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PROBLEM SOLVING / CRITIQUE
02:

THIS SECTION EXAMINES key issues such as land use, deforestation, wastewater treatment, shared micromobility, animal rights activism, and the evolution of legal frameworks. Taken together, these topics reveal the tension between addressing immediate problems and confronting the root causes of unsustainability.

A COMMON THREAD is the call for legal and institutional reforms that incorporate environmental and social justice. Legal frameworks must evolve to align with sustainability imperatives, including the state's right to regulate in the public interest, even when it contradicts existing agreements. This broader view of justice must extend beyond human rights to encompass the health of ecosystems and the planet.

THE DEFORESTATION crisis in the Colombian Amazon highlights the need for sustainable agricultural practices and policy reforms, while wastewater treatment, though helpful in addressing water scarcity, raises concerns about maintaining unsustainable systems. Animal rights activism calls for a shift in how humans relate to other species, challenging anthropocentric views of sustainability. Shared micromobility solutions, such as e-bikes and e-scooters, offer potential but require public-private collaboration to fully realise their environmental benefits. Together, these perspectives emphasize that true sustainability demands both immediate action and a deep reevaluation of the systems that perpetuate unsustainability.

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CATTLE RANCHING AS DRIVER OF DEFORESTATION IN THE COLOMBIAN AMAZON FOOTHILLS

Jesica López
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IN THIS ARTICLE, I will delve into the intricate land conflicts between cattle production and the alarming loss of biodiversity, exploring how these opposing forces shape the future of Colombia's Amazon. I suggest that there must be a deep understanding of land use dynamics in the context of the Colombian Amazon, with the presence of an armed conflict the vulnerability of entire peasant and indigenous local populations and the cascade of consequences at the ecological, socio-economic and cultural levels.

Deforestation and forest degradation account for 12–15 percent of current anthropogenic emissions – the second-largest source of CO2 after fossil fuel combustion.[1] In their study, Davis and Petersen (2018)[2] highlighted the growing attention on forests and the increasing demand for accurate, current information on forest locations, intactness, management, and changes. Such information is vital to support effective forest management and land use planning to maintain biodiversity and ecosystem services.

The Living Forest Report (WWF, 2018)[3] identifies Colombia's Amazon as one of 11 deforestation hotspots. These deforestation fronts are projected to account for over 80 percent of global forest loss by 2030, with up to 170 million hectares affected. In Latin America, beef production is a major driver of deforestation, converting forests to pastures for cattle and destroying around 2.71 million hectares of tropical forest annually.

Despite efforts by the Colombian government, there is a resurgence in deforestation rates. It is worrying that deforestation rates in Colombia, the third-most biodiverse country in the world and home to more than 60 million hectares of forest[4] has surged in the past few years, led by land-grabbing and agricultural commodity production, which has increased in the aftermath of the government's 2016 peace agreement with the FARC.

In 2018, Colombia lost 247,000 hectares of forest in the Amazon, the highest annual rate ever recorded.[5] Moreover, as suggested by McAlpine et al. 2009, in Colombia, cattle ranching has often been a tenuous economic activity that relies on large-scale extensive use of the land and has continued to expand in most of the regions in the country, but especially in the Amazonian foothills.

The Colombian National Planning Department (DNP)[6] is spearheading a "green development" initiative under the banner of bioeconomy. This initiative focuses on the agricultural sector, leveraging Colombia's abundant biological and genetic resources, residual biomass, and potential for creating "green" jobs. International investments, including contributions from Germany, Norway, and the United Kingdom, support Colombia's goal of achieving zero deforestation by 2030. These investments, totalling approximately 22.4 million euros, recognize efforts to reduce emissions from deforestation.

In 2018, the establishment of an initiative to promote the interests and monitoring of national and local public opinion on the problem of deforestation was created. This initiative focuses on the actions to control and reduce deforestation rates, but also highlights sustainable production practices.

By 2025, Colombia's initiative has grown into a multi-faceted national effort. Despite these advances, challenges remain, including high levels of informality in the forestry sector, limited technical and financial capacity for large-scale community forestry, and persistent drivers of deforestation such as illegal roads, cattle ranching, and land grabbing.

To effectively combat deforestation in the Amazon, a multifaceted approach is essential, incorporating sustainable practices, policy reforms, and community engagement. Conservation alone is not a universal remedy; it is crucial that designated reserves actively preserve biodiversity while supporting the livelihoods of local communities. Enhancing Amazonian regional sustainable forest management schemes with capacity-building and governance reforms linked to land-food systems is urgently needed to reduce deforestation, improve local livelihoods, and prevent further biodiversity loss.

If extensive cattle ranching continues, it threatens species habitats, risks forest collapse, and could lead to the permanent savannisation of the Amazon. There is an urgent call to limit and prohibit cattle ranching in

the Colombian Amazon, promoting alternative practices to protect ecosystems, biodiversity, food security, and prevent climate collapse. Inter-sectoral and regional collaboration, economic incentives, and alternative livelihoods based on socio-bioeconomies are essential to reduce deforestation and degradation. Political will is lacking to enforce clear land zonification for conservation or production, hindered by actors involved in illegal cattle and extractive industries. Increased national and international awareness and monitoring of degraded tropical forests across the Pan-Amazon territory are imperative to safeguard these critical ecosystems.

In conclusion, the Colombian Amazon case served as an opportunity to apply a holistic approach To the Agenda 2030 goals to assess and better understand conflicts and synergies of deforestation, land-use change, sustainable development and bioeconomy from the perspective of land use changes from forests to pastures for cattle, which can be accelerating threats alongside increasing climate change and biodiversity loss in these areas with tropical ecosystems.

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PROBLEMS TO SOLVE IN WASTEWATER TREATMENT AND REUSE

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MY RESEARCH ABOUT wastewater reuse, and my work at a municipal wastewater treatment plant, can be understood in terms of problem-solving for sustainable development. From a critical perspective, wastewater treatment and wastewater reuse could be viewed as ways of maintaining an already unsustainable society.

Wastewater treatment is performed to protect drinking water sources and aquatic ecosystems from bacteria, eutrophication and toxic chemicals. Usually, wastewater from households (water from toilets, showers, kitchens etc.) and/or industries is collected in a piping system, and transported to a wastewater treatment plant. At the wastewater treatment plant, the water is treated in several processes (mechanical, chemical and biological) to remove pollutants. After treatment, the water is usually released into lakes, rivers or oceans (the recipient).

The compounds that currently are in focus at many wastewater treatment plants are nutrients and organic compounds. These naturally occur in the wastewater, and can cause eutrophication and low oxygen levels in the recipient. With the revised European urban wastewater treatment directive[1], there will also be demands for the removal of other chemicals such as pharmaceuticals.

Since some of the compounds that can have a negative impact on the recipient, such as nutrients and bacteria, naturally occur in human excrements, it is not possible to avoid their presence in wastewater. The presence of other compounds, such as pharmaceuticals, could theoretically be decreased through bans and other types of regulations. However, these compounds are important since they cure and help people with different diseases. Thus, we might not want to prohibit their use.

Even more compounds, such as per- and polyfluoroalkyl substances, PFAS, can be found in for example textiles, make-up, furniture, and kitchen-ware. These compounds could possibly be prohibited without as big of an impact on society, compared to a ban on pharmaceuticals. PFAS is a large group of chemicals that are persistent to biodegradation, and are sometimes referred to as "forever chemicals". Many of them have negative impacts on human health. There are cases when PFAS has leached into the groundwater and thereby also into the drinking water. Thus causing first of all human suffering, but also monetary costs for water utilities to remove these compounds from the drinking water.[2]

To get rid of such "forever chemicals" and to discover unknown harmful chemicals in water is currently one of the big challenges for water treatment. This makes removal of such substances one of the major challenges with wastewater reuse.

Wastewater reuse is the reuse of (usually) treated wastewater for different purposes, such as irrigation, drinking water production, and industrial applications. The driving force can be drought, sometimes leading to a situation where traditional source waters (such as groundwater or lake water) are no longer sufficient to meet societal demands.[3] In such situations, the societal demands could be adjusted for example through limitations on the water use by industries, limitations on population growth and water use by households, or limitations on the use of freshwater by agriculture. Such limitations on water use could be legitimate, but would also have negative impacts on industries, agriculture, other businesses that depend on water use (such as cafés or restaurants), population growth (and therefore for example schools or stores), and in the end the general societal welfare.[4] Challenges regarding wastewater reuse include ensuring safe water quality, thus enabling smart and circular water use without risking spreading unhealthy chemicals or bacteria.

My research focused on the removal of different microbial and chemical pollutants with a process called granular activated carbon, which is a method to remove a wide range of chemicals through adsorption. The thesis was based on the assumption that wastewater needs to be treated, and in some cases reused to meet societal water demands, which brings us back to the question of problem solving or critique.

With a critical perspective, wastewater treatment and wastewater reuse can be described as ways of fixing the symptoms but not the cause of over-exploitation of water resources and use of toxic chemicals. On the other hand, limitations on the use of some chemicals, such as pharmaceuticals, and freshwater, could have a negative impact on society. Sustainable development will likely always consist of both problem-solving, for example through decreasing the symptoms through wastewater treatment, and of critique, potentially resulting in legislative bans on toxic chemicals or limitations on water use.

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SUSTAINABILITY AS A SPECIES RELATIONAL ISSUE – VEGAN ANIMAL RIGHTS ACTIVISM IN DENMARK

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IN THE FOLLOWING, I will outline how I think of sustainability in my PhD research. From a species-relational perspective, I approach sustainability struggles as a form of "symbolic boundary work". Reworking symbolic boundaries – by blurring, crossing, rethinking, and redrawing them – can manifest as both critique and more practical problem-solving endeavours.

Negotiations on sustainable futures can be seen as ongoing struggles over how to reorganise or maintain dominant ways of structuring, institutionalising, routinising and normalising our relationships with other species – our co-inhabitants of the Earth. Sustainability is, of course, also a question of how structural relations between human social groups should be organised more justly. However, I will focus on the more-than-human world. My PhD project is an ethnographic study that explores the personal transformations and collective influence strategies of vegan animal rights activists in a Danish agropolitical context. I position my overall research topic – the vegan animal rights movement – as one among various contemporary societal tendencies seeking alternative ways of relating to nonhuman Others.

Applying a relational approach to sustainability begins with acknowledging that relationships shape who we are, as we act within a web of entanglements, interwovenness, and interdependence. These relationships are structural and intimate, historical and contemporary, interhuman and interspecies, global

and local. For example, animal agriculture industries play a significant role in the climate emergency and biodiversity collapse.[1] As consumers, we enter a web of abstract, structural relationships with the animals whose bodies are commodified, and with those who lose their basis for existence due to deforestation for feed production or cattle ranching, the occupation of land by monocultural crop fields, water pollution, and global temperature increases driven by the industries' significant greenhouse gas emissions.

Since we are not in direct contact with most of these nonhuman Others in our everyday lives, our structural, border-crossing relationships with them tend to be invisibilized. Nevertheless, some of these relationships are highly intimate: consuming - not just symbolically, but literally ingesting and absorbing the Other – is indeed an intimate relation, and at the same time a certain power relation. In addition to this structural-intimate dynamic, the consumption is also, on one hand, contemporary and local (something we practice now and here), and on the other hand, historical and global. After all, the establishment and expansion of cattle and sheep ranching played an important role in the European colonization of other parts of the world, and the still increasing 'meatification' and 'dairyfication' of diets are related to the introduction and dominance of Western agribusiness methods worldwide.[2] Simultaneously, these dynamics are both interspecies and interhuman: humans as well as other

species are displaced due to deforestation, while workers in agricultural industries are often among the most marginalised and exploited.[3]

During my fieldwork, I have listened to many transformation histories of vegan animal rights activists – narratives about their initial 'becomings' and how they keep becoming through ongoing politicization. One pattern I have noted is that many now-activists previously held an apolitical 'circle of life' understanding of farming and human-nonhuman interactions. However, during their transformation processes, they began focusing on power relations and their own positions in relationships with farmed animals, companion animals, the wild animals they encounter in their everyday lives, as well as those they do not encounter, yet are still connected to. This shift illustrates how activists come to perceive interspecies ethics not merely as a personal trouble but as a political issue infused with power and linked to social institutions.

The activists I have followed engage in symbolic boundary work both internally – reevaluating their relationships with other species – and externally, through activism aimed at challenging species-related boundaries in mainstream culture. In sociology, symbolic boundaries are understood as conceptual distinctions made by social actors to categorize the world in ways used in struggles over defining reality. Social groups compete in the production, diffusion, and institutionalization of alternative principles of classification.

Symbolic boundaries generate feelings of similarity and group membership and are often used to enforce, normalise, or rationalise social boundaries: tangible expressions of social difference.[4]

'Boundary work' refers to the struggle to shift or maintain dominant boundaries. Symbolic boundaries can be bright or blurred, depending on the extent to which they have been institutionalised and naturalized in society. Vegan animal rights activism can be understood as an attempt to rethink, redraw, blur, cross, shift, and dismantle very 'bright' boundaries in society: The value-hierarchical human-animal dualism has historically been a core notion in dominant Western philosophies, Abrahamic religions, and the very foundation of the idea of human dignity. Consequently, the boundaries that the animal rights movement seeks to rework are deeply embedded and difficult to change – not only supported by cultural norms but also by institutional and structural relations.[5]

In my perspective, one way of performing boundary work involves paying attention differently. From a sociological perspective, communities guide their members, subtly or overtly, on what to focus their attention on. When individuals focus on something they are expected to ignore, they engage in 'attentional deviance'.[6] What is considered worthy of moral attention is also shaped by cultural norms. As part of becoming well-socialised members of

our communities, we are taught to "curb our moral concerns in a socially appropriate manner".[7] For example, global sustainability agendas have historically been highly anthropocentric, defining sustainability as securing the basis for future human life while neglecting our nonhuman co-inhabitants in their own right.[8] Some perceive it as irrelevant or even provocative (that is, socially inappropriate) when others advocate for including nonhumans in ways that do not rely on their utility for humans, for example as ecosystem services or resources such as meat.

The activists engage in attentional deviance when they work to draw attention to the invisibilised animals behind the meat – something that in dominant sustainability discourses is abstractly measured in tonnes of CO_2 equivalents or represented as commodities. In doing so, the activists challenge the boundaries for what is considered relevant and worthy of inclusion in sustainability debates.

To conclude, in my research I think of sustainability as a species-relational issue, where struggles for sustainable futures involve symbolic boundary work drawing in the direction of less anthropocentric thinking and being. This boundary work unfolds both within the activists themselves during their personal transformations and in the broader societal shifts they seek to promote through their activism. Their strategies range from explicit

critique, such as protesting in the spirit of "speaking truth to power", to practical problem-solving efforts. These include offering free consulting to companies on marketing plant-based options, distributing free taste samples, organizing prize awards for corporate plant-based initiatives, or lobbying for green canteens in public workplaces. Viewing sustainability through this species-relational and boundary-oriented lens highlights that sustainability struggles are not only about solving practical problems but also involve rethinking divides that shape our relationships with the more-than-human world.

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THE PROBLEM WITH THE SOLUTION

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THAT CARS ARE DRIVERS of environmental problems is unquestionable. However, it remains a challenge to steer individuals toward using other means that are greener. What, then, are some potential solutions that could lower the demand for cars? My PhD project was about shared micromobility, particularly shared e-bikes and e-scooters, which were presented as green transport modes that could contribute to decreasing the demand for private vehicles. The project was related to SDG Goal 11 of Sustainable Cities and Communities. In this contribution piece, I discuss how shared micromobility might help solve car-related environmental issues. But I also present a few drawbacks to having these shared microvehicles on our streets. Additionally, I highlight some results from my project and conclude with a question for the readers.

The development of my PhD project started with the challenge of making the transport sector greener. As the transport sector is one of the major contributors to greenhouse gas emissions, we must find ways to decrease car-related trips and replace cars with green alternatives. In my project, I examined the role of shared micromobility in the transition toward a sustainable transport future.

Shared micromobility is a mode of transport that offers smaller, lighter vehicles powered by electric or human power, also known as microvehicles, that users do not own but can use on a demand basis.[1] I focused on how

shared e-bikes and e-scooters could decrease car demand and complement public transport. Sustainability in my project was seen from a pro-environmental perspective.

The impetus for shared e-bikes and e-scooters came from the need to cover short distances that are too far to walk and areas with limited public transport. They were also designed as car alternatives, particularly since they offered speed, did not require too much effort when used, and most importantly, they were convenient as they could be parked anywhere. However, if you lived in a city where shared e-bikes and e-scooters were available, you would surely have noticed that this free-floating aspect caused chaos and problems in cities.

Shared e-bikes and e-scooters blocked pedestrians and roads. They were left in spaces for long periods without batteries and, therefore, could not be used. Yet what concerned many people the most was the accidents these microvehicles caused. As there were no regulations in place, especially for shared e-scooters, users could drive these vehicles the way they wanted, to some extent, without regard to their surroundings.

This user behavior made me think about whether, indeed, shared micromobility could help address car-related environmental problems. Therefore, my project looked at the behavior of shared electric micromobility users. Specifically, I looked at individual motivations to adopt shared e-bikes and

e-scooters. I asked users and non-users of shared micromobility from Denmark and Sweden to participate in my survey. These countries were among the few that had access to the shared electric microvehicles when I started my PhD.

The pressing issue the project wanted to address was – if shared micromobility could motivate individuals to replace private vehicles with shared e-bikes or e-scooters as a way to cut carbon emissions, could it be considered a good solution to reduce the adverse impact of cars on the climate? But if it only induced individuals to travel more and created a new market for short-distance leisure travel, could it then cause more problems for transport authorities and not address the environmental problems caused by the transport sector?

It did not come as a surprise, given preliminary observations and findings, that the results of my project revealed how individuals used shared electric micromobility primarily because they considered them fun to use. Although some users replaced car trips with shared e-bikes or e-scooters, the majority of the substituted trips were those of sustainable forms, such as the use of public transport, cycling, and walking. Therefore, the potential solution created unsustainable trips and did not complement public transport. Nevertheless, users acknowledged the functional benefits of using

the microvehicles, meaning they use shared micromobility for shopping or commuting. Results also indicated that for users of shared electric micromobility, its environmental benefits motivated continued use.

Even though in some cases and to some extent, shared electric micromobility is already regulated and has been integrated into public transport services, at large, they are still operated by private companies that struggle to break even and continue offering their services. Issues related to shared electric micromobility, particularly regarding safety and regulations, challenge its existence and drive away more people from using it. Currently, the environmental impact of shared e-bikes and e-scooters remains debatable. But one thing is certain – all sectors of society need to work together if they intend to tap into the environmental and social sustainability potential of electric microvehicles. Until now, the question remains: Could shared micromobility help the transition toward sustainable transport, or is the potential solution becoming a bigger problem?

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RETHINKING JUSTICE THROUGH ADAPTIVE LEGAL SYSTEMS

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OBLIGATIONS PROVIDED through legal instruments are being challenged by forces that are beyond the relationship between contracting parties, but rather the relationship between humankind and our planetary host. The Covid-19 pandemic quickly turned commonplace contractual norms in commerce and travel into relics of the past. Simultaneously, the impacts of climate change have introduced a 500-year drought in Europe and crippled world supply chains through heatwaves in China.

Scholars and practitioners of international economic law, the laws and systems that govern trade and investment, have largely recognised that sustainability is a matter of necessary public interest. In doing so, the field has found it increasingly difficult to disassociate sustainability from legal practice, irrespective of jurisdiction. Legal instruments, such as contracts and treaties, have also been evolving to more adequately reflect and respond to new realities.

One way that legal systems and mechanisms are able to adapt is by recognising that states retain the right to regulate and implement policy agendas on behalf of the public interest, even if such government measures may contradict binding legal agreements with either state or non-state entities. This recognition takes place both at the stages of legislation and interpretation.

Broadly, the right to regulate refers to the prerogative of the sovereign state to implement government measures, such as laws and policies, in the state

and/or the public interest. Exculpating this right configures it as a safeguard in relation to the state's obligations, such as those imposed by an agreement.

In international investment law, the right to regulate in the public interest is a form of flexibility pursued by states hosting international investment that is covered by an international investment agreement. This flexibility carves out a policy space wherein the host state may implement policies or government measures on matters it considers to be in its public or essential security interests. Government measures implemented on such a basis may be consistent with an applicable international investment agreement, even if those measures result in a negative impact for the admitted foreign investment. In such cases, the right to regulate is self-judged by the host state until it becomes contested via investment treaty arbitration, which then refers discretion to a tribunal to assess whether the policy or measure was a legitimate exercise of the right to regulate.

The right to regulate for sustainable development applies specifically to those policies and measures implemented on behalf of advancing the host state's sustainable development agenda. These government measures can include anything from revoking construction and/or operations licenses for fossil fuel extraction to terminating solar power subsidies in order to avert a balance of payments crisis.

Formulating and interpreting the right to regulate for sustainable development, however, remains inadequate when constrained to an exclusively legal dimension. This is because understanding and therefore interpreting sustainable development requires one to traverse far beyond the remit of legality. Instead, such interpretation must brave across traditional, disciplinary boundaries so that legal systems do not become obstacles but rather conduits of advancing sustainability. Legal interpretation must then involve questions of environmental and social justice.

Challenging such traditions, however, is an uncomfortable task.

It requires a departure from commonly held beliefs about the domain of a government's margin of appreciation, accepting the possibility that individual entities and actors may better serve the needs of sustainable development than public authorities. It also requires a certain pessimistic optimism about motives: relying on sound analytical methodologies based on real-world need and the best available science to understand whether states, private sector entities, or even development organisations are contributing to sustainable development.

In spite of this, the intersection between law and sustainable development empowers the challenger. Adaptive legal systems that are regularly updated on the basis of rigorous study and research, integrating into the legislative

process the best available science across climate, biodiversity, social systems, indigenous culture and knowledge, labour and environmental justice, and the many diverse dimensions of sustainable development can have tremendous intergenerational impact.

Therein, the steady hand offered by the rule of law meets the forward-looking gaze of sustainability. As we draw our hand above our eyes to block out distractions that may otherwise obstruct our view, we find that we may look farther than we would have and see that the goal is in sight.

The systematic and procedural application of the law is needed to advance justice. However, we must reflect on the meaning of justice and for whom or what. An anthropocentric and economic growth-centric understanding of justice has resulted in great sacrifice for our planetary host. Just as we see in finance, overarching principles in development policy and planning, such as leaving no one behind or doing no significant harm, must be integrated into our understanding of justice and the legal systems that are designed to realise justice.

02: PROBLEM-SOLVING / CRITIQUE (P. 73–103)

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