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Nitrogen is a crucial nutrient that helps plants and crops grow, but high concentrations are harmful to people and nature. Pure, clean water is vital to human health and to natural ecosystems. Excess nitrogen from agricultural sources is one of the main causes of water pollution in Europe. Nitrates and organic nitrogen compounds from fertilizer and manure enter groundwater through leaching and reach surface water through runoff from agricultural fields. A high level of nitrate makes water unsuitable as drinking water. In rivers, lakes and marine waters, nitrogen and other nutrients, in particular phosphorus, stimulate the growth of algae. At moderate levels, algae serve as food for aquatic organisms, including fish. However, excessive nutrient concentration in water systems will cause algae to grow excessively. This affects the natural ecosystem and can lead to depletion of the oxygen in the water. This phenomenon, known as eutrophication, has negative consequences for biodiversity, fisheries and recreational activities. Both phosphorus and nitrogen play a role in eutrophication, but while the main cause of eutrophication in fresh water is phosphorus, it is mainly caused by nitrogen in marine water. The Nitrates Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources that pollute ground and surface waters and by promoting the use of good farming practices. The Directive aims to reduce water pollution caused by nitrates used in agriculture by monitoring nitrate concentrations of water bodies designating nitrate vulnerable zones establishing codes of good agricultural practices and measures to prevent and reduce water pollution from nitrates annual cost of nitrogen losses agricultural nitrogen input to aquatic systems caused by livestock production ammonia emissions from agriculture to atmosphere caused by livestock production The Nitrates Directive requires EU Member States to monitor the quality of waters and to identify areas that drain into polluted waters or at risk of pollution. These concern waters that due to agricultural activities are eutrophic or could contain a concentration of more than 50 mg/l of nitrates. Those areas are defined as Nitrate Vulnerable Zones (NVZs). The Nitrates Directive forms an integral part of the overarching Water Framework Directive and is one of the key laws protecting waters against agricultural pressures. Evaluation of the Directive The Commission has launched a public consultation on the evaluation of the Nitrates Directive. Interested parties such as farmers, industries, NGOs, citizens, public administrations, water authorities and others are invited to share their views until 18 March 2024. The evaluation will assess if the Nitrates Directive remains fit for purpose. Find out more about the evaluation. On 19 April 2024 the Commission launched a public consultation lasting until 17 May on a Commission Directive amending Annex III of the Nitrates Directive. Designate Nitrate Vulnerable Zones (NVZs) areas of land that drain into polluted waters or waters at risk of pollution and which contribute to nitrate pollution; or EU Member States can also choose to apply measures (see below) to the whole territory (instead of designating NVZs) the current status of NVZs and whole territory designations can be viewed using the map viewer Establish Codes of Good Agricultural Practice to be implemented by farmers on a voluntary basis, including measures limiting the periods when nitrogen fertilisers can be applied on land to target application to periods when crops require nitrogen and prevent nutrient losses to waters measures limiting the conditions for fertiliser application (on steeply sloping ground, frozen or snow-covered ground, near water courses, etc.) to prevent nitrate losses from leaching and runoff requirement for a minimum storage capacity for livestock manure; and crop rotations, soil winter cover and catch crops to prevent nitrate leaching and runoff during wet seasons Establish action programmes to be implemented by farmers within NVZs on a compulsory basis, including measures already included in Codes of Good Agricultural Practice that become mandatory in NVZs; and other measures, such as limitation of fertiliser application (mineral and organic), taking into account crop needs, all nitrogen inputs and soil nitrogen supply, maximum amount of livestock manure to be applied (corresponding to 170 kg nitrogen/ha/year); recommendations for establishing action programmes are available for each type of measure to be included in action programmes, according to the pedo-climatic region in Europe, so as to minimise the risk of water pollution. The Action Programmes need to be revised at least every four years. National action programmes under the Nitrates Directive are accessible in the NAPINFO database. Identify polluted water, or waters at risk of pollution surface freshwaters, in particular those used or intended for the abstraction of drinking water, containing or that could contain (if no action is taken to reverse the trend) a concentration of more than 50 mg/l of nitrates groundwater containing or that could contain (if no action is taken to reverse the trend) more than 50 mg/l of nitrates freshwater bodies, estuaries, coastal waters and marine waters found to be eutrophic or that could become eutrophic (if no action is taken to reverse the trend) Every four years, EU Member States are required to report on: nitrate concentrations in groundwaters and surface waters eutrophication of surface waters assessment of the impact of (an) action programme(s) on water quality and agricultural practices revision of NVZs and (an) action programme(s) estimation of future trends in water quality These four-yearly reports produced by Member States are used as the basis for a four-yearly report by the European Commission on the implementation of the Directive. For questions about EU environmental policy, please contact Europe Direct. The Environmental Noise Directive is the main EU law to identify noise pollution levels and act on them. It focuses on four action areas determining exposure to environmental noise and assessing its health effects at single dwelling level ensuring that information on environmental noise and its effects is made available to the public preventing and reducing environmental noise preserving environmental noise quality in areas where it is good The Directive requires EU countries to prepare and publish noise maps and noise management action plans every 5 years for agglomerations with more than 100 000 inhabitants major roads (more than 3 million vehicles a year) major railways (more than 30 000 trains a year) major airports (more than 50 000 take-offs or landings a year, including small aircrafts and helicopters) When developing noise management action plans, national authorities must consult the concerned public. The plans are available here by selecting: the Member State, EU obligations, Environmental Noise Directive, Noise maps/Action plans. The Directive does not set limit or target values for environmental noise, nor does it prescribe the measures to be included in the action plans. This is for the competent Member State authorities to decide. The Directive serves as a knowledge base to amend or introduce noise limits on road, railway and aircraft vehicles. Noise is a health problem for at least 1 in 5 EU citizens. There is therefore a need to coordinate efforts at EU level to reduce this burden on the everyday life of millions of citizens. The Directive acts as the framework legislative tool linking all actions at international, EU and local level. Noise is a complex issue, so effective solutions come from coordinated EU and local actions. The Directive aims to establish a common EU approach to avoid, prevent or reduce the harmful effects of exposure to environmental noise. The Directive does not include a common noise reduction objective nor EU noise limits. Directive 2002/49/EC relating to the assessment and management of environmental noise Revisions of the Directive Annex II of the Directive describes the common EU methods for calculating exposure to different noise levels. These methods comprise a set of formulas and coefficients to be used to calculate noise levels at the facade of the buildings. The common methods were adopted through a revision of Annex II in 2015, and improved further in 2020. Annex III of the Environmental Noise Directive describes the methods for calculating the burden of disease caused by exposure to specific noise levels. The methods include dose-effect relations for a set of health endpoints such as cardiovascular disease, annoyance and sleep disturbance. Annex III was revised in 2020 following the latest scientific review of the health effects of noise that is being performed by the WHO. Evaluation of the Directive The Commission published an evaluation of the Directive in 2016, addressing questions of effectiveness, efficiency, coherence, relevance and EU added value. The results are summarised in a Staff Working Document with an Executive Summary in English, French and German. The evaluation found that the Directive remains highly relevant for EU policy-making as noise pollution still constitutes a major environmental health problem in Europe. The Directive is coherent in itself and with other relevant EU legislation some progress has been made towards a common EU approach but there were delays in adopting common assessment methodologies administrative costs are low at 0.15 for noise maps and 0.03 for action plans per citizen, every 5 years a cost-benefit analysis showed that where action plans - including measures for noise management - have been implemented, the Directive was efficient with a favourable cost-benefit ratio of 1.29 The Directive can generate EU added value by providing a level playing field across the EU in which transport infrastructure operators can compete, and by better informing EU policy-making as a result of delays in implementation, the Directive has not yet delivered all its potential EU added value The evaluation is based on a public consultation and on a study. As required by the Directive, the Commission prepares a report on the implementation of the Directive every five years. The first implementation report was published in 2011, summarising progress in implementing the Directive and outlining possible improvements to enhance its effectiveness. The second implementation report in 2017 found that EU countries have made progress in implementing the Environmental Noise Directive, but progress varies per country. Progress depends on each country's level of ambition, resources allocated to implementation, and whether implementation is tasked to centralised or local authorities. The Commission published a third implementation report in 2023, setting out how noise can be further reduced. The report shows progress achieved since the second implementation report, which includes a more systematic assessment of noise levels and the adoption of noise management action plans by Member States. However, it warns that the current number and intensity of actions must be increased if the number of people affected by transport noise by air is to be reduced by 30% by 2030, as set out in the Zero Pollution Action Plan. A major study on the entire noise policy was performed in 2021 and informed this implementation report. The study uses data on the sea-level and cliff-retreat rates from the last 8000 years at Bidford and Scalby, UK, alongside predicted sea-level rise and cliff retreat-rate data until 2100. Climate change is accelerating sea-level rise (SLR) and, with coastal urbanisation increasing worldwide, cliff erosion on rocky coasts is an immediate hazard to human lives, property and infrastructure in these locations. Rock coasts make up more than 50 per cent of the world's coastline, and are themselves evidence of ongoing erosion. Sea-level rise is expected to increase storm frequency and result in wave energy moving further inshore to erode coastal cliffs, but little is known of the specific impacts of this. Despite the importance of understanding the effect of sea-level rise on rocky cliffs, the stability of rock coasts has been largely neglected, and the expected acceleration of cliff erosion following sea-level rise has not been previously studied with observed data using coastal evolution models. This study is the first to use data from rocky coastline sites to model the impacts of accelerated sea-level rise on coastal cliff retreat rate for the year 2100. This emerging risk of accelerated rocky cliff erosion is important to understand to enable swift societal and political response to mitigate its impacts on coastal communities. The researchers used a coastal evolution model, incorporating digital surface topography and radioisotope data from rock samples (a method of dating rocks and minerals) at a site, to quantify cliff retreat rates for the last 8000 years (before present, where present day is 2000). They then used this calibrated model, but included sea-level rise projections from the UK Climate Projections 2018 (UKCP18), to forecast sea-level rise to 2100. The study focuses on two coastal sites Bidford, north Devon and Scalby, north Yorkshire. The researchers collected rock samples from each site and analysed them to work out the cliff retreat history. Sea-level rise histories specific to each site were constructed using the radioisotope rock data and modelling approach. The researchers added future cliff retreat rates to the model, using the Intergovernmental Panel on Climate Change's predictions of greenhouse gas emissions through Representative Concentration Pathways (RCPs). They modelled minimum, medium and maximum rates for each RCP2, RCP4, and RCP8. They also incorporated an average number of random erosion events, where storms, for example, cause larger-scale damage to accurately identify the long-term future trend of cliff retreat rates for the two sites. Both Bidford and Scalby were found to have a similar sea-level rise history, where the sea has constantly risen from 8000 years ago, when it was around 16 metres (m) lower than today. The results of the model analysis showed that cliff retreat rate is more sensitive to sea-level rise rate, i.e. how quickly the level rises over time, than the absolute amount of sea-level rise. The model predicts that these two historically stable UK coastal sites will see cliff retreat rates accelerate by at least 37 times the present rates under current projections for sea-level rise. This equates to cliff positions retreating by 1014 m at Bidford and 1322 m at Scalby. The researchers note that cliff retreat rates of this speed have not been seen over the last 35000 years at these sites and are due to sea-level rise driven by climate change causing greater wave erosion thereby increasing cliff retreat rates. This suggests climate change will have a direct impact on risks associated with coastal hazards in the coming century and beyond even on historically stable coastlines. The researchers suggest that rocky coastlines should now be included in future planning for global climate change response, for example in coastal protection programmes. Footnotes: Coastal evolution models can simulate fundamental cause-effect relationships in coastal systems. Source: Shadrick, J. R., Rood, D. H., Hurst, M. D., Piggott, M. D., Hebditch, B. C., Seal, A. J., and Wilcken, K. M. (2022) Sea-level rise will likely accelerate rock coast cliff retreat rates. Nature Communications, 13(1). 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