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ACTION FOR NATURE AND HUMAN RIGHTS: INNOVATING LAW AND GOVERNANCE

HANDBOOK

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HANDBOOK

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ACTION FOR NATURE AND HUMAN RIGHTS: INNOVATING LAW AND GOVERNANCE: AN INTRODUCTION

Claudia Ituarte-Lima

The Kunming–Montreal Global Biodiversity Framework (GBF), adopted at the fifteenth meeting of the Conference of the Parties (COP15) of the Convention on Biological Diversity, represents the most ambitious global plan to halt and reverse biodiversity loss to date. The GBF sets out 23 global targets to be achieved by 2030 and identifies monitoring, reporting, and accountability mechanisms to ensure progress. Yet, as the Parties themselves acknowledged, reaching these targets will require more than technical fixes or additional conservation funding: it calls for a human rights-based approach and new forms of cooperation including mobilizing knowledge systems that can transform our relationships between people, economies, and nature.

Rule of law and accountability are key principles of the human rights-based approach and therefore experts on human rights, biodiversity, climate and economic law and governance have a vital role to play in supporting the implementation of the GBF targets. The Convention on Biological Diversity's COP Decisions are adopted by consensus by its 196 parties and complying with the commitments set on these decisions is a critical part of nature stewardship. Decision 15/5 on the Monitoring framework for the Kunming–Montreal Global Biodiversity Framework, requests the Executive Secretary, in collaboration with partners, to develop guidance for national and regional monitoring systems, and to strengthen capacity-building and action plans (para. 15a). The same

decision urges Parties and organizations to support biodiversity monitoring at all levels, recognizing the need for enhanced international cooperation and capacity-building (para. 5) and invites Parties to support community-based monitoring and citizen science (para. 6) [1]. In Decision 15/8, Parties further urged the creation of enabling environments, including legislation and policies to promote capacity-building (para. 5), and tasked the Secretariat to foster scientific cooperation in support of the GBF [2].

At COP16, these commitments were deepened. Decision 16/12 underscored that technical and scientific cooperation, especially when accompanied by strengthening capacities, is a prerequisite for equitable GBF implementation [3]. Decision 16/6 explicitly recognized the interdependence between biodiversity, climate change, and human rights [4], while Decision 16/11 highlighted the importance of sound legal and institutional frameworks [5]. Together, these decisions signal that capacities cannot be confined to data collection of the status of flora and fauna. Catalysing peace with nature must encompass the strengthening of legal and governance tools that tackle the root causes of unsustainability. Human rights-based governance, environmental democracy, and economic policies capable of addressing the drivers of biodiversity loss, ecosystem degradation, and climate change are critical.

The GBF Targets alsoconsolidated guidance to operationalize full, effective, and gender-responsive participation; access to information and justice; protection of environmental human rights defenders (Target 22) and gender equality with equal rights to land and resources (Target 23), making clear that these are not optional add-ons but implementation conditions [6,7]. At COP-16, Decision 16/5 established a permanent subsidiary body on Article 8(j), institutionalising a long-term mechanism for Indigenous Peoples and Local Communities (IPLC) participation across GBF implementation—public meaningful participation being a procedural backbone of environmental democracy [3]. Similarly, Decision 16/20 on restoration explicitly called for using diverse knowledge systems, creating a substantive bridge between human rights such as cultural rights and right to science and biodiversity science-policy processes [3]. Gender considerations were also reinforced: Decision 15/17 resulted in the adoption of the Gender Plan of Action for the GBF, and COP-16 decisions reiterated that NBSAPs and reporting must be gender-responsive and safeguard environmental human rights defenders [7].

Decision 15/17 has relevance to a regenerative economy with the decision calls for the intensified mainstreaming of biodiversity across all sectors, signaling for the need for legal and policy tools that shift production and consumption systems [7]. Complementing this, Decision 15/18 adopted a new resource-mobilization strategy and emphasized aligning fiscal, private, and financial flows with GBF goals, thereby laying the groundwork for due diligence, disclosure, and subsidy-reform law [8]. Target 16 further obliges Parties to establish supportive policy, legislative, and regulatory frameworks to reduce overconsumption and waste, including halving food waste, such commitment was tracked and reinforced at COP-16 [3,8]. Target 18 addresses harmful incentives, requiring identification, elimination, phasing out, or reform of subsidies while scaling positive incentives.COP-16 decisions urged concrete domestic and international action on this front, linking reforms to mainstreaming biodiversity within the private sector and financial regulation [3,8]. Going further, Decision 16/34 called for whole-of-economy alignment by urging Parties to ensure private activities and fiscal and financial flows are consistent with the GBF, to encourage or require disclosures through nature-related reporting standards, and to take effective domestic action on harmful subsidies, thereby strengthening the legal and policy mandate for supply-chain accountability and liability measures [3].

The dual crises of climate change and biodiversity loss reinforce this conclusion. COP16's Decision 16/6 noted that biodiversity loss and climate change exacerbate each other and that effective solutions demand integrated responses [4]. Climate change intensifies pressures on ecosystems and species, while degraded ecosystems reduce resilience to climate shocks and these dynamics affect the realization of a wide range of human rights. The IPBES-IPCC co-sponsored workshop report emphasizes that biodiversity loss and climate change are closely linked and that addressing one without the other can lead to ineffective or even counterproductive outcomes [9]. The report advocates for a holistic approach that considers the synergies and

trade-offs between biodiversity and climate objectives, highlighting the need for policies that simultaneously promote climate resilience and biodiversity conservation. Addressing these crises therefore requires bridging the work of environmental, human rights, and economic institutions, and enabling tools that align biodiversity stewardship with democratic participation and climate-resilient development.

This handbook responds directly to priority areas for research, policy and practice arising from the CBD decisions and to insights and recommendations by IPBES and IPCC [9,10]. Bringing together articles developed by authors with complementary disciplinary expertise, it aims to strengthen capacities on law and governance tools to nurture peace with nature in a changing climate. Instead of treating biodiversity and climate as purely ecological issues, the handbook shows how progress under the GBF depends on collective action by a diversity of groups in two interrelated domains:

First, Human rights and environmental democracy: Biodiversity and human rights are mutually reinforcing. Instruments such as the UN Convention on the Rights of the Child for instance make clear that children's rights depend on a healthy environment. Effectively implementing the human rights-based approach ensures that environmental harm does not fall disproportionately on groups in vulnerable situations and that conservation measures respect and promote human dignity. Environmental democracy and procedural rights including access to information, participation, and justice and the rights of biosphere defenders are essential for tackling unsustainability and injustice and for legitimate and effective biodiversity law and governance.

Second, Regenerative economy: Legal and economic instruments—covering trade, consumption, subsidies, and supply chains—can either perpetuate biodiversity loss or redirect incentives toward stewardship and solidarity with nature. COP15 and COP16 decisions highlighted the urgent need for economic reform and resource mobilization to realign finance with biodiversity targets [8].

HANDBOOK STRUCTURE

COP decisions now have hard-wired access rights, environmental human rights defenders' rights, gender equality, IPLC governance and knowledge into GBF delivery (see table below with the chapters and associated targets). An implementation handbook that equips readers with human rights and environmental-democracy tools is therefore not just interesting—it is key for the effective implementation by the CBD-COP Decisions above-mentioned.

Chapters and connections with GBF Targets

Section & Chapter	Title	Authors	GBF Target(s)
1	Introduction: the power of law for nurturing peace with nature	Claudia Ituarte-Lima	all
Section I – Human Rights and Environmental Democracy Tools for Nurturing Peace with Nature			
2	Enforcing the rights of the child to strengthen the Global Biodiversity Framework	Anu Lähteenmäki-Uutela, Claudia Ituarte-Lima, Siva Barathi (Sharl) Marimuthu, Milka Sormunen	22, 7, 12, 1, 2, 3, 5, 9, 21
3	Mother Earth-centric actions: From a premise of compensating destruction to nurturing biocultural rights	Liisa Varumo, Anna Otta, Carlos Pardo Velazquez, Claudia Ituarte-Lima	19

Section & Chapter	Title	Authors	GBF Target(s)
4	Responsible business conduct: EU due diligence and trade instruments' impact on human rights and biodiversity	Radu Mares	15
5	Human rights innovations, pesticide regulation, and trade governance: From pesticide toxicity to healthy agroecological systems	Irene Musselli, Claudia Ituarte-Lima	7, 8, 14, 22
Section II – Implementing Legal Innovations for a Just and Regenerative Economy			
6	Legal principles and tools for curbing overconsumption and protecting ecosystems and biodiversity	Anu Lähteenmäki-Uutela, Claudia Ituarte-Lima	14 (specific sub-targets to be detailed)
7	Navigating scales in supply chain governance for achieving the global biodiversity targets	Gabi Sonderegger, Irene Musselli	14
8	Vulnerability of biodiversity protection via trade regulation and voluntary certification	Minna Pappila, Maria Tysiachniouk	10
9	Procuring sustainable food in the public food sector: Legal challenges and policy opportunities	Olga Giakouminaki	10, 14, 16 and 18
10	Supply Chain Liability	Carola Glinski	15, 22
11	Effective and Legitimate Supply Chain Governance	Carola Glinski	7, 10, 15, 22
12	Production Requirements in trade to foster biodiversity: Flexibility in WTO law for effective and context-based approaches	Elisabeth Bürgi Bonanomi, Irene Musselli	14

SECTION I — HUMAN RIGHTS AND ENVIRONMENTAL DEMOCRACY: TOOLS FOR PEACE WITH NATURE

The first section demonstrates how human rights and environmental democracy can function as enablers of peace with nature in a changing climate. Together, the chapters explore human rights instruments not merely as constraints on conservation policy, but as positive drivers of Earth stewardship and solidarity.

A temporal scale that focuses not only on the short term but also on long-term peace with nature for present and future generations of humans and other living beings is needed. Furthermore, rethinking the temporal scale of peace with nature can also be nurtured by ancestral and other types of knowledge systems to conceptualise humans as part -not fragmented of nature. Chapter

2 “Enforcing the rights of the child to strengthen the Global Biodiversity Framework” by Anu Lähteenmäki-Uutela, Claudia Ituarte-Lima, Siva Barathi (Sharl) Marimuthu, Milka Sormunen examine the Convention on the Rights of the Child [9] and its implications for the GBF. Children, while often disproportionately affected by biodiversity and climate crises, are also agents of change. The chapter shows how children’s rights—such as the right to health and the right to a clean, healthy and sustainable environment—require States to transform food systems, eliminate harmful subsidies, and promote agroecological practices. Chapter 3 “Mother Earth-centric actions: From a premise of compensating destruction to nurturing biocultural rights” by Liisa Varumo, Anna Otta, Carlos Pardo Velazquez, Claudia Ituarte-Lima contrast dominant “compensatory” approaches to biodiversity—such as offsetting—with emerging paradigms that center on care, solidarity, and biocultural rights. Drawing on experiences from Finland and Colombia, the article argues that law should support initiatives that value relational knowledge and Indigenous worldviews, rather than perpetuating hierarchical distinctions between “scientific” and traditional knowledge.

For catalysing peace with nature in an interconnected world, understanding and acting upon how human rights are intertwined with State boundaries can help the realization of rights and Earth stewardship. Chapter 4 “Responsible business conduct: EU due diligence and trade instruments’ impact on human rights and biodiversity” by Radu Mares examines how EU Green Deal instruments intersect with human rights and biodiversity concerns. He evaluates due diligence regulations and trade measures through the lens of environmental democracy, highlighting where these instruments advance or undermine GBF targets. Chapter 5 “Human rights innovations, pesticide regulation, and trade governance: From pesticide toxicity to healthy agroecological systems” by Irene Musselli and Claudia Ituarte-Lima argues that pesticide regulation and trade policies must be aligned with human rights innovations and participatory decision-making. The chapter stresses the need for inclusive governance in technical domains across geographical scales, bridging right-holders’ concerns, trade law, and biodiversity stewardship.

SECTION II — LEGAL INNOVATIONS FOR A JUST AND REGENERATIVE ECONOMY

The second section turns to analysing key economic and legal instruments that affect healthy ecosystems and biodiversity outcomes. The chapters show that the GBF cannot succeed if global economic systems remain geared toward overconsumption, short-term profit, and externalization of environmental harm. Instead, law must drive a transition to a regenerative economy where biodiversity and ecosystems’ stewardship and justice considerations are embedded in production and consumption processes from the local to the global levels.

Recognition of human and biocultural rights discussed in Section I is important but in tackling the root causes of unsustainability and injustice, human rights law and environmental law are insufficient. Economic paradigms and laws need to be brought into the equation. Chapter 6 “Legal principles and tools for curbing overconsumption and protecting ecosystems and biodiversity” Anu Lähteenmäki-Uutela and Claudia Ituarte-Lima outline how legal principles—such as prevention and precaution—can be operationalized to reduce unsustainable consumption, safeguard ecosystems and gear humanity towards safe and just planetary operating spaces.

While challenging economic paradigms that drive overconsumption is needed, so are concrete economic legal and governance tools attuned with contemporary social-ecological dynamics. Chapter 7 “Navigating scales in supply chain governance for achieving the global biodiversity targets” by Gabi Sonderegger and Irene Musselli highlight how governance across scales, from local producers to global markets need to be coordinated to prevent biodiversity harms from shifting across borders. Chapter 8 “Vulnerability of biodiversity protection via trade regulation and voluntary certification” by Minna Pappila and Maria Tysiachniouk critically assesses the limits of voluntary certification and trade-based schemes. They argue that such instruments, while useful, can

expose biodiversity protection to vulnerabilities unless supported by binding legal frameworks. Chapter 9 "Procuring sustainable food in the public food sector: Legal challenges and policy opportunities" by Olga Giakouminaki shows that although European Green Deal and the EU Farm to Fork strategy do not require a sustainable and biodiversity sensitive food procurement, national authorities are given the opportunity to do so and certain local authorities are already championing these processes. Chapter 10 "Supply Chain Liability" by Carola Glinski proposes mechanisms for holding corporations—and certification schemes—legally accountable for biodiversity harm, emphasizing liability as a cornerstone of effective supply chain governance while Chapter 11 on "Effective and Legitimate Supply Chain Governance" also by Carola Glinski complements Chapter 10 by focusing on legitimacy. She shows that transparent, inclusive governance processes are essential to ensure that supply chain laws are not only effective but also accepted as fair and credible. Chapter 12 by Elisabeth Bürgi Bonanomi and Irene Musselli suggests practical ways to utilize existing World Trade Organisation's (WTO) flexibilities to promote the incorporation of biodiversity into trade policies, in line with Target 14 of the Kunming-Montreal Global Biodiversity Framework.

The common thread through Sections 2 is that biodiversity governance is also governance of justice. Each chapter demonstrates, in its own way, how human rights and democratic participation can reorient law away from extractive logics toward nurturing relationships with nature in which all living beings can thrive. CBD-COP Decisions such as the ones mentioned earlier now require regulatory architectures that change incentives and information along supply chains: disclosure duties, due diligence, liability, subsidy reform, and consumption-footprint laws. This section of the handbook on legal innovations for a regenerative economy directly answers those implementation demands. Together, these chapters aim to operationalize? the vision of a regenerative economy -in which biodiversity is not an externality but a shared foundation for the livability of Earth.

HANDBOOK'S TARGET AUDIENCE

This handbook is designed for various groups that have a critical role in the implementation of the GBF and the achievement of its targets. Its purpose is to break down siloes that traditionally separate biodiversity governance, human rights, and economic law. First, for policymakers and legislators working at the national level, the handbook provides guidance on developing and enacting laws that promote biodiversity stewardship, climate resilience, and environmental justice. It offers insights into the integration of biodiversity and justice considerations into national instruments and the alignment of legal frameworks with international human rights and commitments under the Convention on Biological Diversity. CBD focal points and regional treaty focal points, such as those for the Aarhus Convention [12] and Escazú Agreements [13], can benefit from the handbook's emphasis on the human rights-based approach and environmental democracy as key for achieving substantive social-ecological outcomes in practice.

Second, scholars and students play also a key role in generating insights and bridges useful for these groups and this handbook also aims to be food for thought on how academia can contribute to positive social-ecological outcomes.

Third, the handbook offers guidance for legally empowering civil society organizations, including biosphere defenders, environmental NGOs, community groups, and Indigenous peoples' organizations, as key actors in environmental democracy and Earth stewardship.

Fourth, for international institutions such as UN institutions and intergovernmental bodies, the handbook can serve for coordinating international efforts and facilitating the exchange of knowledge and best practices when providing guidance to UN bodies and UN member States. While EU parliamentarians and regulators can use the handbook to inform law and policy development and regulatory measures that support the objectives

of the GBF, offering guidance for aligning EU policies with global biodiversity and human rights standards and for fostering cooperation among countries.

In sum, achieving the GBF's 2030 targets demands research in the law, policy and practice that help integrate knowledge on human rights-based governance and economic transformation. This handbook respond exactly to that need by focusing first on human rights and environmental democracy, and second on legal innovations for a regenerative economy. By offering analytical tools and legal innovations that bridge communities of practice, it equips decision-makers, thinkers and changemakers to implement the GBF in ways that are both ecologically transformative and socially just.

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SECTION I

HUMAN RIGHTS AND ENVIRONMENTAL DEMOCRACY TOOLS FOR NURTURING PEACE WITH NATURE

ENFORCING THE RIGHTS OF THE CHILD TO STRENGTHEN THE GLOBAL BIODIVERSITY FRAMEWORK

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Abstract. Children's rights recognized under the UN Convention on the Rights of the Child include the right to life, the right to health, and the right to a healthy environment. To realize these rights, States have a duty to transform current economic systems that drive biodiversity loss and environmental crises. The Kunming-Montreal Global Biodiversity Framework and international human rights law are mutually supportive. We take the example of food systems and propose how States must act to prevent and mitigate their negative impacts on children's rights. This includes reshaping the agricultural subsidy system to support ecological agriculture as well as setting adequate restrictions on pesticide use.

Keywords. Children's rights, food systems, biodiversity.

1. INTRODUCTION

The global biodiversity crisis threatens all humans. Children in all countries suffer from the economic practices that compromise the well-being of ecosystems. Ignoring the rights of children to a healthy planet represents a generational failure. Adults involved in business and governance are well placed to reverse the failures of economic systems by looking through the lens of the children's rights. The idea of duties and responsibilities towards children is more than conceptual and can be implemented pragmatically in daily decision-making, zooming into the current problems as well as looking ahead into the desired and undesired futures.

From a legal perspective, acknowledging the rights of the child is a critical legal pathway for sustainability transformations which cannot be discounted. Here, we look at children as rights-holders and discuss how rights of the child mandate practical and immediate State action towards the targets of the Kunming-Montreal Global Biodiversity Framework (GBF) [1], taking examples from food system governance.

2. RIGHTS OF THE CHILD AND THE GBF

Enforcing the rights of the child can strengthen the Convention on Biological Diversity (CBD) and give States guidance on why and how to work towards the targets of the GBF. The implementation of biodiversity targets can and should draw from international human rights law as they are both directly and indirectly connected to the realization of children's rights as defined in the UN Convention on the Rights of the Child (CRC) [2]. While the CBD does not have an independent review mechanism to monitor the implementation of its objectives, human rights conventions do. Human rights law therefore provides an important leverage point towards sustainability transformations [3]. In the GBF, it is stated that its implementation "should follow a human rights-based approach, respecting, protecting, promoting and fulfilling human rights", and the GBF "acknowledges the human right to a clean, healthy and sustainable environment".

Focusing specifically on the rights of the child, we refer to the CRC as a yardstick for State duties on ecosystems and biodiversity. The CRC protects civil and political rights as well as economic, social, and cultural rights of all persons under the age of 18, underscoring that children are independent rights-holders. Through setting binding duties for States, children's rights strengthen the GBF.

The UN Committee on the Rights of the Child is the treaty body that monitors States Parties' compliance with the CRC. The Committee, in its General Comment 26, published in 2023 [4], acknowledges the right of the child to a clean, healthy, and sustainable environment. The General Comment was based on extensive consultations with 16,331 contributions from children from 121 countries.

In table 1, we list the main rights guaranteed by the CRC and the General Comment 26, the realization of which has a close connection to the 22 targets of the GBF.

Table 1: CRC articles relevant for GBF targets (sources: UN Convention on the Rights of the Child 1989; UN Kunming-Montreal Global Biodiversity Framework 2022)

The right to life, survival and development **(CRC Article 6)** The right of the child to have his and her **best interests** taken as a primary consideration **(CRC Article 3.1)**	
The **right to health (CRC Article 24)**; including the obligation to combat malnutrition and environmental pollution in connection to the right to nutritious **food** and clean drinking **water**	GBF Target 7 on reducing nutrient pollution and pesticide pollution GBF Target 10 on enhancing biodiversity in agriculture, aquaculture, fisheries and forestry
The **right to a healthy environment** NOT defined in the text of the CRC; defined by General Comment 26 of the UN Committee on the Rights of the Child 2023	GBF Target 12 on improving human health, well-being, and connection to nature
Cultural rights of indigenous children (Article 30 CRC) and General Comment 26 on the right to a healthy environment: "the rights to life, survival and development of **Indigenous children"**	GBF Targets 1, 3, 5, 9, 19, 21, 22 mention the rights of indigenous peoples
Access to **information** (CRC Article 17) The right of the child to express his and her views and **participate** in matters concerning the child (CRC Article 12)	GBF Target 21: accessible biodiversity data, information and knowledge GBF Target 22 urges the participation of "women and girls, children and youth", protection of environmental rights defenders

The right to life (Article 6) and the right to the highest attainable standard of health (Article 24) are the two major rights recognized by the CRC that children can refer to when they demand action to protect ecosystems and biodiversity that are vital for their life and for their physical and mental health.

Regarding participation, the CRC guarantees the child the right to express his and her views and participate in matters concerning the child (Article 12), obliging decision-makers to obtain children's views in matters concerning them. The obligation to consider the best interests of the child (Article 3) in all actions concerning children is essentially procedural [5], which means that a systematic assessment of children's interests and rights must be integrated in impact assessments and decision-making processes. It is in the child's best interests to be allowed to express their opinion. This duty stretches to areas indirectly affecting children. Both best interests and participation rights aim to compensate for children's vulnerability and lack of standing in many contexts. Moreover, the CRC rights must be guaranteed to all children without discrimination.

Currently, many children and youth are courageously undertaking the role of biosphere defenders, catalyzing transformations towards healthy ecosystems and using their freedom of expression, thought and association (Articles 13-15 CRC). Children who act as biosphere defenders contribute to unleashing values of responsibility by various actors and translating biocultural values of ecosystems into evidence to inform legal and institutional decision-making at various scales [6,7]. While the CRC lacks sufficient provisions on access to justice and does not provide children a specific right to an effective remedy [8], other human rights treaties can offer guidance to CBD parties on how to operationalize children's access to justice. However, children's emerging role in litigation for a healthy environment should not compromise their rights to education and leisure [9].

3. DUTIES TOWARDS AGROECOLOGICAL FOOD SYSTEMS

Food production is a major cause for global biodiversity loss and at the same time heavily dependent on biodiversity. A main driver for biodiversity loss globally is the conversion of forests and wetlands into agricultural production areas. [10]. Food systems should provide food and nutrition security while respecting the planetary boundaries. They fall short of these goals, however, and a transition to environmentally sustainable and socially just systems is required [11,12,13,14,15]. Reversing biodiversity loss is critical in making food systems resilient, sustainable, and just. Diverse living organisms and species support water cycles, nutrient cycles, and crop pollination. Soil microbes, birds, insects, wasps, bats, and many more, play a vital role while weeds, pest animals, and invasive species pose challenges [16,17,18,19,20].

Solving the ***climate crisis*** is a significant part of the required transition. The climate crisis puts a billion children, which is half of the world's children, at an 'extremely high risk' [21]. Sea-level rise, draughts, storms, and floods cause immediate threats to the right to life, and the failing crops and diminishing fish catches threaten the right to life. Indirect risks also arise as food insecurity leads to an increase in child marriages and/or forced marriages. Children have brought climate cases to national and international bodies, claiming that the climate crisis violates their human rights and that governments should act to mitigate and adapt to the crisis. In ***Ashgar Leghari v. Federation of Pakistan*** 2015, for example, the Lahore High Court declared climate change to raise serious concerns for food security, violating children's right to life.

Agri-food systems are a major driver of the climate crisis as they produce a third of human-caused greenhouse gas emissions [22,23]. Without lowering food system climate impacts, it will be impossible to reach the 1.5 goal or even the 2.0-degree goal. Problems produced by food systems for the global climate are a) land use change, i.e., converting forests and peatlands to farmland, and b) greenhouse gas emissions from crop and livestock production, fertilizer production, food processing, transport, retail, consumption, and food waste disposal.

It is a joint, global task to feed the human population while sparing land, lowering emissions, and saving biodiversity wherever possible. Soil health is directly important for food security as well as for water, biodiversity, and a safe climate. Decreasing livestock numbers, improving livestock feed, improving manure management, and reducing food waste are needed. To replace parts of conventional animal-based food and to offer new livelihoods, plant-based proteins, microbial proteins, algae, insects, lab-grown meat, and other alternative protein sources and markets need to be developed.

Agricultural policy has a central role in the uptake of low-carbon, ecological food production. The rights of the child are not compatible with granting the most subsidies to production that warms the planet as well as harms ecosystems and biodiversity. We suggest ***a child rights-based approach to agricultural policy*** where children's best interests and participation are given priority instead of the interests of large-scale industry lobbies. The participation of experts on children rights and environment and of children themselves in agricultural public policy making as well as advances in climate litigation triggered by children (GBF Target 22) can contribute to minimizing the negative impacts of perverse incentives (GBF Target 18) and fostering positive impacts on biodiversity (GBF Target 8).

Problems with ***pesticides*** that have several negative effects on human health have also received further attention. Pesticides are responsible for an estimated high number of 200,000 acute poisoning deaths a year, of which 99 % are in developing countries [24]. Pesticide exposure causes mental disorders, attention deficit, childhood cancers, miscarriages, and congenital malformation. Pesticide pollution contaminates food and water, and children are more likely to suffer from pesticide-related health problems, because both the developmental and the behavioral risks are higher: children ingest more

food, drink more water, and breathe more air than adults in relation to their size. Toddlers often explore the world by putting their hands and objects into their mouths after touching dirt, dust or residual of harmful chemicals found on surfaces. Young children also often play outdoors and are exposed to environmental contaminants. In the longer term, pesticide pollution can lead to life-long health and developmental impacts.

At the same time, pesticides destabilize ecosystems. The intention of using pesticides in agriculture is to control pests, however their use has unintended and harmful effects on ecosystems. Runoff from fields pollutes the surrounding ecosystems as pesticides used for crops do not remain in the field - the chemicals used are carried into nearby rivers and lakes. This runoff is harmful to aquatic life and humans. While there are reductions in pest populations, pesticides can harm agriculture itself. Pesticides decrease soil biodiversity, which can lead to large declines in crop yields and thereby threaten the right to food. Pesticides are also harmful for important pollinators, again with a negative impact on the right to food. [25,26,27,28,29,30,31]. Pesticides, by reducing the food sources for other species such as birds cause irreparable damage to food security in the short and long term.

While the negative impacts of pesticides on both humans and on ecosystems have been demonstrated by scientists, the pesticide and agricultural industries have often downplayed the negative impacts and thereby weakened regulations. The "systematic denial, fueled by the pesticide and agroindustry" and the "aggressive, unethical marketing tactics" [24] have led to inadequate global and local regulation. Three companies, using influences such as financial or political have "paralyzed pesticide restrictions globally" [24], and are accused of manufacturing (or manipulating) evidence, buying scientists, and bribing research institutions. [24] These unethical practices continue to impact negatively on human health and the environment and continue to undermine the trust people have in science, research and policy making.

Rights-based arguments can and should be used to clarify the impacts of pesticides and develop regulation in line with the duties set by human rights law. Regulating the use of pesticides in agriculture and prohibiting highly toxic pesticides and agrochemicals is necessary to protect children's right to life and health. Duty-bearers and right-holders must keep pursuing environmental rights goals even under the pressure of multinational companies, and the home states of the companies must set pressure on businesses actions to align them with human rights and sustainability. Violations of children's rights can derive not only from actions of the State but also from inaction, for example from not banning pesticides that have negative impacts on children's rights to health and to a healthy environment.

By ensuring access to information and engaging public participation of a diverse group of people such as experts in toxicity, parents, and children on the health impacts of pesticides, GBF Target 22 can support an integrated, science-based approach to managing risk from pesticides and highly hazardous chemicals. This approach will not only reduce risk to health but also ensure that there is food security. (GBF Target 7).

4. CONCLUSIONS

Challenges that current economic systems pose to children's rights need to be tackled in a systemic way. The targets of the GBF can be supported by human rights-based approaches. The Convention on the Rights of the Child (CRC) and the General Comment 26 of the UN Committee on the Rights of the Child (2023) offer critical yardsticks and means to advance the implementation of the GBF by defining the substantive rights of children and by demanding children's participation in decision-making and systematically assessing their best interests.

Food systems need to be transformed. Unsustainable food systems cause existential threats through their climate and biodiversity impacts which directly and indirectly put at risk the life, survival, wellbeing, and development of

children. States have a duty to transform food systems into ones that align with the best interests of the child. This will allow children to realize a wide range of interconnected rights: the right to life, the right to food, the right to health, and the right to a healthy environment. The General Comment 26 emphasises the need for transformative changes in industrial agriculture and fisheries to promote sustainable development and to prevent malnutrition.

Children's increasing role as biosphere defenders further highlights the importance of children themselves in defending nature and their rights. GBF Target 22 on participation requires facilitation of biodiversity information in a child-sensitive format. Spaces at various levels are needed to hear and integrate children's perspectives into ecosystem and biodiversity governance without compromising the rights of children to education and leisure.

Humanity can no longer afford to approach sustainability in a fragmented and short-term manner: climate change, biodiversity, water, food security and nutrition are deeply interconnected. Children, by default, are the heavily impacted by the outputs and outcomes of economic sectors. Their interests must not only be represented but must also drive the outcomes in the short and long term.

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MOTHER EARTH-CENTRIC ACTIONS: FROM A PREMISE OF COMPENSATING DESTRUCTION TO NURTURING BIOCULTURAL RIGHTS

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Abstract. This article examines intersections and possible mismatches of biocultural rights and relational values of biodiversity with some top-down conservation instruments

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and financing mechanisms stated in target 19 of the Kunming-Montreal Global Biodiversity Framework (GBF). Based on our research on diverse conservation approaches in Finland and Colombia, the objective is to invigorate an alternative premise to biodiversity conservation emerging from nurture, care and solidarity and collective actions rather than a cycle of destruction and compensation. We see the former as transformative approaches enabling socioecological sensitive conservation, whereas the latter promote affirmative approaches that at worst fail to address the root causes of our biodiversity crises and uphold the status quo. Alternative approaches place particular emphasis on public funding to interlink GBF Target 19 sections a and b with section f.

Keywords. Conservation financing, biodiversity offsets, biocultural rights, collaborative management, rights of nature

1. INTRODUCTION

The Kunming-Montreal Global Biodiversity Framework (GBF) commendably approaches biodiversity conservation in an integrated manner, considering multiple tools and solutions to reduce threats to species loss and ecosystems' degradation while meeting human needs through sustainable use. Through GBF Target 19 (f) [1], the Convention on Biological Diversity Parties commit to "Enhancing the role of collective actions, including by indigenous peoples and local communities, Mother Earth centric actions and non-market-based approaches including community-based natural resource management and civil society cooperation and solidarity aimed at the conservation of biodiversity". The footnote in this target 19 further specifies what is meant by "Mother Earth centric actions" as ecocentric and rights-based approaches enabling harmonic and complementary relationships between peoples and nature, fostering the continuity of all living beings and their communities and ensuring the non-commodification of environmental functions of Mother Earth. Complementary to this target, various other GBF targets (Targets 1, 3, 5, 9, 21 and 22 of the Kunming-Montreal GBF) also mention the need to respect the rights of indigenous peoples and local communities (IPLC).

Yet, more research and clarity are needed to understand how to implement the commitments under target 19 (f) on enhancing collective action and non-market-based approaches to conservation into practice and how target 19 (f) aligns with the other financing mechanisms mentioned in target 19 a-e, particularly private financing and market-based approaches (Target 19 (c) and (d) of the Kunming-Montreal GBF). This is partially a question of national and local policymakers and environmental authorities being mindful of locally successful community and grassroot conservation initiatives, the underlying values and worldviews behind these initiatives and aiding to mainstream them in a locally appropriate, inclusive and socio-ecologically sensitive manner.

This chapter builds on forthcoming articles discussing both top-down managed and alternative approaches to biodiversity conservation [2,3]. It is based on research on biodiversity offsetting projects (considered top-down approaches) in the departments of Lapland, Finland and La Guajira, Colombia and alternatively managed conservation initiatives emerging from IPLCs also in Lapland and La Guajira. The data of the case studies was collected in 2023 and 2024 and consists of 18 interviews with 45 people, field observations and analysis of policy documents and grey literature. The forthcoming articles analyse how biodiversity offsets and alternative conservation frustrate or facilitate epistemic justice and recognition justice. This article further discusses some of the problems related to ostensible inclusiveness, non-collaborative governance, and misrecognition of plural ontologies that are prevalent in many conservation policies and instruments and often rooted in their funding premises [2–4]. We seek to shed light on the complexities of implementing GBF

Target 19 in practice, in particular the challenges arising from the divergence between the premise of compensatory destruction underlying Targets 19 (c) and (d) and the premise of care and solidarity underlying Target 19 f and the overall GBF vision of living in harmony with nature, and peace with nature -the focus of the 2024 CBD-Conference of the Parties 16th .

2. FROM A PREMISE OF COMPENSATING DESTRUCTION AND ENDLESS RESTORATION

Our first biodiversity offsetting case study is related to the Cerrejón open pit coal mine located in the department of La Guajira, in the northern tip of Colombia. The mine, currently owned by Glencore, began its operations in 1983. Cerrejón is an important economic actor in Colombia as it employs approximately 10 000 people and contributes 45% of the department's GDP [5]. The mine and its operations have negatively impacted several local communities, including several Wayuu indigenous communities living in the area. Controversies around Cerrejón have related to for example water use and access, air and soil pollution, displacements of local communities and the unsatisfactory use of free, prior and informed consultations (FPIC) [e.g., 6, 7]. As part of an updated Integrated Environmental Management Plan (2014) [8] Cerrejón presented their plan of environmental compensations, encompassing biodiversity offsets based mainly on restoration and conservation of the ecological corridor Wüin-Manna.

A network of Wayúu, peasant and afro-descendant run community plant nurseries form part of the social element by which the company incentivises participation in the offsetting activities and management, aiming also to 'strengthen the social and cultural values of the territory' [8]. Members of the network have been mainly satisfied with the opportunity to gain economic benefits and capacity building on managing a plant nursery by working with the mining company, while also being able to use their traditional knowledge of local seeds and plants in their activities. However, privatization of lands for mining has also brought restrictions on their access to certain areas when working with Cerrejón, as well as a lack of empowerment and recognition of their relational values on a broader level in the context of the offsetting policy as IPLCs, are unable to contribute to what can and cannot be offset in the first place, or whether offsetting as a principle is even ontologically acceptable (can Mother Nature be commodified?) [3].

There has also been discontent from some communities regarding any collaboration with Cerrejón and allegations of offsets and restoration activities used as a license to trash [3]. The economic benefits of restoration activities also remain marginal and unevenly distributed compared to the socio-environmental trauma caused by the mine and private development projects in the region. These traumas include e.g. ruptures to the social fabric between and within communities caused by compensatory measures distributed unequally, restricted access to freshwater leading to health issues and deaths, and disruptions in the relationality of the Wayúu and their territories [e.g. 6, 9, 10].

Cerrejón has become one of the main conservation actors and financers in the department of La Guajira through its environmental offsetting obligations and work. While seemingly just, it has diminished the authority of local environmental governance and also IPLCs in the area and led to corruption and illegitimacy of local authorities in the eyes of local people, leaving a legacy of distrust and thus potentially hampering the effectiveness of other conservation efforts that are undertaken in the region [3].

The second offsetting case study is related to a planned multimetal mine owned by AngloAmerican subsidiary Sakatti Mining in the municipality of Sodankylä in Lapland, northern Finland. The mine is currently in the environmental permit process, but AngloAmerican has evaluated that the mine will bring significant economic impacts to Sodankylä and the region of Lapland through employment and investments [11]. AngloAmerican has voluntarily made a pre-emptive purchase of 2900 ha of Intact Forest Landscapes for 10,4 million EUR from the

Inari Collective Forest, 125 kilometres north from the planned mining site, to offset degradation to the forest near the mine [12]. The Inari Collective Forest owners have been pleased with the purchase as it finally brought them income from a forest that due to certifications has not been attractive for commercial logging. The forest offset however does not compensate for the possible damages caused to the Viiankiaapa mire which is part of the European Union's Natura 2000 protected areas network covering most valuable and threatened species and habitats and would require an exemption permit and is obligatory to be offset with a similar ecosystem [13, 14].

Local people of Sodankylä have been upset by the distance of the offset and the economic benefits of it falling in the hands of the Inari Collective Forest. The offset based on the protection of the Intact Forest Landscape also had no direct participatory process for the Sámi indigenous reindeer herders affected by the management of the Inari Collective Forest [3]. Likewise, as a cyclically place-based activity, the reindeer herders near the eventual mine see little relief in the offset located far from the current site and await a form of compensation, which may come only if the mine receives its environmental license and is actually constructed [3, 14]. AngloAmerican and researchers of the biodiversity offset have highlighted that the aim of offsetting is to ensure no net loss of biodiversity and that social and economic losses or those of ecosystem services may be offset through different procedures [3]. This is a generally accepted way of approaching offsets although there have been efforts to see how a more integrated approach of biodiversity and people could be achieved in the context of offsetting [15, 16]. This separation of biodiversity and humans is also problematic in the context of Lapland and reindeer herding as it runs counter to the way the Sámi indigenous people relate to their land and nature and perceive traditional and place-based knowledge as central to sustainable use of their lands [17]. This illustrates some of the risks of subjecting biodiversity to a market economy without adequate institutional legitimacy and infrastructure, and effective human rights and biodiversity safeguards.

The offset by AngloAmerican is also a benchmark for biodiversity offsetting in Finland as it is the first offset carried out by a company. Many Finnish companies felt that the offset, costing over €10 million, set an unfair precedent, as most companies may not be able to justify such a cost to themselves, so they will turn to other nature amends that may not be as closely monitored and verified by public authorities [3]. Conservationists and NGOs also saw the offset as an example of big companies buying a license to trash and that state had done too little to safeguard both the degradation and offset sites and ensuring fair distribution of benefits. There was also a worry that by enabling the offset of the forest, the door for degrading also the Viiankiaapa Natura site would become more open. Various of the problems present in the Finnish case study relate to the inadequate communication of what biodiversity offsetting is and lack of deliberation of what it should be in a given context [3].

Although ideally designed with social safeguards [1, 19], offsetting policies and schemes, such as those of Colombia and Finland, with elements to consider local people, promote participation and inclusiveness of local communities and some form of benefit-sharing system, often only achieve this ostensibly on both national and local levels. Ostensibly in the sense, that both the national government fails to include and recognise IPLCs in the actual design of the policy and that the actors implementing the policy fail similarly in the actions carried out under the policy locally. This can lead to misrecognition of local knowledge (epistemic injustice), different ways of relating to nature and territorial rights, among other things. These examples of ostensible participation and the lack of real collaborative governance in offset policies tend to underpin mere affirmative recognition, leaving the underlying causes of socio-environmental unsustainability unaddressed.

Finally, as biodiversity conservation becomes part of corporate social responsibility policies and is mainstreamed through national, regional or global agendas, such as the European Union's Green Deal, it can become detached from local realities. The rhetoric of biodiversity offsets and the possibilities of

restoring biodiversity in the cases of Colombia and Finland mentioned above can lead to a serious overestimation of our actual ability to restore nature. This is not to say, of course, that restoration is bad - it is of the utmost importance for our planet, and conservation action is almost always preferable to inaction [20]. Rather, we urge a shift from the current mindset that we can destroy any species and habitat (common or threatened) because they can eventually be restored to one that truly avoids loss and cares for and nurtures nature through approaches that promote solidarity and transformative remedies for redistribution and recognition injustices. These transformative remedies refer to those that deconstruct and restructure the underlying premises and structures that cause injustices in environmental policy and governance that have enabled environmental degradation and unsustainable use of natural resources [21]. As such, the GBF lists tools and solutions to reverse biodiversity loss, but none of them promote alternative ways of relating to the world that could be at the root of solving biodiversity crises.

3. NURTURING COMMUNITY, RELATIONAL VALUES AND BIOCULTURAL RIGHTS IN BIODIVERSITY CONSERVATION AND SUSTAINABLE USE

The first alternative case study is the rewilding of the Njauddam River flowing from Finnish Lapland to Norway. Restoration and rewilding of the river began in 2011 through the Landscape Rewilding Programme (LRP) of a Finland-based non-profit cooperative called Snowchange and the indigenous Skolt Sámi. It is a project based on collaborative management of the river and its catchment area including the planning of the restoration, mapping of Sámi land use, reforms to the management of different fish species of the river and restoration of the watershed. The objective of the rewilding programme is through democratic governance of the restoration work to ensure that community needs are also met while rewilding biodiversity hotspots and creating carbon sinks [22]. The work of the Snowchange cooperative is financed by donations, project funding and loans, which enable the cooperative to decide on the most appropriate approaches to carry out its conservation work.

The Skolt Sámi themselves decided that their conservation efforts and the collaboration with Snowchange would focus on the Njauddam river and strengthening the resilience of the traditional salmon fishery, which is part of their cultural identity [23]. Thus, they were in charge already in making the decision of the area to be restored and the objectives of the restoration and have been guiding the work throughout the process. The collaborative management plan of the river contains the principles of the rewilding, which are based on workshops, archival materials, local and indigenous knowledge and observations and scientific data on how to best manage the area [23]. The collaborative management plan sought decisions and strategies to conservation that would be based on plural ontological understandings of the river, what the river is – including understandings provided by measurable indicators and data but also those underpinning the Sámi way of life [2]. Thus, importance was given to the historical understanding and sensitivity of place and the way local worlds depend on the cycles of seasons and local resources and landscapes.

In addition to democratic and collaborative governance throughout the project, the rewilding of Njauddam rests on a non-hierarchical partnership between indigenous and western scientific knowledge, promoting epistemic justice and recognition of local worlds [2]. This non-hierarchical approach enabled the Skolt Sámi indigenous knowledge to be equally valued and promote action rather than being reduced to a cultural perspective on the river [2]. Community-based monitoring of the river was central to the rewilding and also included observations on changes in the environment and mapping of lost sites of cultural importance thereby allowing a broader socioecological understanding of the river and the drivers of environmental degradation in the area [2]. This recognition of diverse epistemes and relational views on sustainability also

allows us to hear and learn from the non-human about what are appropriate forms of conservation in a given setting [24].

The second alternative case study is the granting of rights to the Rancheria river and its affluents in La Guajira, Colombia. Rights of nature approaches are generally extensive in their ecological conservation impact potential as they often address whole ecosystems, such as rivers or mountains. The draft law 171 including a detailed explanation of its motives was presented in 2022 by the indigenous Wayúu senator Martha Peralta Epieyú and passed in congress in August 2024 [25, 26]. The Rancheria river is the main water source and a place of everyday activities and coming together for the Wayúu, but also for rituals and spiritual activities and upholding their culture and language. Living with the river rejects a separation between culture with nature and illustrates the relationality of the Wayúu and their environment [7, 27]. The objective of the law is to halt the further ecological degradation of the Rancheria river and grant a central role for the IPLCs in the legal guardianship of the river and restore and respect their access and harmonious use of the river [2].

Similar to the rewilding of the Njauddam river the rights of Rancheria also seeks to promote community-based protection and management, though also highlighting the importance of public authority in collaborating in management and financing. Due to unsatisfactory experiences and results of strictly top-down conservation management and feelings of neglect toward their ontological position to the river by local environmental authorities, the Wayúu now seek to promote a biocultural and natures rights approach to the Rancheria river that is more fitting to their values and motives for conservation [2]. The idea of biocultural rights refers to seeing the conservation of biodiversity and humans as one and the same, thus extending rights to nature. These rights are based on the history of interactions between humans and non-humans, and in particular highlight the uniqueness and yet universality that IPLCs and their relationships with the non-human world represent for all of humanity [28]. Recognition of biocultural rights illustrates the idea that through our relationality we have moral and legal responsibility to care for non-human relatives and to educate others on this responsibility [2]. The collaborative management is thus an opportunity to also transmit and extend the values of care, nurture, and solidarity towards the non-human to all those participating in the management of the river. Giving a central role to the IPLCs also enables the integration of indigenous knowledge into the protection plan of the river that is to be produced now that the law has passed.

Though still something largely “on paper”, the granting of rights to non-human entities and ensuring that they are guarded by IPLCs, and authorities is an ontological shift in western legal processes as indigenous law and worlds leak into it [2, 29]. Yet, as noted above, the legacy of mistrust in local environmental authorities has also the potential to weaken the impacts of legal efforts to protect the Rancheria river. These types of approaches can also become co-optations of indigenous ontologies to reframe business as usual conservation as something communally desirable and acceptable. Indications of this are also apparent in the Rancheria case as some communities are unsatisfied with how the law initiative was socialised and claim that the Wayuu senator’s persona was used to promote the image that all IPLCs in the region support the initiative [2]. Ensuring local ownership and transparency of rights of nature initiatives from the very beginning is essential. Strengthening the institutional capacity of the local authorities and institutions can be seen as crucial for successful natures rights approaches [30]. Ensuring also that degradation and harm done to the river is punished for accordingly was also seen as sending a positive signal on the severity of protecting the rights of the river [2]. These will partially depend on adequate funding for protecting, managing, and monitoring the river. National funding is at the core of most rights of nature approaches that do not rest on the commodification of ecosystems, such as the Rancheria.

These alternative approaches in biodiversity conservation invite us to reframe and hopefully transform the premises of conservation and restoration – why are we realising these activities? As the current Euro-modern logics of conservation

have failed to curb biodiversity loss, there is significant scope for learning from pluralities of ways of relating to the world that promote different, arguably stronger, approaches to biodiversity conservation and sustainable use [31]. Although mechanisms such as the mitigation hierarchy, linked to offsets, exist and start from avoidance [32], this is often seen as something passive rather than active care and nurturing of our non-human community. The markets, laws, policies, science and many of our institutions that govern biodiversity do not often follow the logic of Earth's life support systems [29]. A transformation on what and how we know and exist in this world is required to prioritise what provides the best care for nature. This does not mean completely neglecting any way of being in the world but erasing the domination of one ontology over another to allow for a pluriverse - a peaceful and dignified coexistence of worlds [33]. Extending ideals of solidarity and rights to non-humans could help to strengthen existing biodiversity-related instruments.

The funding bases of the two alternative case studies were rather different illustrating that both public and private funding is acceptable and necessary also in community-led projects if it does not weaken the socioecological sustainability of the conservation projects. Overall, public funding and domestic budgets continue to be the main source of conservation funding [34], which is just as nature should be perceived as a common good. Ensuring the impartial and public financing of locally induced and "non-market-based" conservation is crucial as they are rarely linked to destruction and instabilities of the markets and outside actors.

4. CONCLUSIONS AND POLICY RECOMMENDATIONS

Though target 19 is undoubtedly about financing conservation it specifies little on how to finance conservation that adheres to the "non-commodification of environmental functions of Mother Earth" [1], biocultural rights and acknowledging relational values of biodiversity alongside financial and instrumental ones. Even more problematic, is a tension between GBF target 19 (c-d) and 19 (f), the former being underpinned by a general rhetoric of unavoidable development and continued biodiversity destruction that can be compensated by restoration and protection efforts vis a vis GBF commitments to avoid ecosystems degradation and caring for and nurturing nature as part of our community of life.

Biodiversity offsets are one of the innovative schemes to finance conservation mentioned in Target 19 (d) along Payments for Ecosystem services schemes, carbon offset, green bonds and benefit-sharing mechanisms. These mechanisms reflect the more general trend of private actors and markets gaining importance in biodiversity conservation, even over public financing and governance [18]. The underlying justification for private finance is generally that of the "polluter pays" principle. However, linking conservation with degradation can be seen as creating perverse incentives and outcomes for conservation and lead to undesirable dependencies on multinational companies or other "outside" actors as illustrated by the examples above. These problems are not to say that private funding for conservation is undesirable, but that any market-oriented conservation will obviously require significant resources from the public sector in the form of monitoring, which may undermine the true cost-effectiveness of private funding.

The examples above and relationality and conviviality in conservation and life are not practically or ideologically novel, yet as they are not the mainstream in conservation practice, there may be reservations on their impacts to our

institutions and business as usual. Ideally however, one way of doing things would not dominate another, but rather locally appropriate solutions could be fostered. This would also mean that conservation actors – public, private, communities, NGOs etc. would be open to selecting and adjusting conservation practices to be more socioecologically sensitive and particularly be aligned with IPLC rights and prevent violating these rights. This would mean embracing that Target 19 of the GBF promotes a variety of ways to finance conservation that can be suitable for different situations. Diverse approaches to sustainability, conservation and relating to nature should be recognized and respected and one conservation approach should not be preferential at the expense of others. Further, existing conservation instruments, such as offsets, should be shaped to adhere to the logic of the natural world, not human-centred institutions. Nurture and care should be an objective of these instruments rather than advancing the premise of compensating destruction for development. Our case studies show risks and negative impacts that emerge from offsets having this underlying premise and poorly reflecting how biodiversity is valued locally.

The preamble and many of the Targets of the GBF currently refer to respecting IPLCs and thus all sections of Target 19, not just 19 (f), should be interpreted in coherence with respecting IPLCs rights. We also advocate scaling-up and mainstreaming conservation initiatives that emerge from the grassroots to foster collaborative governance and ensuring public finance and adequate monitoring for these initiatives. This requires also promoting research and experimentation on integrating different legal systems into existing institutions. This would entail recognising the agency of IPLCs and furthering an understanding of the multiple values of biodiversity and accepting the public costs of financing Mother Earth-centric actions and nurturing interspecies solidarity.

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RESPONSIBLE BUSINESS CONDUCT: EU DUE DILIGENCE AND TRADE INSTRUMENTS' IMPACT ON HUMAN RIGHTS AND BIODIVERSITY

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Abstract. Several EU laws adopted or strengthened under the EU Green Deal (2019) target sustainable production in third countries and across international supply chains. This chapter employs five principles of environmental democracy to analyze the content and implementation of selected EU economic instruments. Recent developments in three areas of forestry, corporate due diligence and trade agreements are discussed. Several implications for the GBF are distilled to facilitate the implementation of both EU laws and the GBF.

Keywords. Due diligence, free trade agreements, deforestation, stakeholder engagement, corporate accountability

Disclaimer: The chapter synthesizes and further develops findings from Claudia Ituarte-Lima, Radu Mares, 'Environmental democracy: Examining the interplay between Escazu Agreement's innovations and EU economic law', *Earth System Governance* 21 (2024)

1. INTRODUCTION

The Global Biodiversity Framework (GBF) calls for the integration of biodiversity into public and private activities, and their progressive alignment in all levels of government and across all sectors (Target 14). This chapter focuses on recent regulations of commercial activities in line with Target 15, which aims at sustainable production and consumption across international value chains.

Businesses should undertake due diligence to prevent, mitigate and address their adverse impacts on human rights, according to the principal UN document in this area, the Guiding Principles on Business and Human Rights (UNGPs), adopted in 2011. Perhaps the most notable follow up to the UNGPs has occurred in Europe under the auspices of the EU Green Deal of 2019 [12], with new laws requiring human rights and environmental due diligence and increased corporate transparency in a context of value-based trade policy.

These innovations in corporate sustainability and value chains regulation have coincided with notable developments in environmental law. Indeed, the convergence of environmental and human rights law is manifested in the UN recognition of the human right to a healthy environment [24]. Furthermore, at the regional level, two treaties – the Aarhus Convention [23] and more recently the Escazu Agreement – set standards for environmental democracy through access rights and innovative participatory processes.

With such legal developments, rights-holders will claim their rights against private and public entities in a new context. This chapter builds on these developments to examine the impact of some EU economic laws on the realization of the right to a healthy environment, including biodiversity. The analysis concentrates on three EU regulatory areas: Deforestation Regulation (EUDR) [4], the Corporate Sustainability Due Diligence Directive (CSDDD) [3], and Free Trade Agreements (FTAs). The five pillars of environmental democracy – rights to information, participation, access to justice, biosphere defenders, and cooperation – are used to explore the content and impact of EU economic laws on the implementation of the GBF.

2. THREE EU ECONOMIC INSTRUMENTS

2.1. Deforestation Regulation

Since 2003, the EU's forestry legislation evolved to encompass three instruments: the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan [10], the Timber Regulation (EUTR) [2], and the Deforestation Regulation (EUDR) repealing the EUTR. The FLEGT framework covered comprehensively both the export and import sides of European timber supply chains. Importing illegally harvested timber would be banned in the EU market. On the export side, FLEGT provided the option for producing states to conclude a Voluntary Partnerships Agreement (VPA) with the EU that would facilitate exports to the EU market.

Lessons from implementing the EUTR and FLEGT informed the design of the EUDR. Thus, accounting for the narrow scope of the EUTR, the EUDR criterion for acceptability of exports to the EU market has expanded to encompass non-deforestation as well as legality. Furthermore, the EUDR applies to seven commodities driving deforestation and not solely timber. Companies would have to undertake due diligence: identify the source of these commodities, issue a due diligence statement and an annual report (Articles 4, 8, 12). Cooperation between the EU and producer countries remains a policy objective.

2.2. Trade agreements

All EU FTAs include a trade and sustainable development (TSD) chapter. These TSDs are noteworthy for their participatory institutional set-up that includes civil society groups: domestic advisory groups (DAGs) are tasked with monitoring and providing recommendations and there are also annual Civil Society Forums (CSFs). The EU has historically viewed FTA implementation as cooperative rather than punitive. However, the year 2022 marked a turning point: the EU intends to utilize trade sanctions for some breaches of TSDs and to improve the functioning of the TSD chapters [13].

2.3. Due Diligence Directive

The CSDDD introduces mandatory environmental and human rights due diligence for larger European companies and foreign companies exporting to the EU market (Article 5). All such companies are expected to take preventive and corrective measures regarding adverse impacts throughout their value chains. Notably, there are administrative sanctions and civil liability providing compensation to victims.

By comparison, the CSDDD is more encompassing than the EUDR: they are both due diligence laws, but the EUDR is restricted to several commodities, has a narrow screening criterion limited to deforestation and legality, seeks traceability of commodity chains, and does not have a remedial obligation. On the other hand, the EUDR is more punitive than the CSDDD and contains an explicit trade ban which makes it a rather trade-restrictive measure under the WTO regime [22].

3. FIVE ASPECTS OF ENVIRONMENTAL DEMOCRACY

The GBF refers to access rights in Target 22 which mentions information and participation in decision-making, and access to justice related to biodiversity. Capacity building and support for development is covered in Target 20. In the context of EU economic laws, there are likeminded participation provisions, complaint mechanisms and supportive measures. This section provides insights from the three EU economic laws and tracks the five dimensions of environmental democracy.

3.1. Access to information

Regarding access to information, forestry VPAs refer to transparency as a precondition for effective participation and, therefore, require governments to disclose certain types of information [6]. In contrast, the EUTR did not lay down a corporate obligation to publicly report on due diligence. By comparison, the new EUDR adds transparency, which is built in the due diligence obligation. Similarly, the CSDDD increases transparency through a corporate obligation to release an annual report (CSDDD, Article 16).

3.2. Participation

Regarding participation, the EU FTAs rely on participation of civil society organizations (CSOs) at various stages of FTAs: the impact assessment phase where CSOs are consulted, negotiation phase, implementation stage through the DAGs, and enforcement phase through a right to submit complaints to the Single Entry Point and amicus curiae briefs before the panel of experts.

Under the FLEGT VPAs, participation was a foundational principle. It permeated all stages from pre-negotiation to negotiation and implementation of a VPAs, and that was meant to promote good governance in the forest sector [6]. For example, EU indicated to producing countries that arriving at a legality definition requires multi-stakeholder consultation and the government must guarantee access rights and strive for consensus among stakeholders [6].

In contrast, the EUTR with its corporate due diligence focus had no participation provisions. However, the EUDR introduces participatory provisions. For example, some companies are allowed to go for a simplified due diligence procedure when importing from a low-risk country. Still, if the operator is made aware of any information, including ‘substantiated concerns’ from CSOs pointing to higher risk, the operator must shift to a full due diligence procedure (EUDR, Article 13.2). The European Commission also must engage with exporting countries, which ‘should allow the full participation of all stakeholders’, strengthen the rights of ‘forest-dependent communities’, and ensure public access to ‘forest management documents and other relevant information’ (Article 30).

In the newly adopted CSDDD, ‘meaningful engagement’ with stakeholders is expected at several stages of the corporate due diligence process. That entails

stakeholder consultation, for example, when identifying adverse impacts, drafting preventive and corrective action plans, and relying on multi-stakeholder initiatives (Article 13).

3.3. Access to justice

Regarding access to justice, commonly referred as access to remedy in due diligence instruments, the forestry laws have limitations. Rightholders and civil society groups can submit their 'concerns' under the VPAs to the Joint Implementation Committee [6], as well as to competent authorities under the EUTR and EUDR (EUDR, Article 31). There is however no civil liability provision and judicial mechanism to obtain compensation for damage.

Similarly, under FTAs, only a soft dispute resolution system exists for TSD breaches. The enforcement process of FTAs typically includes a right to public complaint, but subject to state discretion on whether to initiate proceedings, followed by a consultation between states, and culminating with setting up an independent expert panel that issues public reports and recommendations [25]. Since 2020, the EU set up the Single Entry Point to facilitate public submissions for non-compliance with EU FTAs [11]. However it remains unclear 'what type of remedies complainants can expect' [15].

Most notable is the CSDDD which gives foreign plaintiffs access to European courts and a right to full compensation through its civil liability provisions (Article 29). Furthermore, as part of their due diligence, companies are asked to set up a complaint procedure extending to their entire value chain; individuals, trade unions and CSOs can submit their 'legitimate concerns' (Article 14).

3.4. Biosphere defenders

Regarding biosphere defenders, this is the least developed aspect across the EU economic instruments with no or little references. None of the three forestry instruments mentions biosphere defenders. Only the CSDDD contains express provisions (Article 14). While some leading companies see the protection of biosphere defenders as part of their responsibility to respect human rights [1], 80% of the companies assessed in the Corporate Human Rights Benchmark scored poorly in regard to protecting the rights of human rights defenders [26].

3.5. International cooperation

Regarding cooperation, the bilateral FLEGT VPAs contained capacity strengthening measures to improve forest governance [10]. The EUDR has a provision on cooperation with third countries and aims for partnerships especially with countries classified as high-risk under the newly introduced country benchmarking system (EUDR, Articles 29 and 30). To facilitate compliance with the EUDR the Commission announced Forest Partnerships with exporting states [7].

FTAs are cooperative in the sense that they are negotiated agreements instead of unilateral instruments of the EU. The monitoring and soft dispute resolution process are done through joint committees that work in a cooperative mode and contain support measures.

The CSDDD, just like the EUDR, is a unilateral EU instrument. It contains cooperative and supportive measures to alleviate burdens on small producers in third countries and reduce the risk of trade diversion away from high risk exporting countries. To address such concerns, the CSDDD contains 'accompanying measures' (Article 20) to protect and support actors across the value chains [18].

4. IMPLICATIONS FOR GBF

4.1. Sustainable production in Target 15

The GBF envisages a 'whole-of-society approach' and 'human rights-based approach' (Section C), and Target 15 is dedicated to sustainable patterns of production. This target covers transnational companies and financial institutions and asks states to take measures to 'encourage and enable' businesses to assess and disclose their impacts on biodiversity.

However, Target 15 reveals two aspects where EU instruments show that more stringent action is warranted. Compared with CSDDD, Target 15 calls on states merely to promote corporate due diligence rather than to make due diligence a legal obligation subject to sanctions. Furthermore, Target 15 mentions nowhere the crucial issue of remediation of corporate harm. This is at odds with soft law (e,g, UNGPs) and hard law (CSDDD) where remediation is an indispensable element of corporate responsibility.

4.2. Participation and stakeholder engagement in Target 22

Target 22 in GBF refers to the 'full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information'. Notably, that formulation does not include rights as environmental democracy treaties like Aarhus and Escazu do. In that respect, some dilemmas and commonalities between the GBF and EU economic instruments are apparent.

First, a problematic aspect raised by the current narrative and set-up in economic laws refers to the weight given to CSO participation. Participation is widely seen as enhancing the sustainability impact and legitimacy of economic laws, whether they are corporate due diligence or bilateral state agreements [5]. However, participation is resource intensive and fraught with difficulties as seen in the context of FTAs. A comparative evaluation of DAGs considered that involving civil society on an institutional level is 'an important step in the right direction' but there is 'a risk of increasing distrust if this turns out to be merely a tool for pseudo-participation' [20]. Harrison noted that civil society involvement is 'at the heart of the operation of the TSD framework' but drew attention that 'the weight of expectation has been loaded' on participation and dialogue mechanisms while there are operational deficiencies and political marginalization [17].

Second, both the GBF and EU economic laws contemplate principles of good governance. The analysis of the three examined EU economic instruments reveals that access rights and biosphere defenders' protection appear as principles more often than rights. That raises questions of how to evaluate such provisions that do not guarantee rights but can still bring economic leverage and open institutional spaces for public participation. As mentioned, the forestry VPAs record has been disappointing and deficiencies regarding EU FTAs and their TSD implementation were pointed out [21].

However, various assessments documented the merits of VPA processes especially regarding stakeholder participation. For instance, the NGO FERN indicated that 'There is broad consensus that despite the challenges, VPAs have improved sustainable forest management and forest conditions, governance, and local communities' rights' [16]. Furthermore, some of the EU institutional innovations in FTAs, such as the DAGs, have not functioned well, but nevertheless a study noted: 'Non-EU DAGs do appreciate the potential leverage provided by the European Commission and EU DAGs to access and influence their own government' [20].

4.3. ESGs and materiality standard in Target 15

The GBF calls for a 'whole-of-society approach' and Target 15(a) importantly mentions that businesses should monitor and disclose their 'risks, dependencies and impacts'. That points to the rapidly developing area of Environmental, Social and Governance (ESG) accounting and investment. The Target and

associated Indicator reflect the 'double materiality' approach in corporate reporting. Only in 2023 did authoritative ESG standards emerged, from the EU and the International Sustainability Standards Board (ISSB) [19].

These ESG standards are crucial for unpacking the 'interconnections between biodiversity, business and finance' that Target 15 refers to. However, biodiversity and human rights aspects have so far received insufficient attention in ESGs and creating metrics in these areas is not without difficulties. Importantly, these two new ESG standards counteract the greenwashing scourge that engulfed unregulated ESG practice in the last two decades. It will be essential for the GBF that the 'double materiality' standard for biodiversity (the EU standard) is developed and accepted rather than the more narrow 'financial materiality' standard (employed by the ISSB).

4.4. Unilateral versus bilateral and multilateral instruments

When advancing human rights or biodiversity aims in economic laws, one important policy choice refers to pursuing bilateral versus unilateral measures. In this regard, the EU experience in forestry and trade points to a dilemma. The FLEGT VPAs and FTAs are bilateral approaches that reflect the states agreement to link economic activity and sustainability. By the European Commission's own assessment, the VPA system 'has not delivered' and has contributed little to reducing illegal logging [9]. The main EU trade partners have not shown interest in VPAs. The purely cooperative approach in EU FTAs also showed limitations. The result has been a 'hardening' of EU's stance manifested by either adding sanctions to the promotional approach of FTAs or relying more on unilateral measures containing corporate due diligence obligations, as evidenced by the EUDR and the CSDDD.

The economic laws analyzed herein can and have been challenged as creating illegitimate restrictions on trade and ill-considered effects in producing countries, despite aiming to promote sustainable production and consumption. To ensure the legitimacy and efficacy of economic instruments, multilateral frameworks and processes like the GBF have a role to play by incorporating more stringent expectations regarding business responsibilities.

5. CONCLUSIONS AND RECOMMENDATIONS

The EU Biodiversity Strategy [8] is more explicit on the interconnections between business, finance, trade and biodiversity than the GBF, especially the Targets 15, 20 and 22. EU economic laws contain important provisions to advance corporate sustainability and the five pillars of environmental democracy.

At the same time, they have been riddled with tensions, deficiencies and complexities in content and implementation. The chapter took account of some rapidly developing regulatory frameworks under the EU Green Deal and distilled lessons and implications for the GBF.

Regarding Target 15, the GBF falls behind the coverage and stringency of some EU laws. To achieve implementation of this target, important advances in EU due diligence laws and ESG standardization should be accounted for and promoted through multilateral settings such as the GBF.

Regarding Target 22, the GBF and EU instruments tend to share a view of stakeholder engagement as a principle of good governance rather than actionable rights. Nevertheless, the dilemmas and complexities of incorporating access rights in economic instruments are instructive to the GBF and its ambition to mobilize the private sector through its 'whole-of-society approach'.

Regarding Target 20, capacity building and cooperation among states is an imperative emphasized in all instruments. The new corporate obligations and leverage brought by economic instruments can catalyze innovative or sustained forms of capacity building.

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HUMAN RIGHTS INNOVATIONS, PESTICIDE REGULATION, AND TRADE GOVERNANCE: FROM PESTICIDE TOXICITY TO HEALTHY AGROECOLOGICAL SYSTEMS

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Abstract: In this chapter, we argue that achieving Target 7 of the Kunming-Montreal Global Biodiversity Framework involves integrating various targets of the Framework. It requires integrating biodiversity in pesticide-related policy formulation across sectors, including external trade (in line with Target 14). It also involves promoting more effective and inclusive public participation in the approval of pesticides (in line with Target 22), allowing diverse constituencies with differing views on nature to voice their opinions, and

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integrating consumer concerns more effectively. This approach will contribute to filling inclusiveness gaps in two highly technical areas: trade and pesticide policies, with potentially transformative policy outcomes.

Keywords: integrate biodiversity, maximum residue levels, participation, pesticides, right to a healthy environment

1. INTRODUCTION

Pesticides are substances, or mixtures of substances, used to protect crops by killing or controlling pests or weeds. They include herbicides to control weeds, for example glyphosate; insecticides to control insects, such as neonicotinoids (neonics); as well as fungicides to control fungi. There is a technical distinction between the so-called "plant protection products", which are the commercial products sold to the public or licensed applicators, and "active substances", which are the essential pesticidal ingredients that enable the products to kill or control pests or weeds [1]. For example, Roundup TM is an herbicide (plant protection product) containing glyphosate (active substance). Since the term "plant protection product" is positively connotated ("protection"), in this paper, we use the general term "pesticides" with reference to both the commercial product and its active ingredient, even though the term is less technically precise.

While pesticides have contributed to increased crop yields worldwide [2], their use is associated with significant ecological, health, and social risks [3]. A high-profile example are neonics, a widely used class of insecticides with documented adverse effects on biodiversity as well as potential harms to human health. Neonics are toxic to pollinators, especially honeybees and wild bees, and are associated with the decline of bee populations and colony collapse disorder [4–8]. They also pose a threat to surface waters and the diverse aquatic and terrestrial wildlife that depend on these ecosystems [9] Because they persist in the environment and can easily leach into water or runoff in surrounding areas, neonics may hinder biodiversity in refuge areas and jeopardize biological pest control in organic farming [10]. In addition to their ecological harms, neonics are suspected to compromise human health, with reported links to poor sperm quality and quantity, developmental thyroid toxicity, congenital malformations, as well as autism, memory loss, and tremors [11–14]. However, the limited number of studies, coupled with the methodological challenges in modelling real-life exposure to pesticide mixtures, make it difficult to draw definitive conclusions [15,16]. Despite the robust evidence of their impact on pollinators and ecosystems, and pending more conclusive evidence on their potential mutagenic, endocrine-disruptive, and neuro-damaging effects (for which there is "suggestive, but methodologically weak" evidence [15]), neonics continue to be extensively used in agricultural and urban settings. They are registered for use in more than 120 countries worldwide and are one of the fastest-growing classes of insecticides globally [9].

The large-scale commercialization of pesticides like neonics, harmful to biodiversity and potentially hazardous to humans, encroaches on Target 7 of the Kunming-Montreal Global Biodiversity Framework (GBF). Under that Target, states have committed to:

> *Reduce pollution risks and the negative impact of pollution from all sources, by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including […] reducing the overall risk from pesticides and highly hazardous chemicals by at least half including through integrated pest management, based on science, taking into account food security and livelihoods*

Target 7 addresses issues previously considered under Aichi Biodiversity Target 8

and links with the Sustainable Development Goal (SDG) targets 3.9, 6.3, 11.6, 12.4, 12.5, and 14.1 [17].

The commercialization of pesticides that are harmful to biodiversity and potentially harmful to humans also violates human rights law – specifically the human right to a clean, healthy, and sustainable environment recognized by the UN General Assembly in 2022. The substantive elements of the right to a healthy environment include "a safe climate, clean air, clean water and adequate sanitation, healthy and sustainably produced food, non-toxic environments in which to live, work, study and play, and healthy biodiversity and ecosystems" while the procedural elements include access to information, public participation, and access to justice [18,19].

The disconnect between pesticide regulation and environmental/human rights law reflects a fragmented legal landscape that fails to integrate biodiversity concerns coherently. We argue that there is an evident gap between states' commitments under Target 7 of the GBF and their trade and pesticide policies. This undermines the goal of integrating biodiversity into decision-making at every level and across sectors (Target 14, Integrate Biodiversity in Decision-Making at Every Level). In our view, this disconnect also reflects a lack of transparency and inclusiveness in trade diplomacy and pesticide authorization decisions – two highly technical areas that largely eschew public scrutiny. This conflicts with the aim of ensuring participation in decision-making and access to information and justice regarding biodiversity for all (Target 22, Ensure Participation in Decision-Making and Access to Justice and Information Related to Biodiversity for All).

In light of this, we argue that pursuing Target 7 involves "weaving" Targets of the GBF. This entails integrating biodiversity considerations into decision-making at different levels and across sectors (Target 14) while also fostering inclusivity and participation in the decision-making process (Target 22). This approach has the potential to challenge existing regulatory approaches to pesticides, favouring a shift towards more sustainable agricultural systems that involve reducing or avoiding pesticide use. The key tenets of this argument are discussed below.

2. INTEGRATE BIODIVERSITY IN DECISION-MAKING WITHIN ECONOMIC AFFAIRS, INCLUDING EXTERNAL TRADE

To achieve Target 7, which aims to reduce pollution from pesticides, including neurotoxic insecticides, to levels that are not harmful to biodiversity, it is important to link this target with Target 14. Target 14 focuses on integrating biodiversity into policies, regulations, planning and processes "within and across all levels of government and across all sector". While the emphasis is often placed on the role of environmental ministries, we believe that involving public officials responsible for agriculture and livestock, health, energy, and external trade is also critical.

There are good practices that can provide insights on country-driven efforts of policy coherence to address the interconnected health and environmental risks of pesticides. An example is Costa Rica's Public Policy on Agricultural Pesticides 2024–2034 [20]. This policy was developed jointly by the Ministry of Environment and Energy, the Ministry of Agriculture and Livestock, the State Phytosanitary Service and the Ministry of Health. The policy combines agricultural practices with public health, the environment and biodiversity, recognizing that this integration is essential for sustainable development and long-term food security. Public consultation with other institutions and the general public was conducted to develop the policy in accordance with article 361 of the General Law of Public Administration [21].

Coordination between environmental and health ministries on pesticide policies is a positive step. However, it is also important for trade and foreign affairs ministries, who represent states in international negotiations, to align their conduct with the commitment states have made regarding Target 14. When we refer to international negotiations, we are not only talking about environmental and human rights negotiations, but also trade negotiations at all levels.

Yet, there is a still a long way to go in cross-fertilization and coherent action, for

example as regards trade diplomacy at the World Trade Organization (WTO). Below we provide the example of Costa Rica yet it worth noting that this lack of coherency between countries' positions in trade international negotiations with those on environmental and human rights negotiations is also present in other countries. Costa Rica's trade delegates have strongly opposed stricter trade regulations regarding neurotoxic insecticides. They argued against an import restriction by the European Union (EU) on products containing traces of bee-killing neonics, stating that global environment concerns could not justify trade measures inconsistent with the WTO Agreements on Technical Barriers to Trade (TBT) or the Agreement on Sanitary and Phytosanitary (SPS) measures, which regulate non-tariff barriers in agricultural trade. While stressing that "addressing environmental concerns of a global nature is also a matter of the utmost importance to Costa Rica", they argued that this objective did not fall within the scope of the SPS and TBT Agreements [22]. Costa Rica also expressed concerns about the EU's hazard-based approach to pesticides, arguing that the multilateral trading system requires a risk-based approach to pesticide regulation, rather than considering the potential for harm due to the intrinsic properties of a chemical [23].

This contrasts strikingly with Costa Rica's international policy stance on environmental issues. Costa Rica championed the recognition of the right to a healthy environment in the UN Human Rights Council and thereafter at the UN General Assembly. Once the UN Human Rights Council recognized this right through resolution 48/13, Costa Rica's ambassador Catalina Devandas Aguilar, one of the co-sponsors of the UN Human Rights Council, said the decision would "send a powerful message to communities around the world struggling with climate hardship that they are not alone" [23]. At the UN General Assembly, Martiza Chan Valverde, representing Costa Rica and also speaking on behalf of Maldives, Morocco, Slovenia and Switzerland, then introduced the draft resolution titled "The human right to a clean, healthy and sustainable environment" (document A/76/L.75), noting that over the last 20 years, the call to establish the right to a healthy environment has been growing ever stronger at the international level as the world faces unprecedented crises of climate change, biodiversity loss, and pollution. She argued that the recognition of this right by the UN General Assembly would support UN Member States to "more coherently and effectively [fulfil] their human rights obligations on environmental matters, and to scale up efforts to guarantee a clean, healthy and sustainable environment for all" [24].

The lack of consistency between Costa Rica's posture on pesticides in the WTO context and in UN fora arguably reflects a "democratic deficit" in trade diplomacy, deriving from the range of constituencies and interests that can effectively shape negotiating positions and outcomes in trade diplomacy [25,26]. Trade policy is usually within the purview of the executive branch, with limited oversight by the legislative body [25,27]. Further, trade negotiations primarily fall under the responsibility of trade ministries, with little input from other branches of government concerned with broader societal interests, such as health, the environment, or human rights. In the event that inter-ministerial consultation processes occur, these processes are often mere formalities. Trade ministries tend to prioritize the interests of economically powerful sectors [26], overlooking non-trade concerns like cultural values associated, for example, with beekeeping or traditional agricultural systems maintained by indigenous peoples and local communities. There is also a risk of conflict of interest when trade officials move between public and private roles, especially vis-à-vis industries such as agribusiness that profit from pesticide sales.

Therefore, it is important to consider procedural devices and structural reform options at the WTO level to foster inclusiveness of biodiversity and human rights interests in trade policy formulation, connecting the national and international levels [28], As discussed at greater length in Musselli and Ituarte-Lima [29], while litigation has been on the rise to address harm to biodiversity and ecosystems [30], not only are ex-post mechanisms needed to hold those who harm ecosystems to account, but also mechanisms focusing on ex-ante measures.

One possible option is for national legislatures to attach ex-ante constraints on the exercise of discretion by trade delegates in the form of precise legal directives [25]. For example, trade delegates could be required to ensure that their statements on pesticides align with Target 7 of the Global Biodiversity Framework on reducing risks of pesticides and highly hazardous chemicals, as well as Target 14 and Target 22. This and similar ex-ante constraints could be multilaterally or plurilaterally agreed upon at the WTO level in the context of relevant WTO processes and mechanisms.

Another complementary option would be to amend the rules on composition of national delegations at the WTO and related accreditation procedures. On pesticide-related issues, this could entail a WTO requirement for Member States' delegations to also include government delegates from environmental bodies, as well as national focal points for the Convention on Biological Diversity, and the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), and the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement). A related approach could be a WTO requirement for national delegations to engage in inter-ministerial collaboration in drafting national positions at the domestic level before presenting negotiating positions on pesticides and other crucial environmental issues at the WTO level. These and other options are discussed in more detail in Musselli and Ituarte, to which the reader is referred [29].

3. PROMOTE INCLUSIVENESS AND DEMOCRATIC OVERSIGHT OF PESTICIDE REGULATION, AND THE ROLE OF PRECAUTION

The integration of biodiversity at all levels of government and across sectors (Target 14) should go hand in hand with increased participation from non-state actors in pesticide policy (Target 22) and a precautionary approach to prevent serious and irreversible harm.

Under Target 22, states have committed to: "Ensure the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities […], as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders". The perceptions and views of these constituencies could encourage a re-evaluation and realignment of current dominant regulatory approaches to pesticides. To illustrate, we will briefly touch upon two somewhat technical issues that should be more widely understood, considering their effects on our everyday lives: the risk-based approach to approving pesticides, and the establishment of Maximum Residue Levels (MRLs) in food and beverages. Both are "shadow zones" of regulation that largely escape public scrutiny [31].

3.1. Pesticide approval: Risk v. hazard

Why are pesticides permitted, even if hazardous? The answer is that almost all countries, with the notable exception of the EU, follow a risk-based approach to the approval of pesticides. In other words, pesticide approval is based on risk in use, not potential hazard. Risk assessments concern the probability of a harmful outcome occuring when appropriate mitigation measures are taken. This means that even if an active substance is intrinsically hazardous (e.g. carcinogenic), it is approved for use if the risk can be reasonably managed,

for example through use of protective equipment or by establishing no-spray zones around waterbodies or residential areas. The approach often includes a risk–benefit analysis, whereby the "benefits" of a pesticide (improved yields) are weighted against the risks associated with using that pesticide. In pesticide regulations, this translates into legal language approving pesticides as long as they are sufficiently efficient and do not have unacceptable side effects on the environment.[1] Under a risk-based system, pesticide approval is denied only after the risk assessment process has concluded that all control measures would be inadequate to effectively manage risks.

Departing from risk-based approaches, the so-called "hazard approach" follows the principle that if an active substance possesses intrinsically hazardous characteristics, for example, by being carcinogenic or a persistent pollutant, then it is simply too dangerous to be used safely and should not be authorized. No further assessment of risk, or possible management measures, is conducted. This is the approach partially adopted by the EU.[2] In the EU, a pesticide cannot be approved if it is carcinogenic, mutagenic, toxic for reproduction, persistent/bio-accumulative and toxic for the environment/a persistent organic pollutant, or endocrine disruptive – regardless of the possible mitigation of risk.

While hazard-based approaches are restrictive and may create perverse incentives to develop equally toxic alternatives, risk-based systems are costly to implement, and relatively ineffective in practice [32]. It has been observed that approximately 80 percent of developing countries lack the necessary resources to enforce laws related to pesticides. Many of these countries lack the capacity for inspection, and they do not have adequate systems in place to measure pesticide residues or enforce limits. This results in excessive or inappropriate use of pesticides as well as accidents [33]. It is also observed that the protective measures related to pesticide use are typically specified in

1. See, e.g., (Ordonnance sur les produits phytosanitaires, OPPh) du 12 mai 2010, RO 2010 2331, Art. 4 (3)(b) ; EU ; US FS)

2. See in particular Regulation 1107/2009 concerning the placing of plant protection products on the market (PPPR)

voluntary guidelines and codes of conduct, the implementation of which "are poorly monitored let alone policed" [32]. Rigorous and comprehensive risk-based systems would require far-reaching risk mitigation measures (no spray zones around waterbodies or residential areas; reporting and prior notification of pesticide applications; comprehensive human biomonitoring programmes) that can be extremely costly to implement and monitor [32].

The focus on actual risk in use, as opposed to hazard, has resulted in a situation where pesticides are responsible for an estimated 200,000 acute poisoning deaths each year, 99 per cent of which occur in developing countries "where health, safety and mental regulations are weaker and less strictly applied" [33]. It has also led to a situation where chemical pollution has now passed the safe limit for humanity, as assessed under the Planetary Boundary framework [34]. This contradicts states' obligations and pledges under international environmental and human rights law. It specifically encroaches on the human rights principle of equality and non-discrimination enshrined in core human rights instruments.[3] In line with this principle, states have a duty to create and uphold meaningful environmental standards and to enforce non-discriminatory and proportionate measures to address the significant risks posed by pesticides. This obligation also involves taking extra measures to ensure that people in vulnerable situations are able to exercise their rights [35].

To carry out Target 22 in this area, it is important to subject the risk-based approach to pesticide approval to public scrutiny. This would involve making the procedures for pesticide approval easily understandable to the public, conducting extensive consultations involving various right-holders and duty-bearers to determine the best approach (whether risk-based or hazard-based)

3. The principle of equality and non-discrimination dates back to the 1948 Universal Declaration of Human Rights (Universal Declaration of Human Rights, GA Resolution 217A (III), 10 December 1948). This principle is also embodied in instruments of general character such as the1966 International Covenant on Civil and Political Rights, (ICCPR) (999 UNTS 171), the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR) (999 UNTS 171) and also concerning specific groups such as the 1979 Convention on the Elimination of Discrimination against Women (CEDAW) (1249 UNTS 13) and the Convention on the Rights of the Child.

to pesticide approval, and ensuring that stakeholders who are directly affected have a say in the decision-making process. The inclusion of indigenous people, local communities, women and biosphere defenders in pesticide decision-making processes would likely incorporate values and worldviews aligned with a hazard-based approach informed by precautionary concerns. The argument around hazard-based vs. risk-based approaches is, in effect, "a debate about the level of risk that a society is willing to tolerate" for the sake of yield increases in intensive agriculture [32]. These constituencies not only tend to be more risk-averse but are also depositaries of diverse values and valuations of nature [36] concerning present and future generations. Indigenous worldviews, in particular, go beyond a relationship with "other-than-human nature" framed in terms of "separation, objectification, and domination" [37]. They instead emphasize stewardship and responsibility towards nature ("living in nature"), as well as interdependence and reciprocity ("living as nature") [36].

3.2. MRLs: Contested knowledge of toxicity

A second important technical issue that should be made more easily understandable and widely known to the general public is the setting of MRLs for pesticides in food, including beverages, and animal feed. Making information about pesticides risks and potential impacts available in formats which are tailored to diverse groups such as indigenous peoples, peasants, youth, children and people with disabilities is important for promoting broader participation in decision-making, with potentially transformative impacts in the policy arena.

Pesticide "residues" are traces of pesticides that may remain in or on food and animal feed products after harvest and processing. The highest amount of pesticide that is legally tolerated to remain in or on a given product is called the MRL.[4] The starting point in setting MRLs is the information supplied by the company: a company seeking approval of a pesticide must submit to the competent authority scientific information about the minimum amounts of pesticide necessary to protect a crop and the residue level remaining on the crop after such treatment when pesticides are applied correctly. Pesticides are deemed to be applied correctly when they are applied according to the instructions that reflect good agricultural practices (GAP). GAP data, derived from public pesticide use authorization systems (national GAP schemes) as reflected in registered pesticide labels, include details about the recommended dose rate, number and frequency of applications, and the pre-harvest interval. These specifications aim to minimize pesticide residue while ensuring yield quality and quantity.[5] Dietary risk assessment is done by the regulator for the so-called "critical MRL GAP level" when pesticides are applied according to GAPs. Consumers are deemed adequately protected when their estimated dietary intake of pesticide residues does not exceed certain toxicity thresholds, such as the acceptable daily intake (ADI) or the acute reference dose (ARfD).

So, with these terminology and background technical issues explained, where does the problem stand with MRLs? In a real-life scenario, the main problem is the combined effects of pesticide "mixtures" – also known as "cocktail effects" of pesticide residues. Real-life pesticide exposure in the general population involves combined exposure (either simultaneously or sequentially) to multiple pesticide residues via multiple routes of exposure (e.g. oral, dermal, inhalation) and/or different sources of exposure (e.g. air, food, water, medicines, consumer goods) [38]. Note also that in addition to the "active substance" (the pesticidal

4. In the EU MRL Regulation, a MRL is defined as "the upper legal level of a concentration for a pesticide residue in or on food or feed set in accordance with this Regulation, based on good agricultural practice and the lowest consumer exposure necessary to protect vulnerable consumers" (Regulation (EC) No 396/2005, Art. 3 (2) (d)).

5. The information on GAP is derived from public pesticide use authorisation systems (national GAP schemes) as reflected in registered pesticide labels. In turn,, national GAP schemes are largely based on the information supplied by the companies seeking pesticide approval. The specifics vary widely from country to country, based on climatic conditions, types of crops, and agricultural practices. The stringency of pesticide use authorization systems varies considerably from country to country, reflecting varying degrees of technical and administrative capacity. Some use a rigorous registration scheme based on supervised trials, while others use less formal authorization approaches . There have been important efforts at harmonizing national GAP schemes under the aegis of the FAO, the Codex Alimentarius and regional organisations (e.g., ASEAN GAP). These efforts complexly coexist with private-sector-driven initiatives (notably, GlobalG.A.P., a farm assurance programme created in the late 1990s by supermarket chains and their major suppliers).

ingredient), a pesticide usually contains so-called "co-formulants", or "inert ingredients", that are mixed to influence the properties of the pesticides [38]. The cumulative effects of cocktails of pesticides and other compounds may occur in potentially unpredictable ways, raising particular concerns in light of the special sensitivity of pregnant women, infants and children to pesticides. The problem is compounded when assessing the combination effects of pesticides in interplay with a variety of social and environmental stressors [39].

Pesticide (or general food) laws require assessment of people's combined exposure to pesticides from multiple sources and their cumulative and synergistic effects. However, the corresponding procedures, tools, and methodologies are not yet well-established – and this needs to change. Explicit legal requirements to address health risks of pesticide mixtures have been introduced, for example, in the EU regulations on MRLs and the Swiss Ordinance on pesticide residues.[6] However, these requirements depend on the availability of appropriate assessment methods and the assessment of known effects.[7] In practice, there is "currently no mechanism for a systematic, comprehensive and integrated assessment of mixture effects taking into account different routes of exposure and different product types" [38,40]. Therefore, compounds are still largely assessed individually and the potential risks resulting from combinations of pesticides in real-life exposure scenarios are rarely taken into consideration [40–44].

This has given rise to a situation where regulators approve pesticides as safe,

6. See Regulation (EC) 396/2005 on maximum residue levels (MRLs) of pesticides (OJ L 70, 16.3.2005, p. 1–16), Art. 14. Para. 2, let. b; Swiss Ordinance on pesticide residues (VPRH), Art.3, par. 2, let. i.

7. Regulation (EC) 396/2005 on maximum residue levels (MRLs) of pesticides in food stipulates that decisions on MRLs shall take into account "***known cumulative and synergistic effects, when the methods to assess such effects are available"***. The Swiss Ordinance on pesticide residues (VPRH) (RS 817.021.23) requires taking into account ***the known*** cumulative and synergistic effects of the active substances which affect the same biological system (VPRH, Art.3, par. 2, let. i; see Appendix III). In the US, under the Food Quality Protection Act of 1996, EPA considers aggregate exposure of the public to pesticide residues from all sources, and the cumulative effects of pesticides and other compounds with common mechanisms of toxicity

only to reverse their decision some time later in light of new evidence. This reversal is often preceded by companies withdrawing/phasing out the pesticide themselves as a pre-emptive move to avoid litigation and liability. Examples are ubiquitous, such as Vinclozolin, a fungicide widely used in vineyards and horticulture, cleared as safe by the US Environmental Protection Agency (EPA) but later phased out by the same agency for most uses due to its endocrine-disruptive and carcinogenic effects. [45,46]. Another example is EPA's approval of Dicamba, a volatile chemical herbicide to combat glyphosate-resistant weeds. The approval was vacated by the US Court of Appeals for the Ninth Circuit, which found that the EPA had "substantially understated or failed to acknowledge" the risks of the herbicide use The Dachtal case further illustrates the uncertainties involved in risk regulation [46]. In August 2024, the EPA issued an emergency order to halt the use of DCPA or Dacthal, a widely used herbicide linked to impaired brain development in babies whose pregnant mothers were exposed to the substance [47,48]. This is the first time in almost 40 years that the EPA has taken this type of emergency action, because "DCPA is so dangerous that it needs to be removed from the market immediately" [48]. This emergency order came after decades of extensive use of the pesticide.

Consumers are almost certainly not aware of the significant scientific uncertainties involved in approving pesticides and establishing residue levels. Regulatory authorities present the process as safe and science-based, downplaying the uncertainties, assumptions, and value judgments inherent in assessing pesticide risks. How would consumer attitudes and perspectives change if they were properly informed? Current consumer surveys suggest that pesticide residues in food and beverages are currently considered quite problematic, leading to calls for more sustainable agricultural systems that reduce or avoid pesticide use [49]. Allowing the general public to be more inclusively and effectively involved in decision-making, and providing better access to information (Target 22), could lead to a reassessment of where to draw the line or how to reconcile competing goals of environmental and health protection versus access and use of pesticides.

4. CONCLUSIONS

In this chapter, we have argued that achieving Target 7 of the GBF involves integrating various targets of the Framework. It requires integrating biodiversity into pesticide-related policy formulation across sectors, including external trade (in line with Target 14). It also involves promoting more effective, meaningful and inclusive public participation in the approval of pesticides (in line with Target 22), allowing diverse constituencies with differing views on nature to voice their opinions, and integrating more effectively the concerns of right-holders including those in vulnerable situations . We believe that integrating these different targets will enable transformative policy outcomes. Notably, it will likely require disrupting established actor-network structures, such as trade ministries with strong ties to corporate interests, which sustain and entrench regulatory models focused on pesticide access and use. By engaging new actors and diverse values related to nature, policy attention can be realigned to explore neglected alternatives and promote more sustainable agricultural systems that reduce or avoid pesticide use.

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SECTION II

IMPLEMENTING LEGAL INNOVATIONS FOR A JUST AND REGENERATIVE ECONOMY

LEGAL PRINCIPLES AND TOOLS FOR CURBING OVERCONSUMPTION AND PROTECTING ECOSYSTEMS AND BIODIVERSITY

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Abstract. Planetary boundaries including the boundary concerning biodiversity and ecosystems are connected to State duties including international human rights law commitments; transgression of the planetary boundaries is against human rights law. Specifically, the human right to a clean, healthy and sustainable environment is recognized by the United Nations and by several constitutions at the national level. Overconsumption is a central problem as it drives excessive land and water use, deforestation, climate change, pollution, and ecosystem degradation, thereby threatening

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the realization of human rights for everyone. Referring to the legal principles of prevention and precaution together with the right to a healthy environment and associated human rights, individuals and communities can demand States to rebuild global economic systems and supply chains to bring the economy inside the planetary boundaries, which includes lowering the footprints of consumption to sustainable levels. A structural transition towards an economy that prioritizes the planet and the foundations for present and future generations of humans and other living beings to thrive is urgently needed.

Keywords. Planetary boundaries, human rights, legal principles, overconsumption

1. INTRODUCTION

Planetary boundaries are closely connected to human rights: transgressing the planetary boundaries endangers the realization of human rights, including the right to water, the right to food, the right to health, and the right to a clean, healthy and sustainable environment (right to a healthy environment).

Current economic systems with fossil fuel use, pollution, factory farming, and non-transparent global supply chains have caused a transgression of six of the nine planetary boundaries. Biogeochemical flows, freshwater change, land system change, biosphere integrity, climate change and novel entities are the planetary boundaries that we have transgressed. In addition, we are getting closer to the boundary for ocean acidification. With atmospheric aerosol loading and stratospheric ozone depletion, we have managed to stay in the safe space. [1] The overall situation with humans interfering with Earth's life support systems threatens the prerequisites of good life for every human and for other living beings.

From a legal perspective, business as usual threatens most human rights, including the right to life. We highlight that overconsumption is a human rights issue and discuss possibilities to tackle it through human rights law and policy.

2. OVERCONSUMPTION AND FOOTPRINTS AS HUMAN RIGHTS ISSUES

Most developed countries have too vast land use, water, biodiversity, and climate footprints from the perspective of the planetary boundaries [2]. Tian et al. 2024 show that 31–67% and 51–91% of the breaching of the planetary boundaries can be attributed to the global ***top 10% and top 20% of consumers***, where effective mitigation actions on the food and services sectors alone would bring both land-system change and biosphere integrity back within their respective planetary boundaries [3].

Consumption drives production, and consumers pay for products (only). Frequently, neither producers nor consumers need to compensate for the loss of biodiversity they cause. It is an 'externality'; duties, markets and incentives for no-net-loss, mitigation hierarchy, and ecological compensation are lacking. Negative impacts on water quality and aquatic ecosystems often need not be compensated, even when economic actors and residents downstream in the river basin demonstrably suffer economic losses [4]. Only a part of economic actors is mandated to buy carbon allowances for the climate emissions they produce. For example, nitrogen and phosphorus fertilizers are produced and used to cultivate feed and food products for the growing populations. Vast carbon emissions are produced in the fertilizer industry, and agricultural nutrient emissions pollute waters, both creating novel problems for ecosystems and their services, including food production. Yet global economic systems, i.e., markets, fail to set a price on the negative spillover impacts of business decisions. Markets continue to favor economic growth over environmentally sustainable development. These malfunctions of the price mechanism make goods such as avocados, pork, and air travel too cheap for consumers.

Depriving humans of water, food, biodiversity, and a healthy environment is clearly a human rights issue. Warming the planet and causing regions to become inhabitable is clearly a human rights issue. So is causing draughts, floods, wildfires, sea level rise, and storms. Heating the planet aids new pests and diseases to spread, which concerns the right to food and the right to health. Many indigenous peoples rely on forests and aquatic ecosystems for their physical and cultural survival and hence these ecosystems are vital for the realization of their social and cultural rights.

Often, the lack of transparency in global supply chains leads to situations where producers and consumers don't even know the footprints of their products. They don't know if production of commodities and raw materials caused deforestation or pollution or whether they come from a water-scarce area. Consumers may take the water and food away from someone's table without even knowing it.

3. THE ROLE OF HUMAN RIGHTS LAW IN SETTING DUTIES

Human rights law can strengthen biodiversity protection through the specific duties it sets for States. Human rights law includes written agreements and principles internationally agreed under the United Nations procedures. As such, they represent jointly developed criteria for good quality of life. Indicators for the realization of human rights have been developed [5]. Comparison between countries can aid in benchmarking, increase understanding on the production-consumption relations, and support democratic discussion within and between regions. We claim that human rights law and particularly the right to a healthy environment can be interpreted as setting States a duty to tackle the environmental pressures caused by overconsumption, because it is those pressures that burden ecosystems and biodiversity and make access to clean water and sanitation, sufficient food and good health impossible to reach.

Importing excessive amounts of goods from poorly regulated countries with associated toxic pollution and ignoring how they are produced (e.g. the lack of access to information and public participation of defenders) is against the spirit of the universal right of everyone to a healthy environment.

The main pieces of international human rights law consist of the UN treaties, which are binding on the ratifying States. The International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights are major agreements to which most countries are parties. The UN Human Rights Council as the political body and the UN Human Rights Committee as the expert body give their interpretations on the duties set by the human rights conventions. For the rights of the child, the International Convention on the Rights of the Child as well as the UN Committee on the Rights of the Child are important. For planetary boundaries, some of the most important human rights texts are the UN Human Rights Council Resolution in 2021 [6] and the UN General Council resolution in 2022 [7] which recognize the right to a clean, healthy and sustainable environment. For the climate change boundary, human rights law is somewhat clearer than for the other planetary boundaries: action towards the 1.5-degree goal of the Paris Agreement is clearly considered as a rights-based duty of States [8]. Other elements of the right to a healthy environment including healthy ecosystems and biodiversity need similar refinement and court interpretations.

Destroying nature's contributions to people is sometimes justified by referring to property rights over natural resources. At the systemic level, destroying the foundation of life on Earth cannot be based on ownership of land, power plants, and factories. Ultimately, property rights against other human rights including the right to life must be balanced in individual cases and in specific locations where economic activities are established, regulated, and discontinued.

4. LEGAL PRINCIPLES AND PRACTICAL TOOLS FOR BRINGING THE ECONOMY INSIDE THE PLANETARY BOUNDARIES

To bring the economy back inside the planetary boundaries, public regulation of all economic activity is needed. States must set carbon neutrality as a legally binding target. Principles such as the prevention principle [9] and the precautionary principle [10] must be employed for all economic sectors; while the prevention principle addresses risks of significant harm to biodiversity and ecosystems, the precautionary principle deals with the scientific uncertainty. Mining, agriculture, and forestry are among the sectors that have a high impact on whether the planetary boundaries can hold. Any avoidable loss of biodiversity must be avoided in land and water use planning, in environmental permitting, and in daily business practices. Agricultural subsidy systems must reform to support ecological farming [11] and agroforestry systems [12].

Tackling the international land, water, biodiversity, and carbon footprints of consumption is needed. Criteria for imported products in trade law and public procurement law are needed. Products and services with destructive environmental footprints must be excluded from markets: single-use goods must be banned, and the recycling and/or upcycling of all materials and nutrients must become mandatory. Investments to ecological industries must be supported, and taxation must favor ecological products [13, 14]. In between production and consumption, regulations in the type of distribution duties can be set where a specific percentage of the selection offered or sold must be sustainable under specific criteria, with yearly increasing targets. Both sustainability and human rights due diligence requirements for companies must be set to ensure traceability and transparency, to alter incentives and to shift management attention. If companies find it impossible to know the origin of their products, they must rebuild the supply chains. European Union has enacted several pieces of legislation in the right direction as part of its Green Deal, despite the opposition from the lobbying industries. Hearing the concerns of not only the regulation targets but also all vulnerable groups is important: participation of all rights-holders can increase legal certainty, help to avoid bureaucratic or senseless laws, and make sustainability transitions more just. The legal principle of proportionality is important: the strongest remedies are to be used for the most severe problems [15].

Making specific products and services resource-efficient and energy-efficient including their sustainable supply chains is a part of solution but may not suffice; in addition, we may need to restrict the size of each resource-intensive, energy-intensive, biodiversity-degrading sector. For example, reducing emissions from air travel by 10 % does not reduce pressure if air travel grows by 10 %, and restricting nature tourism in one place does not reduce pressure if consumers switch to the neighboring location. Both the State receiving the tourists and the State sending the tourists can be deemed responsible for nature degradation.

There is growing momentum to initiate a shift towards an economy aligned with human rights law, as highlighted by UN Secretary-General António Guterres, who has called for a fundamental rethinking of the economic models that currently underpin policy decisions. These models have proven inadequate in addressing rising poverty and growing inequalities within and among nations, failing to create an environment where human rights can be universally realized. A human rights-centered economy offers a compelling alternative, where economic policies, investment strategies, consumer behaviors, and business models are all guided by the principles of human rights, ensuring that people and the planet are central to decision-making [16]. The 2024 UN Biodiversity Conference (CBD-COP16), hosted by Colombia under the banner of "Peace with Nature," exemplifies this paradigm shift. The slogan reflects a call to rethink our relationship with ecosystems and embrace an economic model that moves away from the extraction, overexploitation, and pollution of natural resources [17]. Astrid Schomaker, Executive Secretary of the Convention on Biological Diversity, emphasized that implementing the Kunming-Montreal

Global Biodiversity Framework alongside the Paris Agreement presents an opportunity to harmonize climate and biodiversity goals, bringing the vision of peace with nature within reach. [18]. If truly implemented, these synergistic actions can mark a critical step forward in transforming the global economy to support sustainable and equitable outcomes for all.

5. CONCLUSIONS

Humanity is transgressing the planetary boundaries, which threatens the realization of human rights of everyone, and disproportionately people in already vulnerable situations. Based on human rights law, States have a legal duty to act. Sustainability transition to ecological production and consumption must be managed through strong public regulation and impactful incentives that reshape economic systems and bring them back within the boundaries. This includes the regulation of global supply chains, footprints and overconsumption. The legal basis is in the universal right on everyone to a healthy environment which cannot be realized by area-limited measures but only through the joint efforts of production and consumption across countries. To be successful, plaintiffs must demonstrate negative human rights consequences for individuals and/or communities resulting from States' inaction in mitigating overconsumption. Legal standing and direct connection may be challenging to establish, yet we foresee a future where overconsumption is challenged in strategic lawsuits. This article underscores the urgent need for structural change towards an economy that prioritizes the planet and the foundations for present and future generations of humans and other living beings to thrive.

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NAVIGATING SCALES IN SUPPLY CHAIN GOVERNANCE FOR ACHIEVING THE GLOBAL BIODIVERSITY TARGETS

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Abstract: This chapter emphasizes the need for the Kunming-Montreal Global Biodiversity Framework (GBF) to more explicitly address cross-scale processes, such as spillovers and leakages, in order to improve the effectiveness of the governance instruments used to implement GBF targets. These processes can undermine the effectiveness of biodiversity conservation efforts and hinder equitable access to corresponding benefits. The chapter provides insights into four types of cross-scale processes and

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critically examines selected private and public instruments regarding their potential to address the complex interplay of scales associated with biodiversity-related risks. It thereby focuses on governance instruments targeting agricultural supply chains, such as private sustainability standards or due diligence legislation under the EU Green Deal. It also discusses the uptake of different types of cross-scale interactions in the GBF targets, drawing attention to considerable gaps. It concludes by providing specific recommendations to policymakers on how to navigate these scale-related challenges and strengthen biodiversity conservation in transnational agricultural supply chains.

Keywords. Certification, due diligence, externalities, supply chains, spillovers

1. INTRODUCTION

Biodiversity can be assessed and governed at various spatial scales [1]. Target 14 of the Kunming-Montreal Global Biodiversity Framework (GBF) touches on this by urging the integration of biodiversity into decision-making at every level. The target calls for inclusion of biodiversity in different governance instruments, such as policies and regulations, and mandates this within and across all levels of governments and sectors. It also emphasizes the alignment of public and private activities in this context.

However, for governance interventions to be truly effective in combatting biodiversity loss, they must even more explicitly address key interactions across scales and/or distances (hereafter referred to as cross-scale interactions) that drive and shape biodiversity impacts, such as spillovers, externalities, or leakages. For example, agricultural land use can lead to the leaching of water-soluble fertilizers and pesticides into waterbodies, causing downstream pollution that significantly harms aquatic biodiversity far beyond the initial application site [2]. Also, the establishment of protected areas can displace land use activities harmful to biodiversity into nearby or distant areas, thereby undermining their overall effectiveness [3]. Research indicates that ignoring such cross-scale interactions can lead to scale mismatches, in which the scales of governance instruments do not properly align with the scale of the problems they aim to address [4].

The IPBES Global Assessment Report highlights the urgent need to understand and integrate spillover processes into policy design to enhance effectiveness [5]. It proposes that "accounting for nature deterioration from local economic activities and socio-economic and environmental interactions over distances" is a key leverage point to achieve transformative change [6]. However, the GBF does not explicitly highlight cross-scale interactions. As a result, the governance instruments employed to implement the GBF under Target 14 may miss critical dynamics and lack effectiveness in mitigating biodiversity risks linked to cross-scale interactions. This points to a significant knowledge gap regarding whether and how cross-scale interactions are integrated into the GBF targets and its related governance mechanisms.

In this chapter, we explore the intricate dynamics of scales in governing biodiversity-related risks. We start by introducing various types of cross-scale interactions, drawing on knowledge from diverse disciplines, including environmental governance and land system science. For each interaction type, we then examine how they are addressed by selected private and public governance instruments. We thereby focus on governance instruments targeting agricultural supply chains, as they are increasingly employed to mitigate biodiversity risks while simultaneously facing challenges related to scale mismatches [7, 8]. We specifically examine Voluntary Sustainability Standards (VSS) and two recent public instruments introduced under the EU Green Deal: (1) the EU Regulation on Deforestation and Forest Degradation (EUDR), which prohibits the import of commodities associated with deforestation risks [9];

and (2) the EU Corporate Sustainability Due Diligence Directive (CSDDD), which mandates companies to identify, prevent, and mitigate negative impacts on human rights and the environment throughout their supply chains [10]. Finally, we assess the GBF targets in terms of the identified types of cross-scale interactions and offer recommendations for policymakers on how to address scale-related challenges associated with governing biodiversity risks.

2. CROSS-SCALE INTERACTIONS AND THEIR INTEGRATION IN SUPPLY CHAIN GOVERNANCE INSTRUMENTS

A wide range of concepts on land use-related cross-scale dynamics and their sustainability impacts have been introduced by different disciplines, including spillovers, externalities, spatial slippage, and land use displacements [11–14]. Many have been recently discussed and investigated under the telecoupling framework, an umbrella concept used to investigate socio-economic and environmental interactions across distances [15, 16]. Challenges and opportunities for governing distant interactions in the context of agricultural supply chains have thereby received a relatively high amount of attention [17–20].

In the following, we introduce four types of cross-scale interactions that are relevant in the context of agricultural supply chains (drawing on Coenen et al. [8] and Sonderegger et al. [21]). We briefly discuss their consideration in selected private and public supply chain governance instruments.

2.1 Land use spillovers

Land use changes, or the alteration of any type of ecosystem, can have far-reaching consequences beyond the immediate area in which the land use changes take place. Spillover processes describe the mechanisms driving these impacts. For instance, in agricultural contexts, various environmental and socio-economic spillover processes spread sustainability impacts well beyond the farm level [see Sonderegger et al., 7 for an overview of agricultural spillovers]. One example is spray drift in pesticide use, which can affect neighbouring plots and even human settlements, potentially harming non-target plants, animals, and people [22, 23]. Further, agricultural practices can influence cross-habitat species interactions, leading to changes in populations outside the farm and disrupting broader ecosystem dynamics [24, 25]. Notably, while this chapter mainly refers to agricultural land use spillovers, the same spillover dynamics can occur in other terrestrial and marine ecosystems.

To what extent are biodiversity-related land use spillovers considered in existing supply chain governance instruments? To our knowledge, research on public supply chain instruments is still lacking in this regard. However, academic studies have reviewed VSS in terms of their contributions to biodiversity at different scales, and have called for VSS innovation to foster biodiversity conservation, in particular, at the landscape level [26, 27]. Moreover, Sonderegger et al. [7] have assessed the coverage of VSS in terms of a broad range of socio-economic and environmental spillovers, among them many with impacts on biodiversity. Their research shows that VSS can importantly contribute to sustainability beyond the farm level by explicitly targeting spillovers. However, the coverage of individual spillovers varies greatly, and many VSS fail to address them comprehensively. To address the revealed gaps, Sonderegger et al. [21] identify several entry points for VSS organizations to incorporate spillovers in both their standards and broader range of activities.

2.2 Supply chain spillovers

Another key type of spillover is associated with international trade, whereby supply chain activities lead to sustainability impacts in places that are distant from places of consumption [28]. As a result of international trade, it is estimated that between one quarter and half of all consumption-related environmental harms – such as CO2 emissions, chemical pollution, loss of biodiversity, and

depletion of freshwater resources – are experienced in regions other than where the consumption takes place [6].

Consideration of supply chain spillovers is an integral part of the due diligence obligations outlined in the CSDDD. These obligations require companies to identify and assess actual and potential adverse environmental impacts arising from their own operations, those of their subsidiaries, and, where related to their chains of activities, those of their business partners (Art. 8). These adverse impacts are also defined in terms of breaches of the obligation to avoid or minimize adverse impacts on biological diversity in line with the 1992 Convention on Biological Diversity (CBD).

2.3 Leakages

Leakages are broadly understood as unintended displacements of impacts caused by an environmental policy intervention [29, 30]. They refer to a particular type of spillover that is triggered by governance interventions and reduces the overall effectiveness of the policy intervention. Leakages are considered a substantial challenge in a wide range of sustainability governance interventions [8, 29]. In terms of biodiversity governance, scientific studies have pointed to leakage risks in the context of conservation efforts [3, 31, 32].

Leakage is also a core challenge for supply chain and trade governance [8]. For example, in the case of zero-deforestation supply chain policies, efforts to reduce deforestation can be weakened or even cancelled out by leakages if deforestation is simply pushed to other regions [33–35]. Notably, the EUDR is also susceptible to leakage. For example, the EUDR currently focuses only on forests, which could lead to displacement of environmentally harmful activities to other valuable ecosystems such as wetlands. Furthermore, there is a risk of other types of leakage and distorted economic incentives if regulatory impacts are shifted to non-target interests and groups [36, 37]. For instance, deforestation requirements may lead to increased demand for crops from large monoculture plantations that are deemed “deforestation-free” simply because the land was cleared for agricultural before the cut-off date specified by regulators. This could create disincentives for more sustainable, smaller-scale forest- and agroforestry-based commodities and their socio-ecologically rich production systems that support rural livelihoods, resulting in the exclusion of vulnerable smallholders from high-value commodity supply chains [36, 37]. The EU CSDDD carries similar risks of displaced impacts on vulnerable producers (Mares, 2024).

2.4 Root causes of biodiversity-unfriendly practices

Land use changes, such as agricultural expansion or urbanization, are among the main drivers of biodiversity loss. The root causes of these land use changes, in turn, involve complex interactions between socio-economic, cultural, and political factors that operate across multiple scales. For instance, farmers’ decisions to adopt unsustainable agricultural practices may be influenced both by international market demands for cash crops and national government policies that subsidize environmentally harmful practices. They can also be driven by land tenure insecurity or lack of financial resources or access to technology. Together, these underlying factors can create a lock-in situations that perpetuate unsustainable practices and make it difficult to shift towards more sustainable practices. To foster long-lasting systemic change, policies should consider and seek to address root causes from the outset, ensuring they are integrated in corresponding policy design.

Public governance instruments such as the EUDR or CSDDD often address symptoms – such as deforestation related to commodity imports – but fail to tackle the underlying problems (e.g. poverty in contexts where exploitation of forest resources supports the livelihoods of poor and subsistence farmers). The EUDR mainly intervenes at the plot level, requiring satellite imagery evidence of non-deforestation at production sites, to assess whether deforestation has occurred where commodities are sourced. Experts have criticized this approach and called for more explicit consideration of landscape approaches

[38]. Recognizing the limitations of their approach, both the EUDR and the CSDDD have sought to introduce supportive measures. The preamble of the CSDDD urges the EU and its members to collaborate with partner country governments, local businesses, and stakeholders to address the root causes of human rights and environmental challenges. The EUDR includes more concrete support for partner countries. According to Article 30 of the EUDR, the European Commission is required to engage in a coordinated approach with producer countries through existing and future partnerships and cooperation mechanisms in order to jointly address the underlying drivers of deforestation and forest degradation. The EU and its member states announced an initial package of €70 million for the implementation of the Team Europe Initiative, which offers a platform to enhance coordination among public and private stakeholders in their efforts to combat deforestation. It further offers technical assistance and capacity building to help partner countries meet the requirements of the EUDR [39].

Private governance instruments with a focus on agricultural supply chains mainly regulate practices at the plot- or farm-level. In so doing, they too may fail to comprehensively tackle the systemic drivers of biodiversity-harming agricultural practices. Recognizing their limitations and striving to redefine their roles in response to new EU supply chain legislation, VSS organizations are increasingly engaging in activities beyond their traditional certification roles [21, 40, 41]. One notable innovation is the adoption of landscape approaches, which encourage collaboration among multiple stakeholders – including farmers, businesses, governments, and local communities – to create more sustainable and resilient landscapes. In addition to VSS, private companies themselves are increasingly engaging in landscape approaches, thereby expanding their activities beyond their respective supply chain [42].

3. CROSS-SCALE INTERACTIONS IN THE KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK TARGETS

Overall, supply-chain governance tools often fail to adequately address the various cross-scale interactions introduced in this chapter. Closer examination of the targets outlined in the GBF reveals that, with few exceptions, the interactions we describe are often mentioned only in an incomplete or implicit manner – not with the level of emphasis required for effective policies. We illustrate this point for the four types of cross-scale interactions that we have introduced in the previous section.

GBF targets refer to a handful of isolated land use spillovers, with varying degrees of directness or indirectness. For example, Target 5 calls for minimization of impacts on non-target species and ecosystems due to use, harvesting, and trading of wild species. Its guidance notes mention bycatch and damage to habitat as examples of processes that cause unintended impacts on other species, thus hinting at spillover processes. In addition, the target explicitly calls for reducing risks of pathogen spillovers. Target 6 mandates curbing the introduction of invasive alien species and Target 7 calls for reduction of pollution risks, thus touching on other forms of land use spillover. However, other biodiversity-relevant land use spillovers and cross-habitat interactions are not mentioned in the targets. This gap points to the need for more comprehensive understanding of spillover dynamics in the GBF framework. Notably, however, a key task of the GBF is to facilitate prioritization of interventions, so that the most important drivers of biodiversity loss are addressed. In this sense, a selective approach to incorporating spillovers into the targets may be seen as appropriate. Nonetheless, future guidance documents could benefit from a more comprehensive discussion of land use spillovers and ensure transparent communication on how priorities are established.

Moving on, Target 15 addresses supply chain spillovers. It calls for administrative

and policy measures to encourage businesses to monitor, assess, and disclose their risks, dependencies, and impacts on biodiversity. The target emphasizes the importance of these actions particularly for large transnational companies and financial institutions. It recommends going beyond individual operations and instead seeking to address entire supply chains.

By contrast, the GBF does not explicitly address potential leakage effects related to governance interventions deployed on behalf of GBF targets. While Target 18 calls for addressing unanticipated and unintended side effects of policies or programmes – such as harmful subsidies that induce unsustainable behaviour – it does not address potential leakage effects of new measures introduced to implement the GBF. Similarly, while Target 3 emphasizes the integration of area-based conservation measures into wider landscapes, seascapes and oceans, it lacks concrete details on how leakage effects of protected areas could arise or be mitigated. This should be concretized in further guidance documents.

Finally, the GBF targets do not explicitly attend to the root causes of unsustainable practices that adversely impact biodiversity. While the GBF emphasizes the need to provide benefits for biodiversity users, particularly vulnerable groups that are dependent on the resources (Target 9), it does not call for addressing the underlying drivers (e.g. poverty) that lead these users to depend on resources such as wild species.

4. CONCLUSIONS AND POLICY RECOMMENDATIONS

In today's globalized world, cross-scale interactions that drive and result from unsustainable land use practices can significantly undermine the effectiveness of governance instruments designed to conserve biodiversity and promote its equitable use. While the IPBES has highlighted their importance, the GBF does not comprehensively and meaningfully address spillovers, leakages, or the underlying drivers of unsustainable practices. This chapter illustrates that while some GBF targets reference selected spillovers of land use and supply chains, they do so only in an incomplete manner. Further, they do not highlight potential leakage effects of governance interventions or the root causes of biodiversity loss. As a result, governance interventions aimed at implementing the GBF targets (under Target 14) may fail to consider important cross-scale dynamics, thus weakening their effectiveness. Our analysis of selected governance efforts in agricultural supply chains points to significant gaps in this regard.

We have several recommendations for how to address the identified gaps, enabling policymakers to strengthen implementation of the GBF targets and make meaningful progress towards biodiversity conservation across diverse contexts and scales. Firstly, there is a pressing need to recognize and openly discuss the limitations of chosen intervention scales and to move beyond interventions at narrow scales (e.g. the plot level, as in the current EUDR). One potential solution is to adopt landscape approaches, which aim to address sustainability issues at a scale that brings together multiple stakeholders and land use types. Additionally, employing participatory processes to integrate trade and sustainability due diligence within context-specific understandings of biodiversity can help bridge governance gaps across scales, linking local realities with distant supply chain obligations [1]. Secondly, to overcome scale mismatches and improve the overall effectiveness of governance interventions, it is key to identify, assess, and prioritize various types of cross-scale interactions such as spillovers and leakages [21]. On the one hand, practices promoted as sustainable and biodiversity-friendly should be evaluated to make sure they explicitly account for land use spillovers and, on the other, governance instruments should be carefully assessed regarding leakage risks. In addition, these instruments should target the root causes of sustainability challenges to ensure long-lasting impacts. Finally, it is essential to recognize that no single governance instrument can fully capture complex cross-scale interactions that drive and shape biodiversity impacts across different scales. It is thus important to foster policy coherence both within and across different governance levels and to strive for a smart mix of public and private interventions.

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VULNERABILITY OF BIODIVERSITY PROTECTION VIA TRADE REGULATION AND VOLUNTARY CERTIFICATION

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Abstract. Forest certification schemes were introduced in the 1990s to address the absence of a global forest agreement and have since adapted to different contexts worldwide. The European Union has implemented regulatory measures, such as the EUTR and EUDR, to combat illegal logging and deforestation driven by international trade. Voluntary certification and national legislation may potentially reinforce each other. However, the effectiveness of these regulations is limited when trade disruptions occur, such as the recent EU sanctions against Russia, which have weakened incentives for sustainable forestry practices in

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Russia: old-growth forests previously protected by the FSC certification are currently under threat. Both EU regulations and private certification schemes face vulnerabilities, nor do they help prevent leakage caused by conservation, meaning the shift of logging to other areas. International cooperation remains essential to addressing the global deforestation crisis and GBF targets effectively.

Keywords. Forest certification, EU, Deforestation regulation, Russia, market-based instruments, old-growth forests

1. INTRODUCTION

An estimated 420 million ha of forest has been lost worldwide through deforestation since 1990. Even if the rate of forest loss has declined, deforestation and forest degradation are occurring rapidly and alarmingly: the world continues to lose 10 million hectares of forest each year [1]. These processes significantly contribute to global warming and biodiversity loss, two critical environmental challenges of our time. The growing demands of the global population for food, energy, timber, and other commodities put increasing pressure on the world's forests.

The United Nations has since the Convention on Biological Diversity (CBD) [2] emphasized the importance of both the sustainable use and conservation of biodiversity. The latest global biodiversity targets are included in the Kunming-Montreal Global Biodiversity Framework (GBF) [3]. Several GBF targets concern the sustainability of forestry, and Target 10 is the most obvious one: Enhance Biodiversity and Sustainability in Agriculture, Aquaculture, Fisheries, and Forestry. Target 10 requires to ensure that areas under forestry are managed sustainably. Also Target 3, which aims at conserving 30 % of land, waters, and seas is important. It emphasizes the areas of particular importance for biodiversity and ecosystem functions and services. Old-growth forests, for example, are important for the conservation of many endangered species, but they have declined significantly in the recent decades, and forestry is threatening the survival of many old-growth forests [4].

The European Union (EU) has been responsible for consuming one-third of the globally traded agricultural products linked to deforestation in 1990–2008, contributing to 10% of worldwide deforestation. Even if the EU's share has diminished since then, the EU has decided to minimize its consumption-driven deforestation and forest degradation further [5].

In this article, the benefits and vulnerabilities of voluntary forest certifications are compared with those of existing EU timber trade-related legislation. The focus is, firstly, on the regulatory approaches to forest management and conservation, and secondly, on external pressures such as war and trade sanctions imposed on the Russian Federation. Russia hosts the last intact forest landscapes in Europe. Russian timber trade to the EU has had both negative and positive impacts on forest biodiversity in Russia. The logging pressure in accessible forest areas has been exhausted, and now old-growth forests and intact forest landscapes are under threat of logging [6]. On the other hand, FSC forest certification and sensitive EU markets have demanded setting at least part of the old-growth forest aside. Now that the EU has imposed trade sanctions on Russia, the priority markets for Russian timber exports have become less sensitive markets such as China and India, where the pressure to sell certified timber is lower than in the EU. Simultaneously, Russian production and export of industrial roundwood have declined [7].

The focus of the article is not to critique voluntary certification schemes but rather to explore the specific vulnerabilities of these regulatory frameworks in the context of external geopolitical events. The central question is: what are the main benefits and vulnerabilities of voluntary certifications, especially in terms of aiming at sustainable use and protection of biodiversity at extraction or production sites? Additionally, could some of these vulnerabilities be mitigated or addressed through EU-level legislation?

A key concern is how EU sanctions might inadvertently increase the vulnerability of sustainable forestry and biodiversity conservation as well as equitable benefit sharing with local communities and Indigenous peoples in the Russian Federation. The Forest Stewardship Council (FSC), for instance, has played a crucial role in securing high conservation value forests, especially the intact forest landscapes and protecting areas significant to local and indigenous communities [8]. War and repression of environmental NGOs not only damage the environment in the conflict zone but can also have indirect consequences for the use of natural resources and environmental protection in the aggressor state. For example, the breakdown of trade links can disrupt market-based conservation tools, such as forest certification. In Russia, many forest areas have been safeguarded by FSC certification, relying on market mechanisms for protection, despite trade simultaneously posing threats to forest ecosystems.

2. SUSTAINABLE USE AND PROTECTION OF FOREST BIODIVERSITY AS A GLOBAL TARGET

2.1. Forest certification

Since the 1990s, and before the EU regulation on timber trade, various trade-related voluntary certification schemes have been increasingly used. Globally, certified forests cover about 10 % of forests [1]; PEFC-certified forests cover 295 million hectares [9] while FSC-certified forests cover 162 million hectares [10]. They supplement national legislation and enable actors along the supply chain as well as other stakeholders to emphasize certain values and require certain behavior from the suppliers in the country of origin of the product or raw material. Certification has also offered a relatively reliable way to prove the adhesion to the sustainability principles of the certification scheme, albeit there are differences in the stringency of the standards of various certification schemes, both between and within countries.

Forest certification was originally developed to safeguard tropical forests in particular and to replace the missing international forest convention. Now, however, most of the certified forest areas are located in the boreal forests of industrialized countries [11]. Forest certification schemes usually promise to guarantee that timber comes from legally and sustainably managed and harvested forests [12,13]. There are various issues – such as high levels of biodiversity, proximity to markets that are not sensitive to certification, NGO engagement, and the number of multinational firms – that affect the level of stringency of the national certification standard [8,14]

Nevertheless, forest certifications alone are not enough to guarantee a country's ecologically sustainable forestry. In addition to certification, for example, a comprehensive network of protected areas is needed. In Russia, protected areas cover 12,5% of the territory, and most of the large intact forest areas – they are the last such extensive areas of old-growth forest in Europe – are still without any official protection status and protected via moratoriums signed by NGOs and companies [13].

Certification schemes protect old-growth forests and other valuable forests to varying degrees. FSC has been considered the most stringent in conserving forest biodiversity as well as protecting the rights of Indigenous peoples and local communities by adhering to the principle of Free Prior and İnformed Consent (FPIC) [8,15]. FSC requires protecting certain high conservation value (HCV) forests including intact forest landscapes. In Russia, FSC has provided for the protection of old-growth forests, as HCVs. This has happened for example, in North-West Russia, where ENGOs with the help of FSC standard requirements managed to agree on large set-aside moratorium areas with forest enterprises that have leased those forest areas [16].

2.2. EU law

The first EU effort to fight illegal logging was the FLEGT (Forest Law Enforcement, Governance and Trade) Action Plan that was adopted in 2003 [17]. Based on

the action plan, the EU Timber Regulation (EUTR, 995/2010) was enacted, and it entered into application in 2013. EUTR focused solely on the legality of timber to counter the trade of illegally harvested timber and timber products [18]. It did not address deforestation directly and currently; a sizable part of ongoing deforestation is legal in accordance with the laws of the country of production. The voluntary FLEGT process has not worked as hoped in producing countries and therefore the EU has increasingly shifted responsibility for production and supply chain quality to importers [19].

The Regulation on deforestation-free products (EU) 1115/2023, EUDR was enacted and came into effect in June 2023. The primary cause of deforestation and forest degradation is the expansion of agricultural land for commodities such as cattle, wood, cocoa, soy, palm oil, coffee, rubber, and related products like leather, chocolate, tires, and furniture. According to the EUDR, any operator or trader who places these commodities on the EU market or exports them must prove that the products do not come from recently deforested land or contribute to forest degradation.

The EUDR is part of a larger governance trend towards unilateral regulatory measures addressing socio-ecological supply chain injustices [20]. Yet not all states are willing to impose unilateral restrictions on other countries. For example, non-interference is a key principle of China's foreign policy [21] and there is a risk that commodity markets will simply reorganize: low-risk countries and producers will sell to the EU and high-risk ones to countries without such supply chain requirements.

In addition, it is estimated that, to effectively reduce deforestation, the EUDR needs to be supported by international collaboration aimed at reinforcing national policies through a territorial approach, along with social movements tackling the root causes of forest loss and human rights abuses in the regions affected [22].

Yet, a combination of market-based forces and mechanisms facilitated by the EU regulation may reduce the barriers and costs for companies to adopt zero deforestation standards in non-EU markets, too, such as China, making some degree of convergence possible [21]. Vasconcelos et al. also state that rather than imposing unilateral regulatory measures, the Chinese government might prefer introducing voluntary guidelines and supporting legality-based regulations aimed at combating illegal deforestation. Thus, the implementation of the forest certification and EU regulation could serve as a model and encourage compliance among the same commodity traders that supply China. This could, over time, reduce barriers and potentially lead to future action from China and other non-EU countries in the longer term. In China PEFC certified forests cover already 1,29 % of forests [23].

There is also a risk that if market-based schemes, such as forest certification, are not integrated into the EUDR system, it could reduce the incentive to commit to certification programs, as the regulatory burden may become overwhelming [24].

3. COEXISTENCE OF LAW AND VOLUNTARY CERTIFICATION

Certification schemes have not been considered directly sufficient to provide a guarantee of legality under the EU Timber Trade Regulation (EUTR), as there is not full confidence in the reliability of all certification schemes and a preference to retain responsibility with timber importers rather than the certification scheme. However, forest certification schemes have to some extent evolved to help the implementation of state regulatory instruments, and operators have included e.g. FSC as a part of their EUTR due diligence system [25].

Forest certification can significantly aid operators in meeting EU Timber Regulation (EUTR) due diligence obligations by assessing legality, managing fraud, and providing supply chain information. However, there are also gaps and weaknesses in certification schemes, such as limited scope and ambiguity in legal requirements, and vulnerabilities in chain of custody systems. Corruption and fraud are major risks in timber supply chains, and existing detection

measures in certification schemes are often insufficient. There are also differences among certification schemes in their coverage and effectiveness against illegal harvesting and trade. Yet, while certification schemes are not perfect, they can be essential tools for meeting EUTR requirements, providing better assurance than non-certified materials [12,26].

Currently, certification standards are working on better adapting to the EUDR [23] and some already claim to strongly align with EUDR [27]. As with the EUTR, forest certification schemes alone are not enough to guarantee that imported timber complies with the EUDR, but certification can help to meet the requirements. Some scholars argue that legality verification requirements introduced by the EU might undermine sustainability certification by focusing solely on narrow timber legality requirements, potentially diverting attention from broader sustainable forest management standards [28,29].

4. THE RISE OF RUSSIAN FOREST CERTIFICATION SYSTEMS AFTER INTERNATIONAL WITHDRAWAL

Before the war in Ukraine, 59 million hectares of forest in Russia were certified by the FSC, representing about 30% of all forest concessions in the country [30,31], while 32 million hectares were certified under the PEFC [32].

In recent years, voluntary forest certification in Russia has undergone significant changes. International certification schemes have exited the country, leading to the emergence of several new Russian certification systems.

Shortly after the war starting in February 2022, both the FSC and the PEFC suspended or revoked all Russian forest certificates indefinitely. In April 2022, the FSC Russia team announced a new forest certification scheme called Forest Etalon (Lesnoj Etalon) that would adhere to FSC standards [33,34]. By autumn 2024, more than 521 companies are Forest Etalon certificate holders certified in Russia. The certified area now covers 9.4 million ha [33].

There are now altogether five national forest certification schemes in Russia. There are 521 Forest Etalon certifications and 24 SFMRU/38200/PECF certificates [35]. Large forest companies such as Ilim Pulp and all its subsidiaries are certified under the National Certification Scheme [36]. Out of the Russian forest certification schemes, only Forest Etalon requires conserving all intact forest landscapes, as well as social values, including the requirement of FPİC that ensure the rights of local communities and indigenous peoples, including comprehensive criteria for identifying different types of High Conservation Value (HCV) sites tailored for Russia, sources of information, protection measures, and requirements for stakeholder engagement on HCV issues [37,38].

Forest Etalon, however, is certifying mostly smaller companies that do not have large intact forest territories on their lease. Therefore, it cannot protect HCV in the same way as FSC. Between June and November 2022, Russia's largest timber company Segezha Pulp and Paper Mill withdrew from logging moratoria in ecologically valuable forests across several regions, and in Karelia started logging old growth forest in a planned nature reserve. This decision affects 1.5 million hectares of forest, with 680 hectares already logged in the Russian Republic of Karelia. Environmentalists attribute this move to the economic impact of EU sanctions and the suspension of Forest Stewardship Council (FSC) certifications following Russia's invasion of Ukraine. The timber company ceased following the logging moratoria after losing access to ecologically sensitive European markets. [39,40]. Despite this, it received the SFMRU/38200 certificate. Other companies have not yet withdrawn from the moratoria.

A Russian expert believes that the timber company's decision to remove leased intact forest from its logging moratorium will make any future return to ecologically more sensitive markets unlikely for Segezga PPM [39]. At the same time, Forest Etalon was established primarily to aid a smooth reentry into environmentally conscious markets after the end of the war and sanctions. However, there is no guarantee that foreign markets will recognize Forest

Etalon's certificates as proof of sustainable forest management, or that FSC or PEFC will automatically reinstate their certificates based on adherence to principles during the suspension.

Forest Etalon has responded to the challenge of interrupted exports to the EU and other sanctioned countries. For example, Forest Etalon invited the Chinese Wood and Timber Trade Association to explore timber production in Russia. Representatives of the Russian Chamber of Commerce were also present. As a result of the visit, a tripartite cooperation agreement was drawn up [41].

5. DISCUSSION ON VULNERABILITY

Forest certification was created in the 1990s as an innovative new solution to the lack of a global forest agreement. Forest certification schemes are already well established in numerous countries and have shown their ability to adapt to new situations. To prevent deforestation caused by international trade, the EU has introduced the EUTR and, more recently, the EUDR. These unilateral international regulatory measures are becoming more common as awareness of the impact of current consumption patterns on biodiversity and human rights grows. Yet, these regulatory instruments have not replaced the need for an international agreement and collaboration [22] and robust national legislation in exporting countries, as our case study illustrates. To accomplish this, the EU, companies and civil society organizations can help exporting countries set up systems to monitor and enforce deforestation rules. These systems will allow for stronger enforcement practices and hopefully encourage governments to implement their own strict conservation policies aimed at reducing deforestation caused by commodity production [42]

Forest certification schemes have been accused, for example, of not being strict enough to guarantee ecological or social sustainability, not being able to prevent illegal wood entering markets or old-growth forests from being cut and favouring corporate forest owners over small-scale forest owners [43].

Forest certification is clearly not a panacea. Yet, although an effective national regulatory system is of utmost importance, no country's legislation has yet made forest certification unnecessary. The goal of forest certification is to raise the bar and, at best, demand continuously more sustainable forestry practices. Additionally, voluntary regulations can pave the way for more ecologically effective legislation and increase the acceptability of legal changes [42]. Thus, the support for selected forest certification schemes within the EUDR could be encouraged.

At the same time the success of forest certification in a given country also depends on, for example, on the functioning of the national legal system and administration and the activity of environmental and social NGOs [12,44]. Thus, international commitments to biodiversity protection and their national implementation are also important to ensure the effectiveness of market-based regulatory instruments.

Forest certification allows a company to stand out from the crowd by acting more ethically than its competitors. The challenge is that forest certification schemes have very different requirements regarding forest management and harvesting in certified forests. These are particularly difficult for consumers to navigate. Some certification standards require protecting old-growth forests and some do not – or the threshold for protection is so high that practically no old-growth forests can be found. In any case, some forest certification schemes provide greater protection for the sustainability of timber imports than EU schemes focusing merely on legality and deforestation.

An advantage of EU regulation is that it applies to anyone importing timber or timber-based products into the EU. However, the effect of regulation ends immediately when trade relations are broken, as is the case now with timber trade between the EU and Russia. The disruption of trade links to the EU's environmentally sensitive market has already had negative impacts on forest protection in Russia. The demand for sustainably harvested products in the EU served as a major driver of the willingness of companies to be FSC

certified. Forest Etalon can foster sustainable wood harvesting using national demand only. Forest Etalon is a proxy scheme to FSC in terms of its standards, democratic governance, and protection of the rights of Indigenous and local communities. However, as it was shown, its scale is much smaller.

In addition, as far as EU regulation is concerned, future interpretations of the regulation will create uncertainty. Much depends on how the EUDR concepts of 'forest degradation' and 'primary forests' will be interpreted in different countries. As interpretations can have a significant impact on logging practices in certain areas and affect the income of companies, interpretations have become highly politicized [44]. It is morally questionable whether the EU can demand strict interpretations from importers if its own member states are trying to define old-growth forests in a way that results in little additional protection.

In any case, EU regulation has shown steady progress in that, in addition to the mere legality of timber origin (EUTR), it is now beginning to impose an obligation to avoid deforestation caused by imports of timber and many other commodities (EUDR). The next step might already be closer to the broader requirement of sustainable forestry.

Private regulation, on the other hand, has proven to be very flexible. FSC Russia turned into a national forest certification scheme Forest Etalon which is trying to keep up the legacy of the FSC Russia and create stronger business ties to markets such as China. Simultaneously FSC and PEFC strive to meet the due diligence requirements of the EUDR as much as possible and thus the EU has a chance to improve the credibility and stringency of certification schemes and their control over the chain of custody if schemes fulfill the requirements of the EUDR.

The importance of international cooperation is highlighted by the so-called leakage effect. It is estimated that a large part of the reduction in forestry production in one country or region can simply shift to another location, which weakens the environmental benefits [46,47]. This effect, known as leakage, tends to decrease when more countries work together, but if only a few nations cooperate, it does not always lead to a significant reduction in leakage. As a result, forest conservation efforts and environmental improvements made by one country or group of countries can be greatly compromised globally without strong, widespread international cooperation [46]. This has been acknowledged by the European Commission, too [12].

Thus far, neither EU regulations nor private initiatives have tackled the root cause of deforestation: unsustainable consumption patterns within the EU and beyond [20]. At some point, we must acknowledge that it is not just the quality of our consumption, but also the quantity, that needs regulation.

Both EU and market-based systems are vulnerable to trade disruptions: when trade ceases, the regulations also lose effectiveness, along with the intended biodiversity and human rights protections these systems aim to deliver. However, market-based regulation can at least partially mitigate the risks posed by sanctions to Russian forests. The need for an international forest agreement persists, yet the global community is no closer to reaching one than it was in the 1990s. National sovereignty and economic interests continue to take precedence, even as biodiversity loss and climate change accelerate. It is therefore crucial to advance the global CBD framework as most countries, Russia included, have ratified the convention. As the example of war disrupting trade relations demonstrates, strong national legislation grounded in international law is vital for protecting biodiversity and human rights, while also supporting the implementation of potentially more far-reaching market-based instruments.

6. POLICY RECOMMENDATIONS

- Actively cooperate at the UN level and specifically with the Convention on Biodiversity and COPs to halt deforestation and biodiversity loss in forests.
- Modify EUDR to accept carefully selected forest certification schemes as part of due diligence requirements to avoid double paperwork for

companies and reduce their transaction costs

- Work together with various stakeholders to find fair, equitable, and effective ways to reduce the damage caused by forestry to biodiversity, climate and human rights.
- Strengthen national forest legislation to effectively enhance ecologically more sustainable forest management and genuinely address the ongoing loss of biodiversity and carbon sinks.
- Start emphasizing restoration of forest ecosystems in addition to conservation and sustainable use.
- Actively seek to reduce consumption, which causes deforestation and biodiversity loss.

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PROCURING SUSTAINABLE FOOD IN THE PUBLIC FOOD SECTOR: LEGAL CHALLENGES AND POLICY OPPORTUNITIES

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Abstract. This contribution discusses the role of sustainable public procurement for the achievement of Targets 10, 14, 16 and 18 of the Kunming-Montreal Global Biodiversity Framework (GBF). It highlights the importance of the (public) food sector for the achievement of these goal as recognised by the European Green Deal and the EU Farm to Fork strategy and argues that EU public procurement law – although not requiring a sustainable and biodiversity sensitive food procurement – meanwhile gives national authorities the opportunity to do so. Thus, procuring sustainable food follows a bottom-up approach with local authorities taking the lead. This contribution shows positive examples from France, Spain and Sweden which other authorities could follow.

Keywords. EU public procurement law, public food sector, examples from France, Spain and Sweden

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1. INTRODUCTION

Publicly procured food provides for an important share of food consumption. Across Europe, around 90 million meals are consumed daily in canteens, while the public food service sector (school, hospitals, nursing homes) represents more than 50% of them. The term 'public' refers not to the operational model of the canteen, but rather to the operational model of the institution the food service forms part of. Therefore, a sustainability and biodiversity sensitive approach in public procurement plays an important role for enabling sustainable consumption (Target 16 GBF) and furthering biodiversity and sustainability in agriculture, aquaculture and fisheries (Target 10 GBT). At the same time, public procurement provides for an important instrument to integrate biodiversity in decision-making in line with Target 14 GBT and to reduce harmful economic incentives while scaling up positive ones in line with Target 18 GBT.

Over the last two decades, health experts and nutritionists have warned about the risks of the ever-rising popularity of ultra-processed food on health [7]. Yet, in addition to the adverse effects on human health, all the multi-detrimental to the environment production processes of these nutritional habits have been revealed. Addressing this multi-faceted challenge, both scholars and policy makers have been drawn by the challenge to create a sustainable food chain in the public food sector. However, public procurement law has not always proved to be an ally to this new approach. This practical guide aims at outlining the challenging interaction between political and societal will of change and public procurement law.

2. THE PUBLIC PROCUREMENT LAW SCENERY

Public procurement is among the most densely regulated fields of EU law, counting five generations of substantive and two generations of procedural law. Acknowledging the economic importance of public contracts and considering that they represent approximately 14% of EU's GDP, the different national legal landscapes were regarded to be obstructive to intra-community trade and thus had to be replaced by a common framework. From the early 1970s (when the first legislation was adopted) to the mid-2010s when Directive 2014/24/EC on public procurement and Directive 2014/25/EU on procurement by entities operating in the water, energy, transport and postal services sectors were adopted, the main focus was the procedure of the award, or the 'how to buy' process. In addition to that, EU public procurement law was developed during an era during which the fundamental freedoms and the general principles of EU law were economy-centered, which delayed the integration of social and environmental criteria in the tenders. More specifically, initially seen as obstructive to the maximization of competition, the road to their inclusion was bumpy. As an example, in the Max Havelaar case, the inclusion of an eco-label for organic production and fair trade as a technical specification for the supply of coffee was deemed to be incompatible to EU law [8]. Nevertheless, this case-law was watered down with the 2014 directives, where it was enshrined that:

'Contracting authorities that wish to purchase works, supplies or services with specific environmental, social or other characteristics should be able to refer to particular labels, such as the European Eco-label, (multi-)national eco-labels or any other label provided that the requirements for the label are linked to the subject-matter of the contract, such as the description of the product and its presentation, including packaging requirements' (Recital 75).

In addition to that, Article 18(2) of the directives has been widely saluted as introducing a general principle of sustainability, and it was endorsed by the Court of Justice in the Tim case [2]. In this context of greening the directives, in 2019 the Commission published a 52-pages long new GPP criteria for food, catering services and vending machines. The main environmental aspects of food procurement associated with the food's production identified are 'the combustion of fossil fuels and energy use for different activities, land use or land-use change and water use and water pollution'. In catering services, 'energy and water use are important contributors to the overall environmental impact, as are waste generation and waste management' [3].

3. THE EUROPEAN GREEN DEAL AND THE FARM TO FORK STRATEGY

However, to this day the narrative of these criteria seems stronger than the legal obligation. More specifically, although both Member States and contracting authorities are encouraged to use environmental and social criteria, their inclusion remains largely discretional. This hands-off approach of EU law – letting the 'what to buy' in the hands of the Member States – was recalibrated following the adoption of the European Green Deal, which in the public procurement context has been translated as the willingness to include mandatory criteria [6]. As publicised by the Commission, 'at the heart of the Green Deal' the Farm to Fork strategy aims to design a 'fair, healthy and environmentally-friendly food system'. To this end, it announced the presentation of the 'Farm to Fork' Strategy to strengthen efforts to 'tackle climate change, protect the environment and preserve biodiversity' [4]. The Farm to Fork Strategy is further expected to 'contribute to achieving a circular economy. It will aim to reduce the environmental impact of the food processing and retail sectors by taking action on transport, storage, packaging and food waste'. The Commission announced an Action Plan on organic farming expected to 'boost demand through promotion campaigns and green public procurement'. The combined policy initiatives should help in reaching 'the objective of at least 25% of the EU's agricultural land under organic farming by 2030 and a significant increase in organic aquaculture'. Among them, action 22 of the Draft Action Plan included in the Annex to the Farm to Fork Strategy [5] requires the inclusion of 'the best modalities for setting minimum mandatory criteria for sustainable food procurement to promote healthy and sustainable diets, including organic products, in schools and public institutions'. Last but not least, according to Action 3 of the Action Plan the Legislative Framework for Sustainable Food was supposed to be developed by the end of 2023. However, it still remains to be developed.

Last but not least, at an EU-level, the project 'School Food 4 Change' was introduced – with the partnership of big European capitals and regions - aiming at approaching school food in a comprehensive way, from raising food literacy, to including food procurement, preparation and service, food education and policy development [9]. The whole school food approach (WSFA) is a holistic concept that offers pupils healthier and more sustainable food choices in the long term. It is not just about what food they are served in schools but also about where the food comes from and how production impacts our environment and our health.

4. NATIONAL POLICIES AIMING AT THE PROVISION OF SUSTAINABLE FOOD

4.1. France

Over the last five years, France has been extremely active in the fight against food waste, in ensuring fair remuneration to farmers and guaranteeing supply. In 2020, law n° 2020-105 relating to the fight against waste and the circular economy (AGEC) was adopted [10]. Yet, it was the Loi pour l'équilibre des relations commerciales dans le secteur agricole et alimentaire et une alimentation saine, durable et accessible à tous (loi Egalim) in 2018 that was the pivotal point of sustainable food chains. According to art. L. 230–5–1-I Code rural, by January 2022, the meals of public canteens should include a minimum share of 50% in value of sustainable products, of which 20% (in value) shall be organic products. For beef, pork, sheep, poultry and fishery products, the significant share of these quality products is raised to 60% by 1 January 2024 at the latest. This rate is 100% in collective restaurants managed by the State.

However, despite the political will to push the organic and sustainable agenda, practice shows huge disparity in the attainment of the objective. To begin with, from a legal perspective, the objectives regarding sustainable food purchases are often included in soft law tools (plans, sustainable food schemes), which are not legally binding, making non-compliance a simple alternative. Furthermore,

although in 2019, the share of organic products in collective catering was only around 4.5%, in 2021, on a sample of 6,766 canteens the share of organic products served was already 37%, i.e. 17% more than what the Egalim law imposes [11]. In addition to that, the lack of knowledge of public purchasers slows down the dynamic of the legislation.

The Dordogne Department can serve as an example for the French strategy. The Dordogne Department voted for an 'Eat Local in Public Foodservice' roadmap in June 2016. This integrated approach ranges from production support to the use of products, including marketing and distribution. As part of its compulsory responsibilities, the Dordogne Department directly manages the school meals of 35 colleges. These 35 schools represent 14,077 students, of which nearly one-third are on scholarship. In 2019, 1.9 million meals were served in these establishments. The department council has chosen to keep a kitchen in each establishment and to have its agents prepare all meals in-house, with the support of two cook trainers and a nutritionist. They use the Agrilocal ordering platform [1] to facilitate exchanges between colleges and suppliers in compliance with public procurement rules. Eleven establishments have been supported and offer 100% organic and local meals. These schools have been certified by ECOCERT and are the first schools in France to obtain this label and the level of 100% organic and local products.

4.2. Spain

In Spain, administrative and legal culture seem to be halting the opportunity of this sustainable wave. The Central Administrative Court of Contract Appeals (TARC) has approached the incorporation of social and environmental criteria with a stricter fashion than its European homologue; as a result, it has issued judgments according to which the inclusion of strategic criteria that did not affect the operational quality of the service (but only concerned the social or environmental performance) was held to be unlawful in Case 235/2019. As a result, at the national level, Article 127 of the Public Contract Law Code simply replicates the EU directives regarding the possibility of incorporating social and ECO-labels when procuring food. On the contrary, at a regional level, things seem to be more optimistic. Recently, the Autonomous Community of Aragon approved Law 11/2023 on the strategic use of public procurement. According to the legislation, the priorisation of 'seasonal products, fresh food, as well as products of organic farming' is mandatory. To this end, the authorities should incorporate criteria that take into account the environmental footprint of the contract, taking as a reference the circumstances relating to the production and transport of food. In addition to the Aragonese legislation, Law 3/2023 on the circular economy of the Andalusia region allows for the incorporation of the reduction of food waste production and the purchase of fresh, seasonal products or products with a short distribution cycle in food supply contracts. Last but not least, Art. 34.1 of Law 5/2022 on Waste and Contaminated Soil for a Circular Economy of the region of Valencia provides for the development of sustainable public procurement criteria for 'reduction of food waste, promotion of food procurement under Mediterranean diet criteria, proximity and seasonal production, sustainable environmental management of food production and contribution to agricultural and marine biodiversity'.

4.3. Sweden

In Sweden, the inclusion of social considerations was encouraged following the Sigtuna case. In that case, the Sigtuna municipality had imposed animal welfare requirements within its meat tender which, among other things, restricted antibiotic use and transport times for slaughter. The large wholesaler Martin & Servera argued that these requirements were unlawful. The court found that this clause was lawful, opening the route to greater inclusion of similar clauses which essentially favoured local producers. The first Swedish National Food Strategy was approved by the Swedish Parliament with cross-party support in June 2017, setting out policy until 2030. The Strategy aimed at promoting greater food production within Sweden – both conventional and organic, while in parallel policies were implemented to encourage national producers to participate in tenders for public food.

5. SUMMING UP

In principle, the European Union has acknowledged the importance of the (public) food sector to achieve Targets 10 and 16 GBF in its Green Deal and its Farm to Fork strategy. European public procurement law provides national authorities with the opportunity to integrate biodiversity in procuring decisions and thereby providing biodiversity positive economic incentives in line with Targets 14 and 18. However, procurement law does not require such a biodiversity sensitive procurement. Therefore, it seems that the change in the field of procurement follows a bottom-up approach, with local authorities taking the lead in what can be called a 'food revolution' as the French, Spanish and Swedish examples have shown. Despite the at times hostile administrative and legal scenery, implementing sustainable food chains is a realistic goal, even at a sub-legal level - if the corresponding political will is present.

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SUPPLY CHAIN LIABILITY

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Abstract. This contribution discusses the role of supply chain liability for the achievement of Targets 15 and 22 of the Kunming-Montreal Global Biodiversity Framework (GBF). This includes not only enterprise liability but also the liability of certification bodies, which play a crucial role in biodiversity related supply chain governance as they often monitor production patterns along transnational supply chains. Liability gives teeth to EU or national supply chain laws implementing the UN Guiding Principles on Business and Human Rights and Target 15 GBF, and it provides for a direct remedy for those affected by biodiversity destruction in accordance with Target 22 GBF. The contribution describes the state of the art in tort law based supply chain liability

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and details out the different codification approaches taken in different supply chain laws. Based on this, the contribution discusses the pros and cons of different regulatory options. It concludes that, although general tort law provides for relevant criteria to hold companies and certification bodies accountable within their spheres of influence, the codification of explicit liability provisions is preferable due to reasons of legal certainty. At the same time, procedural issues, such as costs, representation or burden of proof, which are of high practical relevance for claimants can be detailed out.

Keywords. Supply chain liability, liability of certification bodies

1. INTRODUCTION

Target 15 of the Kunming-Montreal Global Biodiversity Framework (GBF) requires businesses to regularly monitor, assess, disclose and progressively reduce negative impacts on biodiversity along their operations, including in corporate structures and supply and value chains. At the same time, Target 22 GBF demands access to justice for those affected by destruction of biodiversity, such as indigenous peoples or local communities.

In principle, tort law, with its ability to allocate compensation to those suffering damage from biodiversity destruction caused by a wrongful act, constitutes a powerful legal remedy, and it provides for relevant criteria to hold companies accountable within their sphere of influence. Criteria, which can also be applied to corporate or supply chain structures [2]. However, traditionally, civil courts – influenced by the limited liability doctrine in company law, according to which parent companies are not liable for the acts and omissions of their subsidiaries - used to be reluctant to impose liability in those structures. This has changed only recently, not least due to a change in social norms as reflected in the UN Guiding Principles on Business and Human Rights, case law, in particular of English courts, and a number of European and national supply chain laws [7].

Still, supply chain liability is perhaps the most controversially discussed topic with regard to the codification of supply chain laws. This is caused by the fear of enterprises of high damage claims – which already sheds light on the important role that liability can play for effective supply chain governance. Apart from compensation and allocation of damages, tort law plays an important role in preventing damages [17]. It thereby complements public law while being more targeted to the individual case.

Experience with more established supply chain instruments focusing on biodiversity protection such as the Renewable Energy Directive or the Forest Stewardship Council has shown that the implementation and control of biodiversity requirements faces particular challenges. These include jurisdictional limitations, limited (administrative) knowledge of conditions abroad, reliance on (potentially unreliable) standardisation and certification schemes, low protection standards, insufficient controls, smuggling and mixing of commodities, betrayal and bribery, power imbalances between stakeholders and threatening and killing of right-holders or biosphere defenders [5]. At the same time, elaborate public law requirements and documentation duties for enterprises, standardisation and certification schemes bear the risk of excessive bureaucracy, overburdening paper works and ‘ticking boxes’ instead of qualitative improvements.

Vice versa, tort law provides for an intrinsic incentive for companies and/or certification bodies to carry out their duties diligently, while at the same time leaving the responsibility of how to achieve proper performance with the economic actors, and it only steps in when mal-performance or ‘fault’ has led to damage. In turn, it legally empowers those affected directly.

This contribution discusses the role of liability in effective biodiversity related supply chain governance. This includes not only enterprise liability but also the liability of certification bodies, which play a crucial role in monitoring production

patterns. It describes the state of the art in tort law based supply chain liability and details out the different codification approaches taken in different supply chain laws. Based on this, the contribution discusses the pros and cons of different regulatory options. It hereby places particular focus on the liability of certification bodies.

2. LIABILITY OF ENTERPRISES

2.1. General tort law

Tort law doctrine provides for elaborated criteria to impose corporate or supply chain liability on parent or leading companies in case they have not acted with due care within their sphere of impact - depending on the facts of the case. This is increasingly reflected in recent court practice. In this regard, the English cases of ***Chandler v. Cape*** plc and ***Lungowe v Vedanta*** are of major importance.

In ***Chandler***, the Court of Appeal explicitly recognised a duty of care of a parent company for its domestic subsidiary's employees based on the concept of 'assumption of responsibility'. In substance, it was crucial that Cape plc had omitted to advise the subsidiary as to what precautionary measures should be taken to protect employees from asbestos dust [14]. In the cases of ***Vedanta*** and ***Okpabi***, the UK Supreme Court extended (potential) parent companies' duties of care towards victims of pollution and environmental degradation abroad. It stated that '(e)verything depends on the extent to which, and the way in which, the parent availed itself of the opportunity to take over, intervene in, control, supervise or advise the management of the relevant operations (including land use) of the subsidiary.' This could either apply in a situation where the parent not merely proclaims group-wide due diligence plans but also takes active steps to implement them, or to a situation where published due diligence instruments assert an assumption of control although the parent does not live up to this assertion. Based upon these criteria, tort law has the ability to complement due diligence duties in supply chain laws perfectly [3].

At the same time, these rulings have significant influence on the legal development in other countries, in the common law world and beyond. This is based on the rules of private international law such as Article 4(1) of Regulation (EU) No 864/2007 on the law applicable to non-contractual obligations (Rome II), which, lead to the applicability of the law of the country where the damage has occurred, which has often been a common law country. For example, the District Court of the Hague regarded ***Chandler v. Cape*** to be part of Nigerian law and applied its doctrine in the case of ***Oguru v. Royal Dutch Shell*** [1]. In the German case of ***Jabir and Others v KiK***, which concerned insufficient safety at workplace in KiK's supply chain, the logic of ***Chandler v. Cape*** has been tried under the law of Pakistan, which was applicable to the case [18].

2.2. Relationship between supply chain laws and tort law

Existing supply chain laws, while resembling each other as far as the codification of due diligence duties is concerned, differ considerably in their approaches to liability. The Corporate Sustainability Due Diligence Directive (EU) 2024/1760 (SDDD) and the French ***Loi relative au devoir de vigilance*** take a proactive approach and include a provision on civil liability. In contrast, the German ***Lieferkettensorgfaltspflichtengesetz*** emphasises that the violation of an obligation under that law does not give rise to any civil liability while general liability rules remain unaffected, whereas the Norwegian ***Lov om virksomheters*** is completely silent on this issue.

When due diligence laws stay silent on the issue of liability, binding due diligence requirements can have an impact on tort law duties in two regards. Firstly, the breach of a due diligence duty can qualify as a breach of a duty of care under the tort of negligence. Secondly, a breach of a codified due diligence duty can be relevant in tort taw as a breach of a statutory duty, unless the due diligence law explicitly rules out that the obligations under due diligence legislation constitute statutory duties in the sense, as the German ***Lieferkettensorgfaltspflichten-gesetz*** does.

Thus, from a doctrinal perspective, even without an explicit liability clause, the infringement of a due diligence duty in supply chain law can lead to liability. However, this leaves a number of uncertainties which are particularly related to the fact that in most cases the application of the law where the parent or buyer company is domiciled is highly unlikely under private international law, and that the interaction of domestic supply chain laws and foreign tort laws is still speculative. Thus, victims as well as companies will still be confronted with the uncertainties of (the domestic application of) foreign tort laws.

Article 29(1) CSDDD now requires Member States to ensure company liability for damage that has been caused to a natural or legal person by a failure to comply with the codified due diligence duties 'when the right, prohibition or obligation listed in Annex I is aimed to protect the natural or legal person'. This applies to any measurable environmental degradation with impacts on biodiversity, such as deforestation, which impairs environmental human rights related e.g. to the natural bases for food production, a person's health, safety or normal use of land, or 'substantially adversely affects ecosystem services through which an ecosystem contributes directly or indirectly to human wellbeing' (Annex, Part I, No 15). That the biodiversity obligations enshrined in Annex, Part II, such as the obligation to avoid or minimize adverse impacts on biological diversity (No 1) or the obligation to avoid or minimize adverse impacts on wetlands (No 14) also aim to protect a person may be more difficult to argue.

Article 29(1) SDDD can be understood as a tort law provision which is based on fault and causality and which is in line with the tort case law developments in the UK mentioned above. It could be implemented in Member States' tort laws either with the due diligence provisions defined as relevant statutory laws or with the due diligence duties concretising the duty of care (see above).

At the same time, the SDDD now solves the problem of the (potential) applicability of foreign tort law. According to Article 29(7) SDDD, Member States shall ensure the overriding mandatory application of their implementing liability provisions in the terms of Article 16 Rome II Regulation. This creates legal certainty for victims as well as for businesses as (otherwise applicable) foreign tort laws are more difficult to predict, and liability risks might even go beyond European approaches [13].

Similarly but prior to the CSDDD, the French ***Loi de Vigilance*** has laid down that the author of any failure to comply with the due diligence duties shall be liable and obliged to compensate for the harm that due diligence would have permitted to avoid, which is also designed as a mandatory provision.

Notably, Article 29(2) and (3) CSDDD address important practical issues, such as the principle of full compensation (while excluding punitive damages), limitation periods, cost of proceedings, the availability of injunctive measures, representation of victims by a trade union, a non-governmental human rights or environmental organisation or another non-governmental organisation and national human rights institutions, and disclosure of evidence. These are of major importance for the facilitation of lawsuits for claimants. The French ***Loi de vigilance*** was more reluctant in this regard, and in particular did not include any provisions relating to the disclosure of evidence.

Further, Article 29(5) and (6) CSDDD clarify that this liability rule shall be without prejudice to other European or national rules on liability related to adverse human rights or environmental impacts as well as to the civil liability of subsidiaries or direct and indirect business partners in the value chain, and that joint and several liability is possible.

3. LIABILITY OF CERTIFICATION BODIES

Certification bodies play an important role in supply chain governance. Companies often outsource safety and environmental standards verification and controlling duties to external certification bodies, which they pay. Current supply chain laws do not require independent verification of due diligence duties or of proper production conditions in subsidiaries or suppliers. Nevertheless, enterprises might employ them voluntarily in order to get support in carrying out

of their codified due diligence duties or in order to avoid liability (as detailed out above) or both. In the past, however, certification bodies did not always prove reliable, and certified production sites caused huge mass damages to people and the environment. For example, in the well-known case of the factory fire of Ali Enterprises in Pakistan, with 260 killed and 32 injured, the Italian certification organisation RINA was involved in the monitoring of, amongst other things, the fire safety of the factory [11]. Comparably, the safety of the dam at the Córrego do Feijão iron ore ***mine*** near Brumadinho (***Brazil)*** had been certified by the Brazilian subsidiary of TÜV Süd, a well-recognised German certifier, shortly before it burst. The burst released a wave of over 12 million cubic meters of toxic mining sludge, killing 272 people, destroying forests and contaminating the area and the local river. Currently, more than 1,400 plaintiffs are demanding over 582 million Euro in damages from the German parent company TÜV Süd, based on Brazilian tort and environmental law and allegations for negligence in certifying the dam against better knowledge. The case is pending at the Regional Court (***Landgericht***) München I [12].

Reliability problems in certification bodies relate to lack of expertise, in particular in subsidiaries and subcontractors abroad, and the proximity between enterprises and certification bodies as the former pay the latter [8]. Liability of certification bodies could counterbalance these adverse incentives and provide for an additional safeguard in supply chain governance as well as a direct remedy for those concerned. The latter is of particular importance where the polluting company itself is insolvent ([10], [16], [17]). Therefore, the second part of this contribution elaborates the possibilities to hold certification bodies liable for not having carried out their monitoring duties with due care.

In principle, certification bodies can be held liable under general tort law principles. This is now recognised for cases, in which the certification body acts under a defined legal framework, such as the EU Medical Devices Regulation, and where its tasks are meant to add to the safety of products or processes. French and German courts both accepted this in principle, although they came to different conclusions concerning the negligence of the certifier (TÜV Rheinland) in the individual case [10]. Similarly, classification bodies have been convicted for failure to properly monitor the safety of vessels [4].

Liability of certification bodies in international value chains with no explicit legal certification requirement has also been discussed, and indeed tried in court. The situation is less clear though, and litigation has been unsuccessful until now. In English law, an assessment would start with the case of ***Caparo v Dickman*** and the question whether the certification body has assumed responsibility vis-à-vis those whose rights have been infringed through polluting or degrading production patterns. Such an assumption of responsibility could be arguable where the parent or buyer company has control over or crucial impact on the production conditions and where the certification body is a crucial element of the control system of the parent or buyer company on which it relies, and where any breach of controlling duties increases the risks for the rights of workers or local people [9].

In German law, tort law responsibility of a certification body could arise when a parent or buyer company delegates a duty of care (as enshrined in a supply chain law) to the certification body. The tort law logic giving rise to the duty of care of the delegate is that, through delegating the duty of care, the delegator legitimately comes to rely on the delegate and therefore lowers his or her own attention. The delegation of the duty of care to a certification body is normally based on a contract, and the duty can also be partly delegated. This would be the case in supply chain governance, as the contractual arrangement between the parent or buyer company and the certification body normally requires the certification body to monitor certain aspects of due diligence and to notify the parent or buyer company of deficiencies, while it remains for the parent company or buyer to then take action [9]. Thus, if the parent company or buyer owes a duty of care, and if it organises its control system in such a way that a certification body takes over the task of visiting the production site and notifying the parent company or buyer of safety deficiencies, then the certification body

partially takes over the duty of care and will be liable for damage resulting from negligence [9].

In addition to such tort liability towards the victims of, for example, an accident that could have been avoided, certification bodies may of course be contractually liable towards the enterprise if the enterprise is liable towards the victim and that liability could have been avoided if the enterprise had been notified by the certification body of problems with a supplier.

Overall, liability of certification bodies for insufficient monitoring would provide for an additional safeguard to ensure effective supply chain governance in line with Target 15 and access to justice as provided for in Target 22 of the GBF. Although liability could be based on general tort law principles, it should be codified for reasons of legal certainty. In line with the new rules on the liability of the enterprise, the application of the law of the country where the enterprise is domiciled should be made mandatory and liability for subsidiaries established. Furthermore, rules on (potential) representation, for example by environmental or human rights organisations, on costs, causality and burden of proof should be included in order to facilitate lawsuits for victims of environmental degradation. In this regard, access to documents and a rebuttable presumption that the damage could have been avoided by careful monitoring and certification would be of major importance. In relation to the polluting enterprise, joint and several liability could be provided for [6].

Rather than codifying an encompassing liability regime without (potential) loopholes for certification bodies, the impact of independent third party verification by certification bodies on the liability of the enterprise was heavily discussed during the legislative process of the CSDDD. Industry had advocated in favour of a 'safe harbour' clause which would exclude liability in case of positive verification. This, however, would have contradicted general tort law principles [15]. For example, according to established German case law, in such a situation, the enterprise's duty of care changes into the duty to select and monitor the certification body carefully. The extent to which the enterprise has to monitor the certification body depends on the expertise of the latter. In any case, the enterprise has to step in where there are indications of unreliability or other shortcomings on the part of the expert [9]. Article 29(4) CSDDD now clarifies that participation in industry or multi-stakeholder initiatives or the use of independent third-party verification does not exclude the liability of the enterprise.

4. CONCLUSIONS

Overall, enterprise liability and the liability of certification bodies are important cornerstones to achieve the aims of Targets 15 and 22 of the GBF. In order to make them work effectively, enhance legal certainty and establish real access to justice for those affected, they should be codified in supply chain laws, or accompany supply chain laws. Formal requirements [8] and a liability regime for certification bodies based on joint and several liability with the pollution enterprise would reflect and remedy their de facto role in biodiversity related supply chain governance, even where they do not play a mandatory legal role.

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EFFECTIVE AND LEGITIMATE SUPPLY CHAIN GOVERNANCE

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Abstract. A transnational economy that takes into account and minimises its impact on biodiversity is crucial for the achievement of Targets 7, 10 and 15 of the Kunming-Montreal Global Biodiversity Framework. Therefore, the European Union and national States have enacted so-called supply chain due diligence laws. However, the codification, implementation and control of biodiversity requirements that envisage production patterns in the Global South face particular challenges. These include jurisdictional limitations, limited (administrative) knowledge of conditions abroad, legitimacy challenges, insufficient control, smuggling and mixing of commodities, betrayal and bribery. At the same time, voluntary private standardisation and certification systems

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have long-standing experience in supply chain governance and the inclusion of local stakeholders. This contribution elaborates the different doctrinal possibilities on how supply chain laws can include private systems, the pros and cons of these possibilities, as well as the legal safeguards required in order to ensure the reliability of these private systems with a view to their (promised) biodiversity performance and the inclusion of local stakeholders. These safeguards comprise the accreditation and control of standardisation systems, detailed structural and procedural requirements as well as (far-reaching) transparency requirements and the legal empowerment of stakeholders. The contribution concludes that a wisely drafted interaction between supply chain laws and private systems has the potential not only to contribute to Targets 7, 10 and 15, but also to Target 22 GBF.

Keywords. Supply chain due diligence laws, private standardisation and certification systems, interconnections and legal safeguards.

1. INTRODUCTION

The Kunming-Montreal Global Biodiversity Framework (GBF) requires to halt and reverse biodiversity loss, amongst others through pollution reduction (Target 7), sustainable agriculture, aquaculture, fisheries and forestry (Target 10), and through businesses, which monitor, assess, disclose and progressively reduce their impacts on biodiversity (Target 15). As more than 50 per cent of the European Union' s biodiversity footprint is caused abroad, and EU imports have been responsible for as much as 16 per cent of tropical deforestation in some previous years, supply chain laws provide for an important instrument to fulfil these targets [21].

Therefore, the European Union and a number of States have adopted supply chain laws which require the protection of biodiversity, including Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (Renewable Energy Directive; RED), amended by Directive (EU) 2023/2413; Regulation (EU) 2023/1115 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation (Deforestation Regulation; EUDR); and Directive (EU) 2024/1760 on corporate sustainability due diligence (Corporate Sustainability Due Diligence Directive; CSDDD). However, biodiversity related requirements are often framed in relatively broad terms and need to be concretised, such as the CSDDD's 'obligation to avoid or minimise adverse impacts on biological diversity, interpreted in line with Article 10, point (b) of the 1992 Convention on Biological Diversity' (Annex, Part II, No 1).

Traditionally, biodiversity related supply chain governance relied on voluntary private standardisation and certification systems, such as the Forest Stewardship Council (FSC), eco-labels or fair trade labels. Even with supply chain laws in force such as the above-mentioned EU laws, private standardisation systems with their experience in defining concrete biodiversity related protection duties could still constitute an important link between abstract-general laws and their implementation in a specific case.

Thus, the relation between supply chain laws and private systems needs to be reconfigured in order to ensure effective and legitimate supply chain governance that is able to achieve the above-mentioned GBF Targets for an economy which minimises its impact on biodiversity, in particular Target 15. This contribution elaborates the different doctrinal possibilities on how the law can include private systems, the pros and cons of these possibilities, and the legal safeguards required in order to ensure the reliability of these private systems with a view to their (promised) biodiversity performance. The findings are based on an encompassing evaluation not only of biodiversity frameworks such as the RED or the FSC but also of other European frameworks based upon private standardisation and certification, such as EU product safety law and the law of classification (relating to the safety of vessels).

2. ADVANTAGES OF THE INCLUSION OF PRIVATE STANDARDISATION AND CERTIFICATION SYSTEMS IN SUPPLY CHAIN LAWS

Standards ease the coherent implementation of the law and reduce frictions as compared to a situation where each enterprise develops its own substantive standards and procedures. Thus, they provide for an efficiency surplus for enterprises as well as for public authorities that monitor businesses' compliance with the law.

Ideally, private standards are based on expertise and provide for adequate problem-oriented solutions, which are flexible and easy to amend. They provide for practice-based solutions which if conducted properly can enhance acceptance of the law. In addition, private standards have the potential to go beyond legal requirements, as it has been observed in the context of Regulation (EU) No 995/2010 laying down the obligations of operators who place timber and timber products on the market (Timber Regulation) and the RED, and to take into account 'the broader picture' abroad [18], and thus have the potential to enhance biodiversity performance further, in particular in sourcing regions outside the EU [7,8].

Further, supply chain laws, although strictly based on personal and territorial jurisdiction, face certain legitimacy challenges abroad and are criticised of being 'extraterritorial', 'paternalistic' or 'neo-colonial'. Also, domestic legislators and public authorities lack the necessary expertise to daft concrete requirements adequate for conditions abroad. Thus, if drafted in plural, open and transparent transnational bottom-up procedures with the inclusion of those concerned and of stakeholders, private standards can enhance the legitimacy of supply chain laws. This idea is also reflected in the WTO law requirement to base national technical standards on 'international standards', and private systems such as the FSC have amended their standardisation activities accordingly in order to be able to provide for such 'international standards' [1,3,14]. In addition, Target 22 GBF requires full participation of local stakeholders in biodiversity related decision making, which for the economic sector and for Target 15 GBF has been concretised with the Decision 14/15 'Safeguards in biodiversity financing mechanisms' of the COP to the CBD of 2018, and which highlights the importance of 'effective participation of all actors concerned, including the free prior informed consent, (..) involvement of indigenous peoples and local communities'.

If carried out properly, private certification unburdens the State from controlling duties, can bridge jurisdictional borders and provide for important monitoring services abroad [16]. Thus, private standardisation and certification systems have the potential to enhance the legitimacy, effectiveness and efficiency of supply chain laws. Usually, their use provides more reliability with a view to proper risk management, corruption and fraud control, traceability, and so on, than purely internal due diligence systems of businesses or individual supply chains [7,8].

3. RISKS OF THE INCLUSION OF PRIVATE STANDARDISATION AND CERTIFICATION SYSTEMS

Private systems differ enormously with regard to their substantive requirements, their organisational structures and composition, their procedures with regard to the inclusion of stakeholders and of external expertise, to public participation and transparency and to fees or required verification procedures. Differences, for example concerning composition and stakeholder inclusion, are obvious between industry schemes and multi-stakeholder systems, but reach far beyond [4,17]. Thus, there is the risk that private systems do not apply proper procedures, prove to be unreliable or apply unsustainable standards.

Certification bodies may lack the competence to reveal unsustainable production or fraud, and there have been instances where certifiers were bribed, threatened or even killed [1]. The structural proximity between certifiers

and controlled enterprises, the latter paying the former, poses another problem that is inherent to most certification systems [19].

This may result in unsustainable production patterns or even in a race to the bottom between standardisation and certification systems, as it has been observed under the framework of the RED [4]. Cases of mass damages due to unreliable certification such as the ***dam*** burst at the Córrego do Feijão iron ore ***mine*** near Brumadinho (***Brazil***), which caused a toxic sludge-slide killing 272 people, destroying forests and contaminating the area and the local river [13], the breast implant scandal around the French producer Poly Implant Prothèse [11], the sinking of just classified vessels [6], or the factory fire at Ali Enterprises in Pakistan [10] have initiated new legal research on how to safeguard the reliability of certification bodies.

4. POSSIBILITIES TO INCLUDE PRIVATE SYSTEMS AND LEGAL SAFEGUARDS

Existing legal frameworks such as EU product safety law, the law of classification societies (relating to the safety of vessels) and the regularly amended RED provide for different possibilities on how the law can make use of the additional advantages of private systems. At the same time, lessons from previous shortcomings could be learned on how to ensure the reliability of private systems, and thereby safeguard their legitimacy and effectiveness. These insights are particularly relevant for the concretisation and certification of biodiversity relevant production abroad.

4.1. Standardisation

In codifying biodiversity requirements, supply chain laws need to address the tension between relatively broad references to international environmental law and concrete biodiversity requirements. Broad references have the advantage of referring to internationally recognised obligations, which can be concretised by fair and inclusive transnational bottom-up procedures and which are adaptive to different socio-economic conditions abroad. This enhances their transnational legitimacy and allows for the participation of and consent by local stakeholders in biodiversity related decision making as required by Target 22 GBF and the Decision of the COP to the CBD on safeguards in biodiversity financing mechanisms. ***Vice versa***, a high degree of concretisation enables the safeguarding of high biodiversity standards and prevents divergent and inadequate implementation and the above-mentioned 'race to the bottom' between obligations and standardisation systems.

Potential approaches to address this tension are the concretisation of general clauses by rule examples, guidelines and comments to guide interpretation, as well as minimum requirements with limited possibilities for deviation. Another possibility is a public register for (questions and) clarifications. The more safeguards the law provides to ensure the proper functioning of private systems (as outlined below), the more leeway the law can leave to those systems [8].

From a doctrinal perspective, there are different possibilities to include private standards into the law. Firstly, the use of private systems can be made mandatory as it is the case with safety requirements for vessels which have to comply with the rules of so-called 'classification societies' [5] or with the sustainability requirements in the RED where the operators are required to join a 'voluntary system' (Article 30 RED). Such mandatory use of a private system is easy to apply for authorities and enterprises, and the latter do not face further due diligence requirements, which go beyond the participation in a private standardisation and certification scheme.

Secondly, the use of private standards can create a non-rebuttable presumption of compliance with the law, as it is the case in European product safety law [16]. Here, the adherence to the respective private standard equals to adherence to the law and leads to a legally 'safe harbour' but the use of the standard is not mandatory. Instead, enterprises can prove compliance with the law by other means. This option provides for very high incentives for companies to use a private system, as they do not face duties additional to those required by the system. The related certificate allows proof of compliance. Again,

authorities only have to control the adequacy of the standard and the existence of the certificate, in case the enterprise has not decided to prove compliance alternatively.

In these cases, however, elaborate legal safeguards are required to ensure the reliability and comparability of the private systems. These include the accreditation of private standardisation systems based on a domestic domicile and the applicability of domestic law as well as detailed requirements for the organisation, structure and fair and inclusive procedures based on expertise. Reference to standards of the International Organization for Standardization (ISO) and the ISEAL Alliance combined with additional requirements, for example for sector specific problems where necessary, is a possibility. These requirements need to be controlled thoroughly in advance, ideally in a transparent accreditation procedure, which is accessible to third parties, such as environmental NGOs and biosphere defenders [12]. The accreditation must only be temporary and subject to renewal, and the systems need to be monitored and controlled regularly [2,8,15].

In addition, the standards themselves must be subject to approval as a means of output control. Otherwise, mandatory inclusion may not meet constitutional requirements in certain legal orders (as for example in Germany), and inclusion would only be possible as a rebuttable presumption either [7].

4.2. Certification

In parallel, private certification can either be regarded as full proof of compliance with the legal requirements, or as a rebuttable presumption of compliance, or as mere indication. To this end, certification can either be part of a standards scheme, as in the RED system [4], or required independently, as in certain areas of EU product safety law, such as the law on the safety of medical devices [11]. In both cases, certification bodies should be accredited, and the accreditation should be time-limited. Certification bodies should be controlled regularly, and their accountability for subsidiaries and subcontractors should be codified. Structural requirements relate to their independence, impartiality, expertise and sufficiency of resources. Expertise must include biodiversity- and land-use-specific methods in order for certifiers to be able to assess impacts on biodiversity as such, on ecosystem functions for local livelihoods and on environmental human rights. Protection against contract termination by the economic operator, maximum contract length, and mandate allocation systems or rotation mechanisms, provide safeguards for independence. Monitoring methods should (as minimum requirements) be codified precisely and consistently, and be supplemented by a general clause which refers to best practices and requires an investigative, risk- oriented application of these methods. Minimum requirements include unannounced visits, the identification and inclusion of stakeholders in safe spaces, and a review procedure. Commission Implementing Regulation (EU) 2022/996 on rules to verify sustainability and greenhouse gas emissions saving criteria and low indirect land-use change-risk criteria, a law that complements the RED, provides for important elements of the state of the art [8].

5. PRIVATE SYSTEMS AND NEW SUPPLY CHAIN LAWS

Despite these advantages, new supply chain laws such as the EUDR or the CSDDD have not decided in favour of a legally binding role of private standardisation systems. Instead, they refer to private systems as providers of ‘complementary information’ or as ‘additional means of proof’ of compliance with due diligence duties, or as means ‘to support the implementation of due diligence requirements’ (Article 10 EUDR, Articles 10(5) and 11(6) CSDDD). Article 20(5) CSDDD calls on the Commission to set out fitness criteria for private systems and methodologies for their assessment. Thus, at first glance, these laws seem to have chosen a fairly weak inclusion of private systems. Nevertheless, representatives from authorities, enterprises and standardisation systems work on the assumption that private systems will remain important for the implementation of biodiversity-related due diligence requirements [18].

Indeed, despite the lack of explicit legal effects of the use of private systems, there are still different ways of how public authorities could recognise or consider private standards beyond a clear legal reference to accredited systems. Public authorities could consider the use of (listed) private systems as a rebuttable presumption of compliance. In such a case, the European Commission or the competent national authorities would prepare a list of systems that they regard as reliable and in line with the legal requirements. As the presumption would be rebuttable and as the systems would not (necessarily) be accredited and intensely controlled, a legally relevant risk of underperformance of systems would remain, which would require authorities and companies to take indicators of such underperformance into account and to take appropriate additional action. This option still provides for an incentive to use the listed systems while it does not relieve the company from all due diligence duties.

Forth, the consideration of private standardisation systems could be based on defined criteria. Here, the competent authorities would develop a set of criteria according to which the reliability of systems and their performance with a view to compliance with the law can be assessed. Companies would then need to select a system themselves and monitor its performance in accordance with these criteria, and take additional action where required. Vice versa, the authorities would have to assess the chosen systems and remaining due diligence duties. This would provide for a comparable but still weaker option for companies to prove compliance with its due diligence duties.

It must be noted though that a completely open consideration of compliance with a private systems just as additional means of proof does not provide for a real unburdening effect for either authorities or for companies which still bear the full responsibility to select and monitor a system and carry out remaining due diligence duties without reliable legal advantage. Obviously, this only offers weak incentives for companies to use such a system (which they normally have to pay for). At the same time, it only provides for a weak incentive for private systems to improve and adapt to the law. Thus, the additional value of private systems in terms of legitimacy, effectiveness and efficiency are less likely to realise, as the experience with the Timber Regulation has shown [20].

Thus, although the new supply chain laws do not recognise private systems as automatic presumption of compliance with the law, and certification only as additional proof of compliance, these systems might nevertheless play an important legal role in the future, which, however, is still unclear.

6. CONSIDERATIONS AND SUGGESTIONS

The recognition of private standardisation and certification schemes in supply chain laws provides for additional advantages with a view to the participation of (local) stakeholders in biodiversity related decision-making and control, and thus to the legitimacy, effectiveness and efficiency of these laws in achieving a considerable reduction of biodiversity impacts by transnational economic activities as outlined in Targets 7, 10 and 15 GBF. However, previous experience, for example with the RED, has shown that there is a risk that private systems are not sufficiently reliable. Thus, in order to make use of the advantages of private systems, the law should detail out the (future) interplay between the (potential) use of private systems and remaining due diligence duties. Hereby, it could or should provide for sufficient incentives for companies to use a private system and for sufficient legal safeguards and incentives for the systems to improve and adapt to the law. Legal uncertainty with regard to the legal role of private systems, in contrast, is a challenge for all actors, companies and private systems as well as public authorities.

One possibility would be that compliance with private systems that fulfil the upcoming fitness criteria would (in the middle run) be strengthened towards a rebuttable presumption of compliance. A rebuttable presumption would lead to a graded threefold control system, consisting of private schemes, enterprises and authorities. Identified weaknesses or gaps in private systems could be complemented by (modified) due diligence measures and controlled by authorities, an option which is preferred by some academic authors and stakeholders [8].

An important additional aspect to ease the inclusion of private systems

is transparency. Transparency facilitates assessments by accreditation authorities and informed decisions concerning the outreach and reliability of systems by economic actors and authorities, and it strengthens information, participation and control by stakeholders and the general public as required by Target 22 and leads to the related effectiveness and efficiency gains. Thus, supply chain laws that consider the inclusion of private systems should pay particular attention to (far reaching) transparency requirements which comprise the standards themselves, their development procedure, their monitoring and control mechanisms, the remediation of shortcomings, enforcement procedures, the requirements for certifiers, the list of participants, and so on. Transparency requirements for certifiers should include inspection methods and scope, the internal quality management, a list of enterprises and areas, inspection reports (or relevant parts thereof), inclusion of stakeholders and complaints mechanisms.

The legal empowerment of stakeholders strengthens the effectiveness of supply chain laws as well as the proper functioning of private systems further. This encompasses accessible and effective complaints mechanisms, not only within private systems but also towards public authorities, which include whistle-blower protection, the protection of biosphere defenders as required by Target 22 GBF, as well as access to justice for those concerned and for NGOs. These requirements are already reflected in the EUDR (with Article 31 providing for a complaints procedure for any natural or legal person, and Article 32 providing for access to justice for any natural or legal person having sufficient interest) and in the CSDDD (with Article 26 providing for the opportunity for any natural or legal person to raise substantiated concerns). Additional safeguards are a liability regime for economic operators (see Article 29 CSDDD) and for certifiers [9]. Ideally, those legal safeguards should be accompanied by financial and other support to social and environmental representatives in the Global South [8].

Overall, wisely drafted interconnections between public and private supply chain governance can contribute to effective and legitimate biodiversity protection in supply chains and thus to the realisation, in particular, of Targets 7, 10, 15, and 22 GBF.

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PRODUCTION REQUIREMENTS IN TRADE TO FOSTER BIODIVERSITY: FLEXIBILITY IN WTO LAW FOR EFFECTIVE AND CONTEXT-BASED APPROACHES

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Abstract. This article explores the policy space available to World Trade Organization (WTO) members for distinguishing between products based on their production methods. It suggests practical ways to utilize existing WTO flexibilities to promote the incorporation of biodiversity into trade policies, in line with Target 14 of the Kunming-Montreal Global Biodiversity Framework.

Keywords. biodiversity, process and production methods, WTO law

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1. A NEW GENERATION OF PRODUCTION REQUIREMENTS IN TRADE TO FOSTER BIODIVERSITY

Target 14 of the Kunming-Montreal Global biodiversity framework requires the parties to "ensure the full integration of biodiversity […] into policies, regulations" and further policy processes.

Accordingly, the European Union (EU) has recently restricted imports of agricultural products farmed with certain pesticides toxic to pollinators, in an effort to counter the decline of pollinators worldwide [1]. It has also introduced the EU Deforestation Regulation (EUDR) [2], which aims to minimise global deforestation driven by EU consumption by imposing stringent traceability and further due diligence requirements on importers. Further trade-related measures have been introduced as part of the EU Green Deal to promote "sustainable" trade in agriculture [3].

Such production requirements for trade in goods offer important opportunities to address environmental and social externalities, including biodiversity. Since they also raise concerns about trade impacts and fairness, their consistency with WTO law comes into play.

This summary briefly discusses the policy space WTO members have to differentiate between products based on how they are produced and includes recommendations on how to minimise risks of legal challenge and maximise consistency.

In trade language, we speak of trade-related processes and production measures (PPMs). Such PPMs can be product-related (if they impact the physical characteristics of a product) or non-product-related (if the production methods do not get "visible" in the product itself). Environmental PPMs can be product-related, such as restrictions on using neonicotinoid pesticides, or non-product-related, such as the requirement that the commodity has been produced on non-deforested land.

2. PPMS IN FOOD TRADE TO SUPPORT THE AGENDA 2030

WTO-compliant differentiation between products based on PPMs can significantly support the implementation of the SDGs, including biodiversity. The international community has agreed to work together more effectively to create more sustainable systems for food production, marketing, and consumption both locally and globally. Instead of focusing narrowly on food quantities and competitive markets, the focus will be on addressing interlinked issues such as water scarcity, soil fertility loss, agrobiodiversity loss, climate impacts, the need for culturally adapted food, equitable land access, and rural labour standards, among other aspects. This is also true for other economic activities and sectors.

3. PPMS IN FOOD TRADE CAN BE CONSISTENT WITH WTO LAW

It is now well established that regulatory distinctions based on PPMs are not a priori illegal under WTO law. What matters is that they are not unduly discriminatory or excessively trade restrictive, or inconsistent in terms of stated objectives [4–7].

With regard to the non-discrimination standard, PPM requirements shall not be designed and applied such that only some countries/areas can de facto benefit from them. Under the WTO Technical Barriers to Trade (TBT) Agreement, the question is whether the requirements of Art. 2 TBT are complied with (fulfil a legitimate objective, not more trade-restrictive than necessary etc). As to the General Agreement on Tariffs and Trade (GATT), the question is whether two seemingly identical products, produced according to different PPMs, are "like" products in respect of which regulatory distinctions are not permitted. This is a matter of competitive relationship in the marketplace. If PPM requirements are found to be discriminatory in the above respects, grounds for justification could still be sought under GATT Art. XX, which justifies GATT inconsistent measures that pursue legitimate policy objectives. The analysis under GATT Art. XX essentially involves a process of "weighing and balancing" a series of factors, including the importance of the objective, the contribution of the measure to that objective, and the trade-restrictiveness of the measure. Under both GATT and the TBT Agreement, a key aspect is that differences in treatment (e.g. between different fishing methods in different places of the ocean) are "calibrated" to the different sustainability risks stemming from different factual situations.

4. MINIMISE RISK OF LEGAL CHALLENGE BASED ON PRINCIPLES OF FAIRNESS

Many PPMs imposed by countries have so far "failed to pass these [WTO] tests and had to go back to the drawing board, however without being excluded in principle" [8]. However, jurisprudence is evolving, and PPMs can be WTO compliant if drafted in a careful and context-sensitive way. In particular, the following elements should be considered to minimise risks of legal challenge and maximise consistency:

Transparency and procedural fairness are crucial in design and implementation. One aspect concerns transparency and fairness in the TBT notification process, when PPM related legislation is submitted at the draft stage to the other WTO Members. Countries may consider co-designing PPMs through constructive dialogues that acknowledge different socio-environmental conditions across countries, ideally in a multi-stakeholder setting.

It is also important to ensure transparency and procedural fairness in the administration of trade regulations. This involves setting procedures for review of, or appeal from, a denial of an application, and negotiate equivalence agreements with all interested partners.

Another important aspect to consider is the need for regulatory flexibility and tailoring of measures to specific contexts. This involves using equivalence and mutual recognition arrangements as much as possible. It also requires some level of deference to trade partners.

It is also important to link to plurilateral and multilateral standards and procedures and engage in their advancement. This involves mainstreaming sustainability-related standard setting into several work streams hosted by international institutions such as ISO, OECD, UNCTAD, IPCC, UNEP, WTO etc.

A critical further element is to be "consistent towards inside" [9]. The legitimate objective pursued by a certain measure must also guide the domestic policy.

If the measure e.g. seeks to thwart deforestation, the use of certain pesticides or eutrophication to protect the ecosystem, the regulating country or region should ensure that the rules governing domestic production are consistently oriented towards the same objectives.

Finally, it is crucial to combine unilateral standards with financial transfers and capacity/building. This involves an "obligation for regulating Members to cooperatively engage with 'differently situated' Members and place them on an equal footing at the practical implementation stage" [10].

Regulating countries should also consider facilitating market access for alternative, sustainably produced products of high value, as well as promoting innovative pricing models. Such approaches entailing fairness and focusing on the diversification of markets are crucial for the genuine uptake of PPMs.

5. CONCLUSIONS

In sum, sustainability-oriented PPM-measures are a way to integrate biodiversity into trade policies, in line with Target 14 of the Kunming-Montreal Global biodiversity framework. They have the best chance of withstanding WTO scrutiny when: the concrete sustainability requirements are context-sensitive, i.e. flexibly tailored to cover various socio-environmental contexts and production conditions; they apply equally to both domestic and foreign producers; and they are designed and implemented in good faith, with a clear and reasonable connection to their intended purpose. If these conditions are met, PPMs may withstand WTO scrutiny, particularly when combined with supply-side measures.

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This handbook explores how the Kunming–Montreal Global Biodiversity Framework can be effectively implemented through law, human rights, and economic transformation. By building on international human rights law and the Convention on Biological and Diversity (CBD) responding directly to previous CBD Conference of the Parties decisions and recommendations, it shows strategic entry points to implement the right to a healthy environment, catalyse environmental democracy, and strengthen legal accountability to halt biodiversity loss. Bringing together expertise from various disciplines, it examines how open information, public participation, access to justice, and protection of the rights of environmental defenders are essential conditions for tackling unsustainability and injustice and for legitimate and effective biodiversity law and governance. The book also addresses the urgent need to reform economic systems, from supply chains to consumption and trade, to support a regenerative economy aligned with biodiversity and ecosystems. Through practical legal tools, policy insights, and real-world examples, the handbook demonstrates how human rights and democratic participation can reorient law away from extractive logics toward nurturing relationships with nature. Designed for policymakers, scholars, and civil society, this volume offers a roadmap for integrating biodiversity, climate, and justice into coherent, transformative action toward a sustainable and inclusive future in which all living beings can thrive.

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