. According to Appendix 3 of the consultation, data from 2018 indicated soluble reactive phosphorus (SRP) has led to 7.8 % of river water bodies deteriorating from good status since 2015. We must consider the full implications of the recent deterioration in water quality. For example, we know that if a water body moves from being classified as good status to moderate status that can represent a loss of 40% of that river’s species. This represents a significant impact on biodiversity.

According to the UK Government’s 25 year plan for nature, ‘A Green Future’^{ix}

“Overall, farming is now the most significant source of water pollution and of ammonia emissions into the atmosphere in the UK.”

This also applies on a Northern Ireland scale. According to the NI Environmental Statistics Report 2020^x in 2018 agriculture accounted for the largest proportion (30.5%) of substantiated water pollution incidents investigated by NIEA, followed by industry (20%), domestic (18%), other (16%) and NI Water (14%). In fact, according to previous NI Environmental Statistics reports, agriculture has been responsible for the largest proportion of substantiated water pollution incidents investigated by NIEA or its predecessor every year since 2010 and for thirteen of the eighteen years since 2001 for which figures are available^{xi}. In 2017, agriculture also accounted for the largest proportion (30%) of substantiated incidents investigated by NIEA^{xii}. In the following years agriculture also accounted for the largest proportion of substantiated water pollution incidents (which is the figure given after the year in question) investigated by NIEA: in 2016 agriculture accounted for 32% of substantiated water pollution incidents investigated by NIEA^{xiii}, in 2015 it was 33%^{xiv}, in 2014 it was 35.8%^{xv} in 2013, 26.9%^{xvi}, in 2012, 32.3%^{xvii}, in 2011, 33.8%^{xviii}, in 2010, 23.9%^{xix}, in 2008 26.35%^{xx}, in 2003 24.5%^{xxi}, in 2002 30.78%^{xxii} and in 2001, 31.4%^{xxiii}.

These figures confirm that agricultural pollution is the biggest problem for our freshwater bodies and suggest that action above and beyond that taken to date is needed if this level of pollution is to be reduced and NI's water bodies are to meet the targets in the WFD.

Just last month, in May 2020 there were two significant fish kills. One in the Glenavy River County Antrim in which around 1,000 fish were killed and one in the Grange River, a tributary of the Moyola river, which was caused by 30,000 gallons of slurry.

However agricultural pollutants like manure and silage effluent are not the only issues. The use of MCPA to treat rushes presents serious problems to water systems. MCPA is reported as highly toxic to aquatic organisms according to The Dow Chemical Company.^{xxiv} NIEL understands that DAERA is working with partners (NIEA, NI Water, UFU, CAFRE and The Voluntary Initiative) through the Water Catchment Partnership (WCP) to reduce the level of MCPA run off in to rivers in the Derg catchment and this type of inter departmental and inter agency collaboration is welcome.

2. Are you aware of any other issues in addition to the significant issues identified in the report?

The consultation addresses the main issues affecting water bodies in Northern Ireland in some detail, though there was no exploration of the DAERA's policy and approach to the development of hydropower in NI's water bodies. NIEL believes it might be worth evaluating the implications of hydropower in NI and providing greater clarity as to the relevant legislation and policy, particularly in terms of the potential impact on protected species such as Atlantic salmon and in light of the need to tackle climate change and all the other potential threats to NI's water bodies as listed in the consultation.

Further detail on NIEL's preferred principles for managing our water resources is provided in response to question 4.

3. Do you agree with our assessment of the significant water management issues?

Generally the consultation has addressed the significant water issues in NI though the role of hydropower should also be addressed. Also, NIEL would like to see a commitment to ensuring there is a greater role for the use of ecosystem services or soft engineering options such as integrated wetlands and giving rivers land to flood upstream so as to reduce flooding downstream.

4. Do you think existing measures are adequate for addressing the significant water management issues?

No.

The WFD requires that Member States aim to achieve Good Ecological Status (GES) in all waters by 2015 and if that is not possible, it allows interim targets to be set for 2015 and 2021 with full compliance by 2027. Having failed to meet the WFD targets for 2015, the target is for 70% of water bodies (rivers, lakes, transitional and coastal water bodies, and groundwater bodies) in Northern Ireland to have achieved GES by 2021. As of 2018, only 36.6% of Northern Ireland's water bodies were achieving GES, and this is lower than the level in 2015 when 37.4% of water bodies achieved GES. The decline in the 52 water bodies achieving good environmental status (GES) since 2015 is a clear indication that existing measures are not adequate to address the significant water management issues in NI. There was an

even greater deterioration for rivers alone during that time (2015-2018) from 32.7% to 31.3%.

The scale of the problems facing NI's freshwater is illustrated by the findings of the 2019 Article 17 review in relation to the freshwater pearl mussel. The EU Habitats Directive (Directive 92/43/EEC^{xxv}) requires EU Member States to establish Special Areas of Conservation (SACs) for certain habitats (n 200) and species (over 1,000) listed in the Annexes I, II, IV and V of the Directive. Article 17 of the Habitats Directive also requires Member States to report on the implementation of the directive every six years^{xxvi}. The Article 17 report provides information on the conservation status of habitats and species listed in the annexes of the Directive. The Habitats Directive requires Member States to not just protect all the features of an SAC but to implement wider countryside measures to help protect those species and habitats stipulated in the annexes of the directive. The fourth UK report was submitted to the EU in August 2019, and covers the implementation period 2013–2018. The 2019 Article 17 review in Northern Ireland stated that as regards freshwater pearl mussel,

“the lack of juvenile recruitment and an ageing population will almost certainly lead to the future extinction of this species from NI, unless there is a fundamental improvement of their current habitat”.

For one of our most highly protected species to be at risk of extinction is a shocking prospect and an indication of a serious failure to appropriately protect and enhance our freshwater resources and meet our legal obligations - in this case those arising from the EU Habitats Directive and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995. NIEL would argue that it is clear that freshwater protection needs to improve, significantly and as a matter of urgency.

5 . Do you have any other suggestions for how to address the significant issues highlighted?

Yes. There are some fundamental principles NIEL would like to see embedded in to the management of our freshwater resources including:

- Ensuring the targets of the WFD are met by the deadlines set by the WFD.

- Much greater use of natural capital and land management techniques (soft engineering) on an ongoing basis to, amongst other things, improve water quality and reduce the impact of flooding.
- More thorough and consistent application of the 'polluter pays principle' for water pollution incidents.
- More thorough application of integrated catchment management.
- Ensuring WFD targets are met.

NIEL would be satisfied to see the targets set by the WFD met by the deadlines set by the WFD. The UK Government previously committed to ensuring that there would be no deterioration in environmental legislation when the UK leaves the EU. NIEL wishes to see this commitment adhered to. A key factor in this will be what will happen to the legislation which transposed the WFD into UK law. NIEL believes it is essential that as a minimum the standards of the WFD are maintained in any and all relevant laws.

- Greater use of natural capital

NIEL wishes to see much greater use of the natural capital approach as outlined in NI Water's 2021-2046 strategy^{xxvii} which states that NI Water's aims to improve water quality at source and which acknowledges that while investment in treatment works and chemical treatment can remove the problem

“the sustainable long term solution is to work in partnership with land owners and other stakeholders to manage the source waters using catchment management.”

This approach was also reflected in the UK Government's 25 year plan for nature 'A Green Future'^{xxviii} in which the UK government committed to *“using more natural flood management solutions where appropriate”*^{xxix}

It is important to learn from examples of where natural capital and ecosystem services have had a positive impact on the management of water resources, for example, South West Water's Upstream Thinking project. This project works in eleven catchments across Devon and Cornwall, including in the Exmoor National Park, and aims to improve water quality, at source, by improved land management

techniques to reduce soil and chemical run off in the upper reaches of rivers taking a whole catchment approach. According to South West Water^{xxx}

“It also has wide reaching, positive impacts on the environment by increasing biodiversity and improving raw water quality, reducing energy use, improving carbon sequestration and reducing the risk of flood and drought.”

“It is a cost-effective and environmental approach to tackling long-term problems facing the water industry and for relatively small amounts of expenditure, the scheme has the potential to reduce water treatment costs, reduce energy consumption and support our company vision and values – Pure Water, Pure Service & Pure Environment “

The project is also predicted to improve the probable water quality in the sub-catchment to ‘good ecological status’ for phosphate, something that should be of particular interest for those of us in Northern Ireland who seek to reduce the levels of phosphorous in our water bodies. This more natural, land management based approach also has very positive economic benefits. According to South West Water, Upstream Thinking has a potential 65:1 payback ratio over 30 years if it delays or even avoids capital expenditure for building and operating traditional treatment works^{xxxii}

As outlined in TEEB for policymakers (2009)^{xxxii} in New York, this approach also works on a very large scale. For example, payments to maintain water purification services in the Catskills mountains watershed of New York state of US\$ 1-1.5 billion were assessed at significantly less than the estimated cost of a filtration plant (US\$ 6-8 billion plus US\$ 300-500 million/year operating costs). New York City agreed to invest \$1.0 to \$1.5 billion over ten years in a watershed program principally financed by a 9 % percent increase in the taxes on water bills over a five-year period. By comparison, it was estimated that building a new filtration plant would have required a 200% increase in taxpayers’ water bills^{xxxiii}.

Applying an ecosystems based approach also fits with Outcome 2 (We live and work sustainably – protecting the environment) in the draft 2016-2021 Programme for Government^{xxxiv} and the approach outlined in NI Water’s 2021-2046 strategy^{xxxv} which states that NI Waters aims to improve water quality at source and acknowledges that while investment in treatment works and chemical treatment can remove the problem

“the sustainable long term solution is to work in partnership with land owners and other stakeholders to manage the source waters using catchment management.”

This type of integrated catchment management approach using ecosystem services (i.e. natural options) is the type of approach NIEL would like to see as the norm rather than the exception in catchment management in Northern Ireland.

- Application of the polluter pays principle

NIEL also believes it is essential that ‘the polluter pays’ should be firmly established as a principle that is applied to pollution incidents across NI, not just in relation to freshwater pollution, though that is probably the area of greatest need.

NIEL believes there should be tougher sentences for polluters including a requirement for polluters to pay for the rehabilitation of the damage caused by the pollution for which they were responsible. NIEL agrees with the assessment that the penalties for those found guilty of pollution incidents are far too small and do not act as an adequate deterrent. The fines also do not reflect the economic costs of re-instating the river or water body as closely as possible to before the pollution incident in question. For example, stocking a river with salmon or trout can cost thousands of pounds and take many month or years of hard work, often by volunteers. Any fine for a pollution incident that kills fish in a restocked river should include the polluter paying the costs of restocking the river to the previous stock levels. Many of these issues relate to the effectiveness or otherwise of the regulation and management of our water bodies, though many are a matter for the judiciary, which is and must remain independent. Our MLAs also have a role for example by updating and amending the legislation, the Water (NI) Order 1999^{xxxvi}, which outlines the penalties which can be applied to those who are found to have polluted a water body. However, NIEL believes that there are sound arguments for an environmental court in NI. NI needs an independent environmental protection agency and there could be a sliding scale of fines depending on the size of the business, as happens with pollution incidents on land.

- Integrated catchment management

River basins and catchments need to be managed in an integrated fashion. This integration needs to be in terms of issues and geography. For example, the need for integration in catchment management was illustrated by the 1989 flooding of Marble

Arch caves, now a UNESCO Global Geopark, which threatened the viability of the site as a tourist attraction. The flooding was found to be a result of overgrazing by sheep, commercial peat cutting and development of drainage channels, uncontrolled burning of vegetation and use of quad motor bikes, which were all contributing to the peatland erosion on Cuilcagh mountain. These factors combined to increase the volumes of peat enriched rainwater running off the mountain in to the caves. By reducing the levels of grazing and the other threats, the flooding of the caves was reduced.

This integration also applies to how other aspects of the environment are managed, for example, livestock management and nutrient management. An important part of helping to establish buffer zones along our rivers would be to ensure there is fencing to prevent livestock accessing rivers and farmers should be required to ensure this fencing is installed and maintained. Pasture pumps could be installed to ensure livestock have access to drinking water.

In relation to managing the waste produced by livestock, given the vulnerability of manure applications to surface run-off at either end of the closed period for spreading slurry, NIEL supports the use of a 15m spreading buffer zone from waterways and lakes and the reduction in the maximum slurry application rate. Buffer zones can contribute to other ecosystem services, many of which benefit the farmer directly, including carbon sequestration, soil formation and natural pest control. Non-spreading zones should also be increased close to designated sites given their increased susceptibility to issues associated with run-off and aerial deposition. We therefore believe that consideration should be given to increasing the width of buffer strips in line with the best available evidence. NIEL believes there is justification to include buffer strips as eligible under Single Farm Payment (SFP). Given the current challenge of effectively policing the closed period for spreading slurry/manures, we have concerns about how such a specific measure (15m spreading zone) will be properly enforced.

There may be a case for extending these buffer zones beyond February and October, especially with the potential for flash floods and extreme weather events in the summer months.

The potential role for a nutrient cap for nitrogen and phosphorus should be evaluated for all land managers in a catchment. This nutrient cap should be set at a level which will ensure the water body achieves "Good" status as a minimum. This is particularly important for protected areas and the nutrient cap must enable the SACs, SPAs and ASSIs to achieve Favourable Conservation Status and all relevant condition targets.

The Conservation Management Plans for Natura 2000 sites need to be integrated with River Basin Management Plans.

The Freshwater Task Force's ten point action plan for NI to to achieve sustainable water use "From Source to Sea"^{xxxvii} (2012) is still relevant. The ten points are

- Implementation of European Water Policy
- Keep our rivers flowing and wetlands wet
- Restore our water dependent protected areas
- Slow, manage and clean up drainage from roads and buildings
- Stop pollutants contaminating our water
- Keep sewage out of homes and rivers and off beaches
- Retain water on floodplains and wetlands
- Help farmers deliver a healthy freshwater environment
- Waste less water
- Working together for good water quality

6. What other actions do you think could be put in place to reduce the pollution of waters caused by nutrient enrichment?

NIEL believes there is a need for greater co-operation and collaboration with partners across government, including government departments, the third sector and educational institutions. For example, DAERA, farming representative bodies, the UFU, NIAPA and NFFN, and the agricultural research institutions, AFBI and CAFRE, should work much more closely with other parts of DAERA, other government departments and with the environmental sector. NIEL recognises and welcomes the many examples of co-operation and collaboration with partners including external partners outlined in the consultation and would encourage a greater degree of this sort of partnership working and co-design of projects.

There is also a need to greater integration of policy across government departments. For example, if the Department for Economy, which is responsible for energy policy, were to support and assist greater use of anaerobic digestion on farms this could also help reduce water pollution by reducing the amount of manure that is available

to be spread on land, while also reducing the carbon footprint of a farm and potentially generating both energy and income for the farm in question.

Northern Ireland also needs greater political leadership. Rather than seeking derogations from EU Directives, as was the case with the Nitrates Directive, protecting and enhancing the environment should be something which the NI Executive and all component parts should strive for, as per Outcome 2 in the draft Programme for Government 2016-21.

The need for greater provision of advice to help land owners and managers better protect our water bodies and for more effective inspection and enforcement of legislation has already been referred to.

7. What extra data would you like to see collected? What additional monitoring and evaluation would you like to see?

As outlined in Appendix 3^{xxxviii}, NI does face a significant challenge in relation to its ammonia emissions. NI is responsible for 12% of UK ammonia emissions despite having only 3% of the UK population and 6% of the land area. Ammonia emissions have risen by 9% since 2010^{xxxix}. 91% of NI's ammonia emissions in 2015 came from agriculture^{xl}. Cattle (beef and dairy) are responsible for around 70% of ammonia emissions with intensive pig and poultry sectors accounting for 20% of emissions^{xli}. Ammonia is a threat not only to our protected areas and peatlands in particular, but also to human health. In its 2017 report 'Making ammonia visible' the Expert Working Group on Sustainable Agricultural Land Management for N. Ireland said^{xlii}

“Northern Ireland agriculture must take practical and sustained action urgently to reduce its ammonia emissions.”

NIEL therefore welcomes DAERA's stated intention to develop an ammonia action plan to deliver tangible and sustained reductions in ammonia. Simple measures such as extending the grazing season and improving the management of slurry (handling and storage of manure is responsible for 44% of all ammonia emissions) can help reduce ammonia emissions. The Netherlands reduced ammonia emissions by 64% between 1990 and 2016 so we know that with the right policies we can successfully tackle this problem. An important part of this is having the necessary data and NIEL

would support the recommendations in ‘Making ammonia visible’ that the baseline data on ammonia is as accurate as possible and that policy and regulatory decisions are based on sound and up to date science

NI Water is the largest electricity consumer in NI and so it would be very important to set a target date by which NI Water should become net zero carbon and to measure the progress of NI Water’s efforts to meet the target NI Water’s 2021-2046 strategy to become net zero carbon in its operations.

ⁱ<http://www.legislation.gov.uk/nisr/2017/81/contents/made>

ⁱⁱhttps://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF

ⁱⁱⁱ<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32004L0035>

^{iv} A Green Future: Our 25 Year Plan to Improve the Environment

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf page 15

^vIbid page 4

^{vi}Ibid page 15

^{vii}Ibid page 9

^{viii}Ibid page 32

^{ix} A Green Future: Our 25 Year Plan to Improve the Environment

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf page 38

^x<https://www.daera-ni.gov.uk/sites/default/files/publications/daera/ni-environmental-statistics-report-2020.pdf>

^{xi}<https://www.daera-ni.gov.uk/sites/default/files/publications/doe/pollution-reports-incidents-and-enforcement-report-2013.pdf>

^{xii}https://www.daera-ni.gov.uk/sites/default/files/publications/daera/ni-environmental-statistics-report-2019_1.pdf

^{xiii}https://www.daera-ni.gov.uk/sites/default/files/publications/daera/ni-environmental-statistics-report-2018_1.pdf

^{xiv}https://www.daera-ni.gov.uk/sites/default/files/publications/daera/ni-environmental-statistics-report-2018_1.pdf

^{xv}<https://www.daera-ni.gov.uk/sites/default/files/publications/doe/pollution-reports-incidents-and-enforcement-report-2013.pdf>

^{xvi}<https://www.daera-ni.gov.uk/sites/default/files/publications/doe/ni-environmental-statistics-report-2016.pdf>

^{xvii}<https://www.daera-ni.gov.uk/sites/default/files/publications/doe/pollution-reports-incidents-and-enforcement-report-2013.pdf>

^{xviii}Ibid

^{xix}Ibid

^{xx}Ibid

^{xxi}Ibid

^{xxii}Ibid

^{xxiii}<https://www.daera-ni.gov.uk/sites/default/files/publications/doe/pollution-reports-incidents-and-enforcement-report-2013.pdf>

^{xxiv} <https://onlinelibrary.wiley.com/doi/full/10.1002/wat2.1402>

^{xxv} <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043>

^{xxvi} https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

-
- ^{xxvii} Our draft strategy 2021-2016 NI Water <https://www.niwater.com/our-draft-strategy/files/assets/common/downloads/northern%20ireland%20water%20-%20our%20draft%20strategy%202021-2046.pdf> p20
- ^{xxviii} A Green Future: Our 25 Year Plan to Improve the Environment https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf page 36
- ^{xxix} Ibid page 52
- ^{xxx} <https://wwtonline.co.uk/features/moorland-project-delivers-multiple-benefits->
- ^{xxxi} <https://wwtonline.co.uk/features/moorland-project-delivers-multiple-benefits->
- ^{xxxii} TEEB – The Economics of Ecosystems and Biodiversity for National and International Policy Makers – Summary: Responding to the Value of Nature 2009 http://www.teebweb.org/media/2009/11/National-Executive-Summary_-English.pdf
- ^{xxxiii} Case Studies of Markets and Innovative Financial Mechanisms for Water Services from Forests Danièle Perrot-Maître and Patsy Davis, Esq. May, 2001 <https://www.forest-trends.org/wp-content/uploads/imported/casesWSofF.pdf>
- ^{xxxiv} <https://www.executiveoffice-ni.gov.uk/sites/default/files/publications/execoffice/odp-dec-%202019.pdf>
- ^{xxxv} Our draft strategy 2021-2016 NI Water <https://www.niwater.com/our-draft-strategy/files/assets/common/downloads/northern%20ireland%20water%20-%20our%20draft%20strategy%202021-2046.pdf> p20
- ^{xxxvi} <http://www.legislation.gov.uk/nisi/1999/662/contents/made>
- ^{xxxvii} Freshwater Task Force. From source to sea: 10 steps to sustainable water use in Northern Ireland 2012 <https://www.nienvironmentlink.org/cmsfiles/images/News%20Items/From-Source-to-Sea.pdf>
- ^{xxxviii} <https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Appendix%203%20Further%20details%20on%20Agriculture.PDF>
- ^{xxxix} Making ammonia visible <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Ammonia%20Annex-%20Expert%20Working%20Group%20%28final%29.pdf>
- ^{xl} Making ammonia visible <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Ammonia%20Annex-%20Expert%20Working%20Group%20%28final%29.pdf>
- ^{xli} Ibid
- ^{xlii} Ibid