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ARTICLE

A Human Rights Approach to Agrochemical Pollution: Lessons to be Learned from Climate Change Litigation?

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Abstract
In a world grappling with escalating agrochemical pollution, this article explores the potential for shifting from a security-centric approach to a human rights-based approach to safeguard health, the environment, and biodiversity. By engaging with European Court of Human Rights jurisprudence related to environmental protection and climate change, the article critically assesses how to address state (in)action regarding pollutants such as pesticides through human rights litigation. In its analysis, the article highlights climate change litigation as a catalyst for change to assert states' threefold obligations to respect, protect, and realize human rights. It concludes that the legal approaches developed in climate litigation – with regard to both procedural and substantive aspects – provide a strong basis for addressing the human rights impacts of agrochemical harm.

Keywords: Agrochemicals; Pollution; Health; Human rights; Climate change; Litigation

1. Introduction

Increasing pollution threatens human life and health, environmental sustainability, and biodiversity worldwide.[1] Among other forms of pollution, agrochemical pollution has become a pervasive issue with far-reaching impacts on ecosystems and human communities alike.[2] At the global scale, the World Health Organization (WHO) estimates that there are 3 million cases of pesticide poisoning each year and up to 220,000 deaths, primarily in developing countries.[3]

The Food and Agriculture Organization (FAO) of the United Nations (UN) reported that globally, despite a plateau in recent years, pesticide use increased by

1 P.J. Landrigan et al., 'The Lancet Commission on Pollution and Health' (2018) 391(10119) *The Lancet*, pp. 462–512; P.I. Devi, M. Manjula & R.V. Bhavani, 'Agrochemicals, Environment, and Human Health' (2022) 47 *Annual Review of Environment and Resources*, pp. 399–421.
2 Ibid., pp. 405–13.
3 World Health Organization (WHO) & United Nations Environment Programme (UNEP), *Public Health Impact of Pesticides Used in Agriculture* (WHO/UNEP, 1990), pp. 89–90, available at: https://iris.who.int/handle/10665/39772.

nearly 50% compared to the 1990s.[4] This escalation is evident in the rising detection of pesticide residues in ground and surface waters. For example, the herbicide atrazine has been frequently detected at thresholds that exceed safe levels in the Midwest of the United States (US).[5] Similarly, in India, pesticide runoff has been linked to alarming declines in fish populations in the Punjab region, with an impact on biodiversity and local livelihoods.[6] In Switzerland, data published in 2019 demonstrates a significant health risk as chlorothalonil metabolites exceeded the authorized concentration in highly populated areas.[7] These numbers reflect an alarming trend of agrochemical over-reliance. The impact on human, animal, and environmental health underscores the urgent need to reform legal frameworks and practices beyond existing regulatory tools and remedies.[8]

This article explores the potential for transitioning from a security-based approach to a human rights-based approach to address agrochemical pollution. In doing so, it highlights the difficulties of security-based regulation in addressing multiple exposures to risks – each risk being regulated in silos and without taking into account its cocktail effect. While the literature on environmental protection as an issue of human rights and state accountability is growing,[9] the legal challenges of agrochemical pollution remain under-explored.[10] The article addresses this gap. By aligning environmental

[4] FAO, *Pesticides Use, Pesticides Trade and Pesticides Indicators: Global, Regional and Country Trends, 1990–2020*, FAOSTAT Analytical Brief No. 46 (FAO, 2022), available at: https://www.fao.org/documents/card/en?details=cc0918en.

[5] K.R. Solomon et al., 'Ecological Risk Assessment of Atrazine in North American Surface Waters' (1996) 15(1) *Environmental Toxicology and Chemistry*, pp. 31–76.

[6] M. Kaur et al., 'Determination of Organochlorine Pesticide Residues in Freshwater Fish Species in Punjab, India' (2008) 80(2) *Bulletin of Environmental Contamination and Toxicology*, pp. 154–7.

[7] Swiss Federal Office of Agriculture, 'Retrait du chlorothalonil avec effet immédiat', Decision of 12 Dec. 2019, available at: https://www.blw.admin.ch/blw/fr/home/services/medienmitteilungen.msg-id-77491.html.

[8] M.M. Mbengue & S. Waltman, 'Health and International Environmental Law', in G.L. Burci & B. Toebes (eds), *Research Handbook on Global Health Law* (Edward Elgar, 2018), pp. 197–238; A.L. Phelan, 'The Environment, a Changing Climate, and Planetary Health', in L.O. Gostin & B.M. Meier (eds), *Foundations of Global Health & Human Rights* (Oxford University Press, 2020), pp. 417–38.

[9] See, e.g., A. Grear & L.J. Kotzé (eds), *Research Handbook on Human Rights and the Environment* (Edward Elgar, 2015); S. Atapattu & A. Schapper, *Human Rights and the Environment: Key Issues* (Routledge, 2019); A. von Arnauld, K. von der Decken & M. Susi (eds), *The Cambridge Handbook of New Human Rights: Recognition, Novelty, Rhetoric* (Cambridge University Press, 2020); N. Kobylarz & E. Grant (eds), *Human Rights and the Planet: The Future of Environmental Human Rights in the European Court of Human Rights* (Edward Elgar, 2022); C. Macchi, *Business, Human Rights and the Environment: The Evolving Agenda* (Springer, 2022); S. Atapattu, *UN Human Rights Institutions and the Environment: Synergies, Challenges, Trajectories* (Routledge, 2023).

[10] L. Utyasheva & L. Bhullar, 'Human Rights Perspective on Pesticide Exposure and Poisoning in Children: A Case Study of India' (2021) 23(2) *Health and Human Rights*, pp. 49–61; C. Terwindt, S. Morrison & C. Schliemann, 'Health Rights Impacts by Agrochemical Business: Legally Challenging the Myth of Safe Use' (2018) 34(2) *Utrecht Journal of International & European Law*, pp. 130–45; A. Schilling-Vacaflor, 'Putting the French Duty of Vigilance Law in Context: Towards Corporate Accountability for Human Rights Violations in the Global South?' (2021) 22 *Human Rights Review*, pp. 109–27. See also C. Voigt (ed.), *International Judicial Practice on the Environment: Questions of Legitimacy* (Cambridge University Press, 2019); A. Savaresi, 'Climate Change and Human Rights: Fragmentation, Interplay, and Institutional Linkages', in S. Duyck, S. Jodoin & A. Johl (eds), *Routledge Handbook of Human Rights and Climate Governance* (Routledge, 2018), pp. 31–42; G. Futhazar, S. Maljean-Dubois & J. Razzaque,

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imperatives with human rights mandates, the article explores the role of litigation and courts in enforcing state obligations in this context.

The article's case law review and critical analysis focus on the European Court of Human Rights (ECtHR). The decisions of this Court represent a rich repository of legal principles influential within the Council of Europe Member States and resonate globally.[11] Its precedents serve as crucial benchmarks in human rights law.[12] The ECtHR is of interest in environmental matters as it has developed a relevant body of case law, even though the European Convention on Human Rights (ECHR)[13] does not explicitly enshrine a human right to a healthy environment. This focus of this article allows for a comprehensive exploration of how the Court interprets and applies the ECHR in environmental matters, shedding light on the evolving nature of human rights law in response to environmental challenges.

Furthermore, a human rights turn is currently unfolding regarding climate change. Proceedings that question state inaction in climate matters have multiplied, mobilizing human rights and highlighting the critical role of courts.[14] This article builds on the premise that protecting human rights in relation to agrochemical pollution raises similar issues to those identified in the climate change debate.[15] Historically, economic activity and development involving pollution through fossil fuels and agrochemical products have been considered a progressive factor and a source of wealth in domestic markets.[16] Agrochemical products encompass substances used in agriculture, which include pesticides, herbicides, fertilizers, and other chemical agents designed to enhance crop production and protection.[17] The fossil fuel and agrochemical industry narratives have evolved from denial to doubts, silencing, and dependency. Both

'Biodiversity Litigation: Review of Trends and Challenges', in G. Futhazar, S. Maljean-Dubois, & J. Razzaque (eds), *Biodiversity Litigation* (Oxford University Press, 2023), pp. 359–400.

11 S. Cocan, 'La Cour européenne des droits de l'homme et le dialogue des juges' (2020) (Special Issue) *Quebec Journal of International Law*, pp. 573–92.

12 A. Nussberger, *The European Court of Human Rights* (Oxford University Press, 2020).

13 Rome (Italy), 4 Nov. 1950, in force 3 Sept. 1953, available at: http://www.echr.coe.int/pages/home.aspx?p=basictexts.

14 Sabin Center for Climate Change Law, 'Human Rights Archives', available at: https://climatecasechart.com/non-us-case-category/human-rights; J. Setzer & C. Higham, 'Global Trends in Climate Change Litigation: 2021 Snapshot Policy Report', Grantham Research Institute on Climate Change and the Environment, and Centre for Climate Change Economics and Policy, London School of Economics and Political Science, July 2021.

15 Of the same opinion see Futhazar, Maljean-Dubois & Razzaque, n. 10 above; F. Maes et al., *Biodiversity and Climate Change: Linkages at International, National and Local Levels* (Edward Elgar, 2013).

16 R.U. Ayres & B. Warr, *The Economic Growth Engine: How Energy and Work Drive Material Prosperity* (Edward Elgar, 2010); E. Hertwich et al., *Assessing the Environmental Impacts of Consumption and Production: Priority Products and Materials* (UNEP, 2010).

17 M.F. Waxman, *The Agrochemical and Pesticides Safety Handbook* (CRC Press, 1998), p. 4; S. Ali et al., 'Environmental and Health Effects of Pesticide Residues', in Inamuddin, M.I. Ahamed & E. Lichtfouse (eds), *Sustainable Agriculture Reviews 48: Pesticide Occurrence, Analysis and Remediation. Vol. 2, Analysis* (Springer, 2021), pp. 311–36; S. Bollmohr & S. Haffmans, 'Hardly Hazardous Pesticides: A Global Human Rights Concern', Heinrich-Böll-Stiftung EU, 18 Oct. 2022, available at: https://eu.boell.org/en/PesticideAtlas-HHPs.

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industries have contributed to the production of ignorance by diffusing false information or sowing seeds of doubt regarding the harmfulness of their products.[18]

The article's analysis is timely, given the rise in climate change litigation, shifting the legal landscape and holding states and corporations accountable for environmental harm.[19] The ECtHR delivered its first climate change ruling in the *KlimaSeniorinnen* case.[20] The detailed judgment, third-party interventions,[21] and academic scholarship[22] constitute a valuable resource for tackling agrochemical pollution. In particular, the *KlimaSeniorinnen* case offers insights into the procedural aspects of environmental litigation, including questions of standing, admissibility, and burden of proof, which are pivotal in shaping the legal landscape for future human rights claims in environmental contexts such as agrochemical pollution.

The limitations of the article relate to the anthropocentric focus of a human rights-based approach. As critically discussed in the existing literature, such an approach does not necessarily extend protection for the environment, nature, biodiversity, and animals based on their intrinsic value and standing.[23] A human rights approach to pollution may thus not suffice for preserving biodiversity and ecological integrity in the long term. Precedents at the intersection of human rights and the environment show that human rights-based litigation has succeeded somewhat in providing remedies for humans but has done less to address the broader ecological damage extending beyond immediate human concerns.[24] The Rights of Nature scholarship and unfolding case law is a critical parallel development in this regard.[25] While the

[18] R.N. Proctor & L. Schiebinger (eds), *Agnotology: The Making and Unmaking of Ignorance* (Stanford University Press, 2008); M. Gross & L. McGoey (eds), *Routledge International Handbook of Ignorance Studies* (Routledge, 2015).

[19] See the Climate Change Litigation Databases, available at: https://climatecasechart.com.

[20] ECtHR, *Verein KlimaSeniorinnen* v. *Switzerland*, Appl. No. 53600/20, Judgment, 9 Apr. 2024 (*KlimaSeniorinnen*).

[21] 23 third-party interventions in the *KlimaSeniorinnen* case, available at: https://ainees-climat.ch/interventions-tierces-parties.

[22] See, e.g., M. Wewerinke-Singh, *State Responsibility, Climate Change and Human Rights under International Law* (Hart, 2019); B. Mayer, 'Climate Change Mitigation as an Obligation under Human Rights Treaties?' (2021) 115(3) *American Journal of International Law*, pp. 409–51; M. Feria-Tinta, 'The Future of Environmental Cases in the European Court of Human Rights: Extraterritoriality, Victim Status, Treaty Interpretation, Attribution, Imminence and "Due Diligence" in Climate Change Cases' (2022) 13(0) *Journal of Human Rights and the Environment*, pp. 172–94; C. Heri, 'Climate Change before the European Court of Human Rights: Capturing Risk, Ill-Treatment and Vulnerability' (2022) 33(3) *European Journal of International Law*, pp. 925–51; H. Keller & C. Heri, 'The Future Is Now: Climate Cases before the ECtHR' (2022) 40(1) *Nordic Journal of Human Rights*, pp. 153–74; C.E. Blattner et al., 'How Science Bolstered a Key European Climate-Change Case' (2023) 621(7978) *Nature*, pp. 255–7; V. Boillet & C. Demay, 'L'exigence d'imminence: examen de la jurisprudence de la Cour européenne des droits de l'homme à l'aune de deux affaires climatiques suisses' (2023) 135(3) *Revue Trimestrielle des Droits de l'Homme*, pp. 675–97.

[23] Futhazar, Maljean-Dubois & Razzaque, n. 10 above; D. Shelton, 'Nature as a Legal Person' (2015) 22 *VertigO – La revue électronique en sciences de l'environnement*, pp. 12–31; H. Schoukens & F. Bouquelle, *The Right to a Healthy Environment in and beyond the Anthropocene: A European Perspective* (Edward Elgar, 2024).

[24] See Futhazar, Maljean-Dubois & Razzaque, n. 10 above.

[25] D. Corrigan & M. Oksanen (eds), *Rights of Nature* (Routledge, 2021); F. Rochford, *Environmental Personhood: New Trajectories in Law* (Taylor & Francis, 2024). National courts increasingly recognize

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anthropocentrism critique is also relevant for a human rights-based approach to agrochemical pollution, an in-depth discussion of the issues at stake goes beyond the scope of this article. Furthermore, considering the numerous dangerous impacts of agrochemical products, raising awareness and engaging individuals, policymakers, and courts for biodiversity preservation through a human rights-based approach appears to be a tool that is operational and worth pursuing in the immediate future.

Another limitation of the human rights-based approach is that litigation is currently circumscribed to claims against state actors, even though the main agrochemical polluters are private industries such as fossil fuel and agrochemical companies. While a discussion of the business and human rights approach goes beyond the scope of this article,[26] it is noteworthy that the horizontal effect of human rights is an unfolding issue.[27] It is also critical to highlight that many producers of phytosanitary products are based in Europe and are, therefore, indirectly subject to ECtHR jurisdiction and future precedents on agrochemical pollution.[28]

This article proceeds as follows. It firstly describes the use of agrochemical products in today's agriculture and their impact on health, environmental sustainability, and biodiversity (Section 2). The article highlights the drawbacks of the current security-based regulatory paradigm and explores the shift to a human rights-based approach in addressing agrochemical pollution (Section 3). The discussion then moves to the intersection of human rights and the environment, critically reflecting on the limits of the ECtHR case law in environmental matters (Section 4). To illustrate a potential way forward in addressing state (in)action, the article examines climate change litigation as a catalyst for change and demonstrates how human rights can inform approaches to agrochemical pollution (Section 5). The article concludes by assessing the transposability of climate litigation arguments to agrochemical pollution cases (Section 6).

nature as having its own subjective rights, e.g., in Colombia and Peru. In Aug. 2024 (8 O 1373/21) and Oct. 2024 (8 O 836/22), the District Court of Erfurt in Germany set legal precedents by recognizing the rights of nature, in relation to the Charter of Fundamental Rights of the European Union, Nice (France), 7 Dec. 2000, in force 1 Jan. 2009, as amended on 26 Oct. 2012 [2012] OJ C 326/391, available at: http://www.europarl.europa.eu/charter/pdf/text_en.pdf.

[26] See, e.g., I. Bantekas & M.A. Stein (eds), *The Cambridge Companion to Business & Human Rights Law* (Cambridge University Press, 2021); A.R. Ziegler, D. Canapa & M.I. Cardozo (eds), *Business and Human Rights: Emerging Challenges, Issues, and Trends* (Brill, 2025).

[27] C. Macchi & J. van Zeben, 'Business and Human Rights Implications of Climate Change Litigation: *Milieudefensie et al.* v. *Royal Dutch Shell*' (2021) 30(3) *Review of European, Comparative & International Environmental Law*, pp. 409–15; B. Mayer, 'The Duty of Care of Fossil-Fuel Producers for Climate Change Mitigation: *Milieudefensie* v. *Royal Dutch Shell*, District Court of The Hague (The Netherlands)' (2022) 11(2) *Transnational Environmental Law*, pp. 407–18; *Milieudefensie et al.* v. *Royal Dutch Shell Plc*, Case number Court of Appeal: 200.302.332/01 (2024); Case number District Court: C/09/571932/HA ZA 19-379 (2021).

[28] See L. Gaberell & G. Viret, 'Les géants de l'agrochimie gagnent des milliards grâce à des pesticides cancérogènes ou néfastes pour les abeilles', *Public Eye*, 20 Feb. 2020, available at: https://www.publiceye.ch/fr/thematiques/pesticides/analyse-ventes-pesticides-2018; Déclaration de Berne (ed.), 'Agropoly: Ces quelques multinationales qui contrôlent notre alimentation', June 2014, available at: https://www.publiceye.ch/fileadmin/doc/Agrarrohstoffe/2014_PublicEye_Agropoly_Brochure_thematique.pdf.

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2. The Use of Agrochemical Products and Their Impact

Agriculture is pivotal in ensuring global food security and economic stability.[29] Agrochemicals are used to protect crops from pests and diseases and to maximize yields.[30] The growing global population and the increasing demand for food are put forward to justify this productivist lens.[31]

The agrochemical industry presents itself as an indispensable part of modern agriculture, framed as a partner providing farmers with essential tools to enhance crop productivity and efficiency.[32] However, the industry's business growth into 'BigChem' is a more accurate description of reality. Around 2 million tons of pesticides (45% in Europe, 25% in the US, and 25% in other countries) are dispensed yearly for crop protection.[33]

As agrochemicals are omnipresent in today's agriculture, their impact on human health cannot be overlooked. Exposure to agrochemicals has been linked to various health issues, particularly for agricultural workers and communities living near treated areas.[34] Empirical studies illustrate the links between pesticide exposure and the increase or occurrence of six medical conditions: cancer, asthma, diabetes, Parkinson's disease, leukaemia, and cognitive effects.[35]

Agrochemicals also have an impact on animal health.[36] Chemical runoffs into water bodies can lead to aquatic toxicity, affecting marine and terrestrial wildlife.[37] Moreover, the accidental poisoning of non-target species through pesticides disrupts local fauna and can lead to long-term ecological imbalances.[38] A large-scale monitoring conducted in 2025 by the European Commission concluded that 'surface waters are in a highly critical situation. Less than a half (39.5%) of the assessed EU surface water bodies are in good ecological status, and less than a third (26.8%) in

[29] C. Parker & H. Johnson, 'From Food Chains to Food Webs: Regulating Capitalist Production and Consumption in the Food System' (2019) 15 *Annual Review of Law and Social Science*, pp. 205–25.

[30] F.P. Carvalho, 'Agriculture, Pesticides, Food Security and Food Safety' (2006) 9(7–8) *Environmental Science & Policy*, pp. 685–92.

[31] Ibid.

[32] D.A. Patil & R.J. Katti, 'Modern Agriculture, Pesticides and Human Health: A Case of Agricultural Labourers in Western Maharashtra' (2012) 31(3) *Journal of Rural Development*, pp. 305–18; C.A. Damalas, 'Understanding Benefits and Risks of Pesticide Use' (2009) 4(10) *Scientific Research and Essays*, pp. 945–9.

[33] Ibid.

[34] Parker & Johnson, n. 29 above; P. Nicolopoulou-Stamati et al., 'Chemical Pesticides and Human Health: The Urgent Need for a New Concept in Agriculture' (2016) 4(148) *Frontiers in Public Health*, pp. 1–8, at 4.

[35] WHO & UNEP, n. 3 above; K.H. Kim, E. Kabir & S.A. Jahan, 'Exposure to Pesticides and the Associated Human Health Effects' (2017) 575 *Science of the Total Environment*, pp. 525–35; D. Provost et al., 'Brain Tumours and Exposure to Pesticides: A Case-Control Study in Southwestern France' (2007) 64(8) *Occupational and Environmental Medicine*, pp. 509–14.

[36] S. Choudhary et al., 'A Review: Pesticide Residue: Cause of Many Animal Health Problems' (2018) 6(3) *Journal of Entomology and Zoology Studies*, pp. 330–3.

[37] M. Liess et al., *Effects of Pesticides in the Field* (Society of Environmental Toxicology and Chemistry (SETAC), 2005).

[38] M. Riyaz, R.A. Shah & K. Sivasankaran, 'Pesticide Residues: Impacts on Fauna and the Environment', in K. Ferreira Mendes (ed.), *Biodegradation Technology of Organic and Inorganic Pollutants* (IntechOpen, 2022), pp. 40–2.

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good chemical status'.[39] A 2015 study reported that 44.7% of 1,566 surface water sites analyzed across the EU contained insecticide levels that exceeded regulatory acceptable concentrations.[40]

Furthermore, agrochemicals affect the environment through soil degradation, water pollution, and the disruption of natural pest control mechanisms.[41] Agrochemicals can accumulate in the environment, leading to long-term ecological changes and ecosystem risks.[42] Products used for pest control often do not reach their target and dilute into the environment.[43] For example, according to an estimate, some 30,000 kilograms of herbicides pass into the Great Barrier Reef World Heritage Area annually.[44] In addition, biodiversity and ecosystem health are particularly vulnerable to agrochemical pollution.[45] The reduction of biodiversity caused by habitat destruction and species loss has far-reaching consequences on ecosystem services, such as pollination and natural pest control.[46] This loss affects environmental sustainability, threatens global food security, and affects human health.[47]

Finally, the overuse of agrochemical products has an economic downside. In 2005, the economic and environmental losses resulting from the use of pesticides per year in the US were: public health – US$1.1 billion; pesticide resistance in pests – US$1.5 billion; crop losses caused by pesticides – US$1.4 billion; bird losses caused by pesticides – US$2.2 billion; and groundwater contamination – US$2.0 billion.[48]

The widespread use of agrochemicals in agriculture was meant to respond to the global demand for food security and agricultural efficiency. However, considering the impact of these products on human and animal health, the environment, biodiversity, and the ecosystem, the question arises of how to legally prevent this impact.

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[39] European Commission, 'Report from the Commission to the Council and the European Parliament on the Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)', COM(2025) 2 final, p. 34.

[40] S. Stehle & R. Schulz, 'Pesticide Authorization in the EU-Environment Unprotected?' (2015) 22(24) *Environmental Science and Pollution Research International*, pp. 19632–47. See also M. Sud, *Managing the Biodiversity Impacts of Fertiliser and Pesticide Use: Overview and Insights from Trends and Policies across Selected OECD Countries* (OECD, 2020).

[41] H.M.G van der Werf, 'Assessing the Impact of Pesticides on the Environment' (1996) 60(2-3) *Agriculture, Ecosystems & Environment*, pp. 81–96.

[42] J.T. Zacharia, 'Ecological Effects of Pesticides', in M. Stoytcheva (ed.), *Pesticides in the Modern World: Risks and Benefits* (IntechOpen, 2011), pp. 129–42, at 132.

[43] D. Pimentel, 'Amounts of Pesticides Reaching Target Pests: Environmental Impacts and Ethics' (1995) 8(1) *Journal of Agricultural and Environmental Ethics*, pp. 17–29.

[44] J. Waterhouse et al., 'Quantifying the Sources of Pollutants in the Great Barrier Reef Catchments and the Relative Risk to Reef Ecosystems' (2012) 65(4–9) *Marine Pollution Bulletin*, pp. 394–406.

[45] F.H.M. Tang et al., 'Risk of Pesticide Pollution at the Global Scale' (2021) 14 *Nature Geoscience*, pp. 206–10.

[46] M.A. Beketov et al., 'Pesticides Reduce Regional Biodiversity of Stream Invertebrates' (2013) 110(27) *Proceedings of the National Academy of Sciences of the United States of America*, pp. 11039–43; K.E. Gibbs, R.L. Mackey & D.J. Currie, 'Human Land Use, Agriculture, Pesticides and Losses of Imperiled Species' (2009) 15(2) *Diversity and Distributions*, pp. 242–53.

[47] O. Adebayo, 'Loss of Biodiversity: The Burgeoning Threat to Human Health' (2019) 17(1) *Annals of Ibadan Postgraduate Medicine*, pp. 5–7.

[48] D. Pimentel, 'Environmental and Economic Costs of the Application of Pesticides Primarily in the United States' (2005) 7(2) *Environment, Development and Sustainability*, pp. 229–52.

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3. From a Security to a Human Rights-based Approach to Agrochemical Management

Agrochemical products are governed by a complex framework of regulations with regard to their market access, distribution, and use in agriculture.[49] The traditional regulatory approach of states to pollution control is rooted in security and risk management paradigms while maximizing productivity in the name of food security.[50] This approach relies on top-down governance, focusing on risk–benefit analyses, containment of pollutants, and damage mitigation after the fact.[51] Based on command-and-control regulation, the legal tools employed include bans and numerical restrictions on certain pollutants, and management of waste and polluted areas based on the polluter pays principle (for example, nuclear power plants or industrial pollution).

The security-based approach is geared towards immediate human life and health concerns.[52] It does not engage with the long-term ecological and sanitary consequences of pollutants, their subtle, cumulative effects on biodiversity, and the potential indirect backlash on human life and health. Scientific standard setting and updating for regulatory purposes is also a key issue, although often neglected or contested.[53] Another core limitation of the security-based approach lies in its reactive nature: it often leads to action only after significant harm occurs, such as chemical spills in large-scale industrial accidents.[54]

In a report of December 2023, a French parliamentary commission of inquiry notes 'a collective failure' to reduce pesticide use in France and deplores a 'form of public powerlessness' despite the repercussions of pesticide pollution on water quality and biodiversity.[55] Given the numerous threats to health and life, the environment, and biodiversity created by agrochemical products, it is imperative to reassess the existing security-based approach.[56] It is necessary to investigate alternative strategies that can legally control pollutants more effectively.

[49] V.L. Zikankuba et al., 'Pesticides Regulations and Their Malpractice Implications on Food and Environment Safety' (2019) 5(1) *Cogent Food & Agriculture*, pp. 1–15.

[50] See, e.g., the regulatory framework in the EU: Regulation (EC) No. 1107/2009 concerning the Placing of Plant Protection Products on the Market and repealing Council Directives 79/117/EEC and 91/414/EEC OJ L 309/1; Regulation (EC) No. 396/2005 on Maximum Residue Levels of Pesticides in or on Food and Feed of Plant and Animal Origin and amending Council Directive 91/414/EEC [2005] OJ L 70/1.

[51] Mbengue & Waltman, n. 8 above; Phelan, n. 8 above.

[52] Mbengue & Waltman, n. 8 above; Phelan, n. 8 above.

[53] Futhazar, Maljean-Dubois & Razzaque, n. 10 above.

[54] Mbengue & Waltman, n. 8 above; Phelan, n. 8 above.

[55] Assemblée nationale, 'Rapport sur les causes de l'incapacité de la France à atteindre les objectifs des plans successifs de maîtrise des impacts des produits phytosanitaires sur la santé humaine et environnementale', 14 Dec. 2023, pp. 17–8, available at: https://www.assemblee-nationale.fr/dyn/16/rapports/cepestici/l16b2000-t1_rapport-enquete.

[56] United Nations (UN) Human Rights Council (HRC), 'The Right to a Clean, Healthy and Sustainable Environment: Non-Toxic Environment, Human Rights Council. Report of the Special Rapporteur on the Issue of Human Rights Obligations relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment', 12 Jan. 2022, UN Doc. A/HRC/49/53, para. 5.

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This article proposes a human rights-based approach to agrochemical pollution, which includes both *ex ante* and *ex post* effects.[57] The *ex ante* effect involves the proactive integration of human rights into policymaking and enforcement. This consists of the state's obligation to respect, protect, and realize human rights.[58] This three-fold obligation requires states to refrain from interfering with the enjoyment of human rights, to prevent third parties from violating human rights, and to take necessary measures – including legislative, administrative, and budgetary actions – to ensure the realization of human rights. Notably, these obligations include a preventative component, as they call for pre-emptive state measures and thus ensure that potential violations are addressed before they occur. The *ex post* effect encompasses mechanisms through which individuals can exercise their human rights, including litigation;[59] it ensures that when rights are violated, individuals can access legal remedies and hold violators accountable. Litigation is a crucial tool for enforcing human rights, providing a means for redress, and promoting adherence to human rights standards. Together, these elements ensure a comprehensive approach that prevents violations and provides effective remedies when they occur, thereby enhancing the overall protection and realization of human rights.

Public health, as witnessed in legal scholarship and litigation, is an area of law in which a successful transition from a security to a human rights-based approach has occurred in the past.[60] Top-down governance, coercive measures, and a focus on biosecurity characterized the security-based approach in public health, particularly for infectious disease control.

The human rights turn in public health started with the HIV/AIDS epidemic in the 1990s.[61] During this period, the situation of those affected by HIV/AIDS highlighted the inadequacies of the traditional security-based approach to public health regulation.[62] Stigma and discrimination not only resulted in human rights violations but proved unproductive for public health protection as people avoided testing.

[57] A.E. Yamin & A. Constantin, 'A Long and Winding Road: The Evolution of Applying Human Rights Frameworks to Health' (2018) 49 *Georgetown Journal of International Law*, pp. 191–237.

[58] See, e.g., UN Committee on Economic, Social and Cultural Rights, 'General Comment No. 14: The Right to the Highest Attainable Standard of Health (Article 12 of the International Covenant on Economic, Social and Cultural Rights)', 11 Aug. 2000, UN Doc. E/C.12/2000/4, paras 34, 51.

[59] See, e.g., A.E. Yamin & S. Gloppen (eds), *Litigating Health Rights: Can Courts Bring More Justice to Health?* (Harvard University Press, 2011); C.M. Flood & B. Thomas, 'Justiciability of Human Rights for Health', in Gostin & Meier, n. 8 above, pp. 176–96.

[60] S. Sekalala & J. Harrington, 'Communicable Diseases, Health Security, and Human Rights: From AIDS to Ebola', in Gostin & Meier, n. 8 above, pp. 221–42; L.O. Gostin et al., '70 Years of Human Rights in Global Health: Drawing on a Contentious Past to Secure a Hopeful Future' (2018) 392(10165) *The Lancet*, pp. 2731–5; Yamin & Constantin, n. 57 above; P. Farmer, 'Pathologies of Power: Rethinking Health and Human Rights' (1999) 89(10) *American Journal of Public Health*, pp. 1486–96; B.M. Meier, T. Murphy & L.O. Gostin, 'The Birth and Development of Human Rights for Health', in Gostin & Meier, n. 8 above, pp. 23–44; J.M. Mann et al., 'Health and Human Rights' (1994) 1(1) *Health and Human Rights*, pp. 6–23; Yamin & Gloppen, n. 59 above; Flood & Thomas, n. 59 above, p. 177.

[61] Sekalala & Harrington, n. 60 above; Meier, Murphy & Gostin, n. 60 above; D. Tarantola & S. Gruskin, 'The Recognition and Evolution of the HIV and Human Rights Interface: 1981–2017', in Burci & Toebes, n. 4 above, pp. 303–39.

[62] Tarantola & Gruskin, ibid.

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Activists and advocates pushed for a more rights-based response, emphasizing respect for the individual's dignity and rights, including access to healthcare and non-discrimination. The WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) integrated human rights principles into their policies, recognizing that public health efforts must be grounded in respect for human rights to be effective. This movement laid the groundwork for broader application and litigation of human rights in public health. It became a precedent for addressing other health challenges, including access to healthcare, as a human right, emphasizing equality and non-discrimination, promoting participation and empowerment, and upholding accountability and transparency.[63]

The human rights-based approach has since evolved to protect public health from the multiple threats that originate in non-communicable diseases (NCDs) such as diabetes, cancer, and cardiovascular diseases.[64] This human rights turn facilitated the adoption of the first legally binding international treaty to address NCDs in 2003, the WHO Framework Convention on Tobacco Control (FCTC).[65] The FCTC represents a significant milestone in global health governance and demonstrates how a human rights-based approach can lead to concrete legal frameworks that promote public health and protect the rights of the individual.[66]

The example of public health highlights the critical importance and effectiveness of a paradigm shift from security to human rights. It provides a historical blueprint for reconceptualizing legal strategies to tackle the multiple threats originating from agrochemical pollution.

The hypothesis underlying this article is that a human rights-based approach to agrochemical pollution can be effectively formulated. To validate this hypothesis, the article examines the ECtHR case law in the two areas most relevant to this phenomenon: the Court's traditional precedents in environmental matters and recent climate change litigation. By scrutinizing the ECtHR rulings, the article aims to illustrate how the Court has interpreted human rights in the context of environmental protection (Section 4) and climate change (Section 5). This analysis will provide insights into the efficacy and adaptability of a human rights-based approach to address the complexities of agrochemical pollution and its impact on human rights (Section 6).

[63] The health and human rights approach witnessed a slight setback during the COVID-19 pandemic. States have, once again, resorted to a unilateral health security-based approach underlying the restrictive measures imposed on individual rights. Cf. J.B. de Mesquita, A. Kapilashrami & B.M. Meier, 'Strengthening Human Rights in Global Health Law: Lessons from the COVID-19 Response' (2021) 49(2) *Journal of Law, Medicine & Ethics*, pp. 328–31; C.O. Néill, 'A Global Right to Health amid Global Health Emergencies', in C.O. Néill et al. (eds), *Routledge Handbook of Global Health Rights* (Routledge, 2021), pp. 47–61.

[64] B. Toebes & D. Patterson, 'Human Rights and Non-Communicable Diseases: Controlling Tobacco and Promoting Healthy Diets', in Gostin & Meier, n. 8 above, pp. 243–62.

[65] Geneva (Switzerland), 21 May 2003, in force 27 Feb. 2005, available at: https://apps.who.int/gb/ebwha/pdf_files/WHA56/ea56r1.pdf.

[66] O.A. Cabrera & L.O. Gostin, 'Human Rights and the Framework Convention on Tobacco Control: Mutually Reinforcing Systems' (2011) 7(3) *International Journal of Law in Context*, pp. 285–303.

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4. Intersection of Human Rights and the Environment: The ECtHR's Constrained Jurisprudence

The ECHR[67] does not expressly enshrine a right to a healthy environment. Nevertheless, the Court has been called upon to develop its case law in environmental matters.[68] It recognizes that harm to the environment and exposure to environmental risks can affect, at least by ricochet, the human rights enshrined in the Convention.[69] The right to a healthy environment has thus, to a certain degree, materialized in the case law of the ECtHR.[70] This right must be analyzed as a right that is not aimed at protecting nature but human safety. In its reasoning concerning environmental matters, the ECtHR has focused on physical integrity and quality of life, of which health is an essential determinant, to protect individuals against pollution and environmental risks from human activities.

The Court's case law covers various issues, which include industrial activities and pollution, toxic waste, nuclear radiation, natural disasters, electromagnetic radiation, noise and air pollution, and soil and water contamination.[71] Environmental damage may violate the positive obligation to protect life (Article 2 ECHR)[72] or the negative and positive obligations deriving from respect for private and family life (Article 8 ECHR).[73] These substantive rights are supplemented by procedural guarantees,

[67] N. 13 above.

[68] ECtHR, 'Guide to the Case-Law of the European Court of Human Rights: Environment', 30 Apr. 2022, available at: https://rm.coe.int/guide-environment-2774-6103-3478-1/1680a866a7; J. Bendel, *Litigating the Environment: Process and Procedure before International Courts and Tribunals* (Edward Elgar, 2023).

[69] F. Sudre, 'La Cour européenne des droits de l'homme et le principe de précaution' (2017) 6 *Revue française de droit administratif*, pp. 1039–46.

[70] Ibid.; L. Lavrysen, 'Greening the European Convention on Human Rights: How to Determine the Substance of Environmental Human Rights?', in H. Schoukens & F. Bouquelle (eds), *The Right to a Healthy Environment in and Beyond the Anthropocene: A European Perspective* (Edward Elgar, 2024), pp. 53–71; O.W. Pedersen, 'The European Court of Human Rights and International Environmental Law', in J.H. Knox & R. Pejan (eds), *The Human Right to a Healthy Environment* (Cambridge University Press, 2018), pp. 86–96.

[71] ECtHR, 'Fact Sheet: Environment and the European Convention on Human Rights'. Apr. 2024, available at: https://www.echr.coe.int/documents/d/echr/FS_Environment_ENG; P. Baumann, 'Le Droit à un environnement sain en droit de la Convention européenne des droits de l'homme' (Ph.D. thesis, Université de Nantes (France), 2018), p. 34.

[72] See, e.g., ECtHR, *Öneryıldız* v. *Turkey*, Appl. No. 48939/99, Judgment, 30 Nov. 2004; ECtHR, *Budayeva and Others* v. *Russia*, Appl. Nos 15339/02, 11673/02, 15343/02, 20058/02 & 21166/02, Judgment, 20 Mar. 2008; ECtHR, *Cannavacciuolo and Others* v. *Italy*, Appl. No. 51567/14, Judgment, 30 Jan. 2025 (not final); Baumann, n. 71 above.

[73] See, e.g., ECtHR, *Brânduşe* v. *Romania*, Appl. No. 6586/03, Judgment, 7 Apr. 2009; ECtHR, *Di Sarno and Others* v. *Italy*, Appl. No. 30765/08, Judgment, 10 Jan. 2012; ECtHR, *Kotov and Others* v. *Russia*, Appl. Nos 6142/18 and 13 others, Judgment, 11 Oct. 2022; *Budayeva*, n. 72 above, para. 138; Baumann, n. 71 above.

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including the obligation to provide information (Articles 8 and 10 ECHR)[74] and access to justice (Articles 6 and 13 ECHR).[75]

The resulting environmental standard paradoxically reveals a certain unity: based on the prevention of environmental damage that is likely to affect the enjoyment of the rights guaranteed by the Convention, this praetorian standard requires states to set up a general normative framework to prevent, control, and sanction environmental pollution.[76]

However, findings of ECHR violations in the context of the environment are rare.[77] Environmental issues are reframed around the above-mentioned rights, leading to a patchwork of protection through fragmented case law.[78] Several characteristics contribute to the low number of violations recognized by the ECtHR. The first is symptomatic of the inadequacy of the Court's traditional reasoning, which limits responsibility for protecting the environment under the ECHR. It is noticeable in the Court's consideration of environmental damage, which conditions ECHR applicability. According to the ECtHR, environmental pollution must be linked directly to (potential) human harm to be considered a rights violation under the ECHR.[79] The ECtHR so far has refused to devote an autonomous legal status to the right to a healthy environment, a right which, for the time being, still enjoys only indirect and derived protection.[80]

[74] See, e.g., ECtHR, *Guerra and Others* v. *Italy*, Appl. No. 4967/89, Judgment, 9 June 1998; ECtHR, *Roche* v. *United Kingdom*, Appl. No. 32555/96, Judgment, 19 Oct. 2005; ECtHR, *Brincat and Others* v. *Malta*, Appl. Nos 60908/11, 62110/11, 62129/11, 62312/11 & 62338/11, Judgment, 24 July 2014 (*Brincat*); ECtHR, *Association Burestop 55 and Others* v. *France*, Appl. Nos 56176/18, 56189/18, 56232/18 and others, Judgment, 1 July 2021.

[75] See, e.g., ECtHR, *L'Erablière ASBL* v. *Belgique*, Appl. No. 49230/07, Judgment, 24 Feb. 2009; ECtHR, *Howald Moor and Others* v. *Switzerland*, Appl. Nos 52067/10 & 41072/11, Judgment, 11 Mar. 2014 (*Howald Moor*).

[76] See, e.g., ECtHR, *Hatton and Others* v. *United Kingdom*, Appl. No. 36022/97, Judgment, 8 July 2003, paras 98, 119 (*Hatton*); ECtHR, *Fadeyeva* v. *Russia*, Appl. No. 23476/94, Decision, 16 Oct. 2003, para. 89; ECtHR *Borysiewicz* v. *Poland*, Appl. No. 71146/01, Judgment, 1 July 2008, para. 50; ECtHR, *Wałkuska* v. *Poland*, Appl. No. 6817/04, Judgment, 29 Apr. 2008; ECtHR, *Giacomelli* v. *Italy*, Appl. No. 77785/01, Judgment, 2 Nov. 2006, para. 78 (*Giacomelli*); ECtHR, *Tătar* v. *Romania*, Appl. No. 67021/01, Judgment, 27 Jan. 2009, para. 87 (*Tătar*); ECtHR, *Leon and Agnieszka Kania* v. *Poland*, Appl. No. 12605/03, Judgment, 21 July 2009, para. 99; ECtHR, *Zammit Maempel* v. *Malta*, Appl. No. 24202/10, Judgment, 22 Nov. 2011, para. 61 (*Zammit Maempel*); ECtHR, *Flamenbaum and Others* v. *France*, Appl. Nos 3675/04 & 23264/04, Judgments, 13 Dec. 2012, para. 134; ECtHR, *Tolić and Others* v. *Croatia*, Appl. No. 13482/15, Decision, 4 June 2019, para. 91 (*Tolić*).

[77] Baumann, n. 71 above, p. 36; Lavrysen, n. 70 above; Pedersen, n. 70 above.

[78] Lavrysen, n. 70 above; Pedersen, n. 70 above.

[79] In contrast, the Inter-American Court of Human Rights considers that the protection of the environment in its own right, irrespective of human damage, is entailed in the right to a healthy environment. Cf. 'A Request for an Advisory Opinion from the Inter-American Court of Human Rights concerning the Interpretation of Article 1(1), 4(1) and 5(1) of the American Convention on Human Rights 2016', 14 Mar. 2016, available at: https://climatecasechart.com/non-us-case/request-advisory-opinion-inter-american-court-human-rights-concerning-interpretation-article-11-41-51-american-convention-human-rights.

[80] ECtHR, *Cannavacciuolo and Others* v. *Italy*, Appl. No. 51567/14, Judgment, 30 Jan. 2025 (not final), Concurring Opinion of Judge Krenc, para. 14.

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In the 2005 case of *Kyrtatos* v. *Greece*,[81] the plaintiffs' efforts to protest against the demolition of a swamp by invoking Article 8 ECHR highlighted the challenges of using human rights to safeguard biodiversity.[82] The ECtHR rejected the claim, citing a lack of persuasive evidence that the damage to wildlife in the swamp infringed the plaintiffs' rights. However, the Court acknowledged the possibility that the decision might have been different if the swamp had instead been a forest near the plaintiffs' residence.[83] This observation suggests that ecosystem services and benefits, evident in a forest but less so in a swamp, could be considered part of an individual's private and family life.[84] This reasoning opens avenues to connect biodiversity conservation with protecting human rights.

Another shortcoming relates to the Court's rigorous interpretation of causality. The ECtHR persists in applying rules of evidence administration that do not facilitate the applicants' task.[85] As Judge Zupančič points out in his partly dissenting opinion in *Tătar* v. *Romania*, the Court uses a 'classic causal argument (which does not address the notion of uncertainty)'. Such an approach is inappropriate in the case of pathologies linked to the toxicity of certain substances. As Zupančič points out:

> Unlike damage resulting from a road accident (where the damage may appear immediately or shortly after the harmful event and be attributable without any possible discussion as to the collision), toxic damage may not be immediate and, above all, may remain invisible for many years. This type of injury may be attributable to several factors and not necessarily to a single cause. It is well known that the specificity of modern pathologies lies in the absence of a 'signature' of the causal agent.

In other words, the judge thinks that 'in the presence of these invisible risks, the classic concept of the causal link is an archaism'. He concludes, therefore, that 'respect for private life is a paramount value, the defence of which, by the European courts, cannot be limited by the absence of absolute certainty, especially in the context of modern diseases'.[86]

Once a rights infringement has been established, difficulties arise in determining the imputability of this infringement to the state and reviewing the proportionality principle. A general attitude of caution and restraint seems to be driving the ECtHR's stance in this regard.[87] The requirement of a high threshold of seriousness regarding the infringement and recognition of a certain margin of appreciation to the states exemplify this stance.[88] States must protect life and respect for private life from

[81] ECtHR, *Kyrtatos* v. *Greece*, Appl. No. 41666/98, Judgment, 22 May 2003 (*Kyrtatos*).
[82] Futhazar, Maljean-Dubois & Razzaque, n. 10 above.
[83] *Kyrtatos*, n. 81 above, para. 53.
[84] Ibid.
[85] A. Boyle, 'Human Rights and the Environment: Where Next?' (2012) 23(3) *European Journal of International Law*, pp. 613–42.
[86] *Tătar*, n. 76 above, Partially Dissenting Opinion of Judge Zupančič joined by Judge Gyulumyan.
[87] Baumann, n. 71 above.
[88] See, e.g., *Brincat*, n. 74 above.

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'serious',[89] 'real and immediate'[90] environmental risks of which the authorities were or should have been aware.[91] As a result, the Court has not granted claims under Articles 2 and 8 ECHR where the alleged harm is negligible compared to the ecological risks inherent in life in any modern city.[92] One might wonder what level of severity would have to be reached regarding agrochemical pollution if the applicable standard of ecological risks is linked to the state of the art of modern agriculture.

Finally, scholarly literature underscores a range of critiques concerning the environmental jurisprudence of the ECtHR. It is criticized as being too procedural or supervisory, inclined to prioritize economic considerations over environmental aspects, marked by a liberal emphasis on risk information rather than risk prevention and too centred on individual rights rather than collective environmental concerns.[93] Another critique relates to the liberal logic on display, which promotes an environmental public order that allows a stabilized exercise of the freedom to carry out economic activities that are dangerous for the environment by balancing such activities with the rights and freedoms protected by the Convention.[94] This cautious approach reflects deference to state sovereignty in environmental matters, which has reduced the effectiveness of human rights as a tool for environmental protection.

5. Climate Change Litigation: A Catalyst for Change

Despite these criticisms regarding a human rights approach in traditional environmental cases, a global movement to initiate strategic climate litigation is ongoing.[95] While these proceedings develop various legal arguments, many mobilize human rights to engage state responsibility for their climate inaction.[96] The ECtHR is

[89] Ibid., para. 82.

[90] ECtHR, *Balmer-Schafroth and Others* v. *Switzerland*, Appl. No. 22110/93, Judgment, 26 Aug. 1997, para. 40.

[91] ECtHR, *Osman* v. *United Kingdom*, Appl. No. 23452/94, Judgment, 28 Oct. 1998, para. 116.

[92] See, e.g., ECtHR, *Fadeyeva* v. *Russia*, Appl. No. 55723/00, Judgment, 9 June 2005, para. 69 (*Fadeyeva*); ECtHR, *Fägerskiöld* v. *Sweden*, Appl. No. 37664/04, Decision, 26 Feb. 2008; ECtHR, *Galev and Others* v. *Bulgaria*, Appl. No. 18324/04, Decision, 29 Sept. 2009; ECtHR, *Mileva and Others* v. *Bulgaria*, Appl. Nos 43449/02 & 21475/04, Judgments, 25 Nov. 2010, para. 90; ECtHR, *Dubetska and Others* v. *Ukraine*, Appl. No. 30499/03, Judgment, 10 Feb. 2011, para. 105; *Zammit Maempel*, n. 76 above, para. 37; ECtHR, *Apanasewicz* v. *Poland*, Appl. No. 6854/07, Judgment, 3 May 2011, para. 96 (*Apanasewicz*); ECtHR, *Marchiş and Others* v. *Romania*, Appl. No. 38197/03, Decision, 7 Nov. 2011; ECtHR, *Hardy and Maile* v. *United Kingdom*, Appl. No. 31965/07, Judgment, 14 Feb. 2012, para. 188; ECtHR, *Płachta and Others* v. *Poland*, Appl. Nos 25194/08, 33710/08, 43494/08 & 52276/08, Decisions, 25 Nov. 2014, para. 80; ECtHR, *Fieroiu and Others* v. *Romania*, Appl. No. 65175/10, Decision, 23 May 2017, para. 19; ECtHR, *Jugheli and Others* v. *Georgia*, Appl. No. 38342/05, Judgment, 13 July 2017, para. 62 (*Jugheli*); ECtHR, *Kožul and Others* v. *Bosnia and Herzegovina*, Appl. No. 38695/13, Judgment, 22 Oct. 2019, para. 34 (*Kožul*); ECtHR, *Çiçek and Others* v. *Türkiye*, Appl. No. 44837/07, Decision, 4 Feb. 2020, para. 22; ECtHR, *Solyanik* v. *Russia*, Appl. No. 47987/15, Judgment, 10 May 2022, para. 40.

[93] Heri, n. 22 above.

[94] Baumann, n. 71 above. See also Lavrysen, n. 70 above.

[95] See the climate litigation databases available at: http://climatecasechart.com; and https://climaterightsdatabase.com.

[96] C. Cournil, 'Les droits fondamentaux au service de l'émergence d'un contentieux climatique contre l'Etat: Des stratégies contentieuses des requérants à l'activisme des juges', in M. Torre-Schaub et al. (eds),

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among the judicial actors involved.[97] As the ECHR is a living instrument, applicants argue for a dynamic interpretation of its provisions to address the human rights violations resulting from the climate crisis.[98] In April 2024, the ECtHR delivered a judgment[99] and two decisions[100] in the first three climate cases. Six other cases have been adjourned.[101] These cases highlight 'how litigation is becoming an emblematic element of contemporary environmental advocacy when citizens and NGOs use the "weapon" of law as a mode of action'.[102] In the context of this article, these cases illustrate a potential trajectory and paradigm change towards a successful human rights-based approach, overcoming the chains of the traditional case law in environmental matters.

Before examining the Court's responses and their transposability to agrochemical pollution, it is interesting to note that the Court handled the three cases together. They should – as explained by the former President of the ECtHR[103] – be read and analyzed in parallel. In these three cases, the Court first contextualized the evolution of the link between human rights and the climate crisis. It then took part in the unfolding judicial cross-fertilization process, citing decisions of UN committees[104] and domestic courts[105] that have also addressed this issue. Although the number of cases is still limited, their impact is nonetheless significant in that they are binding on all Council of Europe Member States based on the principle of *res interpretata* and have already been considered in the context of other supranational proceedings.[106]

Quel(s) droit(s) pour les changements climatiques (Mare & Martin, 2018), pp. 185–215; C. Rodríguez-Garavito & D.R. Boyd, 'A Rights Turn in Biodiversity Litigation?' (2023) 12(3) *Transnational Environmental Law*, pp. 498–536, at 505ff.

97 *KlimaSeniorinnen*, n. 20 above.

98 ECtHR, *Christine Goodwin* v. *United Kingdom*, Appl. No. 28957/95, Judgment, 11 July 2002, para. 74; A. Mowbray, 'The Creativity of the European Court of Human Rights' (2005) 5(1) *Human Rights Law Review*, pp. 57–79, at 64; V. Stoyanova, *Positive Obligations under the European Convention on Human Rights: Within and Beyond Boundaries* (Oxford University Press, 2023), para. 11.

99 *KlimaSeniorinnen*, n. 20 above.

100 ECtHR, *Carême* v. *France*, Appl. No. 7189/21, Decision, 9 Apr. 2024 (*Carême*); ECtHR, *Duarte Agostinho and Others* v. *Portugal and Others*, Appl. No. 39371/20, Decision, 9 Apr. 2024 (*Duarte Agostinho*).

101 ECtHR, *Uricchiov* v. *Italy and 31 Other States*, Appl. No. 14615/21; ECtHR, *De Conto* v. *Italy and 32 Other States*, Appl. No. 14620/21; ECtHR, *Müllner* v. *Austria*, Appl. No. 18859/21 (*Müllner*); ECtHR, *Greenpeace Nordic and Others* v. *Norway*, Appl. No. 34068/21; ECtHR, *The Norwegian Grandparents' Climate Campaign and Others* v. *Norway*, Appl. No. 19026/21; ECtHR, *Soubeste and Four Other Applications* v. *Austria and 11 Other States*, Appl. Nos 31925/22, 31932/22, 31938/22, 31943/22 & 31947/22; ECtHR, *Engels* v. *Germany*, Appl. No. 46906/22.

102 S. Maljean-Dubois & E. Morgera, 'International Biodiversity Litigation: The Increasing Emphasis on Biodiversity Law before International Courts and Tribunals', in Futhazar, Maljean-Dubois & Razzaque (eds), n. 10 above, pp. 331–51.

103 Keynote speech by former ECtHR President Síofra O'Leary, 'Human Rights in Times of Trouble: Some Reflections on Sustainability and Resilience', at the ICON·S 2024 Annual Conference, 'The Future of Public Law: Resilience, Sustainability and Artificial Intelligence', IE University Law School, Madrid (Spain), 8 July 2024, available at: https://www.youtube.com/watch?v=gIbO6dV8cHw&t=1839s.

104 *KlimaSeniorinnen*, n. 20 above, paras 171ff.

105 Ibid., paras 236ff.

106 See, e.g., the verbatim records 2024/39 or 2024/50 of the International Court of Justice concerning its forthcoming advisory opinion on the obligations of states in relation to climate change, available at: https://www.icj-cij.org/case/187/oral-proceedings.

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The first three decisions on the human rights implications of climate change enabled the Court to provide initial responses to issues that arise to a similar extent regarding agrochemical pollution. The remaining part of this article focuses on these responses and their transposability.

6. Transposing Human Rights Arguments to Agrochemical Pollution

6.1. Current Lack of Agrochemical-specific Court Rulings

Agrochemical pollution is a significant health risk, with one in six deaths worldwide linked to pollution-related illnesses.[107] Chemicals used in agriculture pose direct risks, such as poor water quality and health issues for farmers, and indirect risks by damaging biodiversity and ecosystems essential for human quality of life and well-being.[108]

Despite these facts, courts historically have rarely addressed agrochemical pollution and have instead focused primarily on industrial incidents, environmental sacrifice zones, or disputes involving Indigenous peoples.[109] The ECtHR has not yet adjudicated cases that explicitly involve the impact on human rights of pollution through phytosanitary products.[110] This applies also to UN bodies but in a more nuanced way: (i) the Human Rights Committee recognized violations in cases of agrochemical pollution;[111] (ii) the UN Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a non-toxic environment highlighted in his 2022 report that, despite extensive international regulations on chemicals,[112] most states fail to fulfil their obligations[113] and leave human beings and ecosystems inadequately protected from their harmful effects.[114]

It is therefore relevant to explore whether the ECtHR might recognize that the continuous exposure of populations to agrochemicals could violate the right to life (Article 2 ECHR) and respect for private and family life (Article 8 ECHR). The arguments developed in the ECtHR climate cases are particularly instructive, as they address similar environmental harm and human rights violations.

A growing number of authors argue that climate trials have led to several developments of interest, paving the way for the law and the courts to better grasp the

[107] UN HRC, n. 56 above, para. 5; Landrigan et al., n. 1 above.

[108] On the link between biodiversity and human rights see S. Diaz et al., *Global Assessment Report on Biodiversity and Ecosystem Services: Summary for Policymakers* (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), 2019), available at: https://doi.org/10.5281/zenodo.3553579; Rodríguez-Garavito & Boyd, n. 96 above, pp. 499ff.

[109] See the examples mentioned by the Special Rapporteur, cf. UN HRC, n. 56 above, para. 26. See also Maljean-Dubois & Morgera, n. 102 above.

[110] See, however, *Brincat*, n. 74 above; *Howald Moor*, n. 75 above, concerning asbestos.

[111] UN HRC, *Portillo Cárceres* v. *Paraguay*, CCPR/C/126/D/2751/2016, 20 Sept. 2019; UN HRC, *Daniel Billy and Others (Torres Straits Islanders)* v. *Australia*, CCPR/C/135/D/3624/2019, 18 Sept. 2023, para. 8.3.

[112] See the various conventions listed in the report UN HRC, n. 56 above, para. 15.

[113] Ibid., para. 17.

[114] Ibid., para. 20.

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issues raised by agrochemical pollution.[115] We share this view: the first three ECtHR climate cases, and notably the *KlimaSeniorinnen* case, provide valuable considerations for addressing the issue of agrochemical pollution and its impact on human rights.

6.2. Potential Impact of the ECtHR Climate Rulings

The human rights approach to tackling the climate crisis raises legal challenges regarding the impact of the climate crisis on the right to privacy,[116] the victim status determination – respectively, associations' *locus standi*,[117] the role of scientific expertise – for example, with regard to the causal link,[118] the imminence requirement for defining positive obligations,[119] and the territorial jurisdiction of the ECtHR.[120] It also requires a rethinking of states' margin of appreciation in environmental matters and the role of the subsidiarity and consensus principles.[121] This article analyzes the Court's reasoning with regard to these issues and its transposability to agrochemical pollution.

Recognition of victim status and standing

As in the climate cases, agrochemical pollution embodies a question of large-scale health risks, which complicates the admissibility of victim status/*locus standi*, as an *actio popularis* is not permitted before the ECtHR.[122] In this respect, the *KlimaSeniorinnen* and the *Carême* cases provide clarification.

Although the third-party interventions[123] and the literature[124] focused on individual victim status and put forward arguments that would allow this condition

[115] Futhazar, Maljean-Dubois & Razzaque, n. 10 above; Rodríguez-Garavito & Boyd, n. 96 above, pp. 499ff.
[116] Ibid., pp. 555ff.
[117] *KlimaSeniorinnen*, n. 20 above, paras 458ff.
[118] Ibid., paras 424ff.
[119] Ibid., paras 512ff.
[120] *Duarte Agostinho*, n. 100 above, paras 168ff.
[121] Ibid., paras 451, 541ff.
[122] *KlimaSeniorinnen*, n. 20 above, para. 446.
[123] UN High Commissioner for Human Rights, 'Intervener Brief', 21 Sept. 2021, available at: https://ainees-climat.ch/wp-content/uploads/2021/11/UL_211007_53600_20_Klimaseniorinnen_OBS_P3_United_Nations_High_Commissioner_for_Human_Rights.pdf; C. Rodríguez-Garavito, C. Voigt & M.L. Satterthwaite, 'Written Submissions on behalf of the Global Justice Clinic (GJC), the Climate Litigation Accelerator (CLX) and Professor Christina Voigt', 15 Sept. 2021, available at: https://ainees-climat.ch/wp-content/uploads/2021/11/Global-Justice-Clinic-Climate-Litigation-Accelerator-C.-Voigt.pdf; E. Schmid & V. Boillet, 'Tierce intervention au sens de l'art. 44(3) du Règlement de la Cour', 25 Nov. 2022, available at: https://www.klimaseniorinnen.ch/wp-content/uploads/2023/01/53600_20_GC_OBS_P3_Universite_de_Lausanne__Mmes_Schmidt_et_Boillet__25_11_22.pdf; The Sabin Center for Climate Change Law, 'Third Party Intervention in the Case of Verein KlimaSeniorinnen and Others v. Switzerland' (2022), available at: https://ainees-climat.ch/wp-content/uploads/2023/01/53600_20_GC_OBS_P3_Sabin_Center_for_Climat_Change_Law.pdf; C. Beisbart et al., 'Third Party Intervention in the Case of Verein KlimaSeniorinnen and Others v. Switzerland', 5 Dec. 2022, available at: https://ainees-climat.ch/wp-content/uploads/2023/01/53600_20_GC_OBS3_Group_of_academics_from_the_University_of_Bern__Dr._Ch._Blattner_.pdf; M. Frigo, 'Written Submissions on behalf of the International Commission of Jurists (ICJ) and the Swiss Section of the International Commission of Jurists (ICJ-CH)', 5 Dec. 2022, available at: https://ainees-climat.ch/wp-content/uploads/2023/01/53600_20_GC_OBS_P3_ICJ_05_12_22.pdf.
[124] See Feria-Tinta, n. 22 above; Keller & Heri, n. 22 above; Mayer, n. 22 above; Wewerinke-Singh, n. 22 above.

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to be met, the ECtHR did not recognize the status of individual victims in the *KlimaSeniorinnen* and *Carême* cases. It is interesting to note that although the *KlimaSeniorinnen* judgment did mention all climate-related decisions by UN committees,[125] it did not quote the particularly instructive passage from the *Teitiota* case, which concerns victim status when individuals, entire populations, or even countries are at risk.[126]

While these obstacles are similar with regard to agrochemical pollution (because the phenomenon is so global that it affects everyone and raises the same risk of *actio popularis*), the status of individual victim might nevertheless be more easily admissible in cases of agrochemical pollution than in cases of climate change. In addition to the categories that are specifically affected, such as farmers or other workers, it is indeed possible to isolate particularly affected groups, such as those living close to agricultural or wine-growing areas, or even water consumers in significantly polluted regions. Such individuals can benefit from the victim status defined in Article 34 ECHR. On this issue, the *Müllner* case, which is currently pending before the ECtHR and addresses the case of a person who is specifically suffering from the effects of global warming because of a disability, will provide additional guidance.[127]

The *KlimaSeniorinnen* ruling further offers interesting analytical keys on *locus standi* as the Court underlined that associations could take action to denounce the human rights violations to which its members are subject.[128] As the Court noted concerning climate change, 'there has been an evolution in contemporary society as regards recognition of the importance of associations to litigate issues of climate change on behalf of affected persons'.[129] A similar line of argument applies to widespread pollution. As in the case of climate change, such pollution involves 'intergenerational' harm and the risk of 'irreversibility'.[130] Furthermore, efforts to combat agrochemical pollution are confronted with an ignorance production driven by agrochemical companies comparable to those active in the climate field, making it necessary for associations to support such cases and be given standing.

The ECHR as a living instrument

The ECtHR has been willing to consider environmental data[131] and understand legal concepts relating to climate issues in a dynamic way.[132] If most decisions on climate issues referred to scientific studies published in the climate field and environmental law

[125] *KlimaSeniorinnen*, n. 20 above, para. 175.
[126] UN HRC, *Ioane Teitiota* v. *New Zealand*, CCPR/C/127/D/2728/2016, 23 Sept. 2020, paras 8.5–8.6.
[127] *Müllner*, n. 101 above.
[128] *KlimaSeniorinnen*, n. 20 above, paras 489ff.
[129] Ibid., para. 497.
[130] *KlimaSeniorinnen*, n. 20 above, para. 499. See also ECtHR, *Cannavacciuolo and Others* v. *Italy*, Appl. No. 51567/14, Judgment, 30 Jan. 2025 (not final), Concurring Opinion of Judge Krenc, paras 3ff; and Partly Concurring, Partly Dissenting Opinion of Judge Serghides, paras 2ff.
[131] *KlimaSeniorinnen*, n. 20 above, para. 539.
[132] Ibid., paras 423ff.

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treaties[133] as part of a synergy of sources approach,[134] the ECtHR judgment in the *KlimaSeniorinnen* case is particularly pioneering in that respect. There, the judges not only set out in detail all the relevant international and comparative law texts in the 'facts' section[135] but also referred to many of them in the 'law' section – notably to the UN Framework Convention on Climate Change (UNFCCC),[136] the Paris Agreement,[137] the Glasgow Climate Pact,[138] the Sharm el-Sheikh Implementation Plan,[139] the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention),[140] UN General Assembly Resolution 76/300 on the Human Right to a Clean, Healthy and Sustainable Environment,[141] and the Committee of Ministers of the Council of Europe Recommendation CM/Rec(2022)20 on Human Rights and the Protection of the Environment.[142] With regard to scientific data, the Court refers mainly to the findings of the Intergovernmental Panel on Climate Change (IPCC).[143] Such a development limits the margin of appreciation of states,[144] which has traditionally been considerable in environmental matters before the ECtHR.[145] The Court underlined indeed that:

[133] See, e.g., Swiss Federal Tribunal, ATF 146 I 145, 5 May 2020, para. 5.5 (ATF 146 I 145); German Federal Constitutional Court, 1 BvR 2656/18, 24 Mar. 2021, paras 16ff; UN Committee on the Rights of the Child, *Chiara Sacchi et al.* v. *Argentina*, CRC/C/88/D/104/2019, 11 Nov. 2021, para. 10.11 (*Chiara Sacchi*).

[134] Ibid.

[135] *KlimaSeniorinnen*, n. 20 above, paras 133ff.

[136] New York, NY (US), 9 May 1992, in force 21 Mar. 1994, available at: https://unfccc.int (cited in *KlimaSeniorinnen*, n. 20 above, para. 546). See also the questions addressed to the parties by the ECtHR in *KlimaSeniorinnen*, ibid., available at: https://ainees-climat.ch/wp-content/uploads/2023/04/53600_20_Questions_to_the_parties_to_be_addressed_in_their_oral_submissions_at_the_hearing_before_the_Grand_Chamber.pdf.

[137] Paris (France), 12 Dec. 2015, in force 4 Nov. 2016, Art. 2(2), available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf (cited in *KlimaSeniorinnen*, n. 20 above, para. 442).

[138] Decision 1/CMA.3, 'Glasgow Climate Pact', 13 Nov. 2021, UN Doc. FCCC/PA/CMA/2021/10/Add.1 (cited in *KlimaSeniorinnen*, n. 20 above, para. 442).

[139] Decision 1/CMA.4, 'Sharm el-Sheikh Implementation Plan', UN Doc. FCCC/PA/CMA/2022/10/Add.1, 17 Mar. 2023, para. 92 (cited in *KlimaSeniorinnen*, n. 20 above, para. 442).

[140] Aarhus (Denmark), 25 June 1998, in force 30 Oct. 2001, available at: http://www.unece.org/env/pp/treatytext.html (cited in *KlimaSeniorinnen*, n. 20 above, para. 490).

[141] UN Doc. A/RES/76/300, 28 July 2022, available at: https://digitallibrary.un.org/record/3983329?ln=en (cited in *KlimaSeniorinnen*, n. 20 above, para. 448).

[142] Recommendation CM/Rec(2022)20, 27 Sept. 2022, available at: https://rm.coe.int/0900001680a83df1 (cited in *KlimaSeniorinnen*, n. 20 above, para. 443).

[143] *KlimaSeniorinnen*, ibid., paras 431ff.

[144] Ibid., para. 543.

[145] See, e.g., ECtHR, *Powell and Rayner* v. *United Kingdom*, Appl No. 9310/81, Judgment, 21 Feb. 1990, para. 41; ECtHR, *Lopez Ostra* v. *Spain*, Appl. No. 16798/90, Judgment, 9 Dec.1994, para. 51; *Hatton*, n. 76 above, para. 98; ECtHR, *Sciavilla* v. *Italy*, Appl. No. 36735/97, Decision, 14 Nov. 2000; *Apanasewicz*, n. 92 above; ECtHR, *Moreno Gomez* v. *Spain*, Appl. No. 4143/02, Judgment, 16 Nov. 2004, para. 55; *Fadeyeva*, n. 92 above, para. 94; *Giacomelli*, n. 76 above, para. 78; ECtHR, *Wałkuska* v. *Poland*, n. 76 above; ECtHR, *Oluić* v. *Croatia*, Appl. No. 61260/08, Judgment, 20 May 2010, para. 46; *Zammit Maempel*, n. 76 above, para. 61; *Flamenbaum*, n. 76 above, para. 134; ECtHR, *Greenpeace E.V. and Others* v. *Germany*, Appl. No. 18215/06, Decision, 12 May 2009; ECtHR, *Bor* v. *Hungary*, Appl. No. 50474/08, Judgment, 18 June 2013, para. 24; ECtHR, *Udovicić* v. *Croatia*, Appl. No. 27310/09, Judgment, 24 Apr. 2014, para. 138; *Jugheli*, n. 92 above, paras 64, 73; *Kožul*, n. 92 above, para. 33;

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> the nature and gravity of the threat and the general consensus as to the stakes involved in ensuring the overarching goal of effective climate protection through overall greenhouse gas reduction targets in accordance with the Contracting Parties' accepted commitments to achieve carbon neutrality, call for a reduced margin of appreciation for the States.[146]

A similar trend applies to agrochemical pollution. Numerous international treaties,[147] especially the Kunming-Montreal Global Biodiversity Framework[148] – a biodiversity plan adopted during the 15th meeting of the Conference of the Parties (COP-15) of the Convention of Biological Diversity[149] – bind states in this area. In addition, many scientific studies demonstrate the impacts of pollutants on health and the environment.[150] This combination of legal framework and scientific data can enable the ECtHR to reduce the state margin of appreciation and interpret the ECHR in a dynamic way, recognizing the human rights violations that agrochemical pollution might entail. Using the latest scientific data can also allow the Court to depart from the concepts of threshold levels of exposure and acceptable risk, as these concepts are based on quantifiable data that may not account for the complexity and unpredictability of ecological systems and the cumulative 'cocktail' effect of different agrochemical products.

Assessing causality and imminence requirements

Agrochemical pollution, like the climate crisis, implies negative consequences for the environment and health in the long term, which complicates the assessment of the causality and imminence requirements. The prolonged time frame over or after which damage appears is a challenge. Furthermore, the issue of pesticide cocktails, adding to or multiplying their toxicity and impact, is complex to apprehend. In this respect, the ECtHR recalls in the *KlimaSeniorinnen* judgment that, in traditional environmental cases:

> the measures taken, or omitted, with a view to reducing the impugned harm emanating from a given source, whether at the regulatory level or in terms of implementation, can … be specifically identified. In short, there is a nexus between a source of harm and those affected by the harm, and the requisite mitigation measures may be identifiable and available to be applied at the source of the harm.[151]

ECtHR, *Cordella and Others* v. *Italy*, Appl. Nos 54414/13 & 54264/15, Judgments, 24 Jan. 2019, para. 158; *Tolić*, n. 76 above, para. 92.

146 *KlimaSeniorinnen*, n. 20 above, para. 543.

147 See the references listed in UN HRC, n. 56 above, para. 15.

148 Decision 15/4 adopted by the CBD COP-15, 19 Dec. 2022, available at: https://www.cbd.int/gbf. See also Futhazar, Maljean-Dubois & Razzaque, n. 10 above.

149 Rio de Janeiro (Brazil), 5 June 1992, in force 29 Dec. 1993, available at: http://www.cbd.int/convention.

150 See Futhazar, Maljean-Dubois & Razzaque, n. 10 above. See also the work of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), available at: https://www.ipbes.net.

151 *KlimaSeniorinnen*, n. 20 above, para. 415.

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The Court considers that this is not the case in climate matters. In particular, it noted that 'combating climate change, and halting it, does not depend on the adoption of specific localised or single-sector measures. Climate change is a polycentric issue'.[152] With regard to the requirement of causation, the Court pointed out that 'the duty to regulate not only relates to actual harm arising from specific activities but extends to the inherent risks involved'.[153]About the right to life in particular, the Court recognized that:

> where the victim status of an individual applicant has been established ..., it would be possible to assume that a serious risk of a significant decline in a person's life expectancy owing to climate change ought also to trigger the applicability of Article 2.[154]

These considerations correspond to the results of several academic studies that demonstrate that the assessment of the causality and imminence requirements must be understood in the light of the principles of prevention and precaution and, when it comes to long-term damage in particular, from an intergenerational perspective.[155] Indeed, several authors have shown that the ECtHR uses the principle of prevention, without necessarily expressly mentioning it, to assess state responsibility based on an imminent risk,[156] as well as, in rare cases, the principle of precaution, which allows potential risks to be considered.[157]

The same challenges arise in the context of pollution and biodiversity loss. While the impact of agrochemical pollution on health and life has been documented, it can be measured only over the long term. This challenge requires the ECtHR to adhere to a systematic assessment of existing scientific evidence and consider this evidence in the light of the precautionary principle. Furthermore, most of the pollution emitted today is likely to persist in the environment and thus affect biodiversity and human rights over time,[158] which means that an approach that incorporates the principle of intergenerational equity is needed.

Territorial jurisdiction

Unlike the UN Human Rights Committee, which recognized states' responsibility for their climate impact outside their territory,[159] the ECtHR refused to accept the definition of extraterritorial jurisdiction in climate matters in the *Duarte* case.[160]

While biodiversity protection must also be considered globally, the more specific issue of agrochemical pollution does not seem to raise difficulties regarding

[152] Ibid., para. 419.
[153] Ibid., para. 435.
[154] Ibid., para. 413.
[155] Boillet & Demay, n. 22 above.
[156] Sudre, n. 69 above; Heri, n. 22 above; Keller & Heri, n. 22 above, p. 167; *Tătar*, n. 76 above.
[157] *Tătar*, n. 76 above; Baumann, n. 71 above; Sudre, n. 69 above, p. 1043.
[158] E.g., PFASs (i.e., per- and poly-fluoroalkyl substances), the main characteristic of which is that they are eternal pollutants.
[159] *Chiara Sacchi*, n. 133 above.
[160] *Duarte Agostinho*, n. 100 above, paras 168ff.

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territoriality as the consequences of pollution, in principle, can be geographically ascribed to the territory of a sovereign state.

Separation of power

Climate change and agrochemical pollution necessitate a political assessment of the various opposing interests – environmental and economic – at stake, raising questions about the separation of power. In the *KlimaSeniorinnen* case, the Swiss Federal Tribunal ruled that it is the legislator's responsibility to adopt general and abstract norms and that the Court must limit itself to deciding individual disputes.[161] The Swiss government also put forward such an argument in its response to the ECtHR.[162] This line of reasoning has been criticized by academics.[163] Similarly the Court underlined that:

> democracy cannot be reduced to the will of the majority of the electorate and elected representatives, in disregard of the requirements of the rule of law. The remit of domestic courts and the Court is therefore complementary to those democratic processes. The task of the judiciary is to ensure the necessary oversight of compliance with legal requirements'.[164]

In addition, the Court strongly emphasized the discretion enjoyed by states in determining the measures to be adopted to implement the objectives set out in the *KlimaSeniorinnen* case.[165]

Outlook

Human rights-based climate litigation has shown that courts can effectively address complex environmental challenges by holding states accountable for failing to mitigate harm. This legal reasoning can be transposed to agrochemical pollution cases. For instance, non-governmental organizations (NGOs) can adapt their climate litigation strategies to focus on the human rights impacts of chemical exposure.[166] The analysis of the first ECtHR climate cases provides a glimpse of the extent to which human rights litigation is likely to play a strategic and successful role in the context of agrochemical pollution as well. This leads us to wonder whether the following

[161] ATF 146 I 145, n. 133 above, para. 5.5.
[162] Federal Office of Justice, 'Requête n° 53600/20, Verein KlimaSeniorinnen Schweiz et autres c. Suisse: Observations du Gouvernement suisse sur la recevabilité et le fond', 16 July 2021, para. 4, available at: https://www.klimaseniorinnen.ch/wp-content/uploads/2021/11/2021.07.16-Stellungnahme-schweiz-fr.pdf.
[163] See C.E. Blattner, 'Separation of Powers and *KlimaSeniorinnen*', 30 Apr. 2024, *Verfassungsblog*, available at: https://verfassungsblog.de/separation-of-powers-and-klimaseniorinnen; J. Hartmann & M. Willers QC, 'Protecting Rights through Climate Change Litigation before European Courts' (2022) 13(1) *Journal of Human Rights and the Environment*, pp. 90–113, at 113; Keller & Heri, n. 22 above.
[164] *KlimaSeniorinnen*, n. 20 above, para. 412.
[165] Ibid., para. 543.
[166] Futhazar, Maljean-Dubois & Razzaque, n. 10 above.

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comments by legal scholar Heri on climate change litigation could apply *mutatis mutandis* to agrochemical pollution:

> Even though these harms are perhaps unique in terms of their scale and structural nature, they are of urgent relevance to the work of human rights bodies like the ECtHR. … As a result, … 'the question is no longer whether, but how, human rights courts should address the impacts of environmental harms' and, specifically, climate change harms.[167]

Such a conclusion also seems to result from Rodríguez-Garavito and Boyd's article, which states:

> Rights-based litigation does not offer a comprehensive solution to either of these pressing problems. However, it is a tool that can be used by people, communities, and organizations concerned about these twin crises to try and accelerate action and achieve accountability.[168]

Building on these perspectives, it becomes evident that a human rights-based approach is not the only available legal pathway for addressing the pressing issues of agrochemical pollution and its impact on human, animal, and environmental health and biodiversity. However, the successful trajectory of human rights in health and climate change litigation demonstrates its potential as a strategic and effective avenue. By leveraging this established legal framework, stakeholders can pursue accountability and action on agrochemical pollution in a manner that is immediately available and aligned with broader international legal trends. This approach provides a compelling, pragmatic, and adaptable tool for addressing these multifaceted global challenges.

7. Conclusion

The current state of affairs regarding agrochemical pollution testifies to the inadequacy of existing legal frameworks. It reveals a pattern of insufficient pre-emptive measures, delayed responses, and incomprehensive monitoring and long-term health studies. The blueprint provided by the paradigm shift in public health and climate change opens avenues for reconceptualizing agrochemical pollution through human rights. The legal strategies established in climate cases offer a robust foundation for tackling the harm caused by agrochemicals from a human rights perspective.

[167] Heri, n. 22 above, p. 928 (quoting UN Special Rapporteurs D.R. Boyd & M.A. Orellana, 'Third Party Intervention in the *Duarte Agostinho* Case', 4 May 2021, para. 17, available at: https://jusmundi.com/en/document/other/en-duarte-agostinho-others-v-portugal-and-others-intervention-of-un-special-rapporteurs-david-r-boyd-and-marcos-a-orellana-tuesday-4th-may-2021#other_document_22097). See also Rodríguez-Garavito & Boyd, n. 96 above, pp. 505ff.

[168] Rodríguez-Garavito & Boyd, n. 96 above, p. 523. See also L.J. Kotzé et al., 'Courts, Climate Litigation and the Evolution of Earth System Law' (2024) 15(1) *Global Policy*, pp. 15–22, at 16ff (arguing that 'although climate litigation may offer the clearest indication that courts are becoming important actors in the Anthropocene, they also play a role in adjudicating other issues relevant for sustaining the earth system, including biodiversity loss and air pollution').

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This article highlights that the ECtHR's arguments in its recent climate precedents relating to *locus standi*, the role of scientific data and its impact on the principle of causality, and the role of international environmental law in defining the scope of obligations or the state margin of appreciation can be transposed to the issue of agrochemical pollution. Despite the weaknesses and limitations of human rights-based approaches, the unfolding jurisprudence in climate litigation thus serves as a critical resource for developing effective legal responses to agrochemical pollution.

The theoretical bedrock of a human rights approach to agrochemical pollution is complex and multifaceted. It encompasses substantive and procedural rights that states must respect, protect, and fulfil, which necessitates regulation in the broadest sense. More concretely, based on the ECtHR case law, states must take adequate measures to prevent and control environmental pollution caused by hazardous chemicals. These obligations include regulating and controlling industrial activities, preventing the uncontrolled release of pollutants, monitoring health and environmental impacts, guaranteeing access to information, and providing effective remedies for individuals harmed by pollution.

While the ECtHR has yet to focus on agrochemical pollution from a human rights perspective, domestic law developments in Europe illustrate the challenges in addressing this phenomenon through law outside the human rights sphere. In France, the judiciary has addressed pesticide impacts on human health, the environment, and biodiversity through criminal and administrative law. In June 2023, the Administrative Tribunal of Paris found the French state guilty of the collapse of biodiversity in the case *Justice pour le Vivant*.[169]

Despite our initial finding that human rights can be used as a tool to address agrochemical pollution, such a paradigm change needs to be grounded in further research. More scholarly work is required to reveal the potential of a human rights approach to pollutants as a substitute or parallel tool for a nuanced security-based approach. One complexity to be addressed lies in the conflict between human rights on the one side and rights protected by international trade law on the other, as explained in the business and human rights literature.[170] As with other areas where conflicts of rights appear (such as in the pharmaceutical and food industries), the complexity in legal analysis lies in the confrontation between two different orders of rights.[171]

Finally, future research must consider the role of the numerous stakeholders involved, which include consumers, farmers, industries, scientists, animals, and the environment. The potential of a 'one health – one right' approach for regulating pollutants might offer a more holistic theoretical perspective and practical tool.[172] In

[169] See Tribunal administratif de Paris, N° 2200534/4-1, 29 June 2023.

[170] Arnauld, von der Decken & Susi, n. 9 above; B. McGrady, 'Health and International Trade Law', in Burci & Toebes, n. 4 above, pp. 104–34; C.-F. Wu & C.-H. Wu, 'International Trade, Public Health, and Human Rights', in Gostin & Meier, n. 8 above, pp. 351–72.

[171] O. Martin-Ortega et al., 'Towards a Business, Human Rights and the Environment Framework' (2022) 14(11) *Sustainability*, pp. 6596–622.

[172] For such an approach developed in the specific context of human-animal relations see S. Stucki, 'Animal Rights: A New (Non)Human Rights Revolution?', in S. Stucki (ed.), *One Rights: Human and Animal Rights in the Anthropocene* (Springer, 2023), pp. 1–15.

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both the human rights and the security-based approach to agrochemicals, one of the pressing questions to be addressed pertains not only to the role of the state but also to the accountability of risk-creating industries in producing, advertising, selling, and employing such products.[173]

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[173] A. Galmiche, F. Delerm & M. Levy, 'Healthwashing: Corporate Communication Strategies in a Legal Gray Zone' (2023) 36(1) *Loyola Consumer Law Review*, pp. 23–89.

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