Zbornik

STRATEGIES FOR A JUST GREEN TRANSITION

Scientific Texts of Students Participating in the Summer School of Political Ecology 2025

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Ljubljana, 2025

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Contents

Introduction

The changing natural conditions of life on our planet require deeper reflection on what human communities can do, especially given that they themselves have contributed to these changes – some more, some less, some hardly at all – to halt this trend, at least before a major catastrophe affects most living beings, including the various human communities.

Experts have noted that this trend of change has not been uniform, nor has it been greatly influenced by the ways in which different human communities have lived. Communities have altered their methods of production and consumption, their ideas about the relationship between society and nature, the technological world they place between themselves and nature, and the collective efforts expressed through their social organisations. These megatrends have occurred at different times, in different places, and with varying intensities. As a result, today we see the coexistence of human communities organised in different ways, with different relationships to each other, varying degrees of technological use affecting natural living conditions, and diverse ways of living and relating to their environment, all of which impact the natural conditions of life to different extents.

The long-term effects of these activities have impacted, among other things, the natural conditions of living. Initially, the effects may have been local, then regional, but now some are altering natural living conditions globally. What were once short-term effects are now long-term; what were once simple and one-dimensional are now complex and multidimensional.

If we understand the changing natural conditions of existence not only as the result of nature itself but also as the outcome of more or less deliberate and active intervention by different human communities in their habitats, we must ask ourselves certain questions. If we wish to reduce the influence of human communities on the essential conditions of existence, we must consider how to rethink the relationship between human communities and their living space, which includes nature; how to

derive strategic orientations from this; how to organise ourselves to make appropriate decisions regarding goals and their realisation; how to reorganise if we are dissatisfied with the goals and outcomes set, especially if they have changed in the past; and how to organise in the future if we remain dissatisfied with the goals and outcomes achieved.

We may be dissatisfied because living conditions in our environment have changed, not least because public environmental policies adopted and implemented at various levels have worsened, rather than improved, living conditions. These issues concern different visions for the development of human communities and their ways of life; they are matters of strategic orientation and the formulation of strategies to guide the future functioning and life of human communities.

When the implementation of such strategies has had intended or unintended, desired or unwanted effects on the living conditions of a particular community, it is to be expected that those directly affected and their advocates or supporters would speak out, organise, and oppose the continuation of such public policies and those actors who have primarily contributed to the deterioration of their living conditions, due to such public policies were originally designed.

This collection of works brings together a selection of contributions from the 2025 edition of the International Summer School of Political Ecology, which took place for the fifth time in Ljubljana, Slovenia, from 30th of June until 4th of July, and brought together participants from all over the world. Against the backdrop of worsening ecological collapse, growing disappointment with institutional responses, and the limitations of past mobilizations, this year's edition of the summer school focused on developing and deepening strategic thinking for achieving a just ecological transformation. The program aimed to foster deeper engagement with the strategic dimension of the green transition, connecting theoretical insights with historical lessons and practical examples. Over the course of five days, the participants engaged in lectures, discussions, and collaborative workshops,

exploring diverse approaches to the question of strategy: how can we implement a just green transition?

The summer school, as part of its accredited program, hosted 28 students (17 doctoral students and 11 master's degree students) who had the opportunity to present their research work during the doctoral seminars and at the poster fair. The following collection of works comprises 10 selected contributions written by doctoral students, organized into two sections. Together, the contributions explore key issues such as the co-production of environments under capitalism, the role of climate services and prefiguration in just transitions, environmental movements in socialist contexts, contested landscapes like terrils, energy and development politics in Russia and Bosnia and Herzegovina, and the challenges of participatory urban greening. The participants approached these complex questions from a range of disciplinary and methodological perspectives. While each contribution addresses a distinct topic and context, they all contribute to ongoing strategic debates – identifying barriers and opportunities in the green transition, as well as approaches to achieving just green transition.

The volume opens with conceptual reflections. Dagalev (Chapter 1) reflects on the concept of "the environment" as a dynamic and contested terrain shaped by historical processes and examines capitalism as an environment-making-regime – one that makes, re-makes, and produces environments. Dagalev proposes a relational, historical-materialist understanding of how environments are co-produced through class, colonial, and multispecies struggles, and argues that responses to the ecological crises "must center on transforming the historical relations that continuously produce and reproduce the worlds we live in" (p.), Žnidarič (Chapter 2) discusses the concept of an ecosocial society as an approach rooted in the pursuit of a just, equitable, and environmentally conscious society, and calls for a just green transition grounded in environmental and political justice, Nyamakura and Rastogi (Chapter 3) reexamine the objective of climate services and rethink it through a just transition lens. Drawing from a just transitions literature, they introduce the concept of

"just" climate services, emphasizing inclusive processes, integration of multiknowledge systems, equitable benefit-sharing, and actionable outputs. The authors argue that combining co-creation approaches with the integration of local knowledge offers a promising pathway for developing more just climate services, Petrini (Chapter 4) assess the growing literature on prefiguration, explore its practical and theoretical implications for environmental acitivism, and proposes a new direction for understanding its role, particulary through lens of French activist traditions and the idea of the pluriverse. Drawing on environmental mobilisations reveals the importance of prefiguration in developing post-capitalist imaginaries, materialities, and spatialities and through the perspective of the French environmental resistance movement *Les Soulèvements de la Terre* re-evaluates the French approach to prefiguration. In the final chapter of this section Juhart (Chapter 5) from a historical viewpoint examines the development of the enviromental movement in Yugoslavia and Slovenia, tracing its origins from the 1960s and to the late 1980s, and to the foundation of the first Green party in Slovenia. The author highlights how early environmental awareness emerged, evolving alongside events such as the Chernobyl disaster and the breakup of Yugoslavia, and challenges narratives that socialsim was indifferent to environmental concerns, emphasizing the presence of the environmental discourse in the socialist countries.

The second section of this volume proceeds with in-depth case studies covering various contexts, Lienaert (Chapter 6) explores the ways in which terrils are inhabited, appropriated and contested by both humans and non-humans, drawing on the case of Wallonia (Belgium) argues that they cannot be simply categorized as either ruins or tools of capital but they emerge as complex diverse and shifting sites. Lienaert proposes a framework that combines critical geography and multispecies and multiscalar approaches to understand terrils and the social dynamics they embody, Santos (Chapter 7) explores offshore wind developments within the framework of energy accumulation, blue economy, and just green transition strategies. Santos critically examines

the expansion of offshore wind energy within the EU's push for net-zero emissions by 2050, questioning whether this transition truly supports ecological sustainability and social justice, calls for a rethinking of energy transition strategies and proposes moving beyond top-down technocratic models towards participatory, justice-oriented approaches, Laricheva (Chapter 8) examines the relationship between the energy production of Russian regions and the citizens' perceptions of the ecological situation on regional and national level. The study investigates how institutional, political, and social factors constrain climate action at national and regional levels. Using a mixed method approach, it identifies both opportunities for renewable energy development in Russian regions and the key barriers it faces under the current political and institutional framework, Colombo (Chapter 9) shows how urban greening projects in the city of Milan produce multiple and contested socio-natures and how participatory processes are designed and perceived by local communities. The study reveals disparities in the meaning of nature and critiques participatory processes as often superficial, calling for democratization of green planning and design that promote both social justice and ecological sustainability, Hasić (Chapter 10) explores the involment of foreign development agancies (FDAs) in environmental initatives in Bosnia and Herzegovina (BiH), outlining how international environmental participation works in transitional situations by mapping their approaches and strategies towards environmental protection. The paper argues that the fragmented political structure in BiH shapes the FDAs interventions and limits the potential for coordinated environmental governance.

Andrej Lukšič, Sultana Jovanovska

PART I

Deni Dagalev[1]

There Is No Such Thing as "The Environment": Capitalism as an Environment-Making Regime

Abstract: This thesis argues that "the environment" is not a neutral, external domain but a historically produced concept central to capitalism's world-ecological project. Rather than viewing capitalism as acting upon nature from the outside, it is examined here as an environment-making regime—one that reorganizes human and extra-human natures to sustain accumulation. Through historical cases including Dutch peat extraction, English enclosures, and the U.S.-led Green Revolution, the study shows how capitalist development has systematically transformed planetary socio-ecologies. Drawing on world-ecology and dialectical biology, it critiques both mainstream environmentalism and green political thought for reproducing the dualism of Society versus Nature. It insists that capitalism does not merely destroy environments—it produces them, unevenly and violently. Simulatenously, it proposes a relational, historical-materialist understanding of how environments are co-produced through class, colonial, and multispecies struggles.

Keywords: environment, Nature, capitalism, environment-making, web of life, agriculture

[1] The paper was written under supervision of assoc.prof.dr. Andrej A. Lukšič.

Introduction

There is no such thing as "the environment." This is not a denial of the ecological crisis, nor a refusal to acknowledge planetary degradation. It is a provocative demand to think differently about the present climate conjuncture. For what we call "the environment" has never existed outside of history. It is not a thing to be saved, but a terrain shaped, reshaped, and fought over. In this paper, I argue that capitalism does not merely act upon nature from the outside. Instead, it makes and remakes environments as part of its world-ecological class project—organizing life, labor, and land to serve the endless pursuit of accumulation.

This argument unfolds in four movements. The first returns to the conceptual roots of "the environment," tracing its invention through the long arc of capitalist modernity. From Descartes' metaphysical separations to Malthus' naturalization of inequality, we see how Nature became a ruling class strategy—passive, external, but also knowable and manipulable. This ideological work was not abstract: it laid the groundwork for conquest, enclosure, and colonization.

The second movement shifts from critique to method. Drawing on dialectical biology and world-ecology, I follow Levins, Lewontin, and Moore in refusing to treat nature as a static backdrop. Instead, we see that environments are, however coercively and unevenly, co-produced at every turn—made and remade through the messy entanglements of species, systems, and struggles. In other words, I outline a relational and historical-materialist understanding of environment as a dynamic and dialectical process, co-produced by humans and extra-humans alike.

The third movement grounds these insights world-historically. It examines three moments of agricultural revolution—Dutch, English, and American—to show how capitalism's rise was inseparable from its power to transform environments and how, in turn, environments restructured capitalism itself. From the drained peat bogs of Holland to the hedged enclosures of England and the irrigated monocultures of the Green Revolution, each

transformation reorganized landscapes, labor, and life under new ecological logics of accumulation.

Ultimately, the conclusion advocates for a shift in both analysis and politics: from techno-managerial fantasies of stewardship to a politics of socio-ecological transformation. It insists that the struggle against ecological crisis cannot begin with the idea of protecting a stable "environment," but must center on transforming the historical relations that continuously produce and reproduce the worlds we live in. If capitalism is an environment-making regime, then emancipation must be an environment-remaking project.

Before we act, we must historicize: environmentalism from Malthus to Earth Day (and back again)

The politicization and institutionalization of "the environment" as an object of management and regulation in the decades following the Second World War, particularly after the 'long' 1960s, marked a critical shift in how humanity's entanglement with the rest of nature was perceived on a planetary scale (Selcer, 2018; Warde et al., 2018). As a term, its usage stretches back to the nineteenth century, referring to surroundings, as in *environs*. It was only amid the 1960s street protests, alarming about the unprecedented levels of pollution, industrial solvents, toxic residues, global scars of warfare, loss of biodiversity, and nuclear fallout that the environment not only became a national or continental concern, but increasingly a global concern (Williams, 1983, p. 111). Thus, since the late 1960s, but especially after the symbolic proclamation of Earth Day on April 22, 1970, a web of think tanks, research institutes, transnational networks, academic institutions, foundations, and government ministries has emerged with the aim of "solving" the problem of the environment through the alchemy of "good science" and "good governance" (Moore, 2024, p. 3; Moore & Antonnacci, 2025).

Before this institutional consensus emerged, environmentalism as a movement had already taken on several distinct historical forms, which coincided with episodes of profound social protests. However, it stood on the opposite side of the political and ideological struggle. The first appeared during the penultimate phase of the Little Ice Age (late 1700s), a time marked by crop failures, global climatic instability, and political upheavals. This era saw both the rise of Thomas Malthus' population pessimism and the eruption of popular revolts in England, countryside movements led by Thomas Pence, the Irish Rebellion of 1798 (same year as Malthus' famous essay is published), the Jacobins in France, and the slave rebellion against French colonial rule in Saint-Domingue (Haitian Revolution), to name a few. The emergence of Malthusian environmentalism, premised on "natural law," provided an ideological counterinsurgency—a naturalized justification for inequality amidst popular demands for redistribution (Ross, 1998, pp. 31-78). The second wave reappeared towards the close of the nineteenth century, characterized by eugenics and Social Darwinism as central features amid a widespread politicization of the industrial proletariat in the North and the consolidation of colonial rule in the South (Davis, 2001). Finally, in addition to fierce decolonial, anti-imperialist, and anticapitalist class struggles on a global scale, the end of the 1960s saw the emergence of a new imperialist environmentalism based on overpopulation and overconsumption (neo-Malthusianism), all the while remaining ideologically indebted to the American post-war ultra-hegemony (Robertson, 2012).

The widespread opposition to the Vietnam War, but also the less discussed genocide in Indonesia and other parts of Indochina, not only fostered anti-war movements but also diverse feminist, environmental, civil rights, and Black Power movements, raising myriad issues of sexuality, reproductive rights, racism, sexism, and environmental degradation, to name a few. For instance, feminist, anticolonial, civil rights, and black movements marched to reclaim their social agency, that is, their humanity. However, it was the United Nations (UN) that intervened and

tamed their radicality, because, as Federici (2020, pp. 123-124) argues, more than a struggle for equality, they sought a radical systemic transformation. She contends that the UN's advocacy for decolonization, as reflected in the symbolic respect for the Universal Declaration of Human Rights of 1945, as well as the timing of the organization of the first World Conference on Women in 1975, was anything but an attribute to emancipation. Instead, they represented a deliberate and calculated intervention aimed at establishing an institutionalized, hegemonic terrain for women's selective integration into capital's neoliberal orbit. On the other hand, environmentalists legitimately shed light on the grim logic of fossil-based industrialism, proposing novel, yet by no means radical intellectual and political alternatives.

The third wave of environmentalism was deeply marked by the anxieties articulated in Paul Ehrlich's "Population Bomb" (1968/1983), Garrett Hardin's (1968, 1974) *Tragedy of the Commons* and *Lifeboat Ethics*, as well as Edward Goldsmith's (1972) *Blueprint for Survival*—all of which exemplify a striking case of environmental imperialism and thinly veiled eugenics, framing the so-called "population crisis" as a problem of overbreeding, poverty, and irresponsibility in the Global South. These, and not Rachel Spring's *Silent Spring* (1962/2002) or Barry Commoner's (1972) *Closing Circle*, led to the formation of the *Environmentalism of the Rich* (Dauvergne, 2016), which in turn catalyzed the rise of "a mass media apparatus desperate to manufacture consent at a moment of profound legitimation crisis" (Moore, 2023, p. 108). The crisis of capitalism came to be labeled "environmental" largely because, as Stoll (2007, p. 1) observes, "the environment has just been rediscovered by the people who live in it"—prompted by rising concerns over "pollution, wilderness preservation, population growth, and depletion of natural resources" (Dryzek, 2013, p. 3). But the crisis was far more than a rediscovery or a list of ecological symptoms; it was, at its core, a confrontation with the strategic relations of capitalism's Cheap Nature logic (Moore, 2015a).

Environmentalists began—and stopped—with fossil fuels, thus neglecting "the epochal revolution in landscape change that

occurred between 1450 and 1750" (Moore, 2016, 89). Since that might have been too historical a stretch, they did not even dare to name the system. However, their criticism was somewhat heard, compelling U.S. President Nixon to allocate one-third of his 1970 speech in Congress on the State of the Union on environmental pollution, in which he symbolically acknowledged that "restoring nature to its natural state is a cause beyond party and beyond factions" (Nixon, 1970, n.p.). This was their first—and decisive—ideological compromise with the ruling class. Committed to a shared cause, around 20 million people mobilized across the U.S. to celebrate the first Earth Day on April 22, the same year, marked by an epic comic strip in which Pogo poster downheartedly confessed: 'we have met the enemy and he is us [humans]' (Moore, 2023, p. 112).

The party ended, and American alongside South Vietnamese forces heeded Nixon's command and invaded Cambodia, consequently provoking "the greatest anti-war mobilization in American history" (ibid.). This raises the question of whether militarism has environmental implications beyond the emission of greenhouse gases. Cutting out militarism as an issue of power, re/production, and life, Earth Day liberal environmentalists were nothing louder during the indiscriminate bombardment of Vietnam, during which the U.S. defoliated and sprayed vast proportions of forests, agricultural land, and civilian population with "nearly 20 million gallons of herbicides" within nine consecutive years (1962–1971) as part of the Operation Ranch Hand, thus uniting the socio-ecocidal unity of American techno-scientific imperialism in a military campaign aimed at the prevention of a different vision of socio-ecological governance (Frey, 2013, pp. 2–3; Foster, 1999, p. 102; Neilands, 1970, p. 220).

The Cartesian and colonial (re)invention of Nature

These issues, however, are not altogether new. They reflect a rich and bloody history of material and symbolic violence in the web

of life. The historical arc stretches back to the Cartesian Revolution during the long and cold seventeenth century (c. 1550–1700), whose philosophical and political implications played a pivotal role in shaping modern ways of seeing, knowing, and acting in the world around us (Bieler & Morton, 2018). René Descartes (1596–1650), French by birth, Dutch and English by education, who carries the title 'father of modern science' (alongside several other men like Francis Bacon), but also a (re)inventor of Nature, laid forward two revolutionary claims that were codified as "innocent" laws within the new imperial systems of surveillance, discipline, and control of humans and extra-human natures (Patel & Moore, 2017, p. 62). The first, apparently innocent, expresses the distinction between "thinking substance" (*res cogitans*) and "extended things" (res extensa). However, this powerful separation made way for an ontological distinction between substances, such as mind-body, human-animal, and society-nature. *Cogito ergo sum* (I think, therefore I am)—we have heard about it countless times, but rarely about its political significance. A philosophical premise that has elevated the thinking subject—the human—as the sole creator of value in life. While Descartes himself did not explicitly deny God's authority, his method of radical doubt planted the seed for a profound shift—one in which divine sovereignty would gradually give way to the authority of human reason. The world was recast as a product of nature and natural laws—knowable and manipulable. In short, these philosophical breakthroughs then opened new debates about the individual, who was no longer trapped in pre-modern collective identities but was now free, without a predetermined destiny (faith/destiny) forged in the cosmic order. On the level of ideological legitimation, therefore, the age of modernity began with the ontological and epistemological replacement of the idea of God by the idea of Nature. And Nature's best explanans was science, particularly physics (Pikalo & Lukšič, p. 194).

Precisely in the process of the professed liberation of humanity from its bondage to God, it was also difficult to "see 'science as ideology' because the vital role of science in driving out the

religious ideology of pre-capitalist society" (Rose & Rose, 1976, p. 9). Thus, to codify Nature as a cornerstone of bourgeois ideology, the work of jurists-pioneers like Bodin (c. 1530–96) and Grotius (1583–1645) has, however involuntarily, lend legitimacy to a legal and political framework tailored to the demands of capitalism by "restoring the eternal principles of natural law, free from the accretions of barbarous ages" (Bernal, 1969, p. 1046).

A world-historical translation of Descartes' metaphysics, in our case, would be this: Humans were the thinking things, while Nature was the unthinking rest. Crucially, we need not forget that the colonial politics of the time rendered most of humanity dehumanized, that is, relegated to the realm of Nature. They became a mere extension, "free gifts," readily available for the accumulation of capital. Colonized people, that is, women, people of color, Indigenous People, as a strict adherence to the law, were relegated in the realm of Nature, or from the standpoint of bourgeois naturalism realm of Savagery. In this way, Descartes's philosophical abstractions transformed into a real and violent material force (Patel & Moore, 2017, p. 63). It is here that the civilizational role of the imperial bourgeoisie was to enlighten the savages, but first by making themselves "the masters and possessors of nature" (Descartes, 2006, p. 51).

Henceforth, the second law of planetary ecology was European Civilization, which was entrusted with the task of mastering nature. The separation of Nature and Society did not predispose them to independence from one another. Rather, Nature had to be closely monitored, evaluated, mapped, and controlled. Descartes' genius was, as with other luminaries of his time (e.g., Francis Bacon, Hugo Grotius, John Locke, etc.), not a creation ex nihilo. Without a doubt, however, he helped usher in an intellectual revolution that transformed the modes of thinking, knowing, and being in the web of life (Patel & Moore, 2017, p. 64). His philosophical work was more than abstract philosophy. Rather, it gave rise to early modern managerialism, which separated the thinking things (intellectuals, scientists, policy advisors, voyagers-colonists, bosses, professionals, or today's CEOs) from the extended things, that is, the working hands and bodies of human

and extra-human natures. Patel and Moore (ibid.) outline four major transformations that the Cartesian Revolution brought about that are still with us to the present day:

> First, either-or binary thinking displaced both-and alternatives. Second, it privileged thinking about substances, things, before thinking about the relationships between those substances. Third, it installed the domination of nature through science as a social good. Finally, the Cartesian revolution made thinkable, and doable, the colonial project of mapping and domination.

To illustrate it world-historically, it was the armed-to-the--teeth capitalism that rose as a world-system under the banner of Improving (the uppercase stands for a ruling abstraction expressive of a hegemonic claim of universality) through conquest and colonization of the "New World," in which, as Maria Mies (2014, p. 75) argues:

> The colonies were no longer seen as part of the economy or society, they were lying outside 'civilized society'. In the same measure as European conquerers [sic] and invaders 'penetrated' those 'virgin lands', these lands and their inhabitants were 'naturalized', declared as wild, savage nature, waiting to be exploited and tamed by the male civilizers.

Nothing less arbitrary is Adam Smith's (1776/2007, p. 40), the father of economic liberalism, accounting in the introductory pages of the Wealth of Nations in assessing the commercial capacities of non-European people:

> All the inland parts of Africa, and all that part of Asia which lies any considerable way north of the Euxine and Caspian seas, the ancient Scythia, the modern Tartary and Siberia, seem in all ages of the world to have been in the same barbarous and uncivilised state in which we find them at present.

Furthermore, and insofar as socio-economic problems are seldom linked to the system of class rule in bourgeois thought,

Thomas Malthus' (1798/1966, p. 13) *Essay on the Principles of Population* is considered as the first and perhaps the loudest environmentalist argument of the modern age, in which he insists on population control (especially among the lower classes) against the backdrop of disproportionately developing food supplies:

> The power of population is indefinitely greater than the power in the earth to produce subsistence for man. ... Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will shew the immensity of the first power in comparison of the second. By that law of our nature which makes food necessary to the life of man, the effects of these two unequal powers must be kept equal.

To cut a long history story short, such conceptual apparatus would not only become ideological pillar of colonial conquests in the seventeenth, eighteenth, and nineteenth centuries, but would become the bread and butter of late twentieth-century and early twenty first-century environmental thought—deeply anchored in the Cartesian prison cage of Man versus Nature, posing Man as a transhistorical adversary to Nature, which politically not infrequently translates into frames implying that unless there is a halt to the unchecked global population growth, environmental destruction is a guarantee. Still, while Malthus is continuously read and interpreted as being obsessed with population and resource scarcity (leading to famine, disease, war), he was, above all, preoccupied with poverty because of the redistributive Poor Laws in England.

World history may not have the answers to the present planetary crisis. However, it is precisely the flight from world history that bourgeois humanism and bourgeois naturalism count on, rubbing their hands at every attempt to depoliticize the present by severing it from its historical conditions. Its most vivid expression in the Anthropocene narrative is a subtle, but strikingly powerful ideological purification of the class character of the planetary crisis by invoking the eternal conflict of Man versus Nature at the forefront of the crisis and its technocratic solutions (Moore, 2022).

Narration, or in other words, language, is not a trivial matter for Marxist politics (Voloshinov, 1929/1973; Williams, 1977; Moore, 2025). It is not for nothing a reflection of "practical, real consciousness" (Marx, 1932/1998, p. 49). Language is essentially grounded in, and expressive of, "the ideas of the ruling class, [which] are in every epoch the ruling ideas" (ibid., p. 67). If we scrutinize that powerful assertion earnestly, then how do we get to study contemporary capitalist society if its predominant ideas serve to sustain not only its modes of organizing re/production but modes of thought as well? As Bernal (1969, p. 1247) reminds us, "the existence of class-divided societies does not affect only the material consequences of knowledge, it cuts deep into its roots in ideas." Such a question moves us from viewing capitalization as the command of surplus value, based on the exploitation of productive labor, as anything but an exclusively economic process. Instead, it diverts our focus to the production of knowledge as a capitalist world-praxis (Moore, 2015a, p. 199).

Therefore, how do we pivot our "being, knowing, and doing" in the present climate-class conjuncture that not only curtails the practice of essential freedoms but lays the conditions for a much more existential socio-ecological breakdown (Maturana et al., 1998)? In terms of intellectual production, it is first and foremost crucial to acknowledge that "modern science is a product of capitalism" (Levins & Lewontin, 1985, 197) and, as such, an active re/producer of the hegemonic relations of exploitation and domination. Parallel to the development of capitalism, science was utilized as an ideological weapon to confront feudal theology and as a strategy for cheapening the lives and bodies of the "uncivilized" people and exploiting the "free gifts" of nature in the colonies (ibid.; Patel, & Moore, 2017). Far from implying that modern science has Western European origins, a considerable part of the development of technology and philosophical thought was heavily influenced and imported from other regions, notably China and the Islamic world. It was only when science became intertwined with capitalism that it distinguished itself from other traditions (Freely, 2010, 2012; Pomeranz, 2000). Thus, science

in Europe had been, from its embryonic stages of development, an integral part of a world-historical class project of European Universalism (Wallerstein, 2006). Gorz (1976, p. 62) enunciates this process even further by noting that:

> Modern science was initially conceived of as being impermeable and indifferent to human concerns, and concerned only with dominating nature. It was not intended to serve the mass of the people in their daily struggle; it was meant primarily to serve the ascending bourgeoisie in its puritan effort at domination and accumulation. The ethics and ideology of the puritan ruling class clearly shaped the ideology of science, generating the notion that the scientist must be as self-denying, insensitive and inhuman as the capitalist entrepreneur.

Analogously, Gramsci (1971) would once ask himself: "Are intellectuals an autonomous and independent social group, or does every social group have its own particular specialised category of intellectuals?" (p. 5). Not only did capitalists, as a distinct social group in an emergent capitalist society, harness the work of scientists, but they also integrated them into the institutional orbit of the state machinery not only to exercise age-old Roman strategies of divide and rule, but also to define and rule (Mamdani, 2012, p. 42).

Furthermore, in the process of understanding and consequently challenging the ruling ideas that sustain the existing order and our relational embeddedness with the rest of nature in it, we are necessitated to keep a close eye on the bourgeois culture that "emphasises the separation of knowing and doing, theory and practice, science and technology, natural science and social science" (Rose & Rose, 1976, p. 4). Even more so, argues Gorz (1976, p. 66), the quintessential separation that defines the class character of our society is:

> [t]he dichotomy between intellectual and manual work ... which robs the mass of the workers of their control over the production process, and which embodies the function of control in a small

number of technicians who become the instruments of the manual workers' domination. (p. 66)

Thus, any ontological politics aimed at restructuring the relations in the human and extra-human webs of life in a more emancipatory way must take narration and thus language not as superfluous, but as crucial to critically and adequately determining the world-historical and world-ecological origins and nature of capitalism's cyclical, developmental, and, in the present conjuncture, terminal crisis (Moore, 2015a).

Can, then, the production of concepts, categories, methods, and ideas we deploy in our inquiry ever be value-free, ideologically neutral, or historically innocent? I am not convinced. Again, to borrow from Marx (1976), "the categories of bourgeois economy … are forms of thought expressing with social validity the conditions and relations of a definite, historically determined mode of production" (p. 169). As such, they 'bear the stamp of history.' (Marx, 1867a, p, 169, as cited in Sayer, 1987, p. 126).

However, the issue is that it begins and stops with a consequentialist premise, hence the reproduction of a variant of the Cartesian dualism in which "the" environment and/or Nature (as a pristine, idyllic world necessitating greener stewardship) are indeed recognized, but only as "taps" and "sinks" of resources. Old wine—new bottles.

That was the methodological and epistemological breakthrough of political ecology and environmental studies in the wake of the third-wave environmentalism. Drawing on (critical) political economy, they sought to converge the social, economic, and environmental crises of capitalism. To an extent, it was relatively successful. Yet, at the expense of discovering "the" environment, they elevated Nature as their sacred object of study. This, in turn, did nothing to challenge the originary Society/Nature dualism, which has been at the forefront of capitalism's class project of labor exploitation and geocultural (ideological) domination since the long sixteenth century (Meadows et al., 1972; Malm, 2018). The problem, writes Moore (2014, 14):

> … is that adding 'the environment' to a laundry list is precisely that: additive, and not synthetic. This kind of 'soft' dualism tends to justify social-reductionist analyses of neoliberalism's crisis tendencies, which cannot be abstracted from capitalism's quest for cheap natures. Nature, in this dominant critical approach, does not call for any fundamental rethinking of capital, value, and the patterns of recurrence, evolution, and crisis in historical capitalism.

Although this Green Arithmetic (Society + Nature = environmental scholarship) marked an intellectually and politically significant step in recognizing environmental issues, it did so by merely adding ecological consequences onto existing social analyses—treating capitalism, imperialism, industrialization, patriarchy, and racial and gender formations as distinct social processes, rather than as co-constitutive with environmental transformation. The politically troubling aspect is not only that Green Arithmetic fails to grapple with capitalism's long and patterned history of violence against human and extra-human natures, but that it often does so by collapsing capitalism into a depoliticized notion of industrial civilization, narrowly associated with the post-1784 intensification of greenhouse gas emissions following James Watt's steam engine innovation (Moore, 2016, p. 4).

The problem, then, is not simply that Green Arithmetic adds "Nature" as an external variable to social processes—it is that it has a reductionist view of capitalism as either an economic or social system. Capitalism's ecological and social registers cannot be neatly assembled into a formula where "Society" overwhelms "Nature" through technological excess. Instead, what confronts us is a long, patterned history of accumulation structured by the disciplining of both human and non-human natures. From the sugar plantations of the early modern Atlantic economy to the logistics platforms of contemporary tech empires, capitalism has functioned through the systematic management of life's work and energy: the proletariat (paid human work), the femitariat (unpaid re/productive work, often gendered), and the biotariat (unpaid work/energy of extra-human natures) (Moore, 2023, p. 562). At bottom, these are not simply sites of labor exploitation, but regimes of environment-ma-

king—transforming soils, climates, bodies, and metabolic flows in service of capital's world-ecological project. They reflect capitalism's "earth-moving" logic of Cheap Nature: the relentless pursuit of cheap labor, food, energy, and raw materials (Moore, 2015a).

Dialectical biology and the co-production of environments

The consensus across environmentally oriented scholars and environmentalist frontliners is clear: capitalism is unjust, unsustainable, and destructive to life on Earth. Nevertheless, identifying the right culprit is not enough. In other words, that is only one side of the story, namely that capitalism produces unsavory consequences for the living environment. Hence, the argument that capitalism acts destructively *upon* the living environment of humans and extra-humans alike. However, we must also grasp how it does so, not merely through resource extraction or pollution, but by restructuring planetary ecologies in the service of endless accumulation, enacted through successive revolutions in agriculture, science, technology, industry, finance, and ideology. In other words, we must ask ourselves how living environments, constituted by humans and extra-human species alike, are harnessed for capital. This raises questions about both our analytical and political outlook, extending beyond the view of what capitalism does to the environment and expanding it by viewing capitalism as a regime that is, at every turn (however uneven), co-produced by the very environments it organizes and disciplines in its fashion.

Before Jason Moore applied it in political ecology, Richard Lewontin, Steven Rose, and Leon Kamin (1984), as well as Richard Levins and Richard Lewontin (1985, 1997), had formulated this methodological foundation in the field of dialectical biology. In a case against the fixed and objective definition of "the" environment, Lewontin et al. (1984, pp. 12–13, 272–273) argue that:

> "[T]he 'environment' itself is under constant modification by the activity of all the organisms within it. And to any organism, all others form part of its 'environment'—predators, prey, and those

> that merely change the landscape it resides in … Organisms do not simply adapt to previously existing, autonomous environments; they create, destroy, modify, and internally transform aspects of the external world by their own life activities to make this environment. Just as there is no organism without an environment, so there is no environment without an organism … We must make a clear distinction between an unstructured external world of physical forces, and the environment (literally, the surroundings) of an organism, which is defined by the organism itself.

In a short, dense essay, Levins and Lewontin (1997, p. 98) reaffirm this dialectical view:

> Every act of consumption is an act of production and every act of production is an act of consumption. And in the dialectic of production and consumption the conditions of existence of all organisms are changed. … A rational political ecology demands that knowledge. One cannot make a sensible environmental politics with the slogan 'Save the environment,' first, because 'the environment does not and second because every species, not only the human species, is at every moment constructing and destroying the world it inhabits.

For instance, beavers act as "ecosystem engineers" (Jones et al., 1994) or environment-making creatures when they cut trees and use them to construct dams, thereby modifying hydrology and morpohology (Naiman et al., 1988, p. 753):

> These activities retain sediment and organic matter in the channel, create and maintain wetlands, modify nutrient cycling and decomposition dynamics, modify the structure and dynamics of the riparian zone, influence the character of water and materials transported downstream, and ultimately influence plant and animal community composition and diversity.

Considering the unpredictable and messy relations and processes of the interspecies web of life, in which humans are inextricably embedded with the rest of nature, there are seve-

ral pressing problems arising from seeing "the" environment as a mute and static reality, which shows signs of weariness only when humans treat it irrationally and thus unsustainably. First, an ecological crisis implies a production of issues that have mild or severe effects on broader social dynamics, hence the impossibility of isolating "the environment" as a separate policy or field of inquiry. Second, regarding the idea of "the" environment, can we say that there is one ultimate, objective way of defining it, or is the preconceptualization of "the" environment an inextricable social process expressive of power asymmetries (Haila & Heininen, 1995, 155–157)? Cumulatively, these tensions and contradictions "strengthen the conclusion that social programs proposed in the name of 'nature' and the 'environment' are not positive programs determined by unambiguous external criteria" (ibid., p. 157). The criteria, then, of what makes a good environment for all life—not just human life—requires a multispecies negotiation (Haraway, 2008). In other words, "the" environment cannot be saved or destroyed in the abstract. It is constantly being transformed toward emancipatory or oppressive ends. Emancipation must be conceived as a multi-species struggle, grounded in an awareness of how human societies and extra-human life are bound in shared metabolic relations (Moore & Antonacci, 2025, p. 293).

Agriculture, enclosure, and capitalist environment-making revolutions: some historical examples

This dialectical relation lies at the heart of evolution and biology, and, crucially, political ecology. For instance, let us consider some of the historical examples of planetary landscape transformations in capitalist world-ecology since the advent of the long sixteenth century (c. 1450–1600). Although a relatively marginal topic today, agriculture remains the metabolism of every class society. The cascading restructuring of human and extra-human labor dynamics on the land has been pivotal to capitalism's restoration of the Cheap Labor/Cheap Food dialectic. While cheap food as a

tool of control and preventing unrest was also deeply rooted in the life of ancient China and the Western Roman Empire, Patel and Moore (2017, p. 147) stress that capitalist agriculture was at once both producer and product of a fundamentally epoch-making web of relations:

> What's different about an ecology of cash agriculture is the single-minded focus on profit and the drive for cheap food to feed urban workers and their families not just to prevent riots but also to keep work cheap. ... Cheap food enables that expensive system to yield riches. Those riches flowed through infrastructures of power and production that created a new ecology of the city and the country.

The agricultural revolutions that underpinned Dutch, English, and American capitalist supremacy were not isolated "advances," but coordinated environment-making projects grounded in dispossession, labor discipline, and ecological transformation. Thus, the "urbanization of the countryside," as Marx (1993, p. 479) puts it, was anything but straightforward, as some teleological modernization narratives tend to portray, as if the backward model of land cultivation was merely gradually transformed by new capital investments in the towns and cities. Instead, the project and process ensued from a systematic process of enclosure (the appropriation and privatization of commons, waste, and land), expressive of a class war waged by rural landlords against peasants and farmers, whose cultivation of the land was their sole means of subsistence.

According to Van Dam (2001, pp. 32–33), the rise of the Dutch Republic in the period between 1350 and 1550 was driven by the learned lesson after nearly complete devastation of the protective wetlands along the North Sea during the Middle Ages:

> In the case of Holland, the leading province of the Dutch Republic, the human-induced subsidence of the raised peat bogs triggered changes in production. The crisis further deepened when [excessive] peat mining completely demolished the soils and created huge lakes [by the the beginning of the fifteenth century]. In particular, peat and fish entrepreneurs profited from the formation of large lakes.

In essence, he explains that "when peaty soils are drained, they shrink and disappear through oxidation in reaction with the air (p. 34). Eventually, the rising groundwater levels led to a collapse of agriculture due to a sharp rise in storm tides and river floods, which subsequently gave way to a new crisis. The resolution of this epochal environment-making dynamic? A massive rural exodus to the cities, resulting in a world-historical shift from land to labor productivity (ibid., p. 35). However, the demand for peat did not stop there. On the contrary, it merely intensified in parallel with the growing demand for cheap energy in increasingly industrialized cities. It also revolutionized the fishing sector, which would become not only a strategic "secret weapon of Dutch merchants and shipowners" (Vries & Woude, 2010, p. 236) but an identification mark of Dutch economic supremacy. Given this, Brenner (2001, p. 206) claims that the proletarianization process integrated the rural population into a new dynamic of power, profit, and life in the cities, and by no means according to their will or inherent obliviousness:

> Unlike anywhere else in Europe, the subjection of the agricultural producers to dependence on the market and the rise of a large market-dependent population involved in trade and industry in towns occurred to a very great extent as part of a single process of agrarian transformation. The emergence, on the one hand, of Dutch clothmaking, brewing, shipping, shipbuilding and peat digging—much of which was oriented to export—and, on the other, of Dutch dairy and cattle raising, were thus two sides of the same extraordinary process of ecologically driven separation of the direct producers from their means of subsistence leading to the transition to capitalism, and they must be understood together.

Thenceforth, the "transition to capitalist social-property relations in the countryside" embodied a patterned process of "weakness and disintegration of surplus extraction by extra-economic coercion" and "short-circuiting of peasant possession of the means of subsistence" (Brenner, 2001, p. 207). While the former ensued from an already loose political authority of the feudal lords in the

day-to-day re/production of life, the latter concerned the structural push of peasants into "market-dependent capitalist farmers" (ibid., p. 209). The Dutch "road to capitalism" was elevated precisely because of the productivist turn toward a market-dependent agriculture, which helped establish Dutch supremacy in the Baltic trade as early as the 1550s. Similarly, the primacy in the Baltic trade increasingly reinforced its domestic agricultural revolution, hence the shift among farmers from cultivation of low-profit cereals to high-profit dairy and cattle (Moore, 2010b, p. 194). The logic of "ecological hit-and-run", as Moore terms it, permitted the Dutch to "hit where the ecological wealth was most accessible (cheapest), extract it as fast as possible, then move as quickly as possible once declining ecological returns registered falling profitability" (ibid.). To reiterate, prior to and during the consolidation of the colonial regime in Southeast Asia, Polish grain and Norwegian timber were the primary sources of Dutch wealth. Without the Baltic forests mobilized for "timber extraction and agricultural clearing" (Moore, 2010b, p. 204), in short, the Dutch world-ecological revolution would be historically inconceivable.

In England, a similar pattern unfolded under the enclosure movement. Agricultural land was enclosed primarily by stonewalls and hedges, reaching from 47 percent in 1600 to 71 percent in 1700, with a further six million acres enclosed by the eighteenth century (Foster, 1999, p. 51). The free wage-laborer, or the free farmer, was supposed to become an increasingly more "efficient" worker than the forced laborer, whether serf, peon, or slave. To convince the peasantry to move into the cities, they were, as we know by conventional textbook explanations, offered a release from their extra-economic feudal bonds, but what we do not know by the same textbook explanations is the process of violent expulsion from the land (Hobsbawm, 1996, p. 151–152).[2] Mechanization imposed factory discipline, converting artisanal labor into timed, supervised performance—"the factory was a

[2] Massive land privatization was anything but a British phenomenon. It was sealed in most of Europe prior to the 1850s, with critical exceptions of Brazil, Cuba, and the Southern USA, where slavery was not abolished until 1862–1888 (Hobsbawm, 1996, p. 153).

new kind of prison; the clock a new kind of jailer" (Landes, 1969, p. 43). This was not merely a technical shift but a metabolic reorganization of agrarian life into a profit-driven agricultural imaginary (Thompson, 1968, p. 63).

The mid-eighteenth-century agricultural revolution temporarily enabled industrial expansion through cheap food and labor, but soon reached ecological and productive limits. As Moore (2010a, p. 394; 2015a, p. 133) explains, rising food prices and stagnating yields led to a crisis. England, from a position of Europe's breadbasket in the early eighteenth century, saw a dramatic surge in food prices of 200 percent, which was four times faster than the industrial price index (O'Brien, 1985, p. 776). Eventually, the crisis had to be addressed in some way, or as Moore (2010a, p. 394) succinctly puts it:

> The solution was ultimately found in two great frontiers, which yielded two great sources of windfall profit. The first frontier was vertical, moving into the Earth to extract coal. The second was horizontal, moving across the Earth to produce wheat, especially in North America.

As with the Dutch, this trans-Atlantic turning point was no exception for the English. England's emphasis on labor over land productivity as a new metric of wealth spurred primitive accumulation across the Atlantic and fueled peasant resistance (Moore, 2015a, p. 129; Wallerstein, 2011, p. 193). The Parliamentary Enclosure Acts solidified privatization (Hobsbawm, 1968, p. 81; Turner, 1984, p. 17), while stagnating productivity and widespread dispossession triggered enforced underconsumption and rising inequality (Moore, 2015a, p. 134).

This logic reemerged in the twentieth century with the U.S.-led Green Revolution, on a global scale. Through policies like Public Law 480 and Cold War developmentalism, the U.S. exported a model of high-yield, high-input agriculture that transformed agrarian ecologies across the Global South. Far from alleviating poverty, the Green Revolution intensified class and ecological divides. Its high-yielding monocultures required heavy irrigation, chemical fertilizers, and hybrid seeds—technologies that were primarily ina-

ccessible to poor farmers. Such shift structurally advantaged large landowners and corporate growers, producing a political economy where "the poor pay more and get less" (Rosset et al., 2000, p. 54). Even before the advent of the Green Revolution, the scale, scope, and speed of industrialization of agriculture were already dramatically increasing in the United States alone (Fitzgerald, 2003, p. 188):

> [It] can be seen as the process of making agricultural techniques and principles universal. From a technical, industrial point of view, Montana and the Caucasus are essentially interchangeable because the crops are the same, the geography is similar, and they are both amenable to the same equipment and schedule. Those dimensions that are different—the history, the people, the political and economic situation—are irrelevant to the problem of producing wheat.

The "toxification" of agriculture marked a decisive turn in world-ecological relations: agriculture, once a regenerative metabolic relation, was converted into a primary vector of pollution, carbon emissions, and soil exhaustion (Moore, 2015a, pp. 270–271). It became, in effect, a key mechanism for reorganizing the web of life around capital accumulation (Cleaver, 1972; Shiva, 1997). Yet the Green Revolution was (and often still is) celebrated in the Western hemisphere, particularly in the United States. And not without reason. Patel (2013, p. 6) notes that food production in the developing world more than doubled between 1960 and 1985. Indonesia experienced a 275 percent increase in rice production between 1966 and 2000; maize production rose dramatically in Chile after 1964. By the 1990s, nearly three-quarters of Asia's rice and about half the wheat in Africa, Latin America, and Asia were produced with new crop varieties. From 1950 to 1990, global cereal production increased by 174 percent—outpacing the 110 percent growth in world population. By 2000, per capita world food supply had risen 20 percent compared to 1961, and hunger declined by 16 percent between 1970 and 1990—from 942 million to 786 million people. Still, even this relative reduction masked deeper contradictions. Beyond China's Red Revolution, the number of hungry people ultimately grew by over 11 percent (ibid.).

Another argument with a self-contradictory effect is Mehta's (2018, p. 736) simultaneous celebration of the indisputably higher crop yields and the acknowledgement that they did not bring the desired results in different parts of the developing world, especially in Africa. His assertion that "millions of our fellow humans from the Global South would simply not be alive today" (ibid.) ultimately reinforces Patel's (2013) critique—that this was a top-down revolution, with everything but feeding the poor in mind. Above all, it was intended for soothing "the general fear among the American ruling class that Malthus's prediction might come true: a collapse of society precipitated when an urban population's hunger outstrips its food supply" (Patel & Moore, 2017, p. 155).

Mexico offers a paradigmatic case. Millions of tons of corn, beans, wheat, and sorghum were harvested annually (Sonnenfeld, 1982, pp. 32–33). But in this agro-industrial boom, what could go wrong? Practically everything capitalism chooses to treat as external: property rights, land access, technological equity, and above all, living wages. Much of the productive land (*ejidos*) was monopolized by large-scale commercial farmers. Their asymmetric power over smallholders granted them privileged access to state support and modern technologies. Consequently, they could cut costs and suppress rural wages—forcing peasant families into subsistence farming, child labor, or reliance on remittances from relatives abroad, primarily in the U.S. (ibid., pp. 33–34).

At root, the Green Revolution's "decisive geographical shift was only secondarily global … [since] the really revolutionary act of the long Green Revolution was its subterranean thrust, drawing forth cheap energy and cheap water from the earth" (Moore, 2015b, p. 18). This subterranean extraction was not only ecological but political: it dismantled state protections and empowered multinational agrochemical and biotech corporations like Monsanto, Novartis, AgrEvo (now Bayer), and DuPont (Rosset et al., 2000, p. 52). As such, the Green Revolution came to embody what Metress (1976, p. 91) called "one of the patron saints of the 'technology is God' cult."

Nevertheless, even this logic did not go far enough for capital. Intensive irrigation and the use of agrochemicals ultimately

depleted soil fertility. Policies aimed at maximizing yields for the market reduced on-farm biomass, undermining sustainable cycles of organic replenishment. As Shiva (1997, p. 48) explains, the assumption that chemical fertilizers could replace organic methods was flawed: "the fertility of soils cannot be reduced to nitrogen, phosphorus, and potassium in factories, and agricultural productivity necessarily includes returning to the soil part of the biological products that the soil yields."

Conclusion

To "save the environment" is to misrecognize the terrain of struggle. Environments are not static backdrops—they are made, destroyed, and remade through historical conflicts between capital and life. From the peatlands of the Dutch Republic to the enclosures of the English countryside, and the monocultures of the U.S.-led Green Revolution, we see that capitalist development has never merely acted upon nature—it has produced new environments through violent processes of dispossession, labor discipline, and metabolic reorganization. Following Moore, Levins, and Lewontin, this paper advances a methodological shift: from critique to synthesis, from externalist diagnoses to dialectical explanations. As I have shown (however briefly), agricultural transformations were not only ecological or technological events—they were class struggles reflective of a capitalist world-praxis of environment-making, structured by the pursuit of cheap food, labor, and energy.

This historical insight compels us to reframe our political questions. Not: How do we protect or steward the environment? But: How are environments being made? By whom, for what ends, and at what cost? Rejecting the technocratic greenwashing of planetary management, this perspective opens the way for an emancipatory politics—one that refuses to separate human and extra-human natures, proletariat, femitariat, and biotariat. The task, then, is not to conserve pristine Nature (as resource), but to transform the socio-ecological relations through which capital organizes life and

landscape. This means forging a political unity between the proletariat, femitariat and the biotariat—not as abstract categories, but as materially embedded actors in a shared struggle for new ways of life beyond capital's environment-making regime.

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Davorin Žnidarič[1]

A Just Green Transition: The Path to an Ecosocial Society of the Future

Abstract: The ecosocial society is a concept of social renewal that combines sustainability and equity to create a more equitable future. At the heart of this paradigm are community-based societies that seek to strengthen collective responsibility by promoting community energy and food sovereignty. Such sovereignty contributes to reducing inequalities in society and facilitates greater social cohesion. At the same time, an ecosocial society focuses on environmental stewardship through the adoption of sustainable practices, including resource efficiency and the protection of ecosystems. Through this approach, we strive towards a society where justice, equity and care for the environment are the basic principles that shape a sustainable future for all citizens and, at the same time, a future for all those who come after us. The key focus that will enable the preservation of the last remaining unspoilt areas of natural and living habitats is care for the environment and nature, and a shift towards truly green and society-oriented concepts. Concepts that allow all social groups, regardless of material, spatial or resource diversity, equal and fair access in a way that reduces disparities and increases social and environmental justice. The Green Transition is a bridge between existing non-environmental practices and a community where values are completely different from those of the past. If neoliberal doctrine is still dominated by the consumerist and profit-oriented anomalies of society, green, solidarity-oriented and circular and community-

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oriented goals represent future concepts that, on the one hand, reduce impacts in and on the environment and, on the other hand, reduce the increasingly pronounced and frequent social conflicts. In order to achieve a just green transition, strategies that focus on inclusive policy-making, ensuring that the needs and voices of all groups in society are heard and that actors are involved in decision-making without restrictions, are key. In promoting the ecological and social concepts, it is important to promote both environmental and political justice, which also allow the development of the other not least important ones, social and distributive. Environmental justice focuses on the fair distribution of environmental burdens and benefits, ensuring that no group is disproportionately affected. Political justice, on the other hand, requires transparent and accessible mechanisms for participation that allow all stakeholders to influence the design and implementation of appropriate policies that are environmentally and socially sound.

Keywords: ecosocial society, sustainability, community-based societies, just green transition environmental, social and political justice

Introduction

Humanity today faces multiple existential, environmental and, ultimately, livelihood problems. The development of society since the 1880s (the Industrial Revolution), in addition to its positive effects in the social and economic spheres, has also produced many negative ones. Environmental, due to the degradation associated with the growth of the population and its demand for resources, or the consumer-oriented society of recent decades, and economic and social, due to the increase in inequalities in various forms. If up to 1900 we could still speak of a fairly stable consumption and, globally speaking, of a satisfactory supply of humanity's needs on a finite planet, after that date the curve of pressures on the environment, on nature and on space begins to rise exponentially. The growing imperial way of life (Barnd and Wiessen, 2021) has brought humanity to a point where it is necessary to ask how to survive

on a finite planet in the face of diminishing resource availability and increasing environmental and social conflicts.

The capitalist or neoliberal paradigm imposed on us in the post-socialist countries at the end of the 1980s has brought a diversity of supply on the one hand, and scarcity due to rising prices on the other. Instead of prosperity for all, it has brought enormous enrichment to a few individuals and to elites who, through financial and political machinations, have come to wealth through the expropriation-privatisation of previously social property. The disappointment of the majority of people, not only in the former socialist countries but also in other countries with a tradition of capitalism, is great. Instead of the better life that Friedman's concept of the free market was supposed to offer, the result has been a situation that Chomsky describes as the open, gloveless struggle of capital to own everything possible.

With the help of political structures, the plunder of natural and social goods has become a fundamental principle of capital and the elites. The ownership of everything possible, today including livelihoods such as water, and the restriction and weakening of public services as the basis of the welfare state, has led to a diminishing orientation towards the common good and has created an elitism of the rich.

At the expense of the private, rights to adequate health care, education, or the use of natural resources, which should remain the property and decision of society and its people, are being eroded. In some places, the neoliberal ideal of privatisation has gone so far as to privatise water resources, which are supposed to be a common social good owned by all and available to all. The reality for most has become the realisation that, without financial resources, they are becoming second-class citizens dependent on whatever services are left in the public sphere.

Growing conflicts and inequities, or rather growing inequalities between rich and poor, those who still possess resources and those who have already consumed them, are forcing more and more people to realise that something needs to change in society and space if conflicts over resources are to be contained and

the survival of the Earth is to be made possible for present and future generations. Confronting the various forms of injustice that we are witnessing today through the so-called evolution of society over time is a prerequisite for finding solutions towards a different kind of society, one that is oriented not only towards empathy for fellow human beings, but also towards a different relationship with the environment and nature. In this context, environmental and political justice represent the basic ideal of a future society. To help you understand both of these characteristics of justice, I describe them in more detail below.

Environmental and political justice and deliberation, a bridge to the ecosocial society of the future

Justice is a concept that encompasses various social, societal and, last but not least, environmental spheres. As with the concept of sustainable development, justice has different interpretations. To put the concept in a unifying way, equity is an ethical concept that refers to the fair and equitable distribution of goods, rights and opportunities in society. It advocates the equal treatment of individuals and groups to achieve a balance between different interests and contents. The concept of equity covers the following areas and disciplines;

- Social, which can also be defined as social justice: focuses on the fair distribution of resources, income and opportunities among different groups in society. It addresses issues of equity, inequality and the satisfaction of basic survival needs.
- Legal justice: covers equal access to the legal system regardless of gender, religion, political affiliation, or aims at fair trials and just punishments for all
- Economic justice: emphasises the fair distribution of economic resources, income and economic opportunities for all
- Intergenerational justice: focuses on the fair distribution of resources and burdens between present and future generations

- Environmental justice: addresses the fair distribution of environmental benefits and burdens and includes protecting communities from disproportionate environmental burdens

(Rawls, 1971; Nozick, 1975; Sen, 2009; Nussbaum, 2011, Taparelli d'Azeglio, 1840).

Environmental justice

Environmental justice has its roots in the environmental, activist movements that have spontaneously developed in the developed Western world as a result of exposure to non-environmental practices. First in the USA, where individuals were critical of the direct pressures on their space. They were disturbed by the excessive use of pesticides, restrictions on their leisure activities or the introduction of hazardous waste into their living environment. Environmental justice can be traced back to 1982, when a predominantly African-American community in Warren County, North Carolina (USA), resisted an illegal hazardous waste dump in their immediate vicinity. The concept (of environmental justice) was first introduced into environmental terminology by Bullard in 1990 in his work Dumping in Dixie: Race, Class and Environmental Quality, where he critically responded to the increasing and racially segregated environmental degradation in the USA.

Environmental justice is defined by the EPA (2021) and Low and Gleeson ([1998] 2021) as the fair and equitable treatment and meaningful involvement of all people, regardless of sex, national origin, race, color, tribal affiliation, disability, or income, in the development, implementation, and enforcement of environmental laws, regulations, and policies that affect human health and the environment. Where environmental justice determines what conditions must be provided to all to enable policies to be designed in such a way that "people are fully protected from disproportionate and adverse impacts on human health and the envi-

ronment" (EPI, 2023), from hazards including those associated with climate change, the cumulative impacts of environmental and other burdens, and the legacies of racism or other structural or systemic barriers. All people must have "equitable access to a healthy, sustainable and resilient environment in which to live, play, work, learn, grow, worship and participate in cultural and life practices" EPI (2023).

Greenpeace (2023) describes environmental justice as a concept coined in the early 1960s during the civil rights movement, which gained momentum as social justice movements and environmental issues grew. Same World defines it as "the right of a society and its individuals to live in a healthy environment according to their preferences and culture, without being harmed or affected by economic activity" (Same World, 2016).

Equity in the environmental concept means the search for appropriate models, frameworks and policies that, through control and monitoring mechanisms, enable a fair, equitable and fer relationship between actors and agents in society with respect to the environment, nature and space. In the context of equity and justice, environmental and political justice represent mechanisms to prevent subordination or domination between actors, as well as between actors, nature and space. At the same time, they represent the tendency to seek systemic and structural solutions to the socio-environmental problems that arise, based on scientific knowledge and practical experience, through analyses of society and values, where these are formulated on the basis of universally valid ethical and moral standards.

The coexistence of man and nature dictates the need to build a humane environment where the interests and needs of people and non-living nature are promoted and met, within natural and environmental limits. In the 3E concept and in industrial environments where ecological and environmental areas have been neglected, this means balancing the indicators through greater investment in saving and protecting nature and the environment, or a focus on improving environmental quality.

Political equity

Political justice can be defined as the process of seeking and creating an institutional framework that ensures a fair, equal and accessible space for discursive argument for all citizens. The fundamental purpose of political justice is to create a concept that is concerned with addressing questions of how and by what means to achieve the goals of greater social justice through specific social, political and economic concepts in practice (Piketty, 2015, p. 607). According to Low and Gleeson ([1998] 2021, p. 270), political justice is the provision and respect for the inalienable right of people to have their basic needs and the needs of society met, where reciprocity is a central concept of the political conception of justice.

In order to achieve a broader social consensus that allows for the formulation of the fundamental principles of society, it is necessary to create (build) the conditions for the implementation of the principles of political justice that make such conditions possible.

It is the task of institutions to provide a conception of social relations that is fairer and more equal to the community than any that have existed before. Political justice, then, provides the conditions that enable the enactment of precepts "that regulate the conduct of citizens, that can be accepted by every citizen" (Rawls, 1993a in Low and Gleeson [1998] 2021, pp. 123-124), and that are a guarantee of their acceptance by other citizens as well. No society, however well-ordered, can exist without some degree of consensus on fundamental principles or 'reasonable comprehensive doctrines' (Rawls ibid.). Despite the various religious, political and social differences, according to Rawls, it is possible to create "a framework of free institutions of a constitutional democratic regime" that provides the conditions for securing the interests of the self (the agent) "for the good of the self which the self-possesses" (Rawls, 1993, p. 51 in Law and Gleeson, [1998] 2021, pp. 124-125).

According to Rawls (ibid.) there are many truths, but only one political rule that sets the conditions. The condition to be considered in the context of cooperation is the realisation of justice as fairness with respect to society as a fer system of coopera-

tion. And autonomy is to be understood as a political rather than an ethical value, which is realised in public life "by affirming the political principles of justice and by enjoying the protection of fundamental rights and freedoms" and by participating in public societies and collective autonomy (Rawls, ibid.).

A balance is therefore sought between justice and tolerance, taking into account the differences between justice as the realisation of the highest good and a political conception of justice that takes the dialectic of justice to a new level.

The characteristics that reconcile justice and tolerance are:

- the object of political justice, according to Rawls, is "the political, social, and economic institutions that form the basic structure of modern constitutional democracy" (Rawls, 1993, p. 13 in Low and Gleeson, [1998] 2021, pp. 124 -125) (and does not refer to broader matters of human relations or qualities);
- the political conception of justice is a stand-alone view, without reference to any moral doctrin. The content of a political conception of justice is formulated in relation to "certain fundamental ideas implicit in the public political culture of a society" (Rawls, 1993, p. 13 in Low and Gleeson, [1998] 2021, pp. 124 -125); where the latter represents a tradition of democratic thought.

Greening society

In the context of social and environmental justice, and especially in the light of the environmental problems facing contemporary society, the idea of greening society towards a more environmentally acceptable future is becoming a cornerstone of the existence of living nature. The difficulty in bringing green concepts to life is the lack of a common understanding of what greening means.

In the past, we have already faced the problems of non-unified concepts, which, like sustainable development, have caused continued burdens and deepened environmental and social conflicts. When introducing greening concepts, it is necessary to take a

constructive and critical stance towards the unequal development opportunities for their implementation in practice. Like all measures for the introduction of RES and UE, greening measures also initially require mental, and above all, greater economic, investments that people who are faced with basic survival problems or limited financial resources cannot afford. The difficulty in introducing green measures, such as the introduction of BAT technologies and the use of so-called cleaner energy sources, is that, like the development potentials in the past, they depend on the status of developed, economically stable countries of the developed North.

Statistical indicators of the uptake of environmentally sound technologies and social measures towards a future society show that countries with a developed socio-economic status, such as the Scandinavian countries, also due to their traditions of social development based on solidarity and empathy towards the environment, nature and fellow human beings, are quicker and more effective than others in putting into practice effective and, above all, environmentally sound concepts. The level of economic stability of individual countries and the policies they have developed also play an important role in this. On the contrary, the US example shows that even a sufficiently high standard of living does not guarantee a higher level of environmental concern. Even resource constraints and greater environmental concern are limited by insistence on economic effects alone.

The concept of greening, as I conceive it, which is supposed to be based on the protection of living space and the appreciation of living and non-living nature, cannot be based solely on the consumer-profit philosophy of the Western neoliberal and egositic concept, but on the philosophy of the indigenous peoples, whether they are North Americans ancients, aborigines in Australia or ancientreligious people in *Posočje (Slovenija).* I do not associate the concept of the name *»ancientreligious«* with classical religious themes, but with the people which belief in the harmony between man and nature.

In the context of an equal relationship between nature, man and the environment, as the basis of reformist concepts of the

future, it is necessary to look for solutions in the direction of genuinely green concepts of the future, and not just beautification or formalistic efforts which in reality have little in common with green concepts, but only a profit-making tendency.

The flaw that the concept of going green promotes is also the question of what green even is. The notion of green, electric mobility raises the question of green energy in its own right. Is the production of electric cars really that green or is it just a marketing ploy by electric car manufacturers. Similar concerns arise when dams are built on rivers to build hydroelectric power stations. Green energy without analysing the whole process of production of materials, the processes used to extract metals, or the energy consumed and produced from the beginning to the end of the process, does not give a proper picture of whether such energy, the material or service produced, is truly green or merely a marketing, sales opportunity for capital and politics, which sees only profit in going green.

The point of green production should be to have less input of energy, resources or labour than output, or more environmentally efficient and nature-oriented technology and processes.

As the philosopher Kirn and many other environmentally oriented thinkers state in their writings on society, environment and nature, in order to get a complete picture of the interdependence of man, the environment and nature, it is necessary to take into account all the factors that take place between the actors in space. In particular, it is necessary to emphasise their interconnectedness, notwithstanding the denial of materialistically oriented economists. The destructiveness of existing materialist concepts does not lead to solutions to alleviate environmental problems but, on the contrary, to their aggravation, which is already reflected in numerous conflicts today. Not only between nature and humans over the consequences of development and non-environmental practices, but also between humans over resources. Despite the fact that the era of fossil fuels is supposedly coming to an end because of the limitations and consequences of their use, globally speaking, their exploitation is continuing.

According to consumption projections, the use of fossil resources is only set to increase until 2050. Even the most globally influential countries and economies in the world, such as the US, China and India, continue to rely on the use of fossil resources, despite the fact that the environmental and social consequences of their use are destructive for the environment and society.

In these economies, the use of fossil resources is also subordinated to the policies of the countries, and such non-environmental policies are also the cause of the failure to adopt global climate agreements. Thus, instead of seeking appropriate and binding global climate and environmental agreements, the world remains hostage to fossil lobbies and economies that are not interested in the consequences of non-environmental practices but only in short-term profits.

The eco-social society of the future; myth or reality

The imbalance in global development, or the gap between the developed North and South, is widening. If the countries of the developed North built their development on the exploitation of the underdeveloped South, or in the past on the exploitation of colonies, today the exploitation continues by other means and in a more sophisticated way. The spatial effects remain the same. The rich are getting richer, the poor are getting poorer.

The actions of developed and economically powerful countries, such as some in the EU (Germany, France, even before the UK), and globally China, India and the US, each in their own way use power and influence to secure their interests both within the EU and more broadly. The NIMBY approach, or the relocation of activities to less developed areas of Bangladesh, Pakistan or, in the past, India (Bhopal, for example), is still aimed only at continuing the exploitation of less environmentally conscious countries. Corruption and nepotism, even in the less influential EU countries, allow influential countries to operate within the European space. The cases of Lafarge (now Holcim in Trbovlje-

-Slovenia and the tendency to exploit lithium in the Jadar Valley-Serbia) show the subordination of EU members and potential EU members to influential countries within the grouping.

China, as the world's growing economy, already outperforming the most developed countries (USA, etc.) on some indicators, is exploiting other areas in a different way. Whereas China initially developed its economy at the expense of cheap labour and non-environmental practices, today its policy is based on the exploitation of other areas, especially Africa. This modern and sophisticated NIMBY concept is based on credit and the transfer of ownership of individual resources if countries cannot repay the credit. The end result is still the same as that of colonial exploitation. The social rights of the people living there are violated, environmental problems remain outside the country of origin, and resources are still secured.

In the case of some EU countries, or rather lithium, the story is repeating itself. Countries prefer to invest in resources from elsewhere, protecting their own, with the environmental problems of resource production (polluted environments, destroyed soils and drinking water sources).

The exploitation of resources, and the deepening of social, environmental and other injustices, are only exacerbated by such non-environmental and non-social practices.

Such practices in turn lead to growing conflicts in the world. The latest conflict between India and Pakistan, and the restriction of India's drinking water resources to Pakistan, has also shown that livelihoods are becoming a major factor of political manipulation and pressure. If India diverts the flow of the river, Pakistan will be left without water for almost a third of its population. Such actions do not lead to a reduction in tensions between the two nuclear powers, but lead to open political and military conflict.

A global green environmental and social policy solution for a less conflict-ridden society of the future

In the mid-1980s, the discourse of sustainable development emerged in the wake of the growing consequences of non-environmental practices. Under the auspices of the United Nations, Gro Harlem Brundtland developed a concept for a future development based on greater concern for the environment. The insistence on economic and energy effects, or the two E's, has meant that the neglect of environmental issues in the face of a growing population and rising consumption has begun to have a significant impact on the quality of living space. The discourse is a step in the direction of starting to move in a more environmental direction, but it is flawed and inadequate from today's point of view. Firstly, because the concept of sustainable development is not fully defined at a theoretical level, or even what it means in practice. This inconsistency of definition gave rise to a conflict between neoliberal economists and environmentalists, ecologists, from the outset. The neoliberalists conceive of sustainable development as the continuation of growth and thus of pressures on the environment, while the environmentalists conceive of it as the limits within the self-renewal capacity of the environment, space and nature. These two concepts are diametrically opposed to each other.

The Commission's report, Our Common Future, published in 1987, also contained various recommendations. The report's greatest achievement was its systematic treatment of a number of often isolated or competing issues - development, global environmental issues, population, peace and security, and intergenerational justice (Dryzek, [2013] 2018, p. 180). Despite the attractiveness of the stated goals, the report did not outline the steps needed to realise them.

Radical environmentalists did not perceive any positive effects for the environment and its protection in the Brundtland Report, describing it as a rhetorical ploy that disguises a strategy

of preserving development rather than addressing the causes of the ecological crisis (Sachs, 1992 in Hajer, [1995] 2020, p. 22).

The adoption of Agenda 21 also points to the contradiction between capital, economic growth and the increasing environmental burdens. Although Agenda 21 identified consumerism and the runaway production of developed countries as the fundamental problems of modern society, it also recommended greater economic growth to finance solutions. This interpretation of sustainable development has led to different interpretations by the main actors in the space.

Despite all the criticism, not much has changed in practice. Large and powerful economic and political players continue to avoid implementing effective global environmental and social agreements. Economic effects at the expense of the exploitation of the environment, nature and society still prevail. Segmented solutions at country level fail to deliver comprehensive, global impacts due to the transboundary impacts of pressures.

Green programmes - myth or reality

The dilemmas and shortcomings of sustainable development outlined in the previous chapter, as well as the EU development guidelines on green concepts for the future, point to doubts about truly green efforts, due to a number of shortcomings.

The very definition of greening itself offers the first doubt. The question arises as to what criteria are used to establish this definition. The example of electric mobility casts doubt on the concept of green mobility. The first dilemma is the production of metals for the batteries, the second is the production of energy to charge the electric cars, and the third is the treatment of the dead batteries after use.

The production of battery metals carries environmental and social implications in the initial phase of mining and extraction, especially of lithium from brine. Lithium from brine is an environmentally controversial process which, in addition to the negative environmental impacts (destroyed surfaces, contamination, long years of unused land after the resources have been exploited, etc.),

also has existential impacts, since the tonne of lithium produced uses as much as 2 million litres of water. Lithium production areas in South America have increasing problems with drinking water supply due to the industry. On the other hand, the environmental impact of lithium production is catastrophic. Destroyed land, destroyed flora and fauna (Žnidarič and Senegačnik, 2025).

The production of other metals also brings social and environmental problems. Cobalt is also mined in Africa by children, without any protection, in conditions unworthy of human beings and for meagre pay.

The production of electricity to recharge batteries also casts doubt on green mobility. Most of it is still produced from fossil fuels, which is causing the carbon footprint to grow. Air pollution due to the production of energy itself and others.

The third and not least important segment of the doubt about 'greening' is caused by waste batteries after use. They contain acid, more than ten metals (depending on the type of battery), plastics which pose risks to the environment. When waste batteries are stored, spontaneous combustion occurs, causing additional risks in the room.

Another highly dubious problem of the 'greening' issue is offered by the unnatural construction of hydroelectric dams. The construction of dams is a highly unnatural intervention in space with complex negative consequences for and on the environment, flora and fauna and, of course, for people.

Observation of the consequences of dams already built has shown that dams cause reduced river flows, temperature rises and limit the self-cleaning capacity of the river. The dam-weir accumulates toxic substances that are no longer purified by the river due to human intervention in its channel, and the river's population structure is changing. Instead of native fish and organisms, other species of fauna are colonising the (dammed) river. An important point that is being neglected is that underwater sources of drinking water are diminishing due to the interruption of the vertical flow, which can lead to a permanent drying up of drinking water sources. The case of the Drava polje (Slameršek) has shown that, when the river is dammed, drinking water sources along the river have

dried up and the quality of the water in the river itself has changed significantly, for the worse, due to the aforementioned constraints.

The interventions on the river are changing its intrinsic value for humans. The destruction of the last remaining areas of wild rivers thus constitutes an unmeasurable and unenvironmental practice with far-reaching consequences for the inhabitants, and in the context of greening, it puts the energy produced by hydroelectric power plants into a new form (Žnidarič, 2021; Toman 2022; Slameršek 2024; Žnidarič, 2024).

The aforementioned anomalies of green energy dismantle the myth of green motoring, which only comes to fruition in the final phase of using e cars, which produce a smaller carbon footprint. On the other hand, although they cause environmental, social and developmental drawbacks, their increased implementation (purchase of e cars) also depends on the financial capacity of individuals, charging systems and charging range. In some places, there are also problems with the electricity grid, which is outdated or does not even allow for the upgrading of green programmes such as e m bility or heat pumps, although this is a minor problem compared to the environmental and social impacts.

Solutions

Green transformations and measures, for a truly green transformation, must include steps that take into account the constraints of the space, the energy consumed and the type of energy that needs to be precisely defined. Because sustainability concepts should include and encompass all actors in space, as well as social, economic and, above all, environmentally oriented concepts, which aim at replacing or reducing resource consumption, and at a completely different socio-social concept from the previous ones, be they socialist or capitalist. In fact, notwithstanding their different basic political and social-social orientations, both have so far seen resource exploitation as having only economic effects.

In the context of solutions, only the measures that would be necessary to implement truly green concepts will be mentioned;

- the introduction of Reflexive Ecological Modernist concepts
- Reduced energy consumption
- Community power plants (involvement of all groups and actors in the projects)
- food and energy self-sufficiency (use of own resources)
- taking into account environmental, natural and spatial potentials
- raising environmental awareness (education, awareness-raising, etc.)
- Reduced carbon and water footprint
- circular economy (limits on resource use, more life products, less waste)
- Political, environmental and social justice (systemic solutions towards environmental and social benefits).

Conclusion

Given the persistence of the systems in place so far, and especially of the neoliberal capitalist concept prevalent today, and its consequences in space and society, the transition to an ecosocial society is only possible with a sufficient critical mass of people, state totalitarianism or democratic processes. The latter require a sufficiently large and inclusive social mobilisation, which today is still insufficient for systemic and socio-environmental change. The obstacles to this are inequalities and inequities, which are more pronounced in industrial areas than in non-industrial ones. In the context of social (in)justice, there is a need for community-based concepts to be introduced which will also cover the most vulnerable groups and enable them to improve their food and energy supply. Community-based and solidarity-based concepts already exist in the world, and some of the beginnings are also emerging in Slovenia, but they still do not cover the needy and are limited to particular local environments. Improving social and environmental conditions requires systemic solutions on the part of the state and projects in which all actors in the area participate in an equal and

non-exclusive manner. The establishment of long-term socio-environmental policies, which should not change according to the prevailing policies, is a prerequisite for improving the spatial situation. Truly effective green projects can contribute to a future society, alongside social and political mobilisation and changes in politics and policies (increasing trust in politics and the judicial system).

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Balbina Nyamakura, Sumiran Rastogi[1]

Leaving No One Behind: Framing and Designing Just Climate Services

Abstract: Climate services like weather forecasts and climate projections empower communities to adapt. However, persistent usability gaps hinder their effectiveness. Moreover, much of the climate service literature assumes that these services are produced in a vacuum without much interest in delving into ways in which inequalities and injustices may be perpetuated. In this perspective article, we rethink the objective of climate services and reframe it from a social justice and just transition point of view. Given the proliferation of climate services worldwide and their importance in preparing and responding to growing weather uncertainties and extreme events, we argue that the way climate services are designed and who they serve must be critically evaluated. To address this, we conceptualise a "just" climate service as one which is designed through a fair and inclusive process, integrates different knowledge systems, provides actionable information for use, and leads to equitable benefits and supports a just transition. We further argue that adopting co-creation approaches and local knowledge integration can pave the way not only for developing a just climate service but also encourage uptake by delivering information that is credible, salient and legitimate. We propose an approach to integrate local knowledge in all stages of the co creation process and a practical approach to apply such a method in practice. This work benefits researchers and practitioners through locating CS and LK within just transition thinking and providing approaches to building "just" climate services.

Keywords: Just CS, co-creation, local knowledge, just-transition, design

[1] The paper was reviewed by assoc.prof.dr. Andrej Lukšič.

Introduction

Climate services (CS) (e.g., weather forecasts, advisories, climate projections, etc) are purposed with providing data and information to support decision-making. This includes information that can help prepare, warn, cope and adapt to the effects of climate change and extreme events (Ziervogel et al., 2022). With the worsening effects of climate change, the need for useful climate information has become more pertinent. Climate disasters such as droughts and floods have increased in their frequency affecting countries at a global scale (Centre for Research on the Epidemiology of Disasters (CRED), 2025). As of 2024, CS, in the form of hydrometeorological services, are increasingly referenced within a countries' NDCs and NAPs, often forming the information basis determining risk mitigation and adaptation strategies (WMO, 2024). The role of CS, therefore, in preparing and responding to these disasters has become paramount for the safeguarding of society.

Despite the promised value, CS research and practice finds itself at a crucial crossroads whereby, despite having greatly improved in terms of data quantity and quality (Dilling & Lemos, 2011; Webber et al., 2019), the uptake of CS products remains limited. Literature has attributed this to a persistent "usability gap" (Lemos et al., 2012). Alleviating this gap requires producing usable information. Cash et al. (2003) theorised that such information needed to possess qualities such as credibility, saliency and legitimacy. For CS, this means providing information that holds integrity, is relevant to the needs of the decision-makers, and is viewed by users as being transparent, inclusive and just. This acknowledgement led to many studies highlighting the importance of post

normal approaches to developing science (Kirchhoff et al., 2013). These post-normal approaches advance from the premise that scientific information by itself is insufficient to solve societal challenges like climate change, and other types of knowledge, along with collaboration across science and society, are needed to co-develop solutions (Funtowicz & Ravetz, 1993; Gibbons, 2000) (see Figure 1). Adopting co-creation approaches that are inclusive

of different knowledge systems has been pinpointed as key in a way towards developing CS that encourages uptake. This also aligns with the reality of CS production. Most CS are produced through collaboration and concerted action among a group of stakeholders embodying different roles on the climate service value chain (Hewitt & Stone, 2021) (see Figure 2).

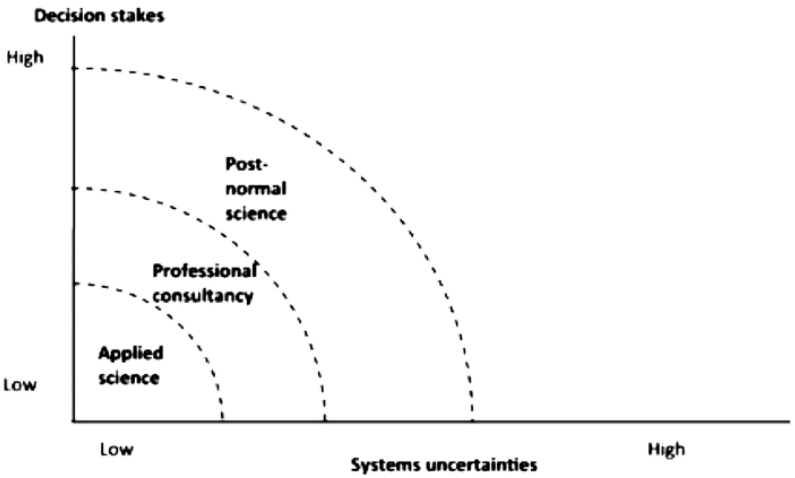

Figure 1. Post normal practices (Funtowicz & Ravetz, 1993)

Figure 2. Climate Service value chain (Source: icisk.eu)

Another impediment, when thinking about CS, is that the role of these services in broader socioeconomic, political, and natural contexts is often overlooked. Historically, this arose from the "rise of a powerful epistemic community of climate modellers, the asymmetrical incorporation of climate and social change into envisaged futures…" (Hulme, 2011). Climate Services (or producing usable knowledge), though driven by collaboration among different stakeholders, often remains an apolitical endeavour (Lovbrand, 2011). Such a view of CS obfuscates the role of power and technocratic practices that are involved in "shaping, sustaining, subverting or transforming relations of authority" (Jasanoff, 2004). Climate Services rarely feature in conversations around justice and just transitions (Troccolli et al., 2024). Yet CS, by virtue of guiding decision-making, have the potential to reinforce injustices if not developed in a manner that takes justice into account. Lack of critical reflection on how CS are produced and whose voices are being heard can perpetuate existing vulnerabilities (Lemos and Dilling, 2007). Additionally, challenges faced within just transition efforts, such as how to better engage and include various actors to leave no one behind due to the transition, are relevant in the CS context. While efforts such as collaborative governance and multi-level governance have shown great potential and taken center stage within the just transitions literature (Øjvind Nielsen et al., 2024; Topaloglou et al., 2024). Within the CS context, the concepts of co-creation and the integration of local and scientific knowledge systems are seen as ways to improve the use of CS. However, in this perspective article, we argue that the thinking around building usable CS through co-creation and integration of local knowledge can also be leveraged to build CS that are just and support a just transition. We present here crucial lessons learnt from the theory and practice of developing CS, providing pragmatic steps forward to address this two-pronged ambition.

Conceptualising a just climate service

Efforts to reduce anthropogenic climate change through transitioning to low-carbon societies saw a rise in the concept of justice through calls for just transitions, climate justice, environmental justice, and energy justice (Newell & Mulvaney, 2013). Common in all these justice frameworks is the need to uphold the tenets of justice, i.e. distributive justice, procedural justice, and recognitional justice (Wang &Lo, 2021; Balest et al., 2025). Specifically, calls for just transitions originally started in an effort to protect the rights of workers who stood to lose jobs as societies transitioned to low-carbon societies. Over time, the just transition now represents fairness and ensuring that no one is left behind in the process (Wang & Lo, 2021). The concept of just transitions is naturally approached from different perspectives in the literature. We approach this paper from the perspective of just transitions as governing strategies. This means that we conceptualise just transitions as Huang and Liu (2021; P4): "Multidimensional, multi-level, multi-actor, and multi-phase governing process to facilitate systemic transformations of socio-technical regimes towards sustainability". CS have the potential to facilitate such transformation towards sustainability as they guide decision-making.

In the field of CS, the concept of justice is not explicitly addressed. Few studies have discussed the pitfalls associated with disproportionate benefits offered by CS to different groups of end users. Lemos and Dilling (2007) first discussed it in the context of seasonal climate forecasts and the equity implications associated with lack of accessible CS; potential harm to vulnerable populations through CS use; and opportunity costs associated with CS use. The value of socially just and inclusive CS was elaborated on by Furman et al. (2014), calling attention to aligning CS with existing practices of knowledge management. Inequity in CS access arising from gender differences was discussed by Gumucio et al. (2022), with the recommendation to adopt participatory processes to reconcile the difference. These connections between justice and CS are few and far between. Links to the procedural and

recognitional justice tenets may be made as CS have been developed through the engagement of end-users and their needs, using participatory approaches and embracing different epistemologies. However, merely drawing these links is not enough to make CS, just CS. Given the increasing frequency and magnitudes of extreme climate events and their devastating effects on communities and society at large (Sánchez-García et al., 2022), CS play a role in ensuring decision-making that reduces the effects of climate change on the vulnerable and reduces maladaptation (review and add more here). Justice in this context is associated with ensuring that the CS developed are used, and used for the benefit of all.

Additionally, we argue that developing CS that is "just" requires looking at both the process through which CS is produced, the benefits accrued through the use of the CS product, and the impact of CS use on the natural environment. From a process point of view, CS are predominantly produced through concerted action of a group of stakeholders, often conceptualised as a CS value chain or value web (Hewitt & Stone, 2021). This value chain comprises organisations with different capabilities, from data providers and integrators (producing datasets), to service providers (providing sectoral information), to service purveyors (responsible for disseminating and communicating information) and finally end users (the ultimate beneficiary of the CS). Developing CS also requires working across "boundaries" (Kirchhoff et al., 2015). Most CS are produced at the interface of science and society, requiring negotiation between different visions, values and knowledge systems (Lemos et al., 2012). Developing a just CS from a process point of view may therefore mean the intentional inclusion of members along the value chain and representing all members in society that are affected by the decisions that will be made from the CS.

As such, we conceptualise a just CS as a CS that a) has been developed through a just process that incorporates the needs of all affected individuals, b) contains useful information that is salient, credible, and legitimate, thus necessitating the inclusion of different knowledge systems and participation of actors on the value chain, c) has information that is useable in a given context,

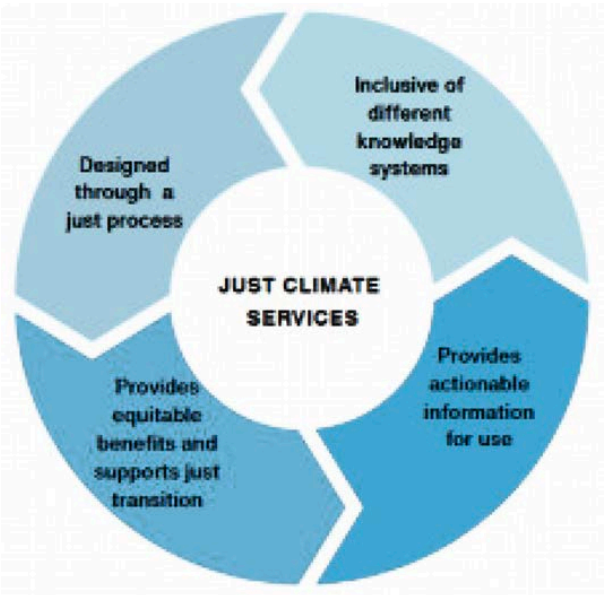

Figure 3: Components of a just CS as conceptualised in this paper

through reducing maladaptation, being fair, and does not leave others in society behind (Figure 3).

We argue that with the launch of flagship projects like Early Warning for All and the proliferation of CS projects and interventions globally, an intentional reflexive step is required to critically evaluate the merit of these interventions through the lens of just transition. The idea of building a just CS should not be an afterthought; instead, it must be used as a touchstone to guide CS development and provision. In this perspective article, we provide pragmatic steps towards achieving this goal.

Co-creation and local knowledge as key components in the development of just CS

Given our framing of just transition and our conceptualisation of a just CS, we propose the application of the concept of co--creation as an approach to building a just CS. Additionally, we propose that the integration of local and scientific knowledge

has the ability to capture contextual behavioural and cultural insights that would make for a CS with the necessary credibility, legitimacy and saliency. Finally, we propose the intentional application of both co-creation and knowledge integration through the development of a CS to be an effective measure in developing a just CS. We base our insights on the lessons learnt from the application of co-creation approaches and the integration of local knowledge and scientific knowledge in the development of locally relevant, socially and behaviourally informed CS within the Horizon 2020-funded I-CISK project (Box 1).

Innovating CS through the Integration of Local and Scientific Knowledges (I-CISK) project

The I-CISK project aims to innovate CS through integrating local and scientific knowledge in the development of a CS through co-creation approaches. It has seven living labs across Europe (Netherlands, Italy, Hungary, Greece, Spain, and Georgia) and in Africa (Lesotho).

Box 1: Description of the I-CISK project from which we draw our insights.

Co-creation

Co-creation in the context of CS refers to the iterative process between multiple actors on the CS value chain (section 2), in the development of a tailored, context specific CS that is salient, legitimate, and credible (Vincent et al., 2018; Bojovic et al., 2021). Within this context co-creation involve various actors on the value chain from end- users to data providers in co-initiating the process, the co-exploring needs, co-developing a solution, co-designing the CS, co-evaluating the CS and finally co- disseminating the CS for use (Figure 4) (Nyamakura et al., in press). Co-creation serves as a gateway to the inclusion of the needs of end users and incorporating their behavioural, cultural and social viewpoints in the CS and how it will be used in decision--making around disasters and climate adaptation.

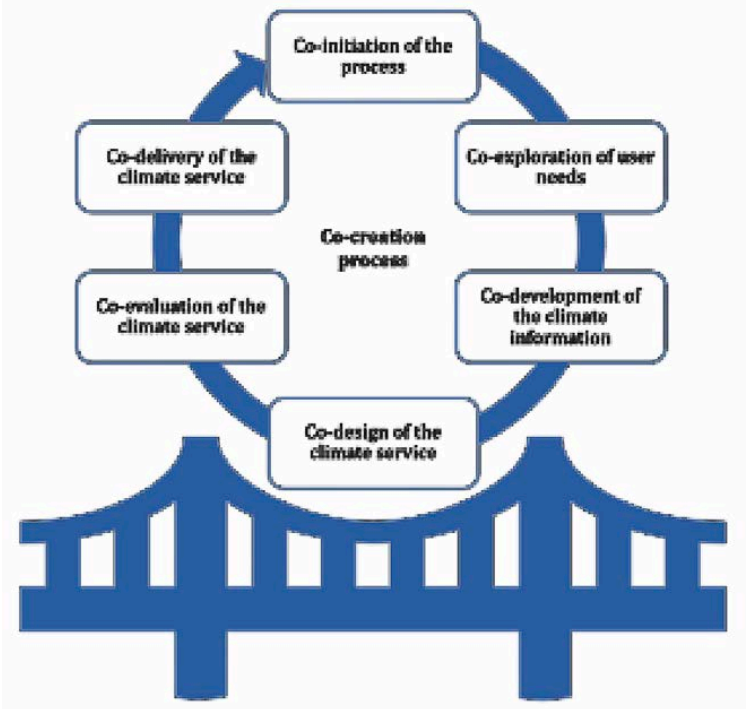

Figure 4: Cycle of co-creation for CS (Nyamakura et al., in press).

While co-creation approaches have been applied in the development of CS in years past, we see the value of the concept in the development of a just CS in a variety of ways. Co-creation has been identified as key in ensuring the use of CS through including the end-user in the process of their development (Bojovic et al., 2021; Baulenas et al., 2023). Co-creation processes with their multiphase structures offer enough room for negotiation at different phases. Additionally, since bringing multiple actors in a room suffers from language barriers, co-creation processes offer the opportunity to adapt language to match the actors, allowing for multiple viewpoints, and fairness (John et al., 2025; Nyamakura et al, in press). Co-creation processes are applied differently in practice, and studies have shown that some processes adjust based on the type of end-user involved; this ensures that co-creation processes are embedded within the local context (John et al., 2025; Nyamakura et al., in press).

Local knowledge integration

Calls for integration of local knowledge within CS emerged from efforts to make CS better grounded in local reality. Eakin (1999) first brought attention to local knowledge in the context of seasonal forecasting, highlighting traditional forecasting techniques of farmers in Mexico and using it as a "point of reference" to ground the forecast. Similarly, Stern & Easterling (1999), when discussing the valorisation of forecasts opined that "the effectiveness of forecast information depends strongly on the systems that distribute the information, the channels of distribution, recipients' modes of understanding and judgment about the information sources, and the ways in which the information is presented", thereby bringing to attention the importance of local knowledge. Since then, the potential of local knowledge has been increasingly studied across CS literature. In their review of local knowledge, Rastogi et al. (in press) found that local knowledge is predominantly used within CS to identify local indicators for monitoring and forecasting weather conditions. This includes indicators used to monitor and predict inter-seasonal variability or natural hazards. Beyond monitoring and forecasting, the review also finds examples of local knowledge being used to tap into communities' knowledge of risks on the ground, as well as identifying coping and adaptation strategies for risk management. These varied dimensions of local knowledge contribute to improving the credibility, salience and legitimacy of CS.

Local knowledge integration and co-creation two sides of the same coin

Despite these strides in understanding co-creation and local knowledge within CS, crucial gaps remain not only in terms of the individual understanding of both these concepts but also understanding the two collectively. Currently, there is conceptual and empirical ambiguity on what the term means in practice, which leads to multiple variations in the application of the concept, and no guidance on which process is useful in which contexts (Nya-

Figure 5: Links between just CS, co-creation and local knowledge

makura et al., in press). Local knowledge integration within CS is impeded by several factors, including local knowledge exploration often carried out in a silo, cherry-picking of dimensions of local knowledge which can be scientifically tested and validated and the lack of local knowledge exploration in its socioeconomic and political contexts, and as it impacts decision-making (Rastogi et al., in press). On a collective level, studies focusing on co-creation often mention local knowledge inclusion as an obvious outcome of the process. Similarly, studies focusing on local knowledge either do not specify co-creation or assume it is occurring in the background without much bearing on how local knowledge is understood and included within the CS development process. This lack of cross fertilisation between the two topics results in a situation where neither is leveraged to its potential. We present a resolution to this by encapsulating both co-creation and local knowledge integration under the umbrella of a just CS (Figure 5). Our aim here is not to present this as a mere semantic alternative,

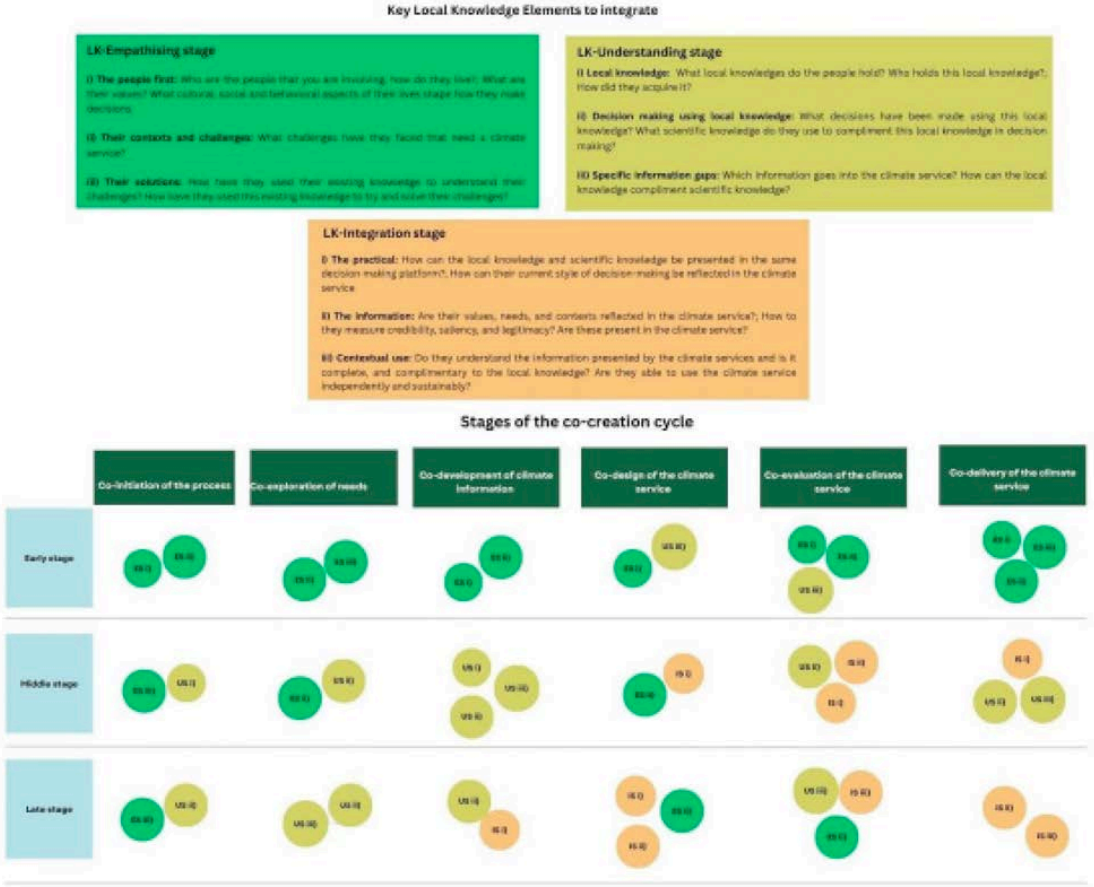

Figure 6: Proposed approach to integrate local knowledge in the co-creation process for just CS.

but instead to illustrate the importance of thinking about just CS from the outset, and leveraging co-creation and local knowledge integration as a way of getting there.

Integrating co-creation and local knowledge in the development of a just CS

As illustrated in Figure 3 above, co-creation and the integration of local knowledge, when combined and applied in the same process, increase the chances of producing a CS that is considered just. However, having these processes occur simultaneously will require a shift in thinking and increased flexibility in execution. Of importance are three key questions that should guide the thinking and implementation of a process rooted in justice: i) why just climate services, ii) just climate services for whom, and iii) just climate services, for what purpose. In Figure 6 below, we recommend three key elements of engaging with LK, and where these elements may be integrated into a co-creation process during the development of a just CS.

Why just climate services?

To avoid symbolic measures and processes that aim to create just climate services only in name, it is important to understand why a just climate service would be needed in a particular context. In understanding the motivation for developing a just climate service lies the value and possible direction of a process. Additionally, it allows the process to be rooted in the reality of the context at hand. Therefore, a thorough understanding of the context where the just CS is to be co-created is needed. This requires engaging with the first two stages of the LK-Empathising stage (Figure 6). This includes thorough familiarisation with the people living in the context, understanding who they are, their values, and how they live. Additionally, it requires empathising with their lived experiences and needs relating to climate change.

Just climate services for whom?

Just climate services should be in service to the end-user and the societies that will be affected by the decisions made by applying the climate service. Furthermore, co-creating a just climate service should be grounded in epistemic humility. This involves avoiding helicopter practices that impose solutions to communities, but rather engage in practices that recognise that local people have the ability to develop solutions to their own challenges and involve them in the process. As such a key question: just climate service for whom? Should be central in not only where the climate service will be used but also who will be involved in the process of co-creation. This not only guides the process but also ensures that key beneficiaries are involved and have process ownership at the earlier stages of co-creation. For this, we propose unpac-

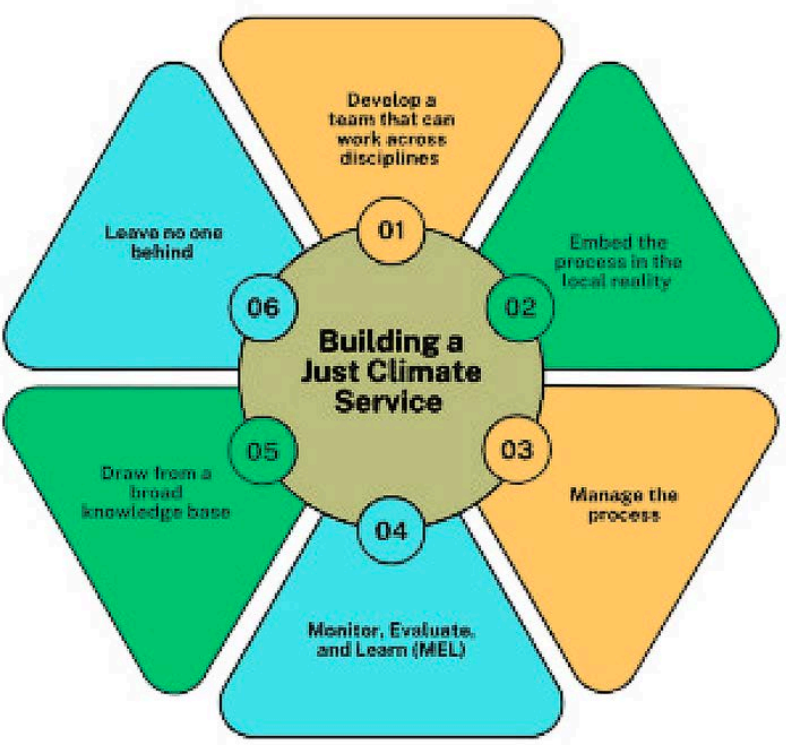

Figure 7: Key components to consider when developing a just CS

king who the climate service is for, which people in society are to benefit, understand how they live, what cultural, social and behavioral aspects of their lives shape how they make decisions. There is also a need to understand how they make decisions, what information they use to make these decisions, and at what point they use local knowledge. This involves all three stages of LK-Empathising and LK-Understanding (Figure 6).

Just climate service for what purpose?

The impact resulting from climate service use can be understood both at the level of an individual end user as well as the broader societal and environmental implications arising from its wider uptake. The former requires answering questions around what is considered 'useful' and 'valuable' from a user perspective. These involve engaging with all stages of LK-Integration (Figure 6). The considerations may range from the credibility and salience of the information provided, as well as its timeliness and method of delivery. The latter requires adopting a systems perspective to unpack benefits and trade-offs arising from climate service use. Here, the focus shifts from individual decisions to collective outcomes like enhanced resilience or better resource management, or tradeoffs like promoting unsustainable practices or perpetuating inequalities among different types of user groups. Understanding impact across different scales of use requires adopting approaches that support quantitative and qualitative co-evaluation of the benefits of climate services and lead to greater trust in scientific institutions.

Building a just climate service - process implications

In addition to the gaps in theoretical understanding, what remains lacking is also a pragmatic way of co-creating and incorporating local knowledge that is responsive to the practicalities of CS ideation, design and development (for e.g. project timeframes, research objectives, etc). Figure 7 below consolidates the key practical components necessary to build a just CS.

a) Developing a team that can work across disciplines

Development and provision of CS necessitates working across boundaries, agencies and disciplines. CS requires collaboration across a wide range of domains such as climate science, social science, policy, technology, and local practice. The onus for the provision of CS not only rests on climate scientists but equally on subsequent organisations in the CS value chain. This entails developing boundary-spanning capabilities (Cash et al., 2003), such as individuals or roles that can translate between disciplines and sectors, or institutions that create shared spaces for exchange. Without this capacity, co-creation efforts often falter due to misaligned values, communication breakdowns, or disciplinary silos. In terms of different roles, studies have highlighted the importance of knowledge brokers or boundary organisations that are often tasked with bridging the science-policy-practice divide (Lemos et al., 2014). Often, these boundary organisations are extension services, NGOs or civil society organisations with vast experience of working with communities and researchers. For designing a just CS, we recommend a more deliberate thinking around how the consortium is constructed and who is involved. A thorough stakeholder analysis based on the CS value chain and informed by knowledge of the context can be critical to the success of the process. Through this intention must also be to create a CS value chain that lasts beyond the project, ensuring that the collaboration is sustained. Lastly, but equally important are the "in-house" skills that the organisations leading the CS co-creation process must possess. Since many of the CS interventions are still led by research institutions, it is critical that a diverse blend of technical, interpersonal and strategic skills is leveraged, which go beyond climate science alone. Some of these include experience with carrying out social science research, strong transdisciplinary collaboration skills to facilitate knowledge co-production across different disciplines, experience with facilitating participatory interactions, and mediation skills to manage and navigate cultural sensitivities and competing interests.

b) Embedding the process in the local reality

Just CSs are not context-neutral—they must be rooted in local priorities, knowledge systems, and decision-making cultures. Embedding the process locally requires more than consultation; it involves sustained presence, culturally appropriate engagement, and alignment with locally relevant timeframes and governance structures. This also means adapting to the political and social realities of the place. For instance, in some contexts, there may be hierarchies that constrain who speaks in public forums, or historical grievances that affect trust in state-sponsored initiatives. Recognising and working within these realities is vital for legitimacy and justice (Nyamakura et al., in press; Chambers et al., 2022). Local knowledge, particularly tacit knowledge held within organisations and situated knowledge held by experts, can be critical in ensuring that the process remains aligned with the local reality (Rastogi et al., in press).

c) Managing the process

Running a just CS co-creation process requires intentional design and ongoing facilitation and management of a collaborative process. Emerson et al. (2012) posit that running such a process successfully requires identifying enabling conditions and establishing synergies, building capacity for principled engagement and collaborative action, and formalising the governance structures for consistent reporting and evaluation. Furthermore, several studies show that managing expectations at the start of the process, as well as formalising the processes, contributes to co-creation processes that are fair and jointly governed (John et al., 2025; Nyamakura et al., in press). Therefore, deciding on a joint aim for the initiative with the actors, and developing Terms of Reference around the roles and responsibilities of each actor in the process can support the management of a just and transparent co-creation process.

d) Monitor, Evaluate, and Learn (MEL)

The process to develop a just CS must also be responsive and capable of learning as the process unfolds. Participatory moni-

toring and evaluation approaches provide a way through which co creation processes facilitate both accountability and learning. These methods can help in gleaning ways through which the experience of justice and effectiveness may differ across various stakeholder groups. MEL should not be treated as an ad--hoc activity; instead, it should be a continuous learning loop explicitly part of the co-creation process. Furthermore, to the extent possible, MEL should incorporate the local knowledge of stakeholders. For instance, participatory approaches may be used to co-identify indicators that must be monitored and track outcomes associated with them. One way of achieving this is through co-designing and applying a Theory of Change (ToC) approach that encourages learning by "outlining the building blocks and the relationships between them that would lead to the accomplishment of a long-term goal" (Bours et al., 2014). The ToC encourages flexibility of the process and its outcomes through iterative cycles of engagement and learning (Vogel, 2012). In the case of the CS co-creation process, ToC can support the monitoring of both the CS process and product by mapping out roles and relationships, articulating the underlying assumptions, clarifying outcomes across different levels and highlighting differentiated pathways for impact (Englund et al., 2022). Ensuring that a ToC is co developed at the beginning of the process and iteratively applied across each phase of the project is crucial in having a consistent and transparent MEL.

e) Drawing from a broad knowledge base

To ensure that the information in the CS is actionable, relevant, and embedded in the local context, it is important to draw from broad knowledge bases such as cultural and local knowledge systems (Jacob et al., 2025). The aim should not only be to leverage this knowledge to improve the credibility of scientific information but also use it to achieve greater salience and create trust and legitimacy with the stakeholders (Rastogi et al., in press). Crucial to this end is the dispensation of any assumptions about what does or does not constitute local knowledge, who holds it,

and how it may be incorporated (Rastogi et al., in press). The diverse backgrounds of stakeholders involved in the provision of CS necessitate that local knowledge is viewed broadly, encompassing different types of knowledge acquired through lived experiences, traditions or governance processes. Moreover, knowledge integration should not be viewed as a one-time goal; instead, focus should be on creating inclusive and sustainable knowledge management practices. Finally, valorisation of local knowledge from a CS development and provision perspective should focus on both product and process aspects of CS. Opportunities for the former can range from contributing new data to validating scientific data and information, and identifying and developing locally relevant indicators. The latter, on the other hand, can help pinpoint decisions that will be supported by CS, better align CS with the information-seeking practices of the end users, identify locally suitable approaches for communication, and enhance the legitimacy of the CS product (Rastogi et al., in press).

f) Leaving no one behind

Ensuring that no one is left behind within the process allows for multiple perspectives to be deliberated. Questions such as, who gets invited to the process and why, where meetings will be held, what will be discussed and by whom, what power dynamics exist between the actors and how do we manage them?, become crucial in ensuring that no one is left behind (Daly & Dilling, 2019; John et al., 2025). Before and during the process, ensure that you have multiple perspectives, decide on plans around inclusivity and accessibility (of language, locations, topics, etc) and manage power dynamics. The considerations around inclusivity must also be integrated in the process through participatory approaches like Theory of Change (mentioned above), allowing for a more tailored understanding of different pathways to achieve desired impact across various stakeholder groups (Bours et al., 2014).

Conclusion

In this perspective, we sought to rethink CS, how they are created, what is valued in the co-creation process, and who benefits from the outcomes. Additionally, we sought to locate CSs within the broader just transition literature, an avenue that is little explored in both just transitions and CS literature. In this context we approached just transitions as: "Multidimensional, multi-level, multiactor, and multi-phase governing process to facilitate systemic transformations of socio-technical regimes towards sustainability" (Huang & Liu, 2021: P4). Finally, being scholars that are grounded in LK, co-creation and CS fields, we sought to refine the thinking around CS and propose a methodology to integrate co-creation and LK in a single CS development process.

We first conceptualised the concept of a "just" CS drawing from just transitions point of view, with four key elements focusing on i) the process of creating the CS, ii) inclusion of multiple knowledge systems, iii) provisioning of equitable benefits, and iv) provisioning of actionable information. Thereafter, we positioned and provided arguments on why a combination of co-creation and LK integration in the process of developing a CS would be the best approach towards developing just CSs.

In this perspective piece, we introduced the concept of a "just" CS and proposed a novel approach towards the integration of LK in all stages of co-creating just CSs. Furthermore, we unveiled aspects of applying our proposed integrated approach in practice. This work benefits researchers who are in the just transition and CS fields literature who wish to engage with CS, LK and just transitions by offering an entry point towards understanding the concepts in practice. Finally, this work benefits practitioners co-creating climate services in practice to better locate their work and apply methods to better engage with LK towards the production of more just CS.

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Loris Petrini[1]

Imaginaries of Activist Resistance *Les Soulèvements de la Terre* and the Impending Making of Post-Capitalism[2]

Abstract: How is post-capitalism imagined and enacted within environmental activist movements? My research follows this question by examining the formulation and materialisation of post-capitalist futures through the lens of prefiguration. Although imagination drives activist resistance, the processual dynamic through which it affects post-capitalist experiments is largely overlooked. Environmental movements face the challenge of simultaneously imagining and enacting liveable futures, a process involving both an ontological recomposition and new material arrangements. I introduce prefiguration as a theoretical tool to understand the making of post-capitalism, and the tensions emerging as post-capitalist imagination and praxis interweave. First, I present a prefigurative manifesto that specifies what analytical value of prefiguration for the study of post-capitalist futures. Then, I clarify how prefigurative practices can concretely work towards post-capitalism in the context of environmental activism. Finally, I explore the recomposition driven by the French grassroots movement *Les Soulèvements de la Terre* to highlight three areas for future investigation within prefigurative studies.

Keywords: environmental activism, prefiguration, post-capitalism.

1 The paper was written under the supervision of prof. Tamara Steger.

2 Note to the reader(s): this paper is a draft associated with my PhD dissertation. It mostly presents a segment of my research question, a reflection on its application in the context of the movement I focus on, and potential contributions of this specific project to studies of prefiguration more broadly. However, it does not contain any 'results,' given that my fieldwork has not started yet. Finally, it must be read as an unfinished work undergoing constant change.

Introduction

Our capitalist ecology actively erodes the conditions of life for human and non-human beings. The pursuit of endless profit that characterises the Capitalocene (Moore, 2015) engendered socio-economic arrangements that overshoot planetary boundaries while failing to satisfy people's social needs (O'Neill et al., 2018). In addition to material dispossession, capitalism carried a process of ontological homogenisation through which European powers brought into being specific visions of the world to legitimise extractivism and invisibilise alternative worldviews (Escobar, 2016; Quijano, 2000). This capitalist ecology is the epicentre of this story. **However,** resistance movements search for cracks in capitalism's instability (Holloway, 2010) and try to overcome 'imaginary lock-ins' (Marquardt & Nasiritousi, 2022). *Les Soulèvements de la Terre*, a disruptive grassroots group whose subversive imaginary seeps into the core foundations of capitalism, takes part in such dynamic (LSDT, 2024a).

Les Soulèvements de la Terre is an environmental resistance movement founded in 2021 with the triple goal to (1) take back the land, (2) dismantle agro-capitalist and ecocidal industries, and (3) socialise/mutualise/communise food chains and subsistence work (LSDT, 2023). The group quickly developed a complex protest grammar weaving the radical aesthetics of direct action with the poetics of interspecies alliances. This unusual activist blend reflects the group's broader project, which integrates both a material critique of capitalism (LSDT, 2024a, p.17) and an unsettling ontological move to retrieve ecological relationality (LSDT, 2024, p.157).

However, alongside other grassroots groups (Temper et al., 2018), *Les Soulèvements de la Terre* faces the challenge of simultaneously imagining and enacting post-capitalist futures. Post-capitalist making involves both the affirmation of new imaginative and action-oriented commitments to disrupt capitalist flows. This dual task remains a fundamental – and yet unresolved – challenge for activists, prompting a growing scholarly interest in activists visions of alternative futures (Yates et al., 2024). In

an attempt to understand this complex interplay between imagination and resistance practices, literature investigating the 'prefigurative politics' of social movements recently gained traction (Monticelli, 2022). I argue that the rupture marked by the rise of *Les Soulèvements de la Terre* provides a window of opportunity to investigate recent scholarly developments around prefiguration.

This essay therefore provides a comprehensive assessment of the flourishing literature on prefiguration and its application to the study of post-capitalist trajectories. It articulates the current state of knowledge about prefiguration, the challenges associated with its exponential use, and perspectives for future contributions.

The second section presents a prefigurative manifesto. I consider a prefigurative approach to be best suited to understand how imagination operates onto the material conditions for transformation and the unfolding of resistance practices. Prefiguration frames imagination directly as an 'enacting tool' for future--making, by seeing protest as the art of performing glimpses of post-capitalist realities in the 'here-and-now' (Dinerstein, 2022; Monticelli, 2018). A prefigurative approach provides relevant conceptual tools to examine the processual dynamic through which environmental movements craft these futures on the ground.

However, my interpretation of prefiguration acknowledges contradictions with which the field continues to grapple. In the third section, I argue that recent developments call for a scholarly synthesis that clarifies how prefigurative practices concretely work towards post-capitalism and underscores the concept's unique relevance *vis-à-vis* environmental activism. Not only does prefiguration provide relevant conceptual tools to understand how environmental activists jointly imagine and set up post-capitalism, but it also helps revealing points of friction emerging during this process. Drawing on three different environmental movements, I will demonstrate that prefiguration matters because it helps activists developing post-capitalist imaginaries, materialities, and spatialities.

Despite their proliferation, several grey zones also remain in the study of prefiguration. In the fourth and final section, I propose a re-evaluation of French approaches to prefiguration,

based on how mobilisations associated with *Les Soulèvements de la Terre* draw on and differ from past prefigurative experiences. This helps me highlighting two areas for future investigation in prefigurative studies. I first contest the rigid understanding of prefiguration's 'impact' to locate success in the quality of activist 'coordination'. Then, I explain how the potential of prefiguration has been insufficiently tied to the concept of pluriverse, despite extensive theoretical affinities.

A prefigurative manifesto

An art of experimentation

Due to the profusion of existing definitions (Jeffrey & Dyson, 2021; Yates, 2015), prefiguration's conceptual foundations might seem fuzzy. Yet, scholars concur in understanding it as a set of practices seeking to simultaneously invent and bring into existence alternative social structures. Prefigurative practices remove the boundaries between the immediate space for collective action and the desired space of the future (Maeckelbergh, 2011). Here, I retain the definition provided by Raeckstad and Gradin (2020), who define prefiguration as *"the deliberate experimental implementation of desired future social relations and practices in the here-and-now"* (p.10).

Prefiguration, rooted in horizontal organising principles, allows for experimenting the transformation of political structures (Chatterton & Pickerill, 2010; Ince, 2012). By engaging in prefiguration, "actors shape their desired alternatives or utopian visions for a fairer, freer, and more sustainably-balanced world" (Habersang, 2022). Yet, it is still a way of carrying out protest since this happens "either in parallel with, or in the course of, adversarial social movement protest" (Yates, 2015, p.1).

Prefiguration is a particularly enlightening conceptual tool to reveal how movements substantiate their future visions into reality (Moore & Milkoreit, 2020). While imagination is often reduced to a set of ideas that stands outside the realm of 'reality' (Graeber, 2012) or to an abstract cognitive tool (Asara, 2020), a prefigurative art instead recognises the action-oriented nature of

imagination, a capacity located in concrete and actionable steps. In other words, it is a form of political action that consists in "exercising the radical imagination […] in a grounded manner" (Escobar, 2022, xxv). Prefiguration truly embodies what anthropologist David Graeber (2011) refers to as 'immanent imagination', where the search for a horizon of otherness proceeds through actions meant to reshape the material world (Sopranzetti, 2025). I refer to this understanding of imagination, encapsulated in prefiguration, as an *art of experimentation*. Studying social movements' prefigurative politics enables us to understand the activist method as a form of "vision-practice", through which movements perform socio-ecological transformations and launch real-life experimentations of post-capitalism (Escobar, 2022, xxiii).

A brief genealogy

While the term finds its roots in anarchist and socialist theory (Bakunin, 1990; Gramsci, 1994; Kropotkin, 1996), prefiguration was only explicitly theorised in the 1960-70s. The word was first used by Carl Boggs (1977) to understand the creation of autonomous institutions as part of revolutionary processes, but the verb 'to prefigure' was used interchangeably by Gorz and Magri (Yates, 2021, p.1036). Prefiguration progressively acquired popularity in analyses of grassroots opposition to neoliberal globalisation (Bray, 2013; Graeber, 2014), especially the Occupy movement (Halvorsen, 2017; Wagner-Pacifici & Ruggero, 2020)2020. Similarly, prefiguration has been used as an analytical tool to illuminate the quest for political autonomy within free/safe spaces (Polletta, 1999; Wallin-Ruschman & Patka, 2016) as well as social centres (Creasap, 2021; Yates, 2015).

The academic boom around prefigurative politics is attested by its exponential use over the past two decades (Yates & De Moor, 2022) and the publication of holistic scholarly introductions (Monticelli, 2022; Raekstad & Gradin, 2020). From this emerged an interdisciplinary sociology of prefigurative movements, forged through close dialogue with activists (Monticelli, 2018) and paving the way for renewed scholar-activist perspectives (Graeber, 2014).

The processual dynamics of prefigurative politics

The emergence of prefigurative studies stimulated extensive research on the conceptual foundations of prefiguration (Gordon, 2018; Jeffrey & Dyson, 2021; Swain, 2019), its connection with movement strategies (Maeckelbergh, 2011; Reinecke, 2018; Yates, 2015) and its spatio-temporal manifestations in activism (Asara & Kallis, 2023; Halvorsen, 2017). An insightful development is also found in the recognition of the discontinuous and ever-changing modalities through which initiatives are built (Asara & Kallis, 2023; Lajarthe & Laigle, 2024). Different typologies have thus recently been conceived to grasp the processual dynamic underlying prefigurative politics.

For instance, Jeffrey and Dyson's (2021) three-fold model understands the articulation of prefigurative politics through improvisation, institutionalisation, impact. First, improvisation frames prefiguration as a system of 'trial and error' in which activists learn from experience. Unlike in a fully-fledged utopia, the contents of prefiguration evolve through uncertainty as movements adapt their practice. Second, institutionalisation illuminates the slow expansion of prefigurative practices to new circles. Activists turn experiments into a more organised activity, hence revealing the conditions necessary to shield activist experimentation from forces defending status quo. Third, impact discusses the resonance of prefiguration *vis-à-vis* external actors. While prefigurative initiatives often reach far beyond movements' immediate territory, the extension of their scope depends on the broader socio-political context and activist responses to potential constraints.

Persisting contradictions

While prefigurative approaches represent a crucial development in the study of contemporary activism, blind spots subsist. First, because prefiguration is often assumed to be intrinsically progressive, Yates and De Moor (2022) regret that scholars still overlook its potential to analyse reactionary or right-wing movements.

More importantly, prefiguration's capacity to assist social movements in pursuing political goals remains ambiguous. Analyses of collective mobilisation traditionally denied its strategic dimension (Epstein, 1991). Whereas the strategic value of prefiguration is now increasingly recognised (Maeckelbergh, 2011), the interplay between prefiguration and strategy is not self-evident (Yates, 2021). The term's meaning has been stretched to include largely symbolic decisions, often without specifying whether actions were deemed strategic for movements (Yates & De Moor, 2022). Retaining the concept's analytical relevance therefore requires utmost clarity as to what type of prefigurative action remains strategic.

Means-ends alignment, a core notion in prefiguration, posits that the enactment of a desired future can be productive strategically (Maeckelbergh, 2011; Yates, 2015). Aligning means and ends may preserve moral integrity, improve cohesion, and increase the likelihood of achieving desired outcomes (Jeffrey & Dyson, 2021). However, strict adherence to means-ends equivalence may also limit the use of other useful tactics to resist oppression (Scott, 2008).

Prefiguration relies on a precarious equilibrium between 'expressive' practices enacting the desired future and 'instrumental' practices helping movements to achieve their practical objectives (Reinecke, 2018). Prefigurative politics are only strategic to the extent that they support the pursuit of targeted objectives without undermining means-ends alignment (Yates, 2015). Activists must constantly balance the consolidation and proliferation of alternatives with multiple pragmatic goals (Yates, 2015, p.18). Striking a perfect balance between instrumentality and expressiveness is a recurring challenge given how easily such fragile equilibrium can be undermined: "tilting too much towards strategic opportunities risks alienating core activist supporters, while privileging internal organising risks losing sight of wider objectives" (Reinecke, 2018, p.1317).

Two specific threats might undermine this balance (Jeffrey & Dyson, 2021). First, prefiguration can lead to social closure if it reinforces inward-looking dynamics. The emphasis on al-

ternative-building can affect the perceived seriousness of movements (Stammen & Meissner, 2022), complicate engagement with external publics (Mygind du Plessis & Husted, 2022), and sideline confrontational approaches to social change (Centemeri & Asara, 2022; Naegler, 2018). Advocating for complete autonomy may also postpone meaningful state intervention. Scurr and Bowden (2021) for instance caution against an "over-focus on 'lifestyle-ist' prefigurative politics divorced from disruptive political action" (p.323). The second danger lies in the risk of co-option if dominant institutions deploy tactics to defuse oppositional prefiguration and marginalise social movement claims. A strategic opening towards diverse actors, guided by the desire for institutional change, can expose prefigurative initiatives to the risk of capture (De Wilde & Duyvendak, 2016).

Activists must therefore constantly work with the tension between structure and openness (Laamanen, 2022). To do so, Clarence-Smith and Monticelli (2022), suggest a form of flexible institutionalisation allowing prefigurative territories to last and expand while retaining their experimental nature. Such balance helps explaining the longevity of experiences like Zapatismo that combine both communalist and state-run economic forms (Dinerstein, 2022).

Lessons to prefigure post-capitalism

For this second axis of reflection, I reflect on recent contributions by means of a scholarly synthesis that clarifies how prefigurative practices concretely work towards post-capitalism. Overall, post-capitalism is central within prefigurative scholarship (Gibson-Graham, 2006; Srnicek & Williams, 2015). Prefiguration is perceived to produce an experiential critique of capitalism (Dinerstein, 2016). More importantly, by "re-thinking and re-politicising capitalist modes of production and consumption" (Monticelli, 2018, p.414), prefigurative movements demonstrate that alternatives to capitalism already exist. Scholars thus recognise them as laboratories for a post-capitalist future (Kokkinidis,

2015). For instance, Scurr and Bowden (2021) consider prefigurative practices as "the building blocks of sustainable and socially just post-capitalist ways of organising society" (p.324).

This post-capitalist potential is deemed particularly important for environmental activism (Davis, 2016; Yates et al., 2024). Prefiguration is interpreted as a foundational step towards the constitution of a radical model of green citizenship based on participatory democracy, stewardship of the environment, and creativity (Mason, 2014). Prefigurative analyses have thus been applied to various environmental mobilisations, including the climate justice movement (Laigle & Lajarthe, 2024), anti-capitalist environmental activism (Scurr & Bowden, 2021) and feminist/decolonial environmentalism (Habersang, 2022). Yet, scholars often focus on the transformation of decision-making processes, political structures, and social relations (Creasap, 2021; Laigle & Lajarthe, 2024). At this stage, it could still be argued that nothing in prefiguration is environmental *per se* since every movement may be concerned with the enactment of imagined futures. Thus, throughout this section, I highlight three distinctly 'environmental' forms of prefiguration that bring movements closer to the realisation of post-capitalist goals, using the examples of climate activism, Zapatismo, and the movements of the squares.

Post-capitalist imaginaries: prefiguration as grounded utopianism

First, prefiguration is a key asset to perform the dual task of destabilising the capitalist present and opening up post-capitalist futures. The capitalist project is, in Graeber's words, a "giant machine that is designed, first and foremost, to destroy any sense of possible alternative futures" (Graeber, 2011, p.31-32). Prefiguration works against such dynamic to instead reactivate utopianism, because it enables the immediate expression of activists' desires for a radically different way of being or living (Habersang, 2022). Prefigurative scholars often recall Bloch's *Principle of Hope* to insist on activists' capacity to oppose the world of capital. Bloch

understood utopia as 'the forward dream of the not yet' (Bloch, 1995, p.6). He considered utopianism to be rooted in the radical negation of the present, a process that drives society forward. Utopia therefore evolves at once 'within, despite and beyond' capitalism (Monticelli, 2022). Social movements mobilise such utopian thinking to effect social change, hence performing 'grounded utopianism' (Davis, 2016).

I focus on the current context of ecological collapse to explain the centrality of grounded utopianism in environmental activism (Anderson, 2017; Friberg, 2022b). Despite the seemingly apocalyptic nature of the present (Swyngedouw, 2013), a sense of urgency and despair drives the formulation of environmental utopias: paradoxically, hope is gained by ostensibly denying it (Cassegård & Thörn, 2018). This imaginative work helps movements orient themselves in the present and discern opportunities for future-oriented action (Cassegård & Thörn, 2022; Friberg, 2022a). Albeit performed differently activists, grounded utopianism is essential to the successful articulation of future-oriented temporalities (De Moor & Marquardt, 2023). Grounded utopianism re-inoculates a sense of hope, thus generating prefigurative practices oriented towards post-capitalist action.

This utopian-prefigurative nexus is particularly strong within the European climate movement, where both Extinction Rebellion (Berglund & Schmidt, 2020; Stuart, 2020) and Fridays for Future (Friberg, 2022b) practice grounded utopianism. Despite claiming to have lost hope, activists are pushed towards action: 'hope dies, action begins'. Prefiguration is encapsulated in a regenerative culture inviting activists to simultaneously take care of oneself, others and the planet (Westwell & Bunting, 2020). Activist organisations are also redesigned to ensure a greater inclusion of marginalised members and establish intersectional alliances, thus reflecting a post-capitalist imaginary rooted in the rejection of all hierarchies (Lajarthe & Laigle, 2024). Utopian orientations stretch across radically different forms of activism. Habersang (2022) for instance finds that the ecological paradigm underlying the prefigurative practices of indigenous women in

Argentina is also imbued with grounded utopianism. By denouncing a dystopian present while grounding the fight for indigenous rights in horizontality, spirituality and autonomy, the movement provided an alternative to the capitalist imaginary.

In sum, the essence of prefigurative projects can be considered post-capitalist because it opens up new imaginaries and revives utopian visions through action-oriented commitments. It is now time to examine the post-capitalist character of prefigurative designs. While this might be interpreted as overly substantialist, I insist that looking at the materialities of desired futures matters because demonstrating that alternatives work in practice is prefiguration's *raison d'être*.

Post-capitalist materialities: prefiguration as ecological sustainability

A second asset of prefiguration lies in its implications for the advent of ecologically sustainable relations (Avelino et al., 2024; Centemeri & Asara, 2022)economic, and social challenges requires us to connect the concepts of justice, sustainability, and transitions. Bridging and discussing heterogeneous fields, we argue that these concepts need to complement each other, and we present just sustainability transitions (JUSTRAs. In their exploration of highly diverse practices, prefigurative studies illuminate concrete actions on energy, food, and urban systems that help (re-) establish ecological sustainability. Prefiguration thus sheds light on how activists can reverse the forms of ecological simplification driven by capitalist value-making processes (Moore, 2015).

Capturing the translation dynamic through which post-capitalism finds root in experiments 'on-the-ground' calls for a discussion on the resurgence of new materialism (Agyeman et al., 2016; Schlosberg, 2019)scholars, case examples, debates, methods, and (multiple. Contemporary environmental movements, Schlosberg and Coles (2016) say, develop "a concern with power, politics, and sustainability represented in the materials and flows through both human and nonhuman communities" (p.161). Activists forge

alternative institutions to reconstruct everyday interactions with other-than-humans, ensure the provision of material needs and redefine the distribution of environmental benefits and burdens (Schlosberg, 2025). Despite their seemingly mundane character, everyday environmentalism has established political arrangements that reach beyond community-level (De Moor, 2017).

Such projects revolve around attempts to reclaim ownership environmental commons. Many grassroots organisations are guided by a transformative understanding of commoning that confronts power structures (Chatterton, 2016; Hollender, 2016; Villamayor-Tomas & García-López, 2021). This orientation materialises through workers councils (Kokkinidis, 2015; Öcalan, 2011), agroecology and permaculture initiatives (Centemeri, 2018; Tornaghi & Dehaene, 2020), self-built housing (Chatterton, 2016), eco-communes (Clarence-Smith & Monticelli, 2022), or energy communities (Luke & Heynen, 2020; Siamanta, 2021). These prefigurative experiments, because they simultaneously enact alternative political structures and reduce ecological destruction, create niches where capitalism's principles of simplification no longer apply (Gibson-Graham, 2006).

For instance, grassroots peasant movements like the Zapatistas reclaim common land to meet their subsistence needs (Davis, 2016). Rooted in an opposition to capitalist development plans, Zapatismo instead organises the distribution of surplus through self-organisation and solidary economy initiatives (Holloway & Peláez, 1998; Sitrin, 2016; Stephen, 1998). This brings control over water use and food provision away from both the market and the state. Such ecological orientation is perpetuated through educational and cultural institutions that honour Indigenous lifeworlds and continuously reshape traditional knowledges (Dinerstein, 2022; Maldonado-Villalpando et al., 2022). In their concrete realities lie the empirical demonstration that a world beyond capitalist simplification already exists.

Post-capitalist spatialities: prefiguration as place-making

The recovery of ecological sustainability is supported by a third, complementary dynamic. Activists seeking to demonstrate the plausibility of post-capitalism develop alternative understandings of place, thus transforming resistance sites into prefigurative territories. As opposed to the spatial dynamics of capitalism, whose centralisation forces remove the specificity of 'places' (Lefebvre, 1991), prefigurative practices help forge a 'place-making' activist praxis (Escobar et al., 2002).

Prefiguration anchors imagination through the physical remapping of resistance sites (Juris, 2008). This spatialisation happens when a prefigurative approach takes root in localised struggles and physical occupations (Frémeaux & Jordan, 2021; Maeckelbergh, 2011). As activists project their political ideals onto geographic territories, they unsettle existing spatial meanings and deploy alternative ones. The shape taken by such prefigurative spaces often depends on the political landscape affecting movement strategies, such as austerity politics (Demaria et al., 2019). The design of collective spaces may entail, depending on different movements, the creation of community centres (Oscilowicz et al., 2023), construction and repair workshops (Pruvost, 2015; Smith, 2020) education facilities (Astruc, 2021), urban gardens (Asara, 2020), or social clinics (Varvarousis et al., 2021).

It is within the movements of the squares that prefiguration's spatial dynamics have been depicted the most vividly (Baker, 2016). Asara and Kallis (2023) ventured into the prefigurative politics of the Indignados movement in Barcelona and investigated the evolution of their spatial strategy. While the first static weeks in Plaça Catalunya "produced diverted space with an ephemeral symbolization of alternative imaginaries", the second phase moved away from the square itself, and "allowed the building of enduring counter-spaces pursuing prefigurative political projects" (p.68). This expansion took a more offensive character by setting concrete objectives to counter the state's organisation of urban space. Activists' spatial creativeness turned symbolic acts of resistance into 'prefigurative territories' (Asasa & Kallis, 2023).

Conversely, prefiguration also reveals the difficulty of destabilising capitalism's spatial dynamics (Lefebvre, 1991). Halvorsen (2017) and Reinecke (2018) both show that Occupy London's place-based strategy limited the movement's capacity to mobilise. Their disruptive occupation initially opened an 'exceptional space' to question capitalist norms of privatisation and exclusion. Then, the creation of a lasting 'communal space' displaced activism towards everyday politics. However, the group's increasingly rigid understanding of occupation led to a 'fetishisation of space': Occupy London progressively became tied to the physical space of occupation, riddled with internal hierarchies, and was subsumed into the logics of dominant institutions (Halvorsen, 2017). For instance, their uneasy confrontation with homelessness revealed the difficulty to challenge deeply entrenched inequalities (Reinecke, 2018).

However uncertain, place-making dynamics remain a central asset. Not only does such spatial anchoring disrupt capitalist uses of space, but it also contributes to the emergence of a grounded ecology, based on kinship with territory as well as locally-rooted environmental knowledges (Temper, 2019).

Unknown territories: exploring grey zones of prefiguration

As impressive as the breadth of academic work linking prefiguration to post-capitalism is, a number of puzzling issues remain. This last section therefore addresses two areas of investigation deserving further attention from prefigurative scholarship. It does so by centering the evolution of the French activist scene from the emergence of *Les Soulèvements de la Terre*.

This movement stands out from other contemporary activist groups in the West due to its frontal and offensive opposition to capitalism, combining occupation, direct action, and concrete experiments (Chopot in Truong, 2023). The group seeks to disrupt the foundations of the state-corporate complex around energy and food provision by physically preventing land grabbing

and enclosure (Haeringer, 2023). It specifically targets the "agro--industrial complex", understood as a network of actors encompassing powerful industrial groups, agribusiness companies, as well as farming lobbies, and sustained through close cooperation with the state. This agro-industrial complex is considered as the driving force of land grabbing and soil artificialisation over the national territory, a process that ultimately sacrifices rural areas to the benefit of a few globally connected urban nodes through which capital continues to flow. In addition, its capitalist value-making processes result in the 'massive poisoning of environmental commons' and the 'killing [of] birds, rodents, insects, and humans' (LSDT, 2025).

Re-evaluating the French approach to prefiguration

Through active and sustained struggle against the agro-industrial complex, *Les Soulèvements de la Terre* strives to develop post-capitalist imaginaries, materialities, and spatialities. This strategy re-ignites the post-capitalist resistance developed previously in French autonomous zones, also called ZAD – 'zone to defend' (Collectif Les Navettes, 2023; Frémeaux & Jordan, 2021; Pruvost, 2017). But by establishing a localised network of occupied territories, the group went a step further, becoming a new home for insurrectionary ecology. By acting simultaneously on several sites, it reinterpreted the prefigurative legacy of the ZAD. This tension between change and continuity offers an opportunity to reformulate assumptions about the prefigurative nature of French movements.

Initially, prefigurative studies of the French environmental scene found an empirical anchor in French autonomous zones. In the emblematic case of the Notre Dame des Landes ZAD, lasting occupation created opportunities to build 'a post-capitalist utopia' (Parry & Jordan, 2023). But despite the inestimable value of existing empirical accounts (Collectif Les Navettes, 2023; Pruvost, 2015), no systematic theorization has yet been developed to analyse successes and tensions characterising this prefigurative experience. Taking a closer look at the ZAD is therefore essential.

The occupation of the ZAD was characterised by a DiY spirit aimed at ensuring material subsistence while dismantling relationships of domination. Diverse projects included the 'Newts School', a training centre created to foster empathy towards living beings; the 'Barn of the Future', which hosted construction workshops; and numerous gardening and cooking spaces (Collectif Mauvaise troupe, 2018; Pruvost, 2017). The slogan 'ZAD everywhere' embodied a deep-rooted culture of protest and led to the creation of strong networks with sister-struggles (Dunlap, 2020; Kempf, 2024). The shape of the struggle evolved through events organised to learn from alternatives happening in diverse resistance sites (Parry & Jordan, 2023). These efforts partially evacuated the risk of social closure, which explains why the ZAD is still referred to as a utopian beacon (Lindgaard, 2018).

Yet, this success should be qualified, as the model of autonomous zones has been criticised for remaining too parochial (Truong, 2023). The persistence of power relations was also denounced by feminist groups (Pruvost, 2017). In addition, the government made repeated use of co-option tactics, pushing the occupants to negotiate an agreement on land rights (De Roo, 2023). The ZAD's utopian spirit was turned into concrete proposals to replace private property with collective arrangements. Yet, this reactivated conflicts between legalist processes and autonomous resource management. The state's reluctance to transfer land rights for agroecology experiences organised at the ZAD also prevented utopian initiatives from securing full autonomy (De Roo, 2023).

The ZAD's prefigurative legacy yet found its way within *Les Soulèvements de la Terre*. Philippe Descola (2023) depicted this new organisation as "an innovative laboratory […], prefiguring forms of community life that are more egalitarian and joyful". Control over environmental commons is also a central goal (Haeringer, 2023). According to the movement, a great deal of energy should therefore be spent implementing communitarian self-organisation around subsistence, and restoring peasant infrastructures. The recent constitution of the 'Uprisings Granaries' –a network of autonomous food provision schemes– is a striking illustration

of activists' defence of this 'subversive subsistence' (LSDT, 2024b). Their strategy contrasts with the last wave of climate activism, characterised by mass demonstrations and the defence of abstractions like global warming (De Moor et al., 2021). Indeed, *Les Soulèvements de la Terre* was partly founded by activists disappointed with the climate movement's lack of traction and distance from issues of land tenure, peasantry and water rights. This direct grip on material conditions has been rapidly perceived as a threatening development by the state, who framed the group as a danger to national interests and tried to outlaw it (Frémeaux & Jordan, 2023).

My dissertation will examine the relationship between these two prefigurative experiences in France, with the intention to identify two areas for future investigation within prefigurative studies. First, by examining the successes and tensions encountered by *Les Soulèvements de la Terre* in relation to the ZAD, I intend to shift the focus away from prefiguration's 'impact' to instead explore forms of prefigurative 'coordination'. Second, I investigate the multispecies alliances built by *Les Soulèvements de la Terre* to highlight areas of overlap between prefiguration and the pluriverse, and therefore build bridges between new materialism and eco-Marxism (Balaud & Chopot, 2021).

From impact to coordination

First, I claim that interrogating prefiguration's capacity to secure change requires moving away from traditional uncertainties about its 'impact', to focus on its modes of 'coordination'. Post-capitalist prefiguration is primarily conceived as 'localised politics' (Gibson-Graham, 2006) since prefigurative scholars prioritise a view of transformation that is 'interstitial' (Wright, 2010) and starts from everyday life (Scurr & Bowden, 2021). However, if postcapitalist initiatives are to become transformational, it is expected that they move beyond grassroots circles. This would require systemic linkages (Schiller-Merkens & Degens, 2024), including cooperation with formal organisations like parties and state institutions (Yates & De Moor, 2022). So far, prefigurati-

on's connection with large-scale transformation remains largely under-theorised (Törnberg, 2021) especially when it comes to understanding its impact on institutional structures (Avelino et al., 2024). Despite the recognition of powerful vehicles to achieve structural change (Scurr & Bowden, 2021), it is unclear what affects the resonance of practices beyond activist sites.

Empirical studies document both cases where movements successfully maintained openness and horizontality over time (Kallis et al., 2022; Varvarousis, 2020) and where they appeared unable to produce stable outcomes, due to either social closure or co-option (Halvorsen, 2017). For instance, in 'Occupy the Farm', the establishment of agricultural commons isolated activists from wider institutional politics (Murray, 2014). On the contrary, when the Auroville ecovillage received support from the Indian government and UNESCO, fears of co-option were voiced (Clarence-Smith & Monticelli, 2022). A lack of transformational dynamic has also been attributed to the reproduction of social hierarchies, whether in Occupy (Halvorsen 2017; Reinecke 2018), Rojava (Hammy & Miley, 2022)it explores: 1, or alternative currency initiatives in Finland (Laamanen et al., 2019). Yet, I assert that measuring the impact of prefigurative experiments is both unrealistic and futile. Niche experiences may fail to be scaled up but still provide lasting inspiration (Dunlap, 2020), while apparent successes always involve important tensions (Holloway & Peláez, 1998).

In emphasising coordination rather than impact, I escape the capitalist dogma of 'scalability' (Tsing, 2015) and focus on conditions enabling a proliferation of alternatives. To challenge conventional understandings of social change, I prioritise proliferation (Asara & Kallis, 2023) over impact (Jeffrey & Dyson, 2021), arguing that proliferation depends on strong coordination – i.e., the marshalling of projected futures into the realm of strategic relevance (Yates, 2021). Prefigurative proliferation requires the development of future-oriented structures in tandem with other tactics that help movements reach their goals. So, rather than evaluating the impact of prefiguration, I suggest highlighting how coordination explains the expansion or contraction of prefigurative networks.

The strength of coordination can be detected in activism's geographic reach. Activists create connections to form networks of resistance, leading to the development of transborder solidarities and shared identities (Keck & Sikkink, 1998). This dynamic is best illustrated by La Via Campesina, a network that nurtures transnational cooperation around the defence of peasantry and local food systems (Desmarais, 2007). If we follow Juris (2008), transnationalisation is itself prefigurative, since decentralised networks are "pointing to a wider model for reorganising society based on open access, direct democracy and grassroots participation", which eventually helps "building new forms of sociality" (p.300). Prefigurative networks adopt archipelago structures: alternatives form locally rooted but closely interconnected islands (Monticelli, 2018). Tracing the circulation of initiatives across local scenes reveals the coordination-related challenge of prefiguration, thus informing our understanding of the configurations under which wider networks are forged.

Finally, prefigurative proliferation also largely depends on context-specific changes in the political landscape, the stage of development of activist niches, and the reactions of institutions (Törnberg, 2021). This calls for a historicised understanding foregrounding the political structures within which prefiguration emerges (Yates et al., 2024), to avoid "[over-reading] the political agency available to think and act effectively against the status quo" (Cooper, 2017, p. 21).

My dissertation centres coordination to explain how *Les Soulèvements de la Terre* reshape the prefigurative spirit of the ZAD. I build here on Maeckelbergh's (2022) distinction between process-time and event-time to understand the implications of different forms of coordination for the strategy of French activists. Here, 'process' refers to everyday activities while 'event' refers to moments of action and public mobilisation. Both were conflated within the ZAD, which itself became both the event and the process. *Les Soulèvements de la Terre* instead conceive punctual events, which are tied together under the continuous process of daily organizing. This mode of coordination, Maeckelbergh (2022) ar-

gues, can facilitate the proliferation of prefiguration across time and space. In sum, nurturing a distinction between process and event helps designing impactful actions without losing sight of forward-looking orientations. The group's prefigurative politics could therefore reach a more advanced stage since it engages a multiplicity of locales, thus accelerating proliferation. This strategy already yielded promising results, given that the group obtained the legal suspension of multiple development projects (Tribunal administratif de Toulouse, 2025).

Towards pluriversal prefiguration

Second, my approach to prefiguration looks for affinities with the pluriverse, a concept that originates from decolonial theory (de la Cadena & Blaser, 2018). Future-oriented studies of social movement continue to come up against strong Eurocentric biases (Yates et al., 2024). With a few exceptions (Baker, 2016; Habersang, 2022), prefigurative approaches selected Western movements as their natural empirical field (Asara, 2020; Graeber, 2014) and Marxist and anarchist theories as their pillar (Castoriadis, 1987; Gramsci, 1992). Prefigurative scholarship, because of its conceptual origins, often neglects non-Western struggles (Dinerstein, 2022).

It is nevertheless possible to develop a decolonial understanding of the term by centring prefiguration's concern for the recuperation of ecological relationality. For Escobar (2022), prefiguration foregrounds diverse ways of conceiving what exists and pre-empts any universalising understanding of sustainability (xxviii). The processual character of prefigurative approaches (Asara & Kallis, 2023) makes room for acknowledging plural assemblages of worldviews. Indeed, prefigurative experimentation develops through contingency, therefore contributing to denaturalise the "modern capitalist culture as our default setting of being", a task that largely overlap with that of pluriversal studies (Escobar, 2022, xxiv). Both pluriversal and prefigurative processes move towards open political horizons wherein ontological

diversity features prominently (Hollender, 2016); as condensed in the Zapatista concept of 'one no and many yeses' (Sitrin, 2016).

This overlap also appears in prefiguration's role to guide activist interventions along the lines of multispecies ecological justice (Centemeri & Asara, 2022; Schlosberg & Coles, 2016). The connection appears strikingly in the development of Italian permaculture, which entails both ontological diversity and prefigurative practices for alternative food provisioning (Centemeri & Asara, 2022). Permaculture recognises the active role of animals, plants, and other living beings in the deployment of sustainable agricultural practices (ibid., p.138). By valuing landscapes and relations involved in food production to improve soil fertility, these practices provide high-quality affordable food while enabling the multispecies networks upon which production depends to thrive.

As such, the value of prefigurative praxis is progressively recognised in pluriversal analyses. For instance, Garcia-Arias and colleagues (2024) assert that the success of networks like Crianza Mutua and the Global Tapestry of Alternatives hinges on a prefigurative approach. Despite these attempts, the theoretical area of overlap between the two concepts is yet to construct. Analyses acknowledging the role of ontological politics remain scarce in the West. My research therefore takes up the task of searching for modes of 'pluriversal prefiguration' (Dinerstein, 2022) within a Western empirical context. It is driven by the following question, raised by Arturo Escobar (2022, xxviii): "What does the exercise of prefiguration imply under conditions of ontological occupation?". To study how post-capitalism emerges from the core of the capitalist world, I suggest that a pluriversal approach can travel to Europe through Santos' (2016) notion of 'non-Occidentalist West'. This move allows the study of pluriversal prefiguration in Western territories that maintain sustainable lifestyles by shielding communities from capitalism (Kallis et al., 2022).

By invoking place-based interests and looking after local ecologies, Les Soulèvements de la Terre try to unsettle the relation to non-humans imposed by the capitalist class, and articulates other ways of knowing, being, and doing (Tornel, 2023). The group cul-

tivates sensible and emotional attachments to other living beings (Glowczewski & Querrien, 2023; Morizot, 2023). The imaginary that propels action draws on the bustard, the otter, or the eel as symbols expressing solidarity with vernacular species threatened by megaprojects (Glowczewski & Querrien, 2023, p.108). The group's claim to represent 'nature defending itself' stems from an understanding of nature as the "continuous and never-stabilised explosion of ways of being alive" (LSDT, 2024, p.159). Nature is taken etymologically as 'all beings yet to be born' (ibid.) which adds a dynamic and future-oriented meaning to the term. Here, nature is neither a biological capital nor an abstraction, but a life-generating capacity. The emphasis placed by the group on living beings, captured in French as vivant.es, thus unifies all subjects, whether human or non-human, that form the web of life (Moore, 2015). The very term 'pluriverse' is even making its way straight into this activist constellation through calls to organise "composition-marches" and open "pluriversal worksites" (Reprise des Savoirs, 2025).

And yet, anthropocentric responses persist, as seen in the establishment of human subsistence as an overarching goal (LSDT, 2024, p.149), and in the re-enactment of a substantialist perspective on energy politics (Malm, 2018, p.61) revealed as the movement prioritises large-scale infrastructures as targets (LSDT, 2024, p.53-55). The group seeks pragmatic modes of multispecies cooperation that directly create political leverage for them to act within anthropocentric political spheres. Activists focus on species that cause damage to profit-making relations but can sustain subsistence relations: while the spread of amaranths ruin monocrops, these plants are edible and offer a powerful resource for local farmers (Balaud & Chopot, 2021, p.205). Some species also directly contribute to activist projects. The uncontrollable spread of knotweed in Europe became a nightmare for project operators, since the plant rapidly dismantles capitalist infrastructures and creates additional costs where its removal is organized. Another example involves colonies of little tern which helped slowing down construction processes by moving in

after the terracing of riverbeds, thus leading to the activation of legal protection measures and obstructing engineers' plans (Balaud & Chopot, 2021, p.229). Activists even intervene directly to heighten non-humans' disruptive capacities. A few years ago, they deliberately established nests in an area concerned by new road construction for ospreys to move in. Their plan was successful: as the bird benefits from strict protection, construction work was not authorized during the species' entire reproduction cycle. By seizing the rights granted to non-humans, such as species and habitat protection laws, activists can slowly pursue their own goals (Balaud & Chopot, 2021, p.229-230).

Hence, the group's imaginary moves through frictions between a proclaimed desire to dissolve the nature-society dualism, and an inexorable re-enactment of anthropocentric paradigms in the movement's day-to-day life. This shows the difficulty for a Western movement to move beyond a dualist understanding of nature and society. As such, the study of *Les Soulèvements de la Terre* helps understanding why it is often harder than expected to retrieve ecological relationality – in a pluriversal fashion – under conditions of ontological occupation.

Concluding remarks

Starting from the conceptual foundations, genealogy and recent evolutions of prefigurative scholarship, I exposed the relevance of such an approach in examining activists' pursuit of post-capitalist futures. Then, I focused on three environmental mobilisations – climate activism, Zapatismo and the movements of the squares – to reveal three prefigurative dynamics that support postcapitalist design: grounded utopianism, ecological sustainability, and place-making. Finally, I re-evaluated French approaches to activist prefiguration from the perspective of *Les Soulèvements de la Terre*. In doing so, I suggested two potential contributions to the emerging field of prefigurative studies: (1) shifting the focus away from impact to scrutinise prefigurative coordination, (2) integrating the strengths of prefiguration to pluriversal studies.

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Dejan Juhart[1]

Environmental Movements in Slovenia from 1960s to Establishment of the Greens of Slovenia

Abstract: The beginnings of the environmental movement date back to the 1960s. The environmental movement emerged in Yugoslavia and Slovenia, following similar tendencies from other parts of the world. A series of protests which took place in 1968 and expressed support for Czechoslovakia was very important for developing the environmental awareness in Slovenia. People who had participated at the protests were the ones that later formed the core group of protesters fighting for the environment in the 1970s. Students were not the only group that was bringing attention to environmental issues, there were also several associations active in this field, such as the Slovene Natural History Association. In the 1980s, a powerful environmental movement emerged, because of the Iskra Semič pollution affair. The intensity of the Krupa River case empowered local environmental initiatives that became even more active after the Chernobyl disaster in 1986. In the second half of 1980s, several political problems began to arise, implying the possibility of an increasingly plausible scenario of the breakup of Yugoslavia. The environmental movement became officially registered as a political party under the name the Greens of Slovenia. The Greens were a part of the DEMOS coalition and the first multi-party government in Slovenia. But due to different ideological viewpoints the party collapsed.

Keywords: environmental movements, protests, the Greens of Slovenia, pollution

[1] The paper was reviewed by assoc.prof.dr. Andrej A. Lukšič.

Introduction

The article aims to briefly present the history of the ecological movement which laid the foundations for the establishment of the Greens of Slovenia, the first green party in Slovenia, in the 1980s. The mass environmental movement had an important role in the increase of the environmental awareness and the shaping of political standpoints in regard to the environmental issues. The topic, however, was not thoroughly explored by the Slovene historians. All references to the environmental movement are made in the context of political shifts that took place during the Yugoslav crisis and the years just before and after Slovenia gained independence. It is a common misconception that the Yugoslav people lacked environmental awareness and that the concerns and the criticisms they expressed were suppressed.

Rise of ecological awareness

The beginnings of the environmental movement date back to the 1960s, the time of the global awakening of the environmental awareness.[2] The environmental movement emerged in Yugoslavia and Slovenia, following similar tendencies from other parts of the world. The first campaigns aimed at protecting the environment took place as early as the beginning of 1960s when the protest against building cableways in the Triglav area occurred. Another great success was the protest against building the Trnovo na Soči hydropower plant in the mid-1960s. The protest was promoted through newspapers, with considerable engagement of natural science experts. In 1965, a public exchange of views of those who supported and those who opposed the power plant being built was organized, and this very event was the reason the construction was called off.[3]

2 ink Hafner, Novak, Knep, *Razvoj slovenskih zelenih strank v primerjalni perspektivi*, p. 17; Rendla, Sedlaček, *Onesnaženost zraka v socialistični Sloveniji*, p. 740.

3 Sedlaček, Pál, Rendla, *Okoljevarstvo v socializmu*, p. 233..

Protesters blocking the road at the protests against the noise at Aškerčeva Ulica in Ljubljana in 1971.[4]

»It was in November 1965 that the part of civil society which began and guided a broad environmental movement in Slovenia in the following years had been born…« [5]

Another event that played a big part in developing the environmental awareness in Slovenia was a series of protests which took place in 1968 and expressed support for Czechoslovakia. People who had participated at the protests were the ones that later formed the core group of protesters fighting for the environment in the 1970s. In April 1971, students staged protest against the noise at Aškerčeva Ulica in Ljubljana, while almost a year later – in March 1972, when the old poplars at Vegova Ulica were about to be cut down – protesters demanded fresh air. In the same year was also the first environment protest in Slovenia.6

Students were not the only group that was bringing attention to environmental issues, there were also several associations active

4 Tone Stojko, National Museum of Contemporary History, inv. nb. TS 86_5 & TS 86_5.

5 Peterlin, Zelena knjiga, pp. 462-64

6 Stojko, *Naša jeza je brezmejna*, pp. 7–11, 14–37.

in this field, such as the Slovene Natural History Association, which was driving force of the Slovene programme during the *European Conservation Year* in 1970. After having carried out the programme, the Association, in collaboration with the Institute for the Protection of Monuments of Socialist Republic of Slovenia, prepared a report on the state of nature in Slovenia. The report gradually evolved into a complex study, containing 67 individual reports, titled »*The Green Book on the Threat to the Environment in Slovenia*«[7] and published in 1972.[8] At the time, the publication was a major event, well-received by the public. The book was presented to the international audience by the Yugoslav delegates at the *UN Conference on the Human Environment* in June 1972 in Stockholm. Another circle that welcomed the newly published book were the politicians, although Stane Peterlin, editor-in-chief, later wrote that Stane Kavčič, president of the Executive Council of the Slovene Assembly at the time, was the only person who commented that the book contained viewpoints that cannot be received without reservations.[9]

Yugoslavia was generally highly progressive regarding its environmental policies, as demonstrated in all of the constitutions (1946, 1953, 1963, 1974) and several different laws (e. g. Environment Protection Act from 1970). The 1974 Constitution incorporated legislation on water, air, forests, agricultural land, natural and cultural heritage, noise, urban planning etc. The 1974 Constitution assigned each Yugoslav republic as responsible for passing its own environmental legislation. In 1971, the Assembly of the Socialist Republic of Slovenia founded the Committee for Environmental Protection.[10] Yugoslavia was a very open-minded country when it came to international environmental cooperation. It took part in several organisations, run by socialist as well

7 *Zelena knjiga o ogroženosti okolja v Sloveniji.*

8 Sedlaček, Pál, Rendla, *Okoljevarstvo v socializmu*, pp. 233, 234.

9 Peterlin, *Spomini na izid pred štiridesetimi leti*, pp. 463, 464).

10 Fink Hafner, Novak, Knep, *Razvoj slovenskih zelenih strank v primerjalni perspektivi*, p. 17; Sedlaček, Pál, Rendla, *Okoljevarstvo v socializmu*, p. 234; Flajšman, *Od Krupe do zelene stranke*, p. 115.

as capitalist countries. The participation of Yugoslavia, however, was oftentimes manifested merely on the formal level because the country signed only 35 out of 138 existing international conventions, protocols, and treaties.[11]

In theory, Yugoslavia safeguarded the environment, but in reality that was not quite the case. Accelerated industrialisation did not begin until the 1950s, and the circumstances nearly 20 years later were already alarming. The Green Book inarguably proves that. The intense industrialisation was a key element for the Yugoslav economic growth, and was as such vigorously protected, even at the expense of the environment. Industrial production saw a tenfold increase from pre–World War II period to the mid-1970s. In 1972, compared to 1952, the manufacturing industry employed 250% more people. Branches that experienced the most rapid increase were chemical, tyre, food, paper, metal, and electrical industries.[12]

One of the areas that were extremely polluted was the Meža Valley, where the abundance of zinc and lead paved the way for building lead mines and a smelter. Lead contamination was so severe that the normal lead levels were exceeded by more than a hundredfold.[13] In 1978, a local musician Marjan Smode shed a light on the devastating pollution of the Meža River – he sang the song The Dead River[14] – one the first songs in Slovenia with a critical attitude towards polluting the environment – for the first time live. In the last two lines, he expressed criticism directed at the people:

// umirat gledali smo te,
a pomagal ni nihče. //

(// We were there to watch you die,
no one helped, we just stood by. //)

11 Kirn, *Ekološki pogled nazaj in naprej*, p. 292.

12 Rendla, Sedlaček, *Onesnaženost zraka v socialistični Sloveniji*, pp. 743–747; Sedlaček, Rendla, *Air Pollution in Slovenia in Socialist Yugoslavia*, pp. 43, 44.

13 *Zelena knjiga o ogroženosti okolja v Sloveniji*, p. 18.

14 Fink Hafner, Novak, Knep, *Razvoj slovenskih zelenih strank v primerjalni perspektivi*, p. 40.

Smode encountered some problems due to the controversial nature of the song – the smelter even held a crisis meeting to discuss it. The author pointed out that the political pressure was not as intolerable as the pressure exerted on him by the smelter's management and certain employees. People realised that pollution was a very real issue, which was nonetheless overshadowed by the economic aspect; the smelter, albeit the leading cause of pollution, provided income and a source of livelihood to many people.[15] In the eyes of Dušan Plut, former leader of the Greens of Slovenia, that was a key issue regarding the attitudes towards environment – in the context of industrial progress, environmentalism was trampled over by the economic aspect.[16] In 1970, Executive Council of the Slovene Assembly adopted directives on long-term and systematic economic aid for the less developed areas in Slovenia. Each local community was accountable for its own economic progress and therefore had control over its pace. In 1975, the majority of environmental policies was transferred to the local communities that now faced a dilemma: is environmental protection more significant than economic growth? On one hand, new roads, power grids, and water management facilities were built in these communities thanks to the industrial progress, but on the other hand it caused several ecological problems as well. This illuminated the duality of the system, which promised economic and social prosperity, while it also guaranteed ecological prosperity and nature conservation at the same time – a paradox, considering that Yugoslavia kept relying on heavy industry.[17]

Two currents formed in the local communities: the people who were in favour of uninterrupted economic growth, and those who drew attention to the problems that arose as its result. Numerous local environmentalist movements were created, and they all highlighted and criticised the attitudes of the local communities and the government towards nature, each in their own way. The

15 Marjan Smode, 2025.

16 Plut, *Ekološka kriza in posledice*, p. 20.

17 Sedlaček, Pál, Rendla, *Okoljevarstvo v socializmu*, p. 242; *Slovenska novejša zgodovina 1848-1992* vol 2, pp. 1015, 1016.

government began paying special attention to the criticism after the second oil crisis in 1979. The first one arose in 1973 as a response after USA and a few other Western countries expressed support for Israel. The Arab OPEC members imposed embargo on oil exports to said countries and suspended their production. As a result, oil prices increased fourfold in a very short amount of time. Yugoslavia depended heavily on the imported oil, and while at first they mitigated the crisis by doing business with countries of the Non-Aligned Movement, they could not escape the consequences. The costs of production and transport increased, contributing to ever-higher prices and decreasing economic growth. Furthermore, the country accumulated a debt to international financial institutions. The second oil crisis in 1979, a result of the Iranian revolution, caused a dramatic decrease of Iranian oil production and the global market price surge. The Iran-Iraq war was another factor causing the price increase. The situation had a massive impact on Yugoslavia. New measures were implemented: vehicles were allowed on the road only on certain days, based on whether the last number on a license plate was even or odd; vouchers for purchasing a limited amount of gas were introduced; gas shortage caused power blackouts. High oil prices, debt, and restricted imports led to dinar depreciation. The decline of economic growth sparked the crisis which drove Yugoslavia into bankruptcy in 1982.[18]

Emergence of the environmental movement in the 1980s

The aggravating crisis forced the country to take a step back. In 1981, a new law was passed – it combined natural and cultural heritage, and caused a deviation from comprehensive management of environmental protection. The law marginalised environmental protection and disregarded the environmental paradigm from the 1970s. It also increased the powers of local communities. What was concerning, were the discrepancies between regulations applicable to different locations, which allowed local econo-

[18] Rendla, Alternativna kulturna gibanja, p. 149; Prinčič, Borak, *Iz reforme v reformo*, pp. 316–361.

mists to manipulate them through lobbying and negotiating.[19] It is worth noting that the local communities were rather successful at tackling environmental problems, once they appeared.[20] The most severe pollution was caused by the aforementioned mines and smelter in the Meža Valley, Celje zinc plant, Idrija mercury mine, Anhovo cement factory, and Iskra Semič electro-technological factory. Especially the latter was one of the key causes for the emergence of a powerful environmental movement in the 1980s.[21]

The Iskra Semič factory charged capacitors, using polychlorinated biphenyls (PCB). In 1979, the use of this very harmful substance was prohibited in the European Economic Community (EEC). The ban, however, did not apply to producing the substance, provided that it was exported from the EEC. Prodelec, a French company, therefore still produced PCB and sold it to Iskra Semič, where the substance was handled irresponsibly. Incorrect storage and waste disposal caused a critical pollution of the Krupa River, which was discovered in a 1983 analysis and kept secret until the first half of 1984. The public was informed of the situation through an article in Razmerja, the newsletter of Metlika youth organisation, which caused a large-scale environmental affair, later covered by two periodicals (Mladina, Delavska Enotnost) and two radio stations (Radio Študent, Val 202) in 1984. An especially controversial statement was that of the Republican Committee for Health and Social Care, in which they admitted on TV that the Krupa River was in fact among top ten most polluted bodies of water in the world. They justified their statement by explaining the water was not used for drinking and watering livestock. The lie was soon exposed by Razmerja after having surveyed the people living near the Krupa River – it was discovered that the people were filling their wells with the water from the river.[22]

19 Knep, Fink Hafner, *Eksperimentalna vladavina na področju zelene politike*, p. 112.

20 Sedlaček, Pál, Rendla, *Okoljevarstvo v socializmu,* p. 236.

21 *Zelena knjiga o ogroženosti okolja v Sloveniji*, p. 18; Flajšman, *Od Krupe do zelene stranke*, p. 112.

22 Flajšman, *Od Krupe do zelene stranke*, pp. 115–119.

The people in charge claimed they would introduce some measures, which were never actually implemented. In January 1985, the public responded with mass protests and demands. In the spring of 1985, the situation escalated to the point that the Razmerja newsletter had to be discontinued. The Krupa case was even investigated at the Russell Tribunal. In February 1985, Iskra Semič terminated their PCB-related activities, but the clean-up of the polluted environment was far from being carried out. Many capacitors were either buried or thrown in the pits, where the harmful chemicals were washed away by the water flowing into the Krupa River. Soon, a press conference titled *Environmental Genocide* was hosted at the Faculty of Arts in Ljubljana. The conference transcended into a protest rally, where a representative of the Razmerja newsletter delineated the case of the Krupa River and, in addition, spoke up on other problems in Slovenia. Radio Študent recorded the protest in full.[23]

The intensity of the Krupa River case empowered local environmental initiatives that became even more active after the Chernobyl disaster in 1986.[24] Only three years prior to that, a nuclear power plant started operating in Krško. The construction began in 1975 and instilled fear and disapproval in locals after the Chernobyl incident. People started to publically express their concerns and disagreement on nuclear energy. On the first anniversary of the incident that caused a major part of Europe to be exposed to radiation, a protest against nuclear power plants began at the Rožna Dolina Campus in Ljubljana. On 23 April 1987, protesters occupied the road in Rožna Dolina and headed towards Trg Revolucije,[25] in front of the building where the present-day Parliament is located. They demanded that a stop be put to the Yugoslav nuclear programme.[26]

However, the government did not welcome the powerful environmental movement, as seen in the article published on 25

23 Flajšman, *Od Krupe do zelene stranke*, pp. 122–130.

24 Sedlaček, Pál, Rendla, *Okoljevarstvo v socializmu*, p. 237.

25 Today known as Trg Republike.

26 Stojko, *Naša jeza je brezmejna*, pp. 46, 47.

A protest against nuclear power. A reproduction of Picasso's painting Guernica was symbolically brought to the protest as a symbol of the destruction of the civilian population.[27]

July 1988 in the Delo newspaper, in which Tomaž Ertl, national secretary, criticised the movement:

> //Years ago, some so-called alternative movements were welcomed in Slovenia with a certain degree of sympathy. Due to environmental problems, it was expected the movements would try to spread environmental awareness. What happened was the opposite. None of the movements have not acted accordingly – in fact, some closed-off groups have formed, which are now putting pressures on social and political institutions.//[28]

Dušan Plut was one of the people who left the League of Communists of Slovenia due to environmental disagreements. He had an extremely important role in the environmental movement and later became the first president of the Greens of Slovenia.[29]

27 Nace Bizilj, National Museum of Contemporary History, inv. nb. NB 286_54.

28 Žarko Hojnik, »Organi za notranje zadeve se zavedajo zapletenosti in občutljivosti razmer.«, Delo (25.07.1988), volume 30, issue 170, p. 4.

29 Flajšman, *Od Krupe do zelene stranke*, pp. 132.

Ertl's statement was not directed only towards the environmental movement, but towards all civil movements that appeared in Slovenia in the 1980s. The Yugoslav economic crisis was aggravating, following a pattern, presented in Ståle Holgersen's book.[30] Several problems began to arise, implying the possibility of an increasingly plausible scenario of the breakup of Yugoslavia. Movements, offering a political alternative to the League of Communists of Slovenia, were assuming more and more political power. They formed an opposition, demanding political pluralism. At the end of 1988 and in 1989, several political organisations emerged. They later transformed into political parties, as enabled by the changed constitutional amendments, which allowed the possibility of founding new parties.[31]

The Greens of Slovenia

Mostec, 11 June 1989 – the environmental movement set the stage for the establishment of an organisation that became officially registered as a political party under the name the Greens of Slovenia in the autumn of the same year. The poster with the invitation to the event celebrating the founding of the party was designed by the New Collectivism studio.[32] The programme was thoroughly aimed at protecting the environment. The party represented a social and political movement, united under the principles of ecology and environmentalism. Their motto was *Think globally, act locally.* The position of the first-ever elected president of the party was occupied by Dušan Plut.[33] In one of his interviews, he pointed out that the Greens were not a typical political party, as they remained in direct contact with environmental activist tackling specific environmental issues. The main problem of the Greens was the lack of a clear premise determin-

30 Holgersen, *Against the Crisis*.

31 *Slovenska novejša zgodovina 1848-1992* vol 2, pp. 1196, 1202–1203.

32 Flajšman, *Vizualna ekologija*, p. 135.

33 *Slovenska novejša zgodovina 1848-1992* vol 2, p. 1199.

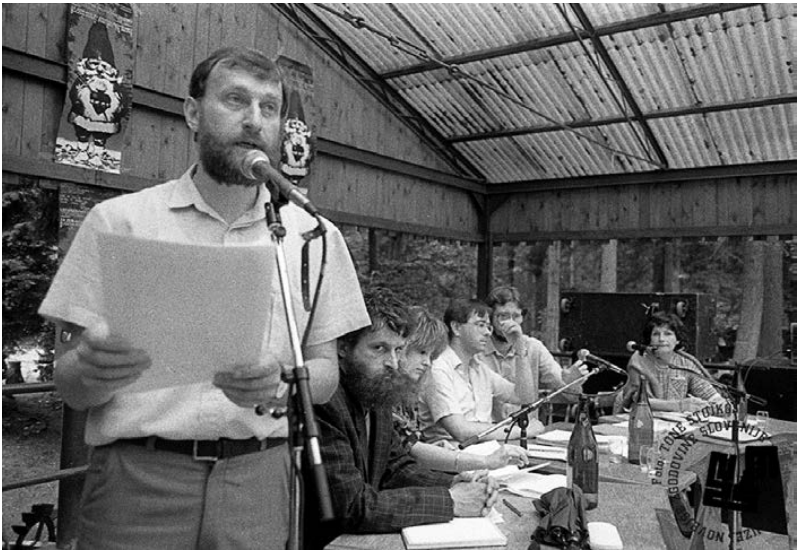
ing their programme and ideological framework, which proved to be extremely problematic for the party's future. In parliament, the members agreed solely on the topic of environmental issues, while they had polarised views on other matters.[34]

The first multi-party election after 1945, at which the public chose members of the Assembly of the Socialist Republic of Slovenia, was held in April 1990. The majority of votes was casted in favour of the DEMOS coalition (Democratic Opposition of Slovenia), founded in December 1989. The amendments to the constitution allowed political participation and activities, paving the way to the foundation of DEMOS. The coalition included newly-founded opposition parties that formed a coalition due to a low probability of each party winning the election individually. The fact of the matter was that the League of Communists of Slovenia still had the highest level of support among the people. However, the League no longer existed at the 1990 election – due to the disagreements they left the 14th Congress of the League of Communists of Yugoslavia and changed their name to the Party of Democratic Reform. In January 1990, the Greens of Slovenia was one of the last parties to join the coalition, helping DEMOS reach 55% of votes and win the election. The Greens received 8,8% of votes and was, percentage-wise, the green party with the highest support throughout Europe. They won 8 seats in Parliament. Their representatives, however, had very different ideological viewpoints.[35]

The Greens of Slovenia were a part of the first multi-party government in Slovenia, which planned to renew Slovene constitution by 1990. However, the constitution was not adopted until 23 December 1991, as a consequence of delays caused by disputes over secularisation and abortion. The content of the constitution caused plenty of disagreements, even among the DEMOS members. The coalition collapsed at the end of 1991, and in

34 Plut Dušan, *Archive of interviews in National Museum of Contemporary History*, Dušan Plut (2024).

35 *Slovenska novejša zgodovina 1848-1992* vol 2, pp. 1283–1294; Flajšman, *Od Krupe do zelene stranke,* p. 135.



Congress of the Green Party in Mostec, 11 June 1989. The man speaking is Dušan Plut. In upper left corner is invitation to the event celebrating the founding of the party designed by the New Collecitivism studio.[36]

1992 three former parties, including the Greens, reflected on who could become the next prime minister candidate. Lojze Peterle, the then prime minister, was replaced by Janez Drnovšek on 22 April 1992. He was in charge of forming the government, a part of which were the Greens.[37]

The conflicts of the party members impacted the results of the 1992 Parliamentary election. The Greens received only 3,7% of votes and, as a consequence, only 5 seats in Parliament. Internal political strife led to the creation of two fractions: one joined the newly-formed Liberal Democracy of Slovenia (LDS) in March 1994, while the other kept operating as the Greens. The latter received only 1,76% of all votes at the parliamentary election in 1996, failed to enter the Parliament and were never in the government again. Today, the party is active under the name

36 Tone Stojko, National Museum of Contemporary History, inv. nb. TS_891279_62.

37 *Slovenska novejša zgodovina 1848-1992* vol 2, pp. 1294, 1995, 1366, 1367.

Andrej Čuš and the Greens of Slovenia – it adopted a centre-right approach and supports the green conservatism.[38]

Conclusion

The post-independence historiography regarded socialism as a regime that was not particularly environmentally engaged and under which any form of political activism was banned – which couldn't be further from the truth. Despite serious pollution problems caused by the rapid industrialization, it is clear that environmentalist discourse was present in socialist countries – they implemented numerous environmental policies that were very successful in certain aspects. In Slovenia, the first concerns over the harmful impact human activity had on the environment were expressed pretty early on – the first spontaneous environmentalist campaigns took place back in 1960s. Environmental awareness developed in the circles of natural scientist and nature enthusiasts, and the environmentalist initiatives were passed from the general public to the authorities. Such initiatives were not perceived as a threat, as proved by the government by introducing legislation protecting the environment.

Despite the legislation, the pollution was getting progressively worse, strengthening environmental awareness and activism. Society now faced a new dilemma of whether or not the environmental protection was more important that the economic prosperity. Due to some several cases of non-compliance with the regulations, there were many accounts of the ongoing pollution, which triggered the emergence of a powerful environmental movement. Following the Chernobyl nuclear disaster in 1986, the movement grew ever stronger, reaching its peak by founding the Greens of Slovenia in 1989. At the height of its power, the party collapsed and the internal political strife eventually led to its downfall.

38 Flajšman, *Od Krupe do zelene stranke*, pp. 135, 136; Fink Hafner, Novak, Knep, The Slovenian Greens, pp. 25–28.

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PART II

Jeremy Lienaert[1]

Is a Terril a Ruin?

Abstract: Wallonia (Belgium) has been profoundly shaped by the coal industry, which collapsed in the 1970s, leaving behind its most visible legacy: Terrils, massive heaps of coal mining waste or slag (Valisena, 2022). Over the decades, these spoil heaps have been appropriated by both human and non-human life forms, giving rise to new ecosystems born from multispecies interactions on what Anna Tsing calls the "ruins of capitalism" (Tsing, 2017). While some movements have protected terrils from destruction, many are now subject to environmental conservation policies. However, neoliberal governance fosters territorial valorization (Pinson, 2020), urban marketing strategies (Adam & Comby, 2020), or conversely, processes of resource extraction and energy production. These dynamics can lead to restricted access, the exclusion of marginalized groups, or even of entire communities. By critically engaging with the notions of "ruin" and "wasteland," this research highlights the socio-ecological and political risks involved in these transformations. Positioned between critical geography and multispecies anthropology, this exploratory research seeks to account for the plurality of ways in which Terrils are inhabited, appropriated, and contested.

Keywords: Terril, spoil heaps, Ruins of capitalism, Territorial valorization, Gentrification

[1] Article reviewed and endorsed by Professor David Jamar, Director of the Sociology and Anthropology Service at the University of Mons. E-mail : david.jamar@umons.ac.be

Introduction

Centuries of intensive coal extraction have deeply shaped the Walloon landscape. In the valleys of the Sambre and Meuse rivers—once dense with coal mines, all now closed—lie the Terrils, massive heaps of mining residue. These monumental forms have become the most visible reminders of the region's extractive past. Abandoned by extractive industries, these spaces have given rise to new ecologies (Beau et al., 2021), far removed from the formal structures of power. Many of them have taken on symbolic value, hovering between formal and informal realms: they serve as guardians of miners' memory, who gave their lives to the mining industry, and as identity markers, representing both history and territory.

Literature often refers to these giants as industrial wastelands (Baldin, 2024), framing them as abandoned zones, sometimes likened to the "*ruins of capitalism*" described by Anna Lowenhaupt Tsing (2017). Yet walking among the Terrils quickly reveals that Tsing's concept developed in "*The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*" does not always apply. Some coal tips are now subject to territorial revalorization policies (Adam & Comby, 2020), in line with neoliberal urban logics of place-making and enhancement (Pinson, 2020; Van Criekingen, 2021), while others are still being exploited or repurposed for extraction or energy production (Laes & Bombaerts, 2022). These uses are shaped by dominant interests and contribute to the discursive order (Foucault, 2009), creating a tension with the notion of capitalist ruins. However, these examples are far from universal. In many cases, informality thrives in these spaces left behind by power. The argument made here is that Terrils cannot be simplistically categorized as either ruins or tools of capital: their diversity demands a case-by-case reading. As we will see, all spoil heaps were, at some point, ruins—but what determines whether they still are? And why does this distinction matter?

These questions draw us toward both critical geography, which seeks to expose power structures rooted in neoliberalism, and "*multispecies and multiscalar approaches*" (Volpe, 2024),

which examine the interactions between human and non-human beings, distinguish between (non-)scalable economies (Leite & Fantinel, 2024), and open multiple possible futures (Tsing et al., 2019). Combining both approaches allows for a more nuanced reading of spoil heaps without denying the value of existing streams. This research contends that not only is it possible, but necessary to combine these analytical frameworks to understand Terrils and the social dynamics they embody. Finally, the lack of literature—both in terms of connections between these two approaches and the general scarcity of social science work on spoil heaps in Wallonia—calls for an exploratory inquiry gathering fragmented data.

Methodology

This research is situated at the intersection of multispecies anthropology, looking at multiple and complex ecologies born on Ruins of Capitalism, and radical or critical geography, who seeks to understand logics of territorial production under neoliberalism. As mentioned in the introduction, this research is primarily exploratory, using formal interviews (with organizations, politics, key informants, etc) conducted participant observation (during hikes and guided walks, children's workshops, public events, in cafeterias...), and engaged in exploratory walks (Valisena, 2022). Some interviews were recorded, and I took notes when recording was not possible. I also experimented with the method of children's drawings, as described by Fabienne Hejoaka (Hejoaka, 2024).

A large part of the fieldwork was carried out through unguided walks on the spoil heaps. The method of "walking ethnography" (Valisena, 2022), described by Daniele Valisena, was particularly helpful, as it allows historical, anthropological, and geographical aspects to come together through the act of walking (Baldin, 2024).

To bring together these analyses and apply them to the objects of this study, the article sheds light on a series of situations encountered in the field, considered in parallel with literature. This helps position the observations in relation to the

aforementioned theoretical frameworks. The data was collected through around a hundred semi-structured or informal interviews, conducted either with local stakeholders or more casual or professional users. These interviews made it possible to situate each actor, bring their discourse to light, and understand how they use one or more Terrils.

Researcher positionality

It is important to explain my positionality, to give proper context to my approach. I am a PhD student in political and social sciences at the University of Mons. My main research focuses on ecologies, local uses, and the forms of exclusion that take place on and around Terrils.

Previously, I wrote a master's thesis on gentrification through the lens of subjectivities related to the revalorization of urban waterways. That work helped me engage with critical literature. However, I find that literature is insufficient when it comes to the Terrils. Indeed, the complex ecologies that emerge there often exist outside capitalist frameworks. On the other hand, I understand the methods of territorial valorization and the exclusions they entail—aligned with neoliberal logics—through the same thesis, which highlighted the use of industrial ruins, rivers, and canals in contemporary urban marketing (Adam & Comby, 2020).

My aim is to paint a realistic, complex, nuanced, and multi-perspectival picture of Terrils.

I want to understand both their ecological roles and vernacular uses, but also the risks that revalorization represents for those local uses and, consequently, the forms of oppression tied to the transformation of their status. This first article seeks to highlight that complexity by bringing together the concepts of "capitalist ruins" and "gentrification," showing not only how they can be applied to spoil heaps, but also how these spaces can at times escape that dichotomy altogether.

The history of the terrils

Let us step back to better understand what a *Terril* is, and the meaning of the "memory of the mine."

As mentioned in the introduction, Terrils are mounds composed of slag and residues, waste materials extracted from the earth during coal mining, including shale and coal too impure to be used, piled up over decades, even centuries. These enormous black heaps take many forms, from flat stretches to hundred-meter-high conical hills, often covering several hectares. Since some have existed for centuries, there existence is not always properly documented. The Walloon Public Service (SPW) has mapped 543 spoil heaps in Wallonia (Service public de Wallonie, 2011), forming a kind of artificial mountain range stretching from the French border to the edge of Dutch Limburg, following the valleys of the Haine, Sambre, and Meuse rivers: the "*Sillon Sambre-Meuse*", Belgian's former industrial backbone.

The word "*Terri-l*" itself is old, predating the industrial era. It comes from Walloon, a French dialect spoken in southern Belgium, and dates back at least to the 13th century (Chiarello, 2021, 42). As early as that time, underground coal seams in Liège or outcroppings in the Borinage (west of the city of Mons) were already being exploited (Helfer, 2008). This region was known for both the quantity and quality of its coal, which served as fuel in local forges. Waste from these early mines was piled near the mine shafts or spread across the ground. Over the centuries, mining techniques improved, and the volume of extracted material increased dramatically. Carts were introduced, followed by horses who soon helped men transport tailings and overburden.

The invention of the steam engine accelerated extraction technologies, with coal itself serving as the engine's fuel source. Steam power made it possible to pump water from greater depths, to lower people, horses (Franssen, 2023), and equipment deep underground, and to bring the extracted materials back to the surface. Ventilation systems also improved, allowing the gallery networks to expand. Eventually, hand-carts were replaced by

wagons pulled by steam locomotives, enabling much more efficient transport of waste from the mine to the top of the spoil heaps. These machines were sometimes substituted by aerial cable systems or conveyor belts, enabling the construction of higher, cone-shaped Terrils. After World War II, trucks were also used to carry mining debris to the summits. Over time, the Terrils became dumping grounds: not just for mining waste but also as uncontrolled landfill for residents.

Coal mining propelled Belgium into the ranks of global economic powers by the late 19th century. However, the industry's intensive pace forced mining operations to dig ever deeper in search of coal. Moreover, mining technologies saw only modest improvements during the 20th century, and the sector became increasingly labor-intensive. As a result, coal mining grew less and less profitable, especially compared to international competitors. The industry declined from the mid-20th century onward, with gradual mine closures beginning in 1965 and culminating in the 1984 shutdown of the Roton mine in Farciennes—the last operational site in Wallonia. These mass closures left deep scars along the Sambre and Meuse corridor. In 1958, the mining industry employed 97,808 people (Gérard-Libois, 1966) in a region with barely over 3 million inhabitants (Poulain et al., 1984). By 1970, only 28,150 miners remained. This collapse brought massive unemployment and was compounded by widespread deindustrialization. The same period also marked the beginning of Belgium's state reforms, which led to a federal structure and increased power for regional governments. Spatial planning, economic development, and environmental policies became regional competencies.

Many Belgian spoil heaps were re-vegetated, following the work of visionary landscape architect Guy Capart, whose efforts began after WWII (Baldin, 2024). Capart emphasized that each Terril was unique, requiring site-specific analysis due to their varying microclimates, but offering a high potential for ecological diversity. Initial reforestation led to rich biodiversity colonizing the slopes, bases, and summits of the spoil heaps. For example, the Terrils in the Borinage—an area west of Mons—host over 500

species of flora and fauna, including some that are unique to these environments. While not all spoil heaps were deliberately planted, the abandonment of mining activity created the conditions for spontaneous ecological regeneration shared by humans and non-humans alike. This process began with the formation of "assemblages" and "patches of feral activity" (Tsing et al., 2024, 38–44), which then enabled new multispecies interactions to take shape.

Humans also informally re-appropriated these spaces long before the mining companies relinquished them. In the past century, the "*grappilleuses*" would climb the spoil heaps at night to collect discarded coal, considered unprofitable by mining standards. Often operating illegally, these women scavenged to heat their homes, especially when their husbands had already spent their wages on coal for drinking. Children and teenagers, too, quickly recognized the Terrils as fantastic playgrounds. Many of the people I interviewed recounted childhood memories of running down the black slopes, playing hide-and-seek, exploring abandoned cars, or even experiencing their first romances on these artificial hills. As I walked and listened to testimonies, I found it almost impossible to imagine childhood near a spoil heap without memories *on* the spoil heap—at least at a time when such uses were tolerated or simply ignored by parental authority. Today, however, the *grappilleuses* are long gone, and unaccompanied children are rare on the heaps. This change stems from a variety of factors: restricted access, heightened parental fears, increased screen time… Yet it is still possible to encounter teenagers, improvised shelters, or youth groups playing on the slopes.

One distinctive feature of the Walloon context is that, unlike France—which nationalized its coal sector—Belgian mines and spoil heaps were mostly owned by private entities. This led to a patchwork of local situations and a lack of consistency across sites. When the mines closed, the spoil heaps were seen by their private owners as one of the few remaining resources with potential value. The mounds could be reprocessed to extract residual coal or used as backfill material. However, in the absence of clear regulations, a certain level of chaos prevailed. Some owners exploited the Ter-

rils without applying for the necessary permits. In some cases, these operations met local resistance, with residents opposing the destruction of their spoil heaps and the environmental nuisances linked to new extraction processes. The main argument for these struggles was the preservation of mining memory (Baldin, 2024, 206), as well as the recreational or symbolic value of the site.

The mining industry left a legacy of violence. Between 1900 and 1960, over 26,000 people died in Belgium in the coal extraction industry. That number, while staggering, is likely far lower than the total number of miners who died from chronic respiratory illness. A 1938 study of 1,000 miners conducted by Fédéchar found that none had "a normal pulmonary condition," and 58% were classified as "clearly pathological" (Geerkens, 2009). As late as 1994, over 36,000 miners were still officially recognized as suffering from pneumoconiosis (Kalisz, 1996).

In Leval, near Binche, the exploitation of the *Terrils de la Courte* was halted following a letter sent to the King and legal proceedings initiated by Marie-Anne Luste. Eventually, Miss Luste's actions and the collaboration of the inhabitants led to the creation of the association "Natecom," which now acts as guardian of the *Terrils de la Courte* (entretien Natecom, 2023). In Roux, a district of Charleroi, local residents mobilized extensively to protect the *Terrils du Martinet*, threatened by the company Ryan Europe. Their designation as a protected natural area in the early 2000's was the result of a fierce struggle that lasted 23 years, during which the citizens of the Martinet neighborhood had to show ingenuity and persistence (Baldin, 2024, 239) to counter corruption schemes and politico-private entanglements (ibid., 246).

Other sites have been granted even more heritage-oriented protection. This is notably the case of the *Terril de Blegny-Mine*, which is fully included in the site's UNESCO protection. Another example is the *Terril du Crachet* (also known as "Mont Ostène"), located on the site of the *Parc d'Aventures Scientifiques* (Spark'Oh!). These mounds have now become part of larger complexes and contribute to their valorization but also act as cultural hubs and local symbols.

Finally, few Terrils remain in a state of limbo, pending decisions from local municipalities, administrative bodies, or their legal owners. In some cases, the succession of mining companies and their heirs over time has led to a loss of information. The cases of the *Sauwartan* or else, the *Terril Sars-Longchamps 1*, illustrate the legal obscurity surrounding some spoil heaps. Their owners seem unknown. Even IDEA, the Hainaut Territorial Development Agency, appears unaware of who owns them (Géronnez et al., 2023). These delays have enabled the more spontaneous development of occasionally rich ecologies, as we will see in the following chapter. This latency has fostered the recomposition of various ecosystems that now exist on the Terrils.

Emerging ecologies onto the ruins of capitalism

Let us begin by exploring some multispecies relationships that emerge on the Terrils. This initial step allows us to consider certain spoil heaps as "*capitalist ruins*" or as "*wastelands*." The abandonment by the coal industry gave rise to new configurations—both human and non-human—that exist outside the reach of formal power. We will only explore a few of them, as there are as many unique cases as there are Terrils.

New forms of cohabitation appear locally, with the arrival of beings that reshape the presence of others. On the *Terril Frédéric*, for instance, which is currently closed to visitors, a group of local citizens "*Le Comité de Gestion des Terrils du Borinage*", in partnership with the environmental association Natagora, has taken responsibility for its management. Their aim, as Peter explained to me during a site visit, is to reopen the Terril to all residents. To do this, the site needs to be made accessible, which includes clearing vegetation to allow species that would otherwise be outcompeted to reestablish. Human interventions benefit some plant species, which in turn attract assemblages of invertebrates and create specific ecological niches. Meanwhile, wild boars (*Sus scrofa*) dig into the soil, aerating it and enabling new plant

growth. Farmers often describe these animals as "destructive," and hunters as "overabundant," but they greatly help other large mammals on the Terrils. Moving in groups, their heavy bodies trample the soil, clearing paths along their way. "They're really smart!" Peter said. They tend to choose the most walkable parts of the Terril, using the gentlest slopes. A wild boar trail is often the best way to reach the summit or traverse from one side of the heap to the other. The presence of deer bedding along these trails, or deer droppings inside boar footprints, are further signs of this cohabitation.

There's more. The strength, resilience, and stocky build of wild boars allow them to create actual tunnels through otherwise impenetrable brambles and blackberry thickets. On several occasions during our visit, Peter pointed out what he called "boar holes." These tunnels make it easier for other animals—like deer and foxes—to move through the undergrowth. Twice, we ourselves used boar passages to navigate across the Terril.

The wild boars, for their part, benefit from the spoil heaps. In Charleroi, where some Terrils are the city's only green spaces, boars find shelter on the slopes of the slag heaps. Even in urban areas, their presence is often reported. On the Frédéric heap, volunteers showed me a dense thicket where the animals usually hide: *"These dense shrubs keep people out. The boars know this and stay hidden there."* This overgrowth is the result of years of neglect, during which ruderal vegetation reclaimed the land and made it suitable for boars.

The heaps also provide food: acorns, of which boars are fond, and a variety of protein-rich invertebrates. Oaks, often present on Terrils, stabilize slopes with their deep roots and contribute to biodiversity. Young oak leaves are even edible for humans. The acorns feed a wide range of animals, from rodents to ruminants to granivorous birds. The jay, a beautiful corvid, plays a key role in the oak's propagation, sometimes dropping acorns mid-flight and helping the tree to spread.

On this Terril, the work done by volunteers is far from profit-driven. They take great pleasure in spending time in this

green sanctuary, engaging in its wildlife. The Frédéric heap has become a space of multispecies gathering (Balaud & Chopot, 2021), where ecological and social concerns converge (Boursier & Guimont, 2023). Volunteer actions maintain the site, foster unity, and attract new members. Species inventories organized as public events create opportunities to discover the non-human inhabitants of the Terril, who—unintentionally—help protect it. As Tsing notes, "*biological and social diversity huddle defensively in neglected margins*" (Tsing et al., 2022). Donna Houston's team similarly shows how urban wild spaces and other forms of marginality "*can disrupt dominant spatial relations of power and injustice*" (Houston et al., 2018).

Let's now turn to Charleroi, where the emblematic *Terril des Piges* hosted a village of unhoused people in 2007 (Saussez, 2007). The idea originated with Denis Uvier—en emblematic street educator. The "*village of the irreducible homeless*" (Delval, 2008) enabled around twenty unhoused individuals to live in semi-autonomy (entretien Uvier, 2024). This space, abandoned by both public and private investment, served as their refuge. And yet, archives from the city of Charleroi (consulted in 2025) contain correspondence dating back to 1978 that mentions a failed project to build an artificial ski slope on that very spoil tip. The proximity of the Terril to the city center offered the unhoused easy access to the resources they needed without having to travel long distances. A phytoremediation system treated wastewater, which was then used to irrigate a vegetable garden. The authorities of Charleroi, a city deeply affected by poverty, did not intervene in the project. Once again, no commercial logic seemed to dictate these actions. Even today, many spoil heaps in Charleroi offer unhoused people a place to sleep. The dense vegetation provides cover and privacy for those seeking shelter. Without falling into the logic of misplaced charity or the romanticization of unwanted conditions, the inhabitants of the Terrils remind us that wastelands also serve as refuges for those without a roof (Mattoug & Piva, 2020).

The same is true at the *Terril Sacré Français*, just a few steps from *Les Piges*, where Adin has been living for several years. He

built a shelter made of tarps tied between trees to form a protected space. Inside is a large tent, two tables, and a fire pit at the center. The ground is cleared of debris, and the place appears clean, far from any stereotypical image of where an unhoused person might live. However, as we will see later, this situation of deep precarity has become even more fragile since a large real estate project has been proposed around the Terril.

It is not unusual to come across another tent on this spoil heap. However, during my visit in November 2024, the only one I saw had been set on fire. According to Martin, from the association *Solidarité Nouvelles*—which assists people in extreme precarious situations and facilitated my access to the site—tent fires or destruction are a regular occurrence. These may be caused by malicious individuals (Votron, 2018), by conflict between unhoused people themselves (Visite 2024, *Solidarité Nouvelles*), or even unintentionally by the occupants.

At the foot of the *Terril des Piges*, just to the left of the steep path descending from its summit, there is a heap of trash in the brush along the slope. Nothing unusual for Charleroi, where no spoil heap is free of illegal dumping. But upon closer inspection, one finds hundreds of used condoms. These are likely remnants of sex work activities carried out by one or several sex workers living in the adjacent social housing tower. This is what Martin told me (Visite 2024, *Solidarité Nouvelles*). Condoms, in this context, become part of the material waste found on urban spoil heaps.

The struggles that took place at the *Terril du Martinet* in Roux, or in Leval, illustrate another form of political ecology born from informality (Balaud & Chopot, 2021). These struggles stem not only from the symbolic importance of these artificial mounds—as memorials to mining—but also from resistance to environmental harm, to the class oppression linked to extractive industry, and from a desire to preserve newly formed ecosystems reclaiming the ruins. An excerpt from Elisa Baldin's dissertation (2024), regarding the defense of the *Terrils du Martinet* against exploitation, shows how power can perceive this entanglement as a threat:

«Il y a eu des véritables épisodes d'intimidation vers les habitants du quartier, tant de la part de la multinationale – qui a engagé des chasseurs pour réduire la valeur faunistique des terrils – tant de la part d'un chef de la police locale, qui envoyait à Jacques des enveloppes grises, contenant des fausses informations. Le "contre-attaque" de la part des habitants se manifestait à travers la démolition des pièges fabriqués par les chasseurs et par l'enquête auprès de certains policiers «alliés» du comité.» (Baldin, 2024, 247)

Translated: *"There were real episodes of intimidation towards the local residents, both from the multinational - which hired hunters to reduce the wildlife value of the slag heaps - and from a local police chief, who sent Jacques gray envelopes, containing false information. The "counter-attack" on the part of the inhabitants was manifested by the demolition of traps made by the hunters and by the investigation of certain police officers "allied" with the committee."*

We observe here a multitude of non-scalable cases—singular actions that align with what we might call "*ruins of capitalism*." The ecologies that emerge and evolve are each time new, unexpected (Morizot, 2017) and exist outside direct relations to power. And when there is an attempt by capital to reclaim these spaces, they sometimes become sites of resistance, giving rise to new alliances.

These entanglements of life evoke what Anna Tsing calls *latent commons*. Neither institutionalized nor exclusively human, they are a kind of "*confused game*" involving "*mutualist and non-antagonistic entanglements*" over which no one can claim full control (Tsing & Pignarre, 2017, 370). However, there are many situations that, unlike the previous ones, reflect scalable dynamics. These frameworks shape formalized systems and repurpose Terrils primarily to generate added value. Let us now examine how Terrils are used to serve capital logics, and why it is inaccurate to label them uniformly as "ruins of capitalism."

The exploitation of ruins by neoliberal logics

Let us begin this chapter with a clarification: the point here is not to call into question the notion of "capitalist ruin" developed by Anna Lowenhaupt Tsing in her book *The Mushroom at the End of the World*. Indeed, her concept provides a fresh perspective on contexts often overlooked in the literature, offering an analytical framework for countless situations, including some I encountered in my own fieldwork (as seen above). Rather, the goal is to multiply perspectives, to complexify our analysis, "*not to save us, but to reawaken our imagination*" (Tsing & Pignarre, 2017, 54).

The literature often draws on the concept of "capitalist ruins" (Bianchi, 2021; Duperrex, 2018; Muller, 2018) or "wastelands" (*friches*) (Lusso, 2013) to speak of spoil heaps, without distinguishing between cases. This echoes the systematic application of the idea of a "third landscape" (Clément & Pernet, 2020) to mining mounds: "spaces without function, abandoned by cities, tourism, industry, but also by agriculture or livestock beyond urban areas" (Hagelstein, 2023). However, it seems to me that the concepts of Anna Tsing's ruins, Gilles Clément's third landscapes, or "*wastlands*" are not suitable for all spoil heaps. Some may warrant these labels, but others can no longer be called ruins or abandoned spaces.

If those terms no longer appropriate for these sites, how should we name them? I cannot yet give a complete answer. Some are "artifacts" (Baldin, 2024), "landscape artifacts," or "museumified artifacts" (Adam, 2020), territorial valorization tools that feed into urban marketing. In this respect, the Walloon Government seeks both landscape and economic revalorization of spoil heaps, integrating them into its "urban project" (Adam & Comby, 2020; Pinson, 2020). As we read on the Walloon Public Service website (Service public de Wallonie, 2011):

> « *En milieu urbain, la valorisation des terrils intègre les opérations de revitalisation urbaine et constitue un projet global de reconversion pour améliorer cadre de vie et activités économiques.* » (Service public de Wallonie, 2011)

Translated: "*In urban areas, spoil heap valorization is part of urban revitalization operations and constitutes a comprehensive reconversion project to improve the living environment and economic activities*"

Among the spoil heaps that have been revalorized and turned into nature reserves, some still flirt with the notion of ruins. However, their official designation grants them formal recognition and roles, institutionalizing their existence and uses. This formalization also introduces exclusions. Assigning a role to wastelands implies, by definition, restricting informal uses. This is particularly evident in Charleroi, where unhoused people avoid heaps too frequented by tourists, or in Saint-Nicolas in Liège, where the institutional control linked to the heritage designation of the *Terril Gosson 2* conflicts with the usage of "youth groups" (interview with F. Bierset, Maison des terrils de St-Nicolas, 2023) who habitually gather there.

There are more extreme, clear-cut cases that leave no room for doubt in this analysis. A significant number of spoil heaps have been transformed to meet capitalist needs. We enter here into scalable production and extraction processes (Köppel & Scoville-Simonds, 2024), which take little to no account of local characteristics (Tsing & Pignarre, 2017). The re-exploitation situations I encountered can be classified into four categories: extractive, energy-related repurpose, energy-oriented land conversion, and real-estate redevelopment.

The first concerns spoil heaps exploited for the mineral resources they still contain. To summarize, when material was extracted from mines, it was sorted to separate valuable components from "extraction waste," made up of "*steriles*" and "*residues*" (Emerys, 2024) that contained insufficient coal to be profitable with past technologies. These formed the spoil heaps. As techniques have improved, it is now possible to profitably extract materials once considered too poor in coal. This is especially true for older Terrils: the further back in time, the less precise the sorting technologies. Moreover, beyond coal, spoil heaps contain schist, a material usable as fill for roads or sports fields. As mentioned earlier, lack of clarity has sometimes led to illegal exploitation. To address this, while

enabling resource extraction, the Walloon government launched an investigation to classify spoil heaps into three categories:

A. Non-exploitable spoil heaps (due to ecological richness or memorial roles for miners)
B. Exploitable spoil heaps
C. Potentially exploitable spoil heaps, requiring further study

Since then, many have been exploited, and several are still being worked today. This includes the two Terrils des Vallées in Gilly (now merged into one—interview with J. Van Gompel, 2025), or the Saint-Charles spoil heap in Dour, which remains active.

"Energy-related repurpose" refers to using spoil heaps as they are to generate energy. This implies preserving the mound itself. Due to their location and shape, spoil heaps can facilitate energy production, especially wind or geothermal. One application is seen in Germany, where some spoil heaps now host wind turbines. Their height provides better wind exposure (Deshaies, 2016): *"Hoppenbruch in Herten [...] was fitted with a wind turbine in 1997. In 2010, two 3.3 MW turbines were installed atop one of the Ruhr's largest spoil heaps, Oberscholven in northern Gelsenkirchen."*

Indeed, the objective of producing 4600 GWh/year of wind energy in Wallonia by 2030 has been a stated goal for over a decade, reaffirmed during the region's 2019 contribution to the National Energy-Climate Plan (SPW Énergie, 2022). Yet progress in connectivity has been slow. Many spoil heaps are therefore at risk of transformation due to their wind exposure and the growing demand for land.

Several studies have theorized the use of geothermal energy on burning spoil heaps. Sometimes, spoil heaps ignite from within, combusting coal, methane, and pyrite, reaching temperatures above 1000°C (Thiéry et al., 2013). Their slow incineration—lasting up to 50 years (Nyssen & Vermeersch, 2010)—could release energy capturable via hydraulic systems (Zhang et al., 2024). The concept was theorized from a study on geothermal potential from underground burning coal seams in China (Xiao et al., 2023). Yet

this idea is unlikely to materialize in Wallonia, given the unpredictability of underground fires. Moreover, out of the roughly twenty spoil heaps reported to have burned in the region (Gombert, 2023), only a few still do. Countries like Poland, facing higher combustion rates (Gombert, 2023), might be better candidates.

The third category—energy-oriented land conversion—concerns spoil heaps that have been flattened or heavily altered to produce energy from the land they occupy. In Wallonia, space for renewable energy production is increasingly scarce: wind sites are saturated and face opposition (Lefèvre & Vande Weyer, 2025), solar fields are expensive to build, and hydro and geothermal resources are limited. Yet the 2019 government agreement mandates that 23.5% of final energy consumption must come from renewables (SPW Énergie, 2022, 6). This implies doubling wind and nearly tripling solar electricity production. Accordingly, spoil heaps deemed exploitable by the Walloon Decree of May 9, 1985, can be used as land resources for renewable energy installations. This is the case in Dour and Estinnes, where solar farms have replaced former spoil heaps. At a broader scale, Europe has also taken an interest in reusing spoil heaps for "sustainable energy"—wind and solar—through the pilot project SUMAD (Sustainable Use of Mining Waste Dumps), which brought together ten partners from Poland, Czechia, Greece, France, and the UK (INERIS, 2019), between 2019 and 2022.

Lastly, we find spoil heaps targeted for real-estate redevelopment. These are located in areas of interest to public or private investment. The heaps in question are partially or completely flattened to accommodate large-scale projects. Often, the spoil heap is redesigned into a park, serving as a green backyard for the project. The redevelopment is justified through a discourse claiming the need to "*revive an abandoned green space*" *(« faire revivre un espace vert laissé à l'abandon* ») (Valimo SCRL, 2021), as in the case of the Sacré Français spoil heap in Charleroi or the "*Jardins du Terril*"-project in Rocourt (Matexi, 2021). The need for land-use planning and spatial reconversion is frequently cited. If the flattened spoil heap contains protected flora or fauna, the work is reportedly carried out

with caution (Selke, 2017), even supposedly improving the socio-environmental setting through the planting of trees, *"ponds, and pedestrian paths"* (Wanty, 2024), as was the case with the Viviers spoil heap, now largely replaced by a 900-bed hospital.

In these cases, industrial wastelands are seen as empty plots to be reinvested (Mattoug, 2021). A wasteland is perceived as a space "*outside the control*" (ibid.) of authorities that needs to be reclaimed. Flaminia Paddeu has shown how "*ruined or derelict parcels*" are "*associated with deviance and criminality*", accused of fostering social disorder (Paddeu, 2016). According to Cécile Mattoug, wastelands offer the potential for deploying neoliberal policies—an "opportunity" (Mattoug, 2021) to meet the demand for land, address security issues, and transform these abandoned spaces into resources. These narratives stand in contrast to those from civil society or some public actors, such as the European Interreg project "Destination Terril." While Valimo argues the spoil heap needs reactivation, the project's European partners disagree (Fédération du Tourisme de la Province de Hainaut, 2024):

> *"The Sacré-Français spoil heap, a large site extending over nearly 20 hectares, offers its grassy and wooded slopes above the urbanized neighborhoods of Dampremy. At the end of an easy and bucolic climb through nature, visitors are greeted with a breathtaking view of the city and surrounding countryside. A guaranteed escape, whether you're a hiker, nature lover, photographer, or athlete! Located in the heart of the city, the site is ideal for relaxing, having a picnic, or taking in the urban landscape."*

The site also mentions a "very diverse" fauna and flora, particularly among insects:

> "*The Sacré-Français spoil heap hosts remarkable biodiversity. A pine forested area (Pinus sylvestris) is home to several ladybug species such as the eyed ladybug (Anatis ocellata), the pine ladybird (Myrrha octodecimguttata), and the harlequin ladybird (Harmonia quadripunctata). An exceptional cricket species for the mining basin—the striped bush-cricket (Stenobothrus lineatus)—has settled there, along with the rare two-colored bush-cricket (Bicolo-*

rana bicolor). Still fairly open, the site also attracts many species of butterflies and thermophilic bees like the sharp-tongued osmia (Hoplitus adunca) and the spined osmia (Osmia spinulosa)."

For A. Tsing, "*The simplification that accompanies alienation produces ruins-spaces abandoned solely from the standpoint of resource production*" (Tsing & Pignarre, 2017, 38). Based on the previously discussed examples, we can understand these cases as reinvestments aimed at exploiting or producing resources. Tsing describes how ruins produced by a "*scalable forestry industry*" give rise to a "*non-scalable forest economy*" based on "*ecological relations*" that are equally irreproducible (Tsing & Pignarre, 2017, 84).

The examples above are driven toward scalability to reach a predictable and acceptable threshold of profitability. However, this undermines complex and unpredictable ecological relationships and results in phenomena of environmental exclusion and marginalization: solar panel fields are systematically fenced off, forming barriers for large mammals. Electrical production installations require the removal of surrounding vegetation. The extraction of raw materials or the flattening of spoil heaps causes significant nuisance to nearby residents (dust, noise, pollution of nearby streams, etc.), while also preventing them from accessing the spoil heaps, appropriating them, or maintaining them as sites of memory.

One particular case illustrates this appropriation dynamic. During a field placement with the non-profit organisation Natecom in August 2024, I asked a group of children (eight children aged 8 to 12) to draw a spoil heap. The instructions were simple: "*draw the spoil heap you can visualize best.*" All of them drew the one they had visited. None depicted the spoil heap closest to their home, responding that it was private and that they were not allowed to go there. In further discussion, it became clear they didn't spontaneously think about the spoil heap they saw daily.

Other events also lead to exclusion. Tourism development and spoil heap exploitation represent various degrees of exclusion—difficult to quantify precisely. This is especially true for unhoused people. The forms of exclusion they experience on spoil

heaps that have lost their "ruin" status range from subtle to blatant: increased foot traffic along the paths, a sense of exposure, and complaints from nearby residents about waste may all generate pressure for those camping there. A rise in the presence of more affluent social classes also tends to increase control (Van Criekingen, 2021) and the likelihood of denunciation (Dessouroux et al., 2009). The transformation of an area through heavy construction displaces all living beings from that space—both human and non-human users.

We might speak of gentrification (Chabrol et al., 2016), drawing from Marie Chabrol's team's approach that encourages viewing the concept in plural terms. However, even here, it is difficult to interpret some forms of exclusion purely as gentrification. This is particularly the case for re-exploitation aimed at resource extraction. It is hard to see this as a gentrifying policy per se. Gentrification, a concept developed by Ruth Glass in 1964 (Hamnett, 2003), refers to the production of land value through the reinvestment of capital, benefiting from an exceptional rise in land values following a growing interest in a particular area (Clerval, 2013), thus ensuring a lucrative return on investment. Public authorities play a crucial role in enabling this phenomenon by facilitating the installation of capital through landscape improvements, the development of services, and the creation of public amenities, thereby attracting a population with more capital than the previously established population. The increase in demand and territorial attractiveness drives up land values and, consequently, housing costs. This primarily impacts the most precarious populations, who can no longer afford rent (Lienaert, 2022). Additionally, gentrification policies include a security dimension that is multifaceted but consistently affects the most disadvantaged and minority populations. These security policies may result from increased police intervention or manifest through the participation of wealthier new residents in what political rhetoric might call "social control" or "policies of social and functional diversity" (Van Criekingen, 2021).

Lastly, there are contexts that remain difficult to define. Such is the case of the *Batterie Nouveau* Terril in the city of Liège, which

serves both associative uses and informal or even illicit activities: refugee camps, prostitution, drug use, etc. A public benefit organizion located nearby—La Cité s'invente—situated at the foot of another spoil heap, navigates between these informal worlds while operating within institutional norms. Funded mainly by municipal and regional subsidies, the association nonetheless maintains a critical stance toward the city of Liège's authorities. On one hand, it organizes numerous events, workshops, and programs, drawing mostly "*desirable*" populations into spaces previously left outside the scope of power, "*on the margins*" (Mattoug & Piva, 2020). In this sense, associations, though nonprofit, fulfill a role (Lightbourne et al., 2024) that critical literature often characterizes as "*gentrifying*" (Landon, 2022), acting as a bridge between precarious and more affluent populations, enabling capital to reinvest in areas with significant social contrasts, causing reluctances among possible investors. However, it is reductive to consider the nonprofit organization purely as gentrifying. That would overlook the actions of association members toward populations engaged in non-normative uses. Outside any official framework, they support precarious populations, including unhoused and undocumented individuals living on nearby spoil heaps: members regularly bring them food, turn a blind eye to electricity use from the association's shed, and keep an informal eye on their wellbeing.

The association also offers a space to residents of the nearby *coron*, a set of old mining back-to-back houses nestled at the end of a dead-end street. Until recently, the residents had very few communal gathering spaces. Today, they often sit on one of the garden benches at La Cité s'invente and are present at every major event organized by the association. The older residents, including Mr. Phillipo, enjoy recounting stories of their youth on the spoil heaps, when the mounds were seen as marginal places.

These situations recall what Young describes as peri-capitalist spaces. He suggests that they can offer responses to pressing social and environmental needs, even as it remains difficult to fully escape capitalist logics (Young, 2023):

> *"Pericapitalist spaces need not only arise in wastelands; activists and scholars have articulated various alternative economic models that can be performed within urban centres under and alongside dominant capitalist systems. 'Cooperatives, post-growth organizations, common good organizations, community-supported agriculture, transition towns or ecovillages are', according to Schiller-Merkens, 'examples of alternative forms of organizing economic exchange' (Schiller-Merkens, 2022). Such alternatives promote feasible ways of undermining capitalist hegemony for those compelled to live and work under it."*

Conclusion

The many cases discussed reveal a rich ecology that offers a unique perspective regarding Terrils. Some of Wallonia's artificial summits have become spaces of informal use, sites of diverse ecosystems and interspecies interactions, and places that function independently of institutional power structures. In this way, they can be compared to Anna Tsing's "*ruins of capitalism*", and share—albeit in highly diverse ways—many characteristics with other post-industrial wastelands. Numerous examples underscore this non-scalable abundance. In addition, these sites carry symbolic weight, evoking the memory of underground miners, to which these colossal mounds stand as silent witnesses.

On the other hand, the reappropriation of spoil heaps for territorial enhancement or project development, and their exploitation in various forms (resource extraction, energy production, or real-estate repurposing), strips them of their ruin-like status. They are mobilized to serve new capitalist interests, contradicting the very notion of a wasteland or a ruin. This shift in status leads to the exclusion of various social groups, depending on the new function assigned to the spoil heap: heritage valorization, especially in a touristic sense, tends to exclude those forced to live on the slopes of artificial hills. The addition of real-estate developments brings a risk of gentrification for more precarious nearby populations. Resource extraction or energy production, beyond

undermining the symbolic meanings associated with these sites, also displaces all local uses: residents face pollution and tremors from construction, walkers are denied access, and non-human species are driven out, harmed, or eliminated by mining activity.

This research highlights the need for critical attention to areas undergoing such transformations. Spoil heaps should be observed as complex objects, capable of generating unique environments shaped by the intersection of informal uses and the interactions between humans, non-humans, and non-humans among themselves.

Lastly, this apparent dichotomy between vernacular Terrils (as ruins or wastelands) and spoil heaps reappropriated by power (in the service of capital) remains imperfect. There are indeed examples of multiple uses that combine features of both typologies. How, then, can we simply label a Terril as an industrial wasteland? And how can we stop at the idea of their mere capitalist exploitation? This conclusion highlights the importance of combining critical geography with more pragmatic perspectives, especially those that emphasize the value of a multispecies anthropology.

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How Can Offshore Wind Be Just? A Reflection on Energy Accumulation, the Blue Economy, and Future Strategies

Abstract: With the increasingly rapid deterioration of the climate, the European Union has established the goal of net-zero emissions by the year 2050 and the increase of offshore wind power generated. While regarded as a technological innovation and high-level solution, offshore wind power raises issues of energy justice, environmental effects, and territorial ownerhsip. This paper examines offshore wind developments within the framework of energy accumulation, blue economy and just green transition strategies. It begins by questioning the dominant discourse of green growth by arguing that current developments illustrate a logic of energy accumulation rather than a break with fossil dependency. The following section examines how the blue economy rearranges ocean spaces, generating conflicts, dispossession in terms of their use, and possible environmental degradation. The last section enters a conversation on approaches to a more just 'green' energy transition that promotes hybrid models that fuse technological innovation inherent in eco-modernism with participatory governance and socio ecological cognisance. This article argues the importance of conceptualise the energy transition not just a technical process, but a political, social, and environmental one, built on trust and community participation.

Keywords: Energy transition; Offshore wind energy; Europe; Blue economy; Just transition.

[1] The paper was written under supervision of Dr. Antonio Pusceddu, Centre for Research in Anthropology (CRIA), Iscte University Institute of Lisbon

Introduction

Amid accelerating global environmental change, the European Union (EU) has set ambitious targets to mitigate climate degradation and achieve net-zero emissions by 2050 (European Commission, 2023). A central element of this strategy involves expanding offshore wind capacity across member states, aiming to reduce reliance on fossil fuels and shift towards renewable sources in electricity generation. However, for offshore wind to grow effectively and sustainably, it must ensure the protection of marine ecosystems, many of which are already under significant stress, and promote social justice for all affected stakeholders. The urgency of reaching net-zero has driven a search for rapid, effective solutions. Yet, this raises critical questions: Can offshore wind development address both ecological concerns and societal inequalities? Is offshore wind development contributing to a meaningful energy transition, or merely reinforcing patterns of energy accumulation? How does the blue economy shape or undermine its potential for justice? Who and what is at stake? What strategies can guide a global transition to net-zero emissions in a fair and sustainable manner?

This article critically explores these questions by focusing on three main sections. The first, *'What kind of transition are we building? Energy accumulation and resource dependency'*, interrogates the dominant green growth narrative by examining the dynamics of energy accumulation and resource dependency. It reflects on the promises of energy transition embedded in net-zero ambitions and offshore wind expansion, questioning whether these developments require rethinking. The second section, *'Tensions in the blue economy'*, investigates how the blue economy framework generates conflicts over ocean space, altering marine life and spatial governance while claiming to balance economic growth with the sustainable use of marine resources. It considers who and what are at risk in this process, highlighting the socio-ecological tensions raised by large-scale offshore wind projects. Finally, the third section, *'Strategies towards a just green future in*

offshore wind', considers potential strategies to promote a 'just green transition'. This includes proposals to reorient eco-modernisation towards models that emphasise community participation and deliberation, moving beyond technocratic, top-down approaches to those that acknowledge the complex interrelations between society, technology, and the environment.

What kind of transition are we building? Energy accumulation and resource dependency

The energy transition has increasingly been framed by narratives that encompass the climate emergency and the promises of technological innovation as the solution. As previously stated, this narrative constructs a 'green' future, anchored in the replacement of fossil fuels by renewable energy sources such as offshore wind power. However, as Tooze (2025) makes clear through Fressoz's work *More, More and More* (2024), the current energy transition is not a shift from one energy source to another, but rather a new phase of 'energy accumulation', a term Sovcaool (2016) also offers as a more accurate one to describe these transformations, carrying large-scale political, economic, and ecological implications. In addition, Fressoz (2024) also notes that 'energy symbiosis', or energy mix, exists in a supportive relationship between energies and materials. Furthermore, no energy source has ever been completely abandoned in favour of another to this day. In fact, as Günel (2022) highlights, energy consumption from all sources has increased significantly over the past two centuries.

Although the energy transition (therefore referred to as energy accumulation) is complex and contextual. Thus, it becomes essential to rethink it beyond the technical perspective and analyse its material and symbolic effects, through large-scale infrastructural expansion that reinforces industrial and geopolitical logics. This leads to contradictions that need to be addressed, particularly regarding the costs associated with the future of 'green' energy (Knuth et al., 2022), the dependence on

oil in the economic, cultural, and energy spheres (Szeman, 2019). For example, the impact of offshore wind development in Europe at the global scale is to be considered, especially given the rapid and increasing growth of countries such as China, India and other southern and southeastern countries that primarily and abundantly use coal and other fossil fuels and they see their economy rise (Internacional Energy Agency, 2024), also including the development of renewable energy in China's case. According to the 2024 *World Energy Outlook* by the International Energy Agency (IEA), the global energy landscape highlights that Europe alone cannot resolve the climate crisis. Even if it meets its climate targets, the overall impact will be insufficient to alter the current trajectory, due to the continued reliance on fossil fuels needed to develop other rapidly developing major economies.

In addition, Europe itself has a problem that is often overlooked regarding the substitution of fossil fuels. Although there is an attempt to shift towards electrifying countries through renewable energy, Szeman (2019) points out the dependence on oil in several spheres. This dependence on fossils, specifically on petrochemicals, as Hanieh (2021) notes, presents significant challenges for future energy transitions due to the deep integration of these materials into commodity production and the absence of viable alternatives. Petrochemicals are not solely an energy source, but an essential and versatile material used for a wide range of products (e.g., plastics, fabrics), making it difficult to envisage a substitute and a future without oil while this remains unchanged.

Besides the dependency on petrochemicals and the challenge of substituting petrochemicals in the production, Pitron (2025) highlights the 'new dependency' of renewable energy and contemporary life at large by introducing the 'war' for rare materials, which are necessary to build the renewable technology such as wind or solar, and electronic equipments such as phones and computers. Although this imposes a significant problem of extractivism on land, the sea has been at the forefront of discussions regarding deep-sea bed mining to extract such materials. As Campling & Colás (2017) point out, the ocean ceases to be a

territory and it becomes a space of negotiation and contestation over sovereignty and marine resources when analysed as a space of significant economic value within global capitalism, frequently appropriated by major economic actors.

Rethinking offshore wind?

In contemporary debates on climate change, the energy transition is often presented through narratives of urgency, promise, and a desire to attain a sustainable future, as evident in the creation of ambitious environmental targets. The EU is an example of this phenomenon, having set the goal of achieving net-zero, or carbon neutrality, by 2050 (European Commission, 2020), by pushing its member countries to comply and reach targets. To achieve its goals, in 2023, the EU released the 'Green Deal Industrial Plan', which aims to increase the competitiveness of net-zero technologies and products required to meet the EU's ambitious targets. This entails phasing out fossil fuels and transitioning to renewable energy sources, such as wind, solar and hydro, also known as 'green' energy.

Although development efforts are underway across renewables, the EU set a target to develop offshore wind, with plans to expand its current capacity from 12 GW to 300 GW (European Commission, 2020), meaning a 2400% increase in capacity by 2050. Therefore, the potential of offshore wind plays a central role in many national climate strategies, and it is frequently promoted as a 'win-win' situation by enabling emissions reduction, stimulating economic growth, and creating 'green' jobs. Allan et al. (2020) demonstrate how offshore wind development can simultaneously reduce carbon emissions and boost economic growth in the UK, one of the leading countries in this technology, particularly when local content is maximised, potentially generating up to £30 billion in cumulative value-added. Similarly, Li et al. (2022) explored how technology advancements could significantly reduce the environmental impacts of offshore wind energy by 2040. Yet, this techno-optimism framing of the transition, which uses offshore wind as a strategy in national economies to

achieve emission reduction goals, risks reducing a deeply political and social transformation to a matter of infrastructure replacement. As Kothari et al. (2019) challenge, without belittling the work being done on renewable energies, the technology and market mechanisms cannot solve environmental problems without fundamental socio-cultural transformations.

More recently, research shows contrary evidence regarding the profitability and financial difficulties of offshore wind developments. Sathler et al. (2024) investigated how operating losses, such as failure rates or potential curtailment, affect offshore wind projects. They found that under unfavourable conditions, these losses can increase expenses by up to 21.6%, thereby undermining the profitability of such projects in the mid and long term. Therefore, if offshore wind projects turn out not to be as profitable as initially estimated, will the industry stay put? Will offshore wind continue to be regarded as the 'promise' of the energy accumulation? What socio-cultural transformations need to happen, and what is at stake?

Tensions in the blue economy

Barbesgaard (2018) and Bennett et al. (2019) have pointed out that the blue economy is not a single, widely accepted idea. Its meaning can change based on institutional, economic, and geopolitical contexts, since 'blue economy' is a broad category where fisheries, aquaculture, shipping, offshore energy, coastal tourism, marine biotechnology and others fall under.

In this paper, the blue economy is defined as the sustainable use of ocean resources and ecosystems for economic growth, therefore aiming to balance social justice, environmental preservation, and economic development (Silver et al., 2015; Voyer et al., 2018). Although the blue economy is frequently depicted as a mutually beneficial approach to economic growth and sustainable use of marine resources, critical studies alert that it may facilitate 'ocean grabbing', the appropriation and commercialisation of marine spaces and resources by influential entities,

resulting in the marginalisation of local communities and traditional ocean users (Barbesgaard, 2018; Childs & Hicks, 2019). Additionally, Barbesgaard (2017) argues that the expansion of economic activities at sea is presented as both inevitable and desirable, despite often resulting in the marginalisation of local communities and the destruction of marine ecosystems. This critique is central to the analysis of offshore wind energy, where the discourse of the 'green' transition may obscure dynamics of dispossession, exclusion, and environmental conflict. Therefore, the sea has increasingly been studied as a new space of accumulated activities and territorial disputes, where conservation logics meet exploitation logics.

Moreover, the expansion of offshore wind energy is part of a broader movement of ocean privatisation, whereby the sea is increasingly integrated into regimes of sovereignty, planning, and economic appropriation. The installation of these infrastructures, in turn, exemplifies the intersection of economy, environment, and politics as highlighted by Steinberg & Peters (2015), regarding how the ocean has been constituted as a political, epistemic, and ontological space. As such, within this framework, the sea is conceived as a territory governed by legal norms, such as Exclusive Economic Zones (EEZs), under state sovereignty as defined in the United Nations Convention on the Law of the Sea (UNCLOS), which aims to enable its productive and sustainable use. Offshore wind infrastructures embody this logic, functioning simultaneously as technical devices for energy production and as markers of a new territorial regime in which the ocean becomes a space of investment, contestation, and governance (Campling & Colás, 2017). These infrastructures thus form part of a spatial reconfiguration driven by the political economy of energy accumulation, raising questions on who has the power to determine the use of the sea, with what social, environmental, and political consequences, and for whose benefit. Consequently, offshore wind development has more at stake than energy production, carbon targets and financial gains. Whose and what is at stake with these developments?

Whose and what is at stake?

On the social level, affected communities (the 'whose') have little to no long-term gains. Although 'green' jobs are highly discussed as a 'win-win' situation to a given community likely to increase job opportunities or lower electricity housing-bills, Heffron & McCauley (2018) highlight that many developers either mobilise their high-skilled workers, thus not hiring local workers, or promise job creation that may not come or may be concentrated in brief construction phases. This paper does not aim to criticise companies' choice of personnel, but rather to highlight feelings of powerlessness in marginalised coastal populations characterised by labour precariousness and low community participation in the process of development. Researchers have highlighted this matter to reinforce patterns of dispossession tied to marine space, among fishermen, Indigenous groups, and coastal residents, which are frequently ignored in favour of economic valuations (Sovacool, 2016).

Additionally, multiple offshore wind farms can have significant cumulative ecological effects, particularly when placed on an already damaged marine environment (the 'what'). Nevertheless, recent studies underscore the potential of multi-use offshore wind farms, particularly their integration with aquaculture activities (e.g., seaweed and shellfish farming). This multi-use approach promotes a more efficient and sustainable use of marine spaces, aligns with global sustainability goals and supports blue economy models (Maar et al. 2023; Miranda et al., 2025). However, despite the rapid acceleration of offshore wind development, knowledge gaps persist on long-term and cumulative impacts on marine ecosystems. While some marine organisms benefit from artificial reef effects created by turbine foundations, other species face risks related to underwater noise, electromagnetic fields, and habitat disruption (Wang et al., 2024).

Additionally, the marine environment is increasingly crowded by a wide array of activities, such as commercial fishing, recreational activities, shipping, and subsea cable infrastructure. Offshore wind development, which requires occupation of large areas

for turbine installations, risks intensifying spatial competition and user conflicts. Thus, Marine Spatial Planning (MSP) has been emerging as a critical governance tool to ensure coherent and equitable decision-making across sectors. However, recent assessments reveal that MSP processes often lack integration across governance levels and struggle to ensure the inclusion of stakeholders, particularly smaller actors such as artisanal fishers and coastal communities (European Environment Agency, 2024).

In this context, it is essential to adopt an integrated and adaptive planning approach that considers ecological, economic, and social dimensions of marine development. This includes conducting robust environmental impact assessments, increading participatory governance mechanisms, and prioritising long-term sustainability to safeguard marine ecosystems and energy justice while supporting offshore energy developments.

Strategies towards a 'just green future' in offshore wind

Breewood & Garnett (2022) define eco-modernism as "an environmental philosophy rooted in the belief that technological progress can allow humans to flourish while minimising our impacts on the environment" (p. 4). In addition, this narrative of harmony between technological innovation and economic growth is characterised by the belief in the capacity of humankind to separate environmental degradation from economic development (Javed et al. 2025). However, this technological optimism often overshadows the social, cultural, and political dimensions of energy systems, particularly the need for behavioural change and community participation in the governance sphere (Kothari et al., 2019).

In the offshore wind sector, this translates into large-scale, capital-intensive projects that prioritise efficiency and aim to achieve rapid decarbonisation. According to Brand & Wissen (2021), green technologies are employed within the existing capitalist framework and tend to perpetuate unequal power re-

lations and global asymmetries, a pattern that offshore wind industry also risks reproducing. Therefore, offshore wind, if implemented uncritically, may risk creating new forms of marine extractivism if governance and ownership structures are not rethought. In other words, technological innovation alone, without fundamental socio-cultural transformation, will not suffice to tackle the ecological crises. In this context, achieving a *just* environmental and social transition requires more than technological deployment. The infrastructures and the transition need to be redesigned in the way energy is thought, not as an old commodity or service, but as a socio-ecological relation with its defining aspects being the result of the history of enclosure, labour, and territoriality (Bouzarovski & Simcock, 2017). While eco modernist approaches often avoid tackling issues of energy justice, both concepts are not contradictory to one another. Instead, a mixed strategy is feasible and needed since it could hold the potential of eco-modernist state-led investment, regulatory innovation, and technical capacity and, at the same time, provide strong procedural and distributive justice measures (Heffron & McCauley, 2017).

This hybrid model, as described, will be one that involves community participation, not just through representation, but by involving the community as a structural pillar. For example, this may mean either creating a benefit-sharing mechanism and governance structures that involve communities in the decision-making process in a substantial way (Szulecki, 2017). Another strategy is, for instance, descentralising energy production to create a more sustainable, resilient and flexible power system. As offshore wind moves towards the traditional power grid which have been designed in a hierarchical and centralised manner by having large-scale powerplants supplying energy downstream to consumers (O'Neil, 2022; Ingalalli & Kamalasadan, 2024), the implementation of a descentralised energy infrastructure- which involves a small scale production of energy which can operate independely or together with the main grid- is capable of re-imagening energy as a public good, ensures that marginalised voices

shape the process, and create a resilient future grounded in social and ecological justice which produces enough energy to meet the populations' needs while also promoting energy security (Boyd, 2017) and preserving the marine ecosystem.

Although offshore installation presents unique challenges regarding, for instance, physical remoteness, scale, and regulatory complexity of the projects, that should not be sufficient to disqualify energy infrastructure from such initiatives. On the other hand, these problems signal the need to speed up the task of having new strategies, governance and/or engagement models in the public sphere, allowing control, transparency, and equity (Park et al, 2024).

Additionally, for a real shift to take place, it must be based on broader strategic and structural conditions. To achieve such strategy, it is crucial to ask: Which social groups are in a better position to affect a just transition? Can a competitive, carbon-intensive state convert itself into a „green state" that can focus on people's welfare rather than private energy accumulation? (ref. Gough, 2017). Could a descentralised energy production be a solution? What political organisations could facilitate the process?

Although the issues and solutions raised could be interpreted as theoretical, the core idea of this article is to show the balance needed between efficiency and democratic participation, global scale and local place, profit orientation and social justice. As Satgar (2018) emphasises, 'green' transition strategies that overlook issues of class, race, and global power dynamics risk reinforcing existing power structures under the appearance of environmentalism. Nevertheless, this article leaves the question open for further research regarding whether offshore wind power must not lose its principles of being a sustainable energy source and become a site of 'green' energy accumulation or if the technology was conceived for accumulation and the difficulty it brings is in changing its trajectory of operation, especially regarding the lack of community participation. Still, offshore wind should be regarded as a potential area for environmental balance and energy democracy and envolvement, particularly in

coastal regions that have a history of being shaped by extractive industries and marginalisation.

In sum, to achieve a 'just green transition', this article proposes to reshape the social relations of the energy landscape, meaning that social justice becomes a part of the transition process as early as the planning stage of such projects, its source procurement, the allocation of resources and either revenue sharing or a new descentralised model of energy production. Only through a revision of the institutional and cultural settings that cover the offshore domain it is possible to ensure that the 'green transition' is not just a success in the technological innovation side but also socially and environmentally beneficial, which for that to happen must be based in trust between communities, the private sector and the state.

Conclusion

Offshore wind energy has emerged as a solution in the EU's strategy for climate mitigation by achieving a net-zero future. Nevertheless, this article has argued that offshore wind development must be understood not only as a techno-optimistic innovation to the ecological issue, but as a web that integrates deep political, ecological and social transformation. Moreover, framed within the broader discussion on energy accumulation and the evolving tensions in the blue economy, offshore wind risks replicating existing dependencies on resources and inequalities through top-down market driven approaches. Although the market is necessary for the production and acceleration of technical solutions, it is necessary to integrate other spheres in the green transition. As it is currently envisioned, the 'green transition' tends to prioritise large-scale infrastructure, economic competitiveness and techno-optimism, often sidelining questions of justice, community participation and agency, and long-term environmental stewardship.

Even though the promise of offshore wind is articulated through narratives of 'win-win' in its development, tensions are often

visible in the inefficient engagement with coastal communities due to ecological uncertainties and spatial conflicts at sea. Therefore, to move towards a 'just green transition', it is necessary to reimagine energy and the infrastructure not as a commodity or resource, but as a socio-ecological relation that, if done properly, can lead to an effective 'green' transition.

This transition would entail strategies such as adopting hybrid models that combine technological innovation for environmental solutions present in eco-modernism, while combining energy justice across all project phases and envisaging new models of transition such as the descentralisation of energy production. Additionally, governance frameworks must be restructured to support more inclusive, adaptive, and community driven participation in offshore wind developments, such as ownership models that could be rethought to redistribute benefits and responsibilities more equitably across affected stakeholders.

Lastly, offshore wind can contribute to the net-zero goals only if its development is embedded within broader strategies that challenge extractivist paradigms and prioritise long-term ecological integrity and social well-being. The question is not just how much energy we can produce or how 'clean' it is, but also who decides, who benefits, and at what human, non-human and economic cost.

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Daria Laricheva[1]

Russian Energy Transition: Analysis of Public Perceptions, Political Institutions, and Energy Mix

Abstract: As the world's second largest producer gas and the third largest producer of oil, Russia is one of the first countries in the list of world's biggest polluters, which produces major negative environmental impact. Nevertheless, response of key political institutions remains two-fold, sending different messages to its international and domestic audiences. On the one hand, Russia actively engages in international discussions on environmental protection and mitigation of climate change effects. On the other hand, decision-makers continue to disregard alternative energy sources, and the level of citizens' concerns about climate change and demand for policy change remain relatively low. The disruption of traditional export routes and international sanctions, together with forecasts on the global peak of oil demand pose big challenges to the traditional dominants of Russia's budget revenues. Russian regions have a big potential for development of renewable energy, but the sanctions and counter-sanctions, together with political and social ignorance of the issue, serve as barriers for their development. This research analyses the links between energy production of Russian regions and the citizens' perceptions of the ecological situation on the regional and national level. The study aims to identify opportunities for development of renewable energy sources and the barriers it faces among policy-makers and energy consumers.

Keywords: energy transition, ecological awareness, Russian energy policy, political institutions, institutional change.

[1] The paper was written under the supervision of dr. Anton Kazun, director of the Institute for Industrial and Market Studies, and assistant professor of the Faculty of Economic Sciences, Department of Applied Economics.

Introduction

At international forums/panels on climate change and calls for collective action, the Russian Federation is joining the ranks of other major global players such as the United States, the Gulf States, India, the European Union, China and others in expressing concern about the social, environmental, economic and political consequences caused by the human impact on the environment. However, the stumbling block is energy policy and the demand for an energy transition, which the major hydrocarbon exporters are in no hurry to put into practice, as it threatens one of the strategic sources of government revenues.

Despite the fact that the main sources of greenhouse gas emissions are transport and hydrocarbon production, the goal of Russian energy policy is rather to improve energy efficiency and modernize existing (traditional) production facilities than to develop new technologies to replace fossil fuels.

There are many studies that demonstrate how beneficial the shift to renewables can be (Leiserowitz et al. 2006; Sovacool 2011, Szulecki 2018; Patzelt & Shepherd 2011) and their positive industrial impact (Aydoğan & Vardar 2020; Chopra et al. 2022; Pata 2020), make forecasts on its development and explain some of the obstacles for its promotion (Al-Saleh 2009; Fesenfeld et al. 2022; Söderholm et al. 2011), but there is little research on what factors may actually help to facilitate the transition towards less carbon--intensive energy in countries that are reluctant to diversification of the energy mix.

When it comes to any social, political or economic structure, we talk about institutions – and energy policy is no exception. Which factors facilitate institutional change and how this change may lead to more sustainable energy sector? North (1990) writes that one of the major reasons for institutional transformation is change in relative prices – when the current practices are not efficient anymore, and the institution is faced with exogenous or endogenous changes (for example, availability of natural resources, technological advancements, wars or economic crises). This

study is aimed at investigating limiting factors of political and social nature, which limit the scope of climate change action on the national and subnational levels.

Institutional evolution and energy transition

According to March and Olsen (2008), the central problem of institutional adaptation lies in balancing between exploration (search for new forms and structures, analysis of other experiences and experimenting) and exploitation (using existing knowledge, resources, procedures which were used before and constitute a part of social, cultural or historical legacy). Selection of policy instruments in such areas as energy requires consideration of interests of all stakeholders – taxation for emissions might be the simplest way, but it puts a big burden on industries and they trigger resistance from business (Spash 2010). Therefore, the ratio behind instrument choice is to meet the demand for energy transition while having consent of all big interest groups. The prerequisites of energy-related climate policies include institutional capacity, governmental desire to take into account the interests of the energy-intensive industries and public demand for energy transition (Hughes & Urpelainen 2015; Zawadzki et al. 2022).

Among the factors which influence development of clean energy are also perceptions of the people and business. Roberts et al. (2018) highlight three most important factors, which affect low-carbon transition policies: coalitions which create policy conditions (may either facilitate change or become a barrier), feedback and stability (whether or not it is positively assessed by policy-makers and the public) and the context (local factors such as institutional rules may require different approaches in the same policy fields). The opponents slow down policy changes by lobbying, doubting scientific evidence and exaggerating costs, but major policy changes require the breakdown of path-dependency and status quo preservation. The third factor, the context, defines "the nature and speed" of transition due to a variety of economic environments, cultures, institutions (Roberts et al. 2018).

While many forecasts on the future of green energy are cautious and flesh out the multitude of obstacles for promotion of climate change mitigation policies (Al-Saleh, 2009; Barradale, 2010; Söderholm et al., 2011; Brandt & Svendsen 2022), it looks like little attention is paid to the institutional factors which affect energy transition, and especially to the factors of political and social nature. One of the institutional constraints or barriers for energy transition was explained by the Choice Awareness theory (Lund, 2010), which demonstrates that successful policy changes require public acknowledgement of existing alternatives to the status-quo (preservation of which is beneficial for particular sectors, such as oil and gas producers) together with readiness of organizations and the public to bear the costs for a common good and ensure good-quality sociotechnical transition (Longhurst & Chilvers, 2019). According to the theory of belief formation (Bayer & Genovese, 2020), public awareness of climate action's positive effect on sectors of economy may contribute to more ambitious decarbonization goals.

Methodology

This study employs a mixed-methods research design that integrates qualitative conceptual analysis with quantitative data to examine the relationship between public perceptions, institutional dynamics, and the development of renewable energy in Russia. These are analyzed through the theoretical lenses of institutional change (North, 1990; March & Olsen, 2008) and choice awareness theory (Lund, 2010), which emphasize the role of belief systems and institutional inertia in shaping policy outcomes.

Data collection combines primary survey results from the 2024 Russian Field (n=1600) and the International Center for the Study of Institutions and Development (ICSID) (n=10 400) across both on the national and regional levels, with secondary data from official sources such as the Accounts Chamber, Russian Energy Agency (REA), BP Statistical Review, and the International Energy Agency (IEA). The surveys explore perceptions

of climate change and satisfaction with environmental quality. Analytical methods include descriptive statistics that aims to identify patterns in public opinion and CO_2 emissions.

The key research question is what is the relationship between public perceptions on ecological issues and the composition of regional energy consumption? The study also aims to look at the existing policy framework and evolution of climate policy overtime.

The qualitative part includes overview of federal and regional policy measures, together with analysis of key policy-makers. While limitations include the self-reported nature of survey data and restricted access to disaggregated regional energy statistics, this methodological approach allows for a multidimensional analysis of how energy policy, institutional capacity, and social awareness interact in shaping the trajectory of decarbonization in Russia.

> The Russian Federation provides a striking contrast to both Western liberal democracies and developing countries. Studying it enhances comparative analysis by demonstrating the impact of institutional variation on transition trajectories. Russia's institutional framework can hinder or redirect efforts towards renewable energy, making it a pivotal case for understanding how institutional legacies shape transition pathways. The resistance illustrates how political institutions can delay or distort transition efforts, offering valuable insights for other resource-dependent states in a similar position. Studying Russia helps us to understand how non-democratic regimes approach energy transitions, often prioritizing regime stability over environmental goals.

Energy sector in Russian Federation: barriers and opportunities for change

Russia is one of a few examples of a resource-rich countries, which went through both privatization and partial re-nationalization of large energy sector in the last 30 years. Taking into account a role of fossil fuels in the national economy, development of alternative energy sources met both formal and informal institutional constraints.

For the last 20 years the average share of fossil fuel tax revenues of federal budget reached 40% (sometimes rising to 50%), which certainly makes Russia sensible to the global energy demand. At the same time, Russia is faced with negative consequences of climate change and there is a growing global demand for decarbonization, so there are visible crossroads – keep energy policy business-as-usual or invest in energy transition.

As a top-3 crude oil producer, Russia is very dependent on fossil fuels both in terms of domestic consumption and export. According to the Accounts Chamber data (2000-2023), the share of fossil fuel revenues fluctuated for the last twenty years, sometimes reaching 51% of all revenues of the federal budget (with the total average of around 40%) (Fig. 1).

Due to the sanctions that were imposed in 2022, oil production will face constant reductions until 2028 (IEA, 2023), which poses a big threat to the oil export revenues. As a result of lower average annual price of gas and Urals oil, reduction in mineral extraction tax and export duties revenues, transition of fields to an additional income tax, the share of oil and gas revenues in the federal budget dropped to a pandemic level (28%) by both relati-

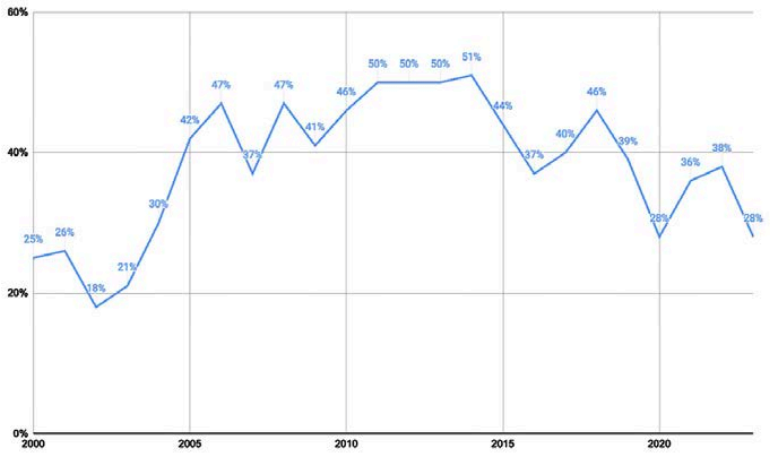


Fig. 1 Share of oil and gas revenues in the federal budget, 2000-2023, %. Source: compiled by the author based on the Accounts Chamber data (2000-2023)

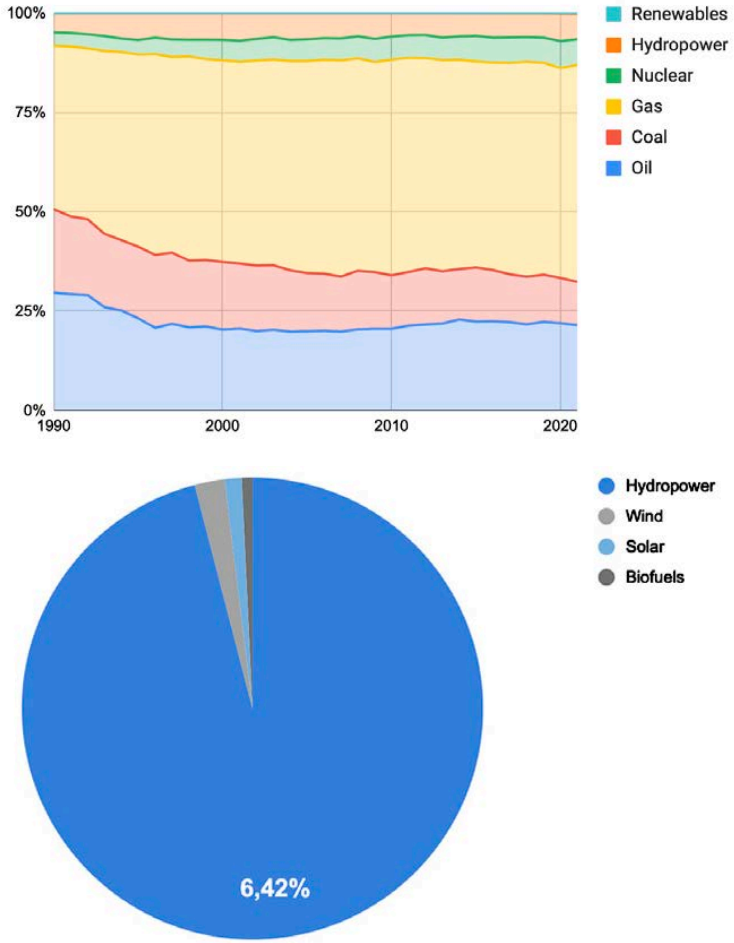


Fig. 2 Total energy consumption by source, Russia (1990-2022) & share of renewables (2022). *Source:* compiled by the author based on BP Statistical Review of World Energy (2023)

ve and absolute numbers. The mining volumes are also facing a decline, however they were expected to grow back in 2024 (as well as the overall share of oil & gas revenues in the federal budget) (Accounts Chamber, Ministry of Economic Development 2023).

The volume of "non-hydrocarbon" primary energy consumption (hydropower, nuclear fuel, and renewable energy sources) has been rising by an average of 1.5% yearly since 2015 (the solar and

wind segments are leaders in terms of growth rates). The energy consumption by source demonstrates practically no change on energy balance since 1990 (Fig.2). The share of renewable energy is about 7% in total, and these are the historical peak numbers. However, the growth rates compared to other sources is insignificant.

The goals set for the share of renewable energy were first set in the Decree of the Government of the Russian Federation in 2009, that defines the values of target indicators for the volume of production and consumption of electric energy using RES (renewable energy sources), except for hydro plants with an installed capacity of more than 25 MW), calculated as the share of electricity production based on RES and its consumption in the total volume of production and consumption in Russia (in 2009 it was <1%, the target for 2024 was 4,5%, for 2035 – not less than 6%). Although if we look at the data on energy production by source, we would observe that the share of renewables is not increasing according to the plan. Since 2009 the share of renewables (wind, solar and bioenergy and others) increased from 0.1% to 0.6% (without the hydro energy) (Fig. 3). As we can see on Fig. 3, 68,21% of all CO_2 emissions come from electricity, gas and

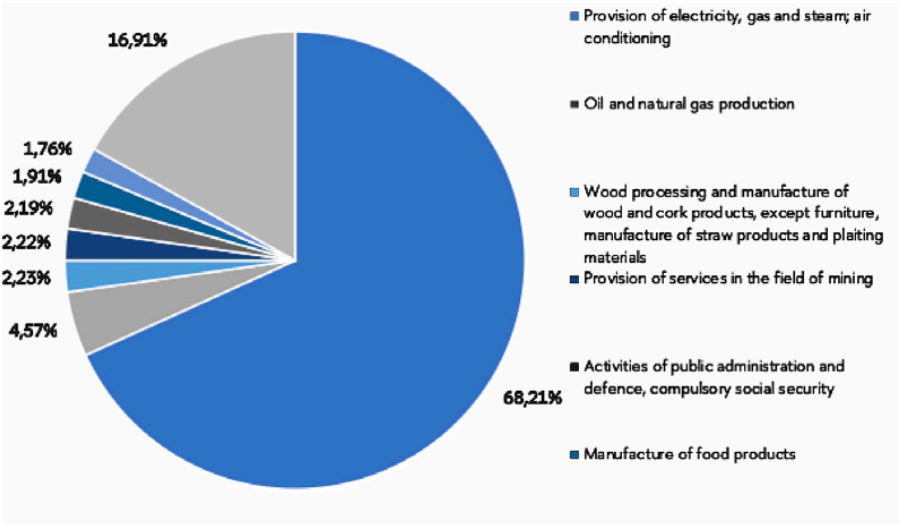


Fig. 3. CO_2 emissions by source, Russian Federation, 2023. *Source:* compiled by the author based on the Russian Federal Agency of Statistics (Rosstat) (2023)

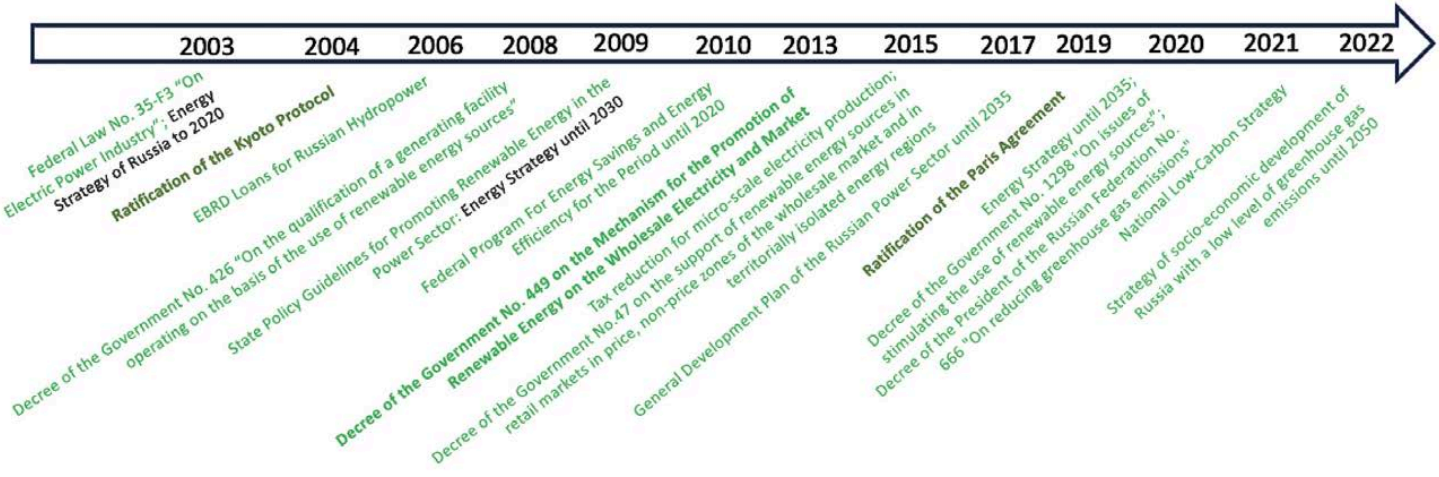


Fig. 4 Timeline of the most important policies and normative acts on renewable energy in Russia, 2000-2023 (green – in force, black – ended) *Sources:* compiled by the author based on the data from Government of the Russian Federation website (2023), IEA Policy Database (2023), Lanshina (2018)

steam supply, that is why it is an important factor in analyzing current state of affairs on the road to national decarbonization.

According to the Russian Energy Agency, the types of RES in different regions of Russia vary significantly due to the geographical location, terrain features and climate diversity. In all regions of the country there are one or two types of renewable energy sources, the operation of which can be economically justified, and in some regions all types of renewable energy sources are available (for example, the Republic of Dagestan). Today, state support for the development of renewable energy in the country goes in several main areas (Russian Energy Agency, 2022):

- construction of RES power plants operating in the wholesale electricity and capacity market;
- construction of RES power plants operating in the retail electricity markets;
- construction of RES power plants operating in technologically isolated and hard-to-reach areas;
- development of the microgeneration market based on RES.

If we look at the timeframe of the major policy adoptions in the Russian RES sector, we may see a limited set of measures developed since the beginning of the century (Fig. 4). The major share of the documents are plans, guidelines and strategies, mostly setting goals and recommendations for diversification of energy mix and development of new RES technologies.

The quotas for renewables set by the Governmental decrees were changed three times because of the expired (or unclaimed) quotas up to 85% in 2014 to 59% in 2017 (only solar energy quotas were almost fulfilled due to the existing big solar business, mostly owned by the subsidiaries of state-owned corporations, such as PJSC RusHydro, PJSC RusAtom, PJSC RusNano (Association of Renewable Energy Development 2022).

The shortcomings of Russian policy are the lack of a carbon pricing and monitoring mechanism, poor planning for the expansion of renewable energy sources, and counterparty risks.

Researchers highlight that Russia has too much formal procedures involved in setting up a grid-connected renewable energy generating plant, such as a strict local content requirements or necessary conditions for getting an affordable loan (Russian Energy Agency 2022). It means that although Russia has established a RES regulatory framework that is fairly robust (even though is not very diverse by measures or policy adopters, as it is shown in the Figure 3), the implementation of that framework has been rather subpar due to issues with the bureaucracy and Russian investment climate (Lanshina et al. 2018). Overall, the main factor of insufficient attention to the development of renewable energy sources in Russia is its low economic competitiveness in relation to fuel energy (prices and tariffs for electric and thermal energy in areas of centralized energy supply in Russia are significantly lower, than in other countries) huge reserves of fossil fuels along with a large reserve capacity of the interconnected energy systems (from 3 to 16 GW) with low growth rates of electricity consumption (forecast growth is 1-1.3% annually) (Russian Energy Agency 2022).

Russian Unified Energy System (UES) is divided into seven power systems in the South, Middle Volga, North-West, Center, Urals, Siberia and the East with a large area of isolated energy systems (which includes 71 regional systems) with five territories of technologically-isolated territories (Chukotka Autonomous Okrug, Kamchatka Territory, Sakhalin and Magadan regions and power systems of the northern part of the Republic of Sakha (Yakutia) (Russian Power System Operator 2022). These remote territories face a growing energy insecurity, but at the same time have a great potential for renewable energy sources (such as hydro, solar and wind) and electricity export opportunities to China, Japan and South Korea (from Siberia and Far East in particular). The main problems of energy supply to such areas are long-distance transport and complex logistics of fuel delivery, with limited timing of seasonal delivery to hard-to-reach areas. Energy supply in isolated areas comes mainly from low-power diesel plants, which leads to low supply efficiency and high electricity production costs

Table 1 Policy mix of climate change action, Russian Federation, 2000-2023. *Sources:* IEA Policy Database (2023), IPSOS (2022), Russian Field (2024).

Policy mix (number of policies by type, 1990-2023)	Key policy actors	Public demand for policy change
Regulations (21) Trade policies (16) Preferential trade agreements (15) Framework legislations (7) F-gas regulations (7) Safety standarts (5) Minimum Energy Performance Standarts (MEPS) (3) Energy codes for new buildings (2) Incentives and investments (2)	**Government:** President, the Government (the Ministry of Energy, the Ministry of Economic Development, the Ministry of Industry and Trade), the State Duma Committee on Energy, the Federal Agency for State Property Management	Lower concerns (29%) about climate change than the global average (48%) (IPSOS, 2022). 73% report the evidence of climate change in their living area (Russian Field, 2024).
	Biggest state-owned or politically-exposed energy business: PJSC Federal Grid Company of Unified Energy System, PJSC RusHydro, PJSC RusAtom, PJSC RusNano, PJSC Lukoil, "Hevel Group", LLC "LUKOIL-Ekoenergo", PJSC "Oil Company Rosneft" and its subsidiaries, PJSC "Gazprom" and its subsidiaries **Private producers of RES technologies:** Unigreen Energy, Forward Energo, Unipro (until transfer to the interim administration of the Federal Agency for State Property Management in 2023);	
	NGOs: Russia Renewable Energy Development Association (RREDA); Association "Non-profit partnership Market Council for organizing an effective system of wholesale and retail trade in electrical energy and capacity"; Russian Association of Wind Power Industry; All Russia s ociety of inventors and rationalizatiors (VOIR); National Association of Secondary Material Application (ASMA); Association Resurs	

(together with higher rates of carbon emissions) (Lanshina et al. 2018, Suslov 2020). In the absence of decentralized energy sources, the problem is solved by installing diesel power plants, but this is neither an efficient nor sustainable way out. Nowadays this need is also justified by the increasing energy demand together with growing prices of traditional energy sources, worse energy

supply, more expensive maintenance services of the existing power systems (Shepovalova 2015; Tikhomirov & Tikhomirov 2018).

In general, institutional framework of Russian energy sector has shown a growing interest in energy transition, the state produced a number of new legislative initiatives of recommendations, regulation and strategies, however the scope of adopted policy instruments remains limited to one mechanism, while the policy initiative continues to belong to federal executive bodies, not diffusing to regional level, and at the same time not addressing the subject of public awareness, which could have encouraged a demand for more renewable energy sources from consumers (Table 1).

However, as the it was mentioned earlier, the scope of adopted measures remains rather limited. The short period of vivid attention to the issue of global warming (especially in the aftermath of 2010 heatwave) was during the term of President Dmitry Medvedev – his plan of modernization included wide range of climate change actions, but the measures remained only partially or not realized at all. Previous works on Russian climate initiatives identify policy response as disproportionate – the underreaction is claimed to be intentional (Yagodin, 2021; Henry & McIntosh Sundstrom, 2012). The resistance towards development of more subtle policy measures is produced by industrial lobbyists, such as the Russian Union of Industrialists and Entrepreneurs (which includes senior management of key hydrocarbon producers Gazprom, Rosneft and Novatek) (Gershkovich, 2019).

Table 2. Rating of the Russian federal district, based on the share of people NOT satisfied with the environmental quality (grade <5).

Federal District	1	2	3	4	Total %, <5
Siberian	21,6%	5,0%	10,4%	7,0%	46,0%
Southern	17,8%	5,7%	9,6%	5,2%	40,9%
Urals	14,3%	3,9%	10,0%	6,8%	36,6%
Volga	12,6%	4,4%	7,4%	7,7%	32,7%
Far Eastern	12,1%	5,4%	6,4%	9,1%	30,9%
Central	13,6%	3,3%	6,8%	7,8%	30,4%
North-Western	10,6%	3,1%	7,3%	8,4%	28,8%
North-Caucasian	9,4%	1,6%	5,8%	8,3%	22,0%

Table 3. Rating of the Russian regions, based on the share of people NOT satisfied with the environmental quality, >33%.

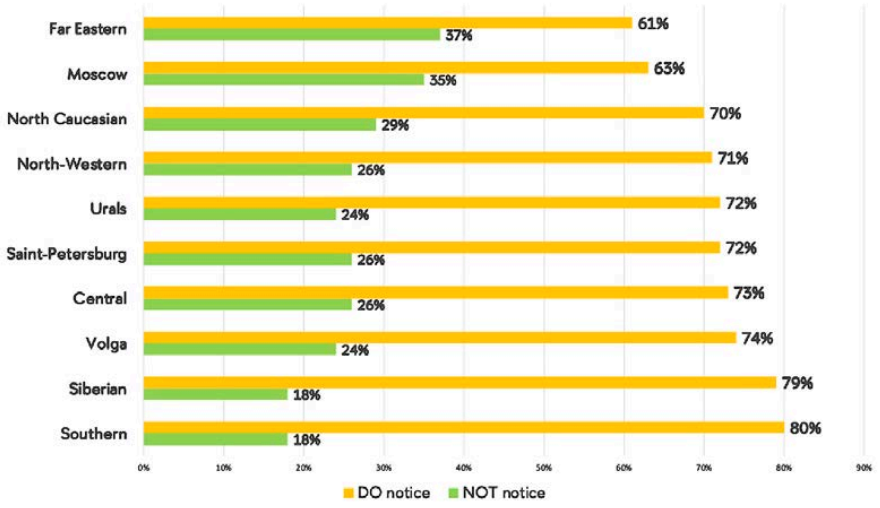
Region	1	2	3	4	Total %, <5
Astrakhan region	29,7%	8,8%	11.0%	9,9%	59,3%
Kemerovo region	31,7%	5,2%	12,7%	8,6%	58,2%
Krasnoyarsk region	24,2%	8,7%	16,4%	8,7%	58,0%
Rostov reg ion	24,3%	7,0%	11,3%	7,7%	50,4%
Omsk oblast	24,2%	7,8%	11,8%	6,5%	50,3%
Orenburg region	20,0%	7,8%	12,8%	8,9%	49,4%
Tula region	26,1%	4,2%	13,3%	5,5%	49,1%
Irkutsk region	20,5%	2,9%	9,0%	15,7%	48,1%
Chelyabinsk region	19,0%	4,6%	13,1%	9,2%	45,8%
Ryazan region	18,1%	7,6%	8,6%	11,4%	45,7%
Lipetsk region	20,0%	2,2%	13,3%	8,9%	44,4%
Sverdlovsk region	16,7%	4,8%	9,9%	10,2%	41,6%
Volgograd region	17,7%	5,4%	9,9%	8,5%	41,5%
Samara region	18,6%	5,3%	9,6%	7,8%	41,3%
Kursk region	19,6%	3,9%	6,9%	10,8%	41,2%
Leningrad region	15,5%	2,8%	4,2%	18,3%	40,8%
Ivanovo region	18,3%	6,3%	8,7%	7,1%	40,5%
Vologda oblast	22,4%	3,3%	7,9%	6,6%	40,1%
Republic of Bashkortostan	18,9%	6,1%	5,7%	8,7%	39,4%
Novosibirsk region	20,2%	4,4%	7,7%	6,0%	38,3%
Saratov region	14,1%	3,2%	11,3%	9,3%	37,9%
Arkhangelsk oblast	17,0%	5,9%	9,8%	4,6%	37,3%
Belgorod region	17,3%	2,5%	8,0%	8,6%	36,4%
Murmansk region	8,7%	5,8%	11,5%	8,7%	34,6%

The challenges for the nation arising from its reliance on the conventional energy mix include the depletion of traditional hydrocarbons, detrimental effects on the environment and climate, obstacles to international energy technology cooperation, rarely predictable fossil fuel prices, and rising competition at traditional energy markets (Ermolenko et al. 2019). As we can see from the performed analysis, Russian policies are not diverse in terms of types (both in terms of number, policy entrepreneurs

and measures), and there is a clear lack of educational and public campaign initiatives, even though Russia has a huge potential for development of renewable energy, while the industrial sector would benefit from both security of supply, energy efficiency and additional public benefits.

The next sections of this paper will closer investigate the relation between the regional electricity mix and public opinion on the matters of ecology and climate change. The preliminary hypothesis is that residents of more carbon-intensive regions (with bigger share of CO_2 and fossil fuels as the sources of electricity production) report lower evaluation of environmental quality. The second hypothesis concerns the level of awareness about climate change – that people who live in bigger and more industrialized areas demonstrate higher level of climate change awareness.

Fig. 5. Climate change awareness by Russian federal districts, Russian Field, n = 1600



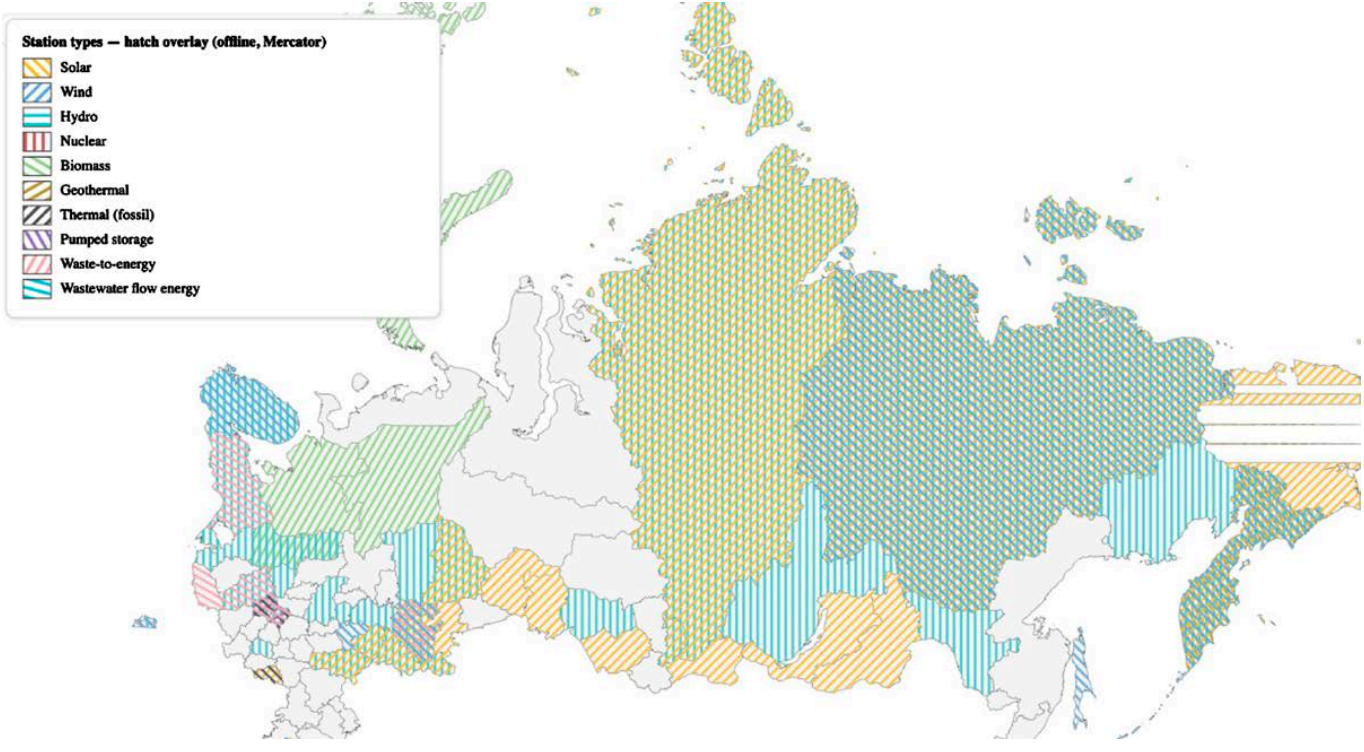


Fig. 6. Map of electricity production by source, MWh, Source: Rosstat, 2024

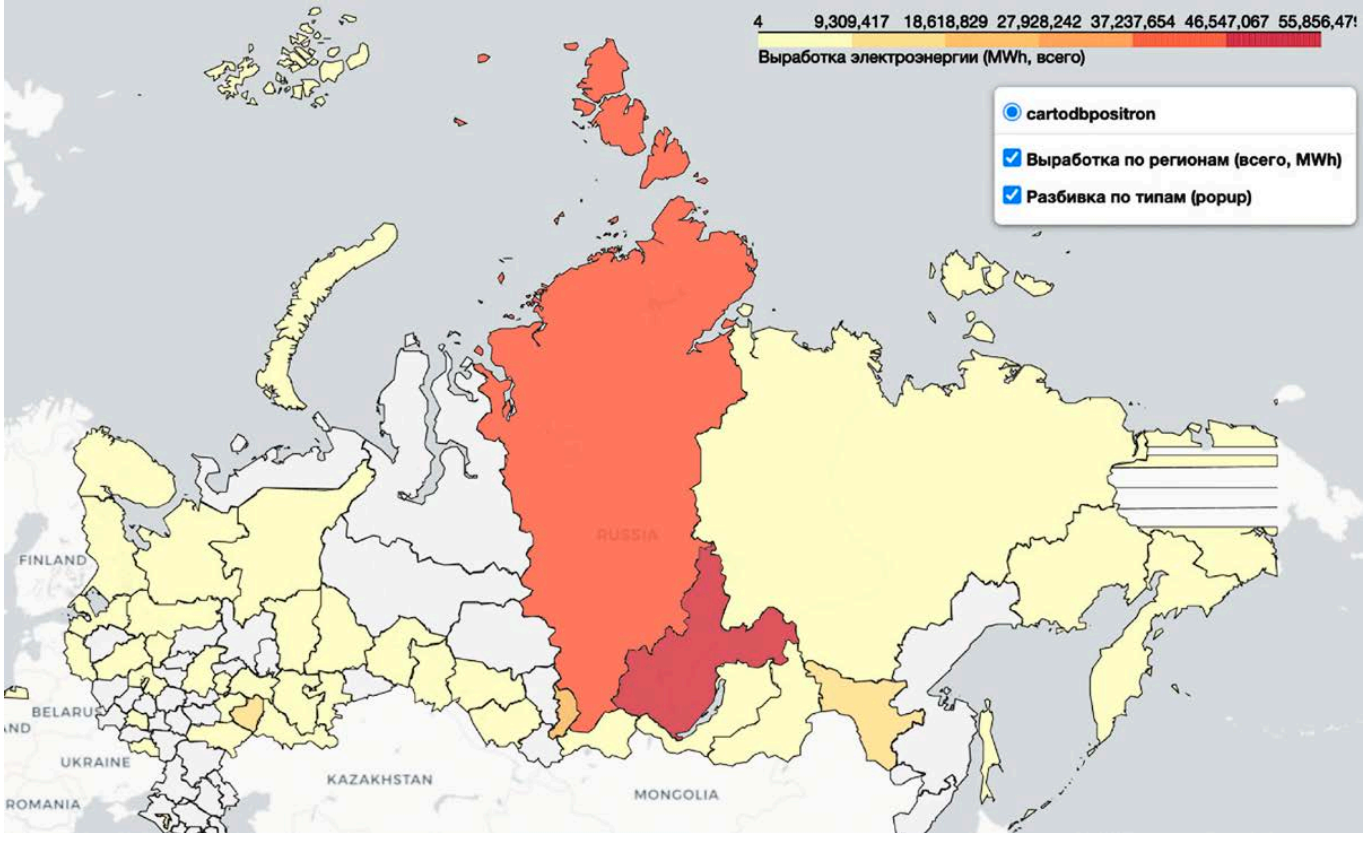


Fig. 7. Electricity production by the size of generation from renewable energy sources, MWh, 2024, Source: Rosstat

Public opinion: environmental quality and climate change

From a comparative perspective, Russian citizens report lower concerns (29%) about climate change than the global average (48%) (IPSOS 2022). According to the Russian Field survey in 2024, 72,3% of respondents in Russia notice climate change in their region in recent years. Climate change is more frequently felt by respondents from the Southern (80%) and Siberian (79%) federal districts. Climate change is mainly not noticed by citizens of Moscow (35%) and residents of the Far Eastern Federal District (37%) (Russian Field, 2024).

According to the results of the 2024 survey conducted by the International Center of Institutions and Development, 34,31% of Russian citizens are not satisfied with the quality of environment in their area.

Regarding awareness of climate change, 3/4 of respondents of the 2024 Russian Field survey (73%) noted that they feel climate change in their region. Respondents from the Southern Federal District (80%) and Siberian Federal District (79%) stated this most often. The highest proportion of those who do not feel the changes is observed in the Far Eastern Federal District (37%) and Moscow (35%).

Based on the comparison of two surveys' data, we may observe that residents of Southern and Siberian federal districts are both not satisfied with the quality of the environment in their living area and they notice the consequences of climate change more than respondents from other federal districts.

When we refer to the graph on CO_2 emissions, we see that 68,2% of all emissions come from electricity supply. In Russia, 62,6% of electricity is produced by thermal stations. Nuclear energy (18,9%) and hydro plants (17,4%) equally share the rest of the supply.

In the Siberian district the biggest electricity producers are hydroelectric stations (54,51%) and thermal plants (45,4%). In the Southern federal district thermal plants produce 41,8% and 37,8% is produced by the nuclear stations (Fig. 6-7).

Table 4. Electricity production by source, 2023, %

	Nuclear power plonts	Wind power plonts	Geo thermal power plonts	Hydro storage power plonts	Hydro electric power plants	Solar power plonts	power plants
Moscow	0,00%	O,OO%	0,00%	0,00%	0,06%	0,00%	99,45%
St. Petersburg	0,00%	0,00%	0,00%	0,00%	0,00%	00,00%	100,00
Far Eastern Federal Dist rict	0,52%	0,00%	0,61	0,00%	29,30%	0,39%	69,12%
Volga Federal District	17,44%	0,11%	0,00%	0,00%	12,70%	0,42%	69,34%
Russian Federation	18,92%	0,55%	0,04%	0,16%	17,44%	0,23%	62,62%
North-Western Federal District	32,60%	0,43%	0,00%	0,00%	11,10%	0,00%	55,82%
North Caucasian Federal District	0,00%	5,42%	0,00%	0,03%	27,88%	0,58%	66,09%
Siberian Federal District	0,00%	0,00%	0,00%	0,00%	54,51%	0,10%	45,39%
Urals Federal District	4,54%	0,00%	0,00%	0,00%	0,00%	0,00%	95,45%
Central Federal District	42,53%	0,00%	0,00%	0,77%	0,69%	0,00%	55,87%
Southern Federal District	37,84%	4,63%	0,00%	0,00%	14,41%	1,30%	41,82%
Total	14,04%	1,01%	0,06%	00,09%	15,28	0,27%	69,18%

Ecological awareness and income inequality

The following figures (Fig. 8-9) demonstrate the correlation between the evaluation of environmental quality and perceived inequality in the living area. The role of ecological awareness in promoting climate action became a subject of scholars' interest – depending on the studied context, researchers identify such factors as differences in income, education (Lee et al., 2015), civic engagement and access to social services (such as healthcare) as main predictors of the climate change awareness (Andre et al., 2024; Uzar & Eyuboglu, 2023). Other important factors are gender, age, ideology and nationality (Weber, 2016; Knight, 2016).

In order to grasp the relation between perceptions of income inequality and level of environmental degradation, the all-Russia survey was analyzed on the regional level. The respondents were

asked to rate the income inequality in their region on a 10-point scale (0 – low level of inequality, 10 – high level of inequality), while scale on environmental quality also ranged from 0 (low level) 10 (high quality) (Fig. 8-9).

Fig. 8. Evaluation of environmental quality, ROCIRR survey

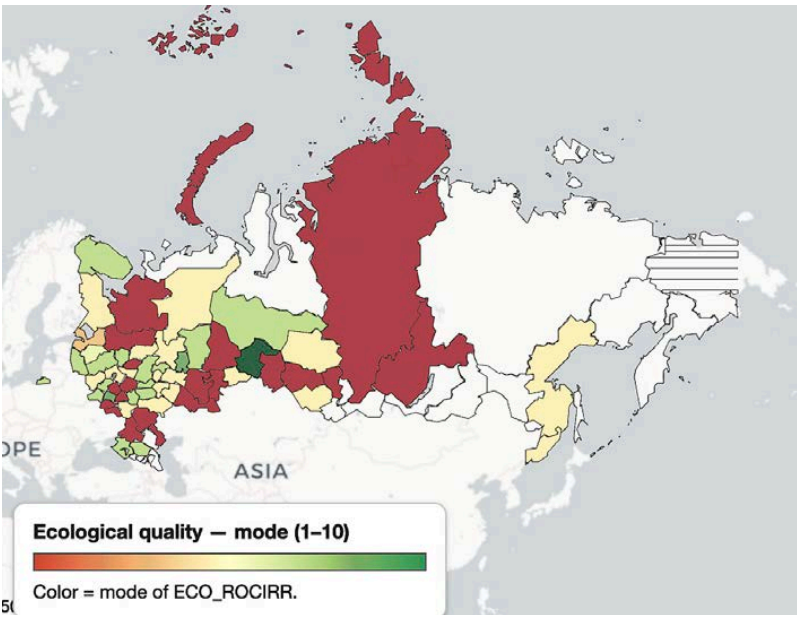
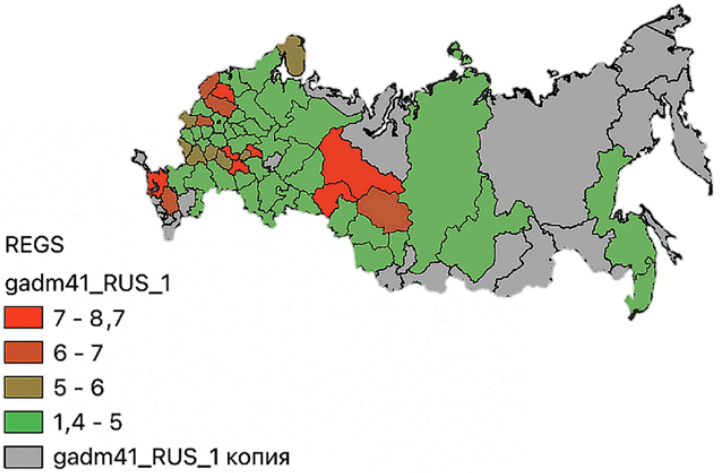


Fig. 9. Perception of income inequality level in the region, ROCIRR survey

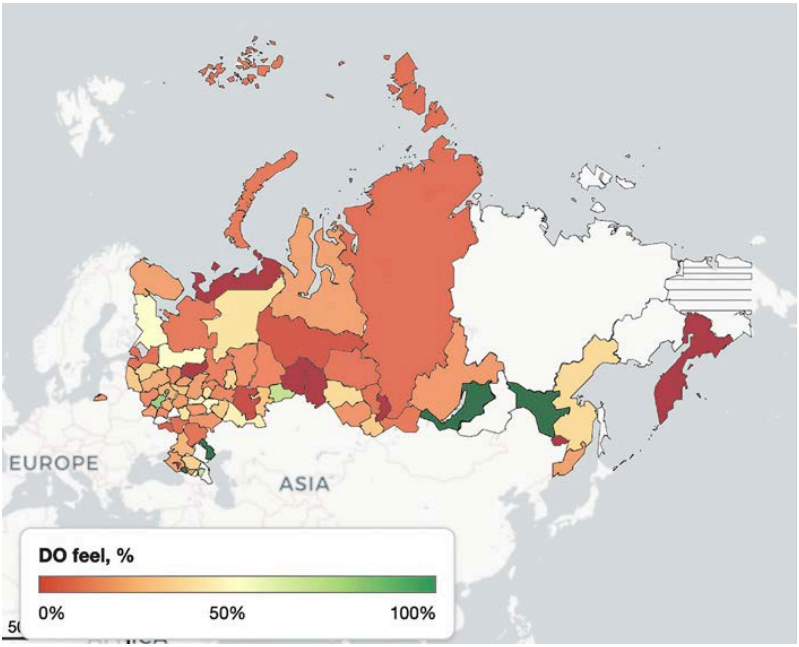


Regarding awareness of climate change, 3/4 of respondents of the 2024 Russian Field survey (73%) noted that they feel climate change in their region. Respondents from the Southern Federal District (80%) and Siberian Federal District (79%) stated this most often. The highest proportion of those who do not feel the changes is observed in the Far Eastern Federal District (37%) and Moscow (35%).

Table 5. Climate change awareness by gender and level of education, Russian Field, n = 1600

	Don't know	DO NOT feel	DO feel
Without higher education	2,79%	21,67%	75,53%
Female	2,17%	17,08%	80,75%
Male	3,48%	26,83%	39,69%
With higher education	1,01%	23,13%	75,75%
Female	1,12%	23,13%	75,75%
Male	0,88%	32,7%	66,37%

Fig. 10. Map of the climate change awareness in Russian regions, based on the Russian Field survey, n=1169, question: "Do you feel or do not feel climate change in your region in recent years?"



Based on the map images, we may observe that respondents from regions with higher income inequality report lower level of environmental quality. Following the Table 5, the survey data shows that women and people without higher education in general show higher climate change awareness rather than men or people with higher education. This data falls in line with the existing research on climate change in developing countries. The comparison of two surveys' data demonstrates that residents of Southern and Siberian federal districts are both not satisfied with the quality of the environment in their living area and they notice the consequences of climate change more than respondents from other federal districts.

Conclusion

There is no doubt that the Russian economy has a big potential for diversification of its energy balance. However, absence of state support, lack of clear renewable energy regulations, low tariffs for electricity and heat, difficulty in securing investments and the bureaucracy are among the major barriers to the growth of renewable energy in Russia, even though Russia is thought to have the world's highest potential for wind energy. Analysis of gender and educational differences in environmental awareness also fall in line with existing research of socio-technical transitions in developing countries.

Besides the peculiarities of the petrostates' institutional design, the level of individual concerns falls in line with other developing countries – the economy grows, but the environment degrades, however, people notice climate change, but do not demand policy changes. This sets a fertile soil for preserving a status-quo and continuing reliance on fossil fuel, but the residents of the mostly affected regions are already acknowledging the consequences of environmental degradation. One of the possible solutions for the key decision-makers in the energy policy would be the continuation of international cooperation and attraction of foreign investments in modernization of the oil & gas industries together with collaboration in the development of clean energy projects together with other resource-rich countries.

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Beatrice Colombo[1]

Rewilding Milan: Urban Socio-Natures and Participative Democracy in Greening Projects

Abstract: Green and natural spaces are crucial for biodiversity conservation and enhancing people's well-being. European cities are increasingly adopting Green Infrastructures and Nature-based Solutions for urban regeneration. The EU emphasizes citizen participation while promoting land consumption neutrality in these projects. Public greening initiatives aim for collective benefits but can contribute to gentrification. Private ones, driven by profit, often come with tax incentives and higher costs. Social movements oppose both private and public projects when linked to land consumption, highlighting contradictions. In Italy, research on this topic is rich but fragmented, especially regarding strategy. The aim of my work would be to analyse municipality strategies in Milan re-greening plan and consequent social movements' strategies by conducting a series of interviews with activists and local government.

Keywords: Green Gentrification; Citizens Participation; Private led regreening design; Public led.

[1] The paper was written under the supervision of Prof Marco Romito – Department of Sociology and Social Research, University of Milan-Bicocca.

Introduction to the Research Problem

Reflecting on the ongoing loss of green and blue spaces and the change in their management in urban contexts, this research aims to understand the differences in terms of vision among decision makers and local population. With insights from 8 semi-structured interviews with residents and city council's representatives and literature, the research seeks to offer a meaningful perspective on the possible ideological and praxis division among them. Emerging from this framework, the research has two aims arises from the willingness to investigate, on a city-wide scale. The first one is investigate how meaning of nature differs between administrators and local communities considering both green management and maintenance; while the second one is to undestand how participatory processes are designed and perceived by local communities. The results of the investigation are intended to be useful for both policy makers and local communities in order to design just and community-oriented projects.

Theoretical framework

a. Urban "nature" and green gentrification

Urbanization is a process that has produced different "natures". Specifically, during the fordist period, urbanization processes were driven by the presence of environmental resources from which value could be extracted. As a result, they were almost always accompanied by a sudden reduction in local biodiversity and a loss of habitats for living species—a type of "nature" instrumental to production. Conversely, urban expansion was guided by the exploitation of pre-existing infrastructures, meaning that the extraction of resources by productive industries occurred outside the local context.

Alongside this, environmental movements in cities at the time demanded a "nature" that would protect living species and foster community building. Urban parks emerged from these demands. Up until the 1970s and 1980s, the creation of green spaces

in cities was primarily driven from the bottom up, responding to the needs of the population. This resulted in a kind of "nature" still functional to humans, but collective and community-oriented. Later, during the post-Fordist period that led to deindustrialization, cities ceased generating value through productive processes and began relying on the gig economy and real estate investment for value extraction. At this point, the meaning of "nature" changed and it became functional to build the brand image of both companies located in urban areas and the cities themselves.

We can therefore summarize that the type of "nature" produced in Western urban contexts has served several purposes:

- Conservationist, aimed at protecting wildlife in designated areas;
- Community-oriented, creating spaces that are democratically accessible and self-managed;
- Aesthetic, producing value for those with economic interests in image or real estate.

Delving further, within the orthodox debate around green urban regeneration, the development-oriented approach has increasingly taken center stage. This approach leads to the production of "green" and "nature" that is functional to real estate or aesthetic value extraction. No longer community-focused, this model often results in phenomena of green gentrification—gentrification processes led by large investors who, along with new building developments, also propose the introduction or aesthetic improvement of green areas. These changes further increase property values and lead to the displacement of the most socially and economically disadvantaged segments of the local population.

Already in the 1990s, major U.S. cities witnessed large-scale renewal plans that led to the reconstruction of entire neighborhoods—often predominantly Black—forcing residents to relocate, with all the associated economic and social consequences, following the creation of newly "greened" and regenerated districts.

The outcome of these major urban regeneration projects has been widely studied at a local level, demonstrating how targeted neighborhoods saw actual increases in property values and changes in the racial and class composition of the community—transforming formerly predominantly Black and working-class areas into affluent, predominantly White neighborhoods.

Examples include the restoration project of Brooklyn's Prospect Park in New York (Gould & Lewis, 2012) and the sustainability plans in Portland, Oregon (Goodling et al., 2015), both of which promoted green investment while contributing to inequalities and the displacement of racialized and poor populations.

Despite growing research efforts in this field, there are still relatively few studies that adopt a city-wide approach to evaluate the impact of green gentrification on the broader urban fabric. Among the pioneers, Anguelovski et al. (2017) adopted such an approach in the city of Barcelona, showing that the impact of creating urban parks in disadvantaged neighborhoods heavily depends on the existing context and built environment. Their research highlights the need for studies focused on the dynamics of population reconfiguration, and urges policy makers to consider the social impact of greening interventions at the city scale.

b. Private and public management in Milan urban green areas

Building on Azzimonti's (2023) analysis, Milan's urban greening is marked by an increasing retreat of public authorities from both design and longterm management, and a concomitant rise of private actors shaping green spaces primarily through marketoriented lenses. Publicled interventions, such as the renovation of historic parks and the creation of new municipal gardens, have had different aims. During the post-fordist period, when industries were leaving western cities and agriculture production was being reduced in favor of real-estate market expansion, parks like Parco Nord and Parco agricolo del Ticinello were institutionalized. In particular, Parco Nord was established on the abandoned

area of Breda's military production site, while Parco Agricolo del Ticinello was established after the expropriation of land owned by real-estate developers that had the aim of transforming the agricultural and rural district in a modern residential one.

However, in the more recent year, constrained municipal budgets and a lack of sustained maintenance funding have left many of these areas underresourced. In contrast, privateled developments (e.g. CityLife Garden, Biblioteca degli Alberi) are funded and managed by developers or sponsors, who prioritize aesthetic coherence, event-ready infrastructures and brand visibility. As Azzimonti (2023) highlights, these projects often employ highmaintenance that serve promotional aims more than ecological resilience, and are accompanied by tax incentives that shift upkeep costs off public books. This dynamic deepens social inequities: while private sites boast yearround programming and pristine landscapes, they rarely incorporate genuine pathways for resident input or longterm community stewardship, fueling perceptions of "greenwashing" and exclusionary gentrification.

Methodology

The choice of my research questions and the trajectory of my research strategy were strongly influenced by the intention to center my analysis on the comparison of the perception and intention of active citizens and city council's representatives.

Initially, I conducted background research on urban developments in Italy, selecting some of the most impactful projects that involved citizen participation, conflicts with local committees or people relocation. This preliminary investigation guided me to detect a specific area of interest and formulate the context for my first research question, focusing on Milan. Wanting to know the perspectives of citizens, since they are considered as a crucial and indisputable legitimizing factor to the concept of right of the city (Ročak & Keinemans, 2023), I decided to focus on their perceptions and on the reasons of the rise of conflicts between local committees and city council.

I felt it necessary to conduct field observations and interviews to obtain material not available online, also given the different characteristics of regeneration projects in the city of Milan and the nature of conflicts.

After confirming the feasibility of conducting a qualitative investigation, I started gathering data on Parco Nord Milano, Piazza d'Armi, Parco Agricolo del Ticinello, Biblioteca degli Alberi Milano (BAM), Bosco di Via Falck and Parco Martiri della Libertà Iracheni Vittime del Terrorismo preparing for the subsequent phase of my research.

Data Collection

Desk-based research was used to collect much of the data on the recent and past urban redevelopments of Milan that involved land consumption and habitat fragmentation or, on the contrary, park institutionalization and conservation strategies.

Online data were supplemented by photographs and local publications, media articles and books about Milan published only in Italian or by local organizations gathered during fieldwork. All data collected were used to learn about the history of the relationships of "nature" and human populations in the urban context and how different capitals shape and shaped it.

Before reaching out for interviews, I mapped Milan committees' in order to investigate how many and how distributed they were. Then I adopted the Snowball Sampling technique (Goodman, 1961) to select interviewees since it is known to reduce time and resources needed for recruitment compared to traditional methods. Subsequently, I selected 4 different local committees active in the city and 4 technicians and representatives of the Milan municipality. Then, I followed a semi-structured interview model with a common outline and a range of 12-14 questions and the same overarching structure. In all of the cases, the interviews were conducted individually and the model adopted allowed me to adapt the questions to the personality and characteristics of people interviewed.

Each interview included specific questions about the meanings the interviewees gave to nature, green and blue areas and

how the connection with them states itself. Furthermore emphasis were give on the participatory processes and the engagement of the population in the design, realization and maintenance of the regeneration projects.

The fieldwork produced 8 interviews, all of which subsequently transcribed.

Data Analysis

To analyze the interviews, I opted to conduct a thematic analysis with the support of the analytical software Nvivo. This method was chosen to facilitate the categorization of interviews into specific themes, enabling the identification of potential interconnections between collected testimonies and the selected theoretical framework (Clark et al., 2021). The coding system was initially carried out following the same structure as the research questions and thus adopting a deductive type of analysis.

Subsequently, as the initial responses were analyzed, additional codes were incorporated, leading to the adoption of an inductive approach (Knott et al., 2022).

Positionality

First of all, I am aware of my positionality and of the biases that could potentially influence this research. The selection of the people interviewed, the questions asked, the analysis of the results and the different choices made during my writing process could all be influenced by multiple biases.

In conducting my fieldwork, I took time to acknowledge my privilege as a white woman with a higher education degree and an environmentalist and post-capitalist perspective. I also acknowledged that my activist background and personal experiences constituted an advantage in understanding the socio-political dynamics and the cultural contexts I was exploring. When defining interview guidelines and questions and during the conducting itself, I made sure to leave room for the interviewees to express themselves freely, without feeling restricted or overly gui-

ded. The very choice of using a semi-structured interview method I believe allowed me to tailor each encounter to the needs and positionality of the person I interviewed. Furthermore, I always tried to interview people in their neighborhood, in their preferred places, precisely to avoid them feeling uncomfortable. All interviews were conducted with respect for confidentiality and random initials were used in the transcriptions to maintain interviewees' anonymity. All data were handled and stored with precaution in accordance with the guidelines provided by my university.

Limitations

Finally, before proceeding with the results, it is necessary to illustrate the possible limitations encountered during the research design and during the conducting itself. First, the snowball selection of interviewees led me to conduct interviews with people with a common world view, reinforcing each others' perspectives.

Secondly, it is worth mentioning that my background in natural sciences and the small experience in social sciences field and desk research slowed down the process and led me to a downsized work that can not easily be generalized. In particular, the age range of the interviewees was small and the under-representation of young generations is an important aspect to take into account since socio-cultural differences could have emerged if I would have interviewed younger people.

Results

First research question: Meanings of nature

What are the differences between city council's representatives and local committees' view on and relationship with nature in the urban environment?

All the interviewees, both from city council and local committees, were concordant on the importance and relevance of nature in the urban context as a source for human health and wellbeing. From lo-

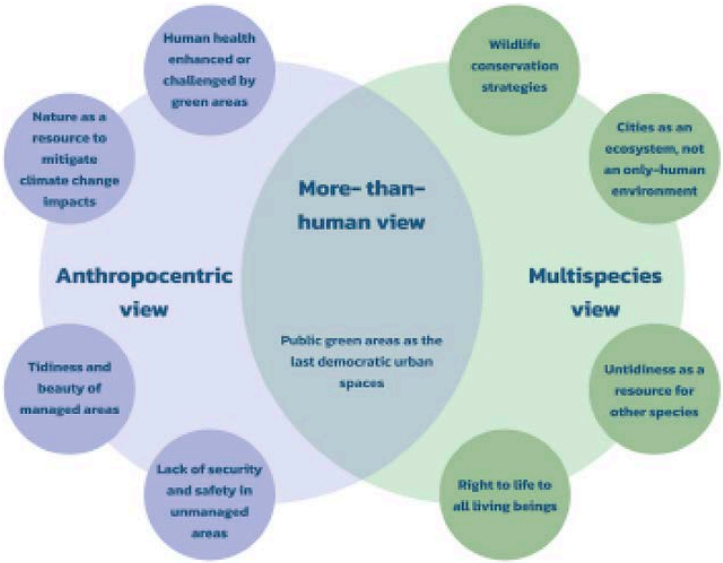

Figure 1. Visual representation of the meanings of nature emerged in the interviews (own illustration).

cal committees' interviews emerged more strongly the importance of preserving nature as it is leaving space for other species to thrive in the urban environment with small to no human intervention. On the contrary, city councils' highlighted the implied conflicts between citizen and wild nature in urban contexts, such as allergies, domesticated animals' diseases spread and the lack of accessibility to wilder green areas.

The city councils' representatives tend to have a more anthropocentric view of nature, strictly useful for humans in different ways (T.C, E.P, B.R.). Specifically, all of them highlighted the importance of the ecosystem health services provided by parks, trees and green areas such as heat waves and floods impacts mitigation (T.C., E.P., B.R.) and the same view was shared with local committees' representatives (M.B., M.C.). Furthermore, green areas were considered essential for human psychological and physical health and wellbeing but when wilder areas were included in the discourse, all the interviewees cited the possible side effects of human-wildlife interaction as well as allergies and mosquitos issues. The differences arose when possible solutions

to this conflict were discussed. In fact, city council's representatives were more focused on how to handle and manage wildlife in order to avoid adverse effects of a wilder urban nature, while some citizens (M.B., M.C., G.S.) as well as one of the city council's representative (T.C.) had a more possibilist and tolerant approach towards a wilder urban nature which we should learn to live with, highlighting the need to address a cultural issue and not a managerial or maintenance issue.

Going deeper in the maintenance discourse, tidiness and beauty are values often applied by the interviewees to evaluate and discuss feelings around green areas. Specifically, it is acknowledged by most of them (T.C., E.P., M.C.), regardless of their role, that a part of the city population tend to prefer tidy and highly managed green areas where beauty and human livability are first priority. An interviewed citizen (N.C), was also concerned about the loss of the green area livability due to introduction of reduced mowing activities adopted by the municipality, which were reducing space for recreational and cultural activities outside consumeristic logic prevailing in the rest of the city.

Finally, also the lack of security and safety in park and green areas in general were addressed by most of the interviewees (T.C., E.P., M.C., M.B., N.C.) as a big concern but enhanced lighting solutions were mostly disliked by the citizens (M.C., N.C.) and they were also concerned that a security argument could prevent any public discourse on wilderness and therefore these two issue should be discussed separately.

The multi-species or more-than-human view of nature was adopted by 2 out of the 4 citizen interviewees and by one of the city council's representatives. Both citizens, M.C. and M.B., highlighted the need for a cultural change in how nature and other species are seen and perceived by humans. Specifically, they say that the cultural change needs to be in the direction of overcoming the view that as a species we can extract any resource from anything and that any living creature has a right to life. On the other hand, T.C. highlighted the importance of giving space to natural ecological processes as an integral part of including na-

Figure 2. Visual representation of research question 2 findings (own illustration).

ture in the urban environment. Furthermore, the three of them highlighted the need for conservation strategies that are more consistent with scientific evidence while at the same time that can be maintained and funded over time in order to give proper care to trees, animals and their habitats.

Second research question: participatory processes in design and maintenance of green areas

What are the differences between city council's representatives and local committees' view on designing and maintaining green areas with the engagement of the local population?

Citizens' and city council's representatives' opinions regarding the meanings of nature are mixed and therefore they are not completely useful to clusterize the two groups. On the other hand, when interviewees were asked about population engagement and citizen participation in the designing and maintenance of green areas, a more clear division appeared. Specifically, city council's representatives were enthusiastic in sharing all the different strategies adopted in engaging with citizens and associations. On the other hand, all the citizens interviewed were concordant on the lack of participatory processes put in place by the municipality. Therefore, the first impression one can have when analyzing the interviews is that there is a clear lack of common vocabulary among active citizens and city council representatives when talking about participatory process.

In the following paragraph I will divide the results into two blocks (Figure 2), the first one regarding public-led project design and maintenance of green areas, the second one regarding private-led ones.

Specifically, with public-led project design and maintenance I intend any public intervention in existing and new green areas in the urban contexts following the definition also adopted by

Azzimonti (2023). For example, I include in the definition any intervention that leads to a renovation in the aesthetic and in the function of an existing green area or infrastructure. I also intend as public-led, any intervention that results in the establi-

shment of a new public green area or infrastructure. Accordingly, any intervention that results in one of the above categories but it's privately funded, designed and/or maintained, it is considered private-led.

In the interview, when asked about public-led projects, citizens had mixed reactions that were also site dependent. Some positive examples of public-led projects, such as Bosco in città, Parco Segantini, Piazza d'Armi, Parco Nord, Parco agricolo del Ticinello were considered virtuous examples both by the citizens and city council's representatives (M.C., M.B., T.C., E.P., B.R., N.C., G.T.). At the same time, in some of these projects, a lack of clear cultural and political direction were highlighted by the citizens. In fact, some argued that green areas need to have a well-defined function in the urban context since different needs can in fact produce conflicts among citizens and between citizens and wildlife. For instance, the need for outdoor sports facilities can be in contrast with the interest for wildlife and biodiversity conservation (M.C.). Furthermore, the design of educational or recreational infrastructures in green areas, if it's conceived without defining, involving and engaging with the community(ies) that lives in the area, the infrastructures can result in abandoned or underused spaces (M.C., M.B.).

Considering now the examples of public-led initiatives evaluated less positively by the citizens, here the contested point was the introduction of the possibility to organize big events with little limitations in regard to the impacts on wildlife or ecosystem services (M.B.). The introduction of these events in the park ecosystems led in fact to a complete re-design of parks function and aesthetics.

On the other hand, city council's representatives, when asked about the engagement of citizens in the design and maintenance of green areas, highlighted the importance of different new administrative instruments able to better engage with active associations, committees and citizens (E.P). For instance, the introduction of the Assemblea Permanente dei Cittadini sul Clima di Milano (in english: Permanent Citizens Assembly of Milan on

Climate) was a celebrated results for the city council as well as the introduction of the Patti di Collaborazione (in english: Collaboration Pacts), an instrument that institutionalized the relationship between the municipality and formal or informal citizen associations active in community gardens. Citizens and local committees' feeling and evaluation of those initiatives were aloof, especially in regard to the Assemblea Permanente dei Cittadini sul Clima di Milano since its changeable and apolitical nature can possibly reduce its transformative potential (G.T.).

Finally, all the interviewees expressed their disappointment on the lack of funding available for maintenance of public green spaces as well as for biodiversity conservation intervention and socio-cultural activities (E.P., B.R., T.C., M.B., M.C.).

Switching to private-led projects, such as City Life garden and Biblioteca degli Alberi Milano, the division among the two groups was even stronger. In fact, the citizens' opinion (M.C., M.B., G.T.) on those kind of regreening projects were completely negative due to different reasons: i) high maintenance vegetation that needed extra care to be aesthetically pleasing; ii) little to no citizen engagement in the design of the areas and in their maintenance; iii) no space for informal organization of socio-cultural activities; iv) evident form of greenwashing for the private funds funding the realization and the maintenance of the areas. Only one of the interviewed city council representatives were concordant with this view (T.C.) while the others were supportive of the initiatives claiming that the private-led projects made it easier for the administration lacking public funds for maintenance (E.P., B.R.). Furthermore, private-led projects were appreciated by the city council representatives since they brought significant added value to the city (E.P., B.R.) since they have been accompanied by a complete urban transformation of the district, while for the local committees' the relevant process related to these kind of projects is the resulting green gentrification with relocation of consistent portion of vulnerable part of the population (M.B., G.T.).

Discussion

Different emerging urban socio-natures

From the different "natures" that have been present in the city of Milan, we can acknowledge the fact that green areas in the urban environment can always be considered a form of socio-nature and therefore a space where both ecological and social processes take place. In studies like Trentanovi et al. (2021), it emerges that socio-natures in the urban contexts nowadays assume multiple shapes and from this study's interviews, three main socio-nature emerge: i) commodified nature; ii) nature as the last democratic urban space; iii) nature as a right's holder entity.

The city council's representative interviews hold a more anthropocentric view, with 2 people highlighting the importance of commodified urban green spaces for the added value they bring to the city. Specifically, commodified nature is completely functional to human activities and asserved to the capital accumulation and in urban contexts often leave room for gentrification processes (Heynen et al., 2006; Zinzani and Curzi, 2020). Rarely, when this view prevails, there is little space for democratic use of green spaces since private-led projects tend to organize the areas as a stage for profitable events and strictly organized social events leaving no room for informal socio-cultural activities. These findings support what Azzimonti (2023) highlights as an ongoing process where, despite Milan greening rhetoric, public institutions have decreased their influence on green design and management. In fact, in the same study, emerges as private led projects tend to base their choices on vegetation and landscape architecture on aesthetic and symbolic values, that are functional to the projects aims to design an attractive place for events and marketing purposes.

Moving on to the second meaning of nature, one of the city council's interviewees and all of the citizens interviewed cited how public green areas can act as a place for community building and informal socio-cultural activities. Specifically, communities characterized by specific ethnic and class groups found in the

green areas a place for recreational and cultural activities that they would be able to find in the rest of the city where commodification and liberalization of public grey spaces is strongly present and leave little room for non consumeristic recreational or cultural activities. This aspect highlights the importance of green spaces as a safe space for racialized people and other oppressed identities where to image and create community in spite of the mainstream consumeristic view.

Finally, nature in some citizen interviews emerges as a rights holder entity. Specifically, for some of the interviewees, green spaces and wildlife should not be considered a resource to extract value from, but a whole living being. Adopting this view would foster transformative change and could potentially improve both human and other species health and quality of life.

Democratize the process of green areas design and maintenance

The interviews reveal a profound disconnect between municipal visions of "participation" and citizens' lived experiences. I claim that, in order to democratize design and maintenance, different interlinked strategies exist, but some emerge more clearly from the results. First of all, the participatory process needs to be strategically designed for empowering the local community, otherwise population engagement results in mere managerial tools. In fact, participatory and collaborative projects are not *per se* community oriented, but they need to be designed as such if the aim is to make people and communities feel engaged. Even if those projects are time consuming, in the long term they are able to build communities connected to the area they live in, and people more prone to take care of it (Raymond et al., 2017). Some examples of tools able to empower communities are collaborative onsite workshops, that rather than limiting engagement to oneoff public meetings, convene facilitated design in the actual parks or sites in question.

Conclusion

This study has shown that Milan's urban greening projects produce multiple, often contested, socionatures: commodified landscapes driven by realestate logics; communityoriented parks serving as democratic commons; and morethanhuman spaces asserting ecological rights. Publicled initiatives, while conceptually inclusive, suffer from funding shortfalls and mismatched engagement processes, whereas privateled developments deliver highquality amenities but reinforce green gentrification and exclude informal uses. To bridge these divides, policies must democratize every phase of green area planning and upkeep—moving from tokenistic consultations to cocreation, securing stable stewardship frameworks and ensuring transparent, adaptive governance. Only through these systemic transformations can Milan's greening genuinely serve both social justice and ecological resilience.

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Selma Hasić[1]

Shaping Environmental Governance: Mapping Environmental Interventions by Bilateral Development Agencies in BiH

Abstract: This paper explores the involvement of seven bilateral foreign development agencies in environmental initiatives in Bosnia and Herzegovina. It examines how these agencies navigate a complex socio-political landscape characterized by weak institutions and limited local resources. Using a comparative approach - drawing on a review of previous strategies and semi-structured interviews with agency representatives - the study analyzes their environmental agendas, types of environmental interventions and cooperation with other agencies. By outlining approaches, research gives a better understanding of how international environmental participation works in transitional situations by mapping out their approach and strategies toward environmental protection.

Keywords: Foreign Development Agency, Bosnia and Herzegovina, Environmental protection, technical assistance.

[1] The paper was written under the supervision of assoc.prof.dr. Andrej A. Lukšič.

Introduction

Developing countries include insufficient institutional frameworks, limited resources, tensions between economic development and environmental preservation, and low public awareness find many difficulties implementing environmental policies (Najam, 2005; Barbier, 2010). Many governments struggle to implement rules due to administrative inefficiencies; financial restrictions typically result in the giving rapid economic advantages top priority above long-term sustainability (Smith and Urpelainen, 2014). Furthermore, strong reliance on the extraction of natural resources could lead to conflicts between goals of development and conservation (UNEP, 2011). In the end, inadequate public participation and knowledge reduce the effectiveness of policies since environmental problems usually take second place to pressing socioeconomic concerns (Meadowcroft, 2005).

One of the most important actors in reshaping current environmental policies in Bosnia and Herzegovina (hereinafter: BiH) are foreign development agencies (hereinafter: FDA or agencies). Most of them were established in BiH during the war when their main purpose was to provide humanitarian aid and the initial services provided for the purpose of environmental protection focused on the removal of mines from the ground (Mitchell, 2004; Kolenda, 2018). Later, agencies created initiatives for a range of political, strategic, and economic factors that ultimately benefit the country and brought them closer to satisfying the international community's expectations (i.e. EU accession and sustainable goals) by investing in policy reforms (Collantes Celador, 2009), economic development, infrastructure (Nuroglu, 2013), digitalization, energy consumption (Harbaš, 2017) and other. Several authors (Čaušević, 2022; Zahumenská et al. 2015) posit that international cooperation and support plays a key role in addressing environmental protection challenges in BiH particularly in the areas of pollution reduction and environmental restoration. However, a scarce number of academic or policies discuss environmental discourses adopted by FDAs in BiH. Consequently, the

absence of specific parameters impedes an accurate assessment of the agencies' actual role in promoting environmental protection in the country.

Various literature disproportionately emphasizes successful projects and exemplary cases, even though insights gained from unsuccessful projects significantly enhance learning and contribute to the success of subsequent endeavours: What may be ineffectual in one context could, with certain modifications, achieve success in another (Ika, 2012). Therefore, the same time, answers to environmental change are not socially neutral and could harm some groups more than others. Environmental policy creation has to therefore include more gender equality, social equity, and poverty research (Mackie and Haščič, 2018).

This study seeks to examine how bilateral FDAs[2] contributed to strengthening environmental governance in post-war BiH using an exploratory and qualitative method. The analysis is mostly based on desk research, including a review of publicly available project reports, strategic documents from 1995 to the present, and interviews with the representatives of FDAs. Rather than testing formal hypotheses, the aim is to identify patterns of intervention, changes over time, and approach variances among bilateral FDAs. By classifying their interventions into types (such technical assistance, infrastructure, and institutional support) and methods of implementation (either strategic or participatory), the study provides

[2] Multilateral FDAs fund projects by means of competitive procurement procedures demanding proof of the greatest "value-for-money" and guarantees that projects are technically suited to local conditions (Martínez-Galán and Proença, 2023). Therefore, in procedure of selection, multilateral FDAs are concerned about the country's ability to attain observable development results, depending on efficient public procurement and project management techniques. Bilateral FDAs have similar approach, however unlike multilateral FDAs, bilateral FDAs are apt to be impacted by a complex interaction of historical, political and sometimes commercial drivers along with larger development and poverty agendas that make it an important part of the donor foreign policy (International Development Association 2002) since the donor retains control over the funds and decides who will receive them (Mavko 2006). Moreover, the bilateral FDA works according to ex-ante: it creates an environment that favors donor-recipient country economic relations and improves domestic consular diplomacy of a donor state (Gulrajani and Swiss 2017). Therefore, the nature of diplomatic relations and political priorities can be inferred from fluctuations in bilateral aid levels. Bilateral aid frequently embodies the donor nation's particular ideals, political aims, and historical connections with the recipient nation (Mawdsley, 2017).

a first approach to grasp how these organizations affect national (local) environmental policy and actions. The goal is not to evaluate project effectiveness per se but rather to better understand the underlying logics of intervention and their interaction with a fragmented governance environment.

The initial identification of factors will include reviews of primary documents:

1) the project reports and internal documents of FDA on aiding and assisting the reforms of regulatory frameworks in BiH to address sustainable development and ecological modernization, including proposals regarding environmental protection and human rights to the environment, state and substate level regulations;
2) semi-structured interviews with the representatives of the development agencies examined in BiH.

This paper will be guided by the following research questions:

1. To what extent is the environment a consistent strategic priority across different development agencies?
2. At which levels—state, entity, or local—do development agencies primarily engage in environmental interventions, and why?
3. What are the dominant modes of intervention used in environmental projects (e.g., technical assistance, infrastructure, policy support), and how participatory are these approaches?
4. How do development agencies coordinate (or fail to coordinate) their environmental efforts, and what implications does this have for policy coherence and project sustainability?

To answer the research questions, a comparative analysis was conducted. The analysis was based on defining key criteria relevant to the environmental dimension of the agencies' work.

These criteria included the degree of integration of environmental issues into development programs, the type of support, the focus on specific environmental sectors, and collaboration with other actors.

Literature review

The first chapter explores EU environmental policies and how they are implemented in member states and EU candidate countries. The second chapter focuses more on environmental governance in BiH and the existing legislative competences. The third chapter focuses on the role of agencies in the environmental sphere in BiH: agency agenda, level of engagement, modes of intervention and collaboration with other agencies.

EU policies on environmental protection: priorities and implementation in member states

Over the last 40 years, the EU has passed several hundred environmental rules of varying legal power. Nowadays, a vital field of the EU's efforts at national and worldwide levels is environmental preservation (Jordan and Lenschow, 2010). The EU framework for environmental protection is carefully developed and the most recognized in the world (Kopytsia and Tryzno, 2022). The EU often advocates environmental standards in relevant negotiations and takes part in more than 60 worldwide environmental agreements (Hollaus, 2021). The framework possesses an impressive range of instruments based on obligations that address various issues related to multiple types of environmental protection. However, the successful translation of these priorities into concrete results at the national level, therefore, depends on the capacity of member states to properly transpose EU directives into domestic law and carry them out in line with locally relevant priorities and administrative capabilities (Mammadov et al., 2024). Conversely, while such initiatives have seen varying levels of success from one mem-

ber state to the next, non-EU member countries also face various difficulties with environmental governance across a diverse range political and socio-economic context. Individual states are often granted more control over environmental protection if the effort can cover such large regions (i.e. leaguering in transborder uneven benefits) although each EU country member is legally obliged to properly and fully implement EU environmental policy and law (European Commission, n.d.). Current trends show a move for EU member states to delegate responsibilities of administering and enforcing environmental and other laws within domestic enforcement process directly to EU institutions. That has created greater layers of bureaucracy, alongside differing levels of backing and implementation that have led to a patchwork approach among EU member states and questionable enforcement mechanisms (Campa and Entingin-Frati, 2023).

Moreover, when it comes to non-EU countries (i.e. candidates and potential EU candidates), ineffective environmental governance has been a significant roadblock in implementing and enforcing robust environmental policies. The Western Balkan (hereinafter: WB 6) countries[3] more precisely the political leaders, tend to focus on short-term benefits that provide security in terms of energy supply and environmental protection. Broadly speaking, WB countries' leaders factor out the matters of pollution in sense monetary matters due to the economic challenges in this region. [4] This position of the region hinders the process of meeting requirements for entrance to the EU and dealing with different national regulations and economic challenges and expe-

[3] "Western Balkan 6" (WB6) (Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Montenegro and Serbia) is mostly used in reference in the European Union (EU) and it is related to European integration, regional collaboration, and economic development, the phrase. The Berlin Process was established in 2014 as a framework to enhance collaboration among the Western Balkans Six, the host nations of the Berlin Process, and the European Union. (Berlin Process | Berlin Process)

[4] For example, with their unfounded expectations and evaluations of production of electrical energy and the market prices of coal alongside with the low emission taxes, the governmental representatives in power have the tendency to settle for the less expensive fuel at the cost of the environment and the citizens. With these trademarks of economical thinking, there always seems to be a justification for prioritizing economy over environment

riences an unsettling amount of criticism on internal and external level on decision-making (Bieber, 2018).

Bărbulescu and Troncotă (2012) argue that the EU has obstacles in the WB countries because of the complex Europeanization process, which focuses on establishing stable „political communities" and bolstering democracy amid post-war reconstruction. The Europeanization model that these WB candidate countries chose is referred to in academic literature as the „misfit model." According to this approach, the ability of candidate and applicant nations to adapt to the EU is based on how compatible their national laws are with those of the EU. Higher levels of incompatibility, or „misfit," result in more institutional pressure, more stringent regulations, and an EU-managed procedure based on conditions. Put simply, the task for nations in the WB countries is not just about creating what Grindle (2004) calls ‚satisfactory governance' but building systems and organizations that are similar and capable of operating like EU member states (Börzel and Fagan, 2015).

Fragmented environmental governance in Bosnia and Herzegovina: an overview of institutional responsibilities

BiH is a post-war state governed by the Dayton Peace Agreement[5] signed in 1995. Despite being recognized as a sovereign state, its internal structure is complex and fragmented, with responsibilities distributed across multiple levels of government. The country is highly decentralized at the state level, however environmental policy-making tends to be internally centralized within each entity (i.e. the Federation of BiH (hereinafter: FBiH) and Republika Srpska (hereinafter: RS)) and Brčko District (hereinafter: BD) that retain some forms of governing autonomy.[6] The competent bodies

5 Deyton agreement, more information available here: https://www.osce.org/files/f/documents/e/0/126173.pdf

6 Both entities have their own laws and administrative bodies (Deyton agreement: https://www.osce.org/bih/126173)

in the entity FBiH are further fragmented in their jurisdiction, since the entity is divided into ten cantons which have their own governments in charge of various areas. The other entity, RS, is a highly centralized entity with little power devolved to lower state units (i.e. municipalities) (Bieber, 2006; Golijanin, 2011). The BD is a centralized administrative unit with its own laws and regulations, which are also adopted separately (Assembly of the Brčko District of BiH, n.d.). With such administrative composition, the country faces great difficulties in establishing central authority over certain policy areas. Therefore, the main governmental bodies for the enforcement of the environmental laws in BiH are devolved and operate in multiple decision-making centers which complicates further procedures in the harmonization with EU regulations.

The primary level, resting with the Institutions of BiH, include Ministry of Foreign Trade and Economic Relations (hereinafter: MOFTER) („Official Gazzette BiH" no. 5/03) establishes robust coordination mechanisms, delineates clear guidelines, and institutes comprehensive reporting procedures for administrative entities. Furthermore, it assumes a pivotal role in shaping overarching policies pertinent to the sectors in which these entities operate and actively engages in the formulation of new regulations and their implementation. In addition to MOFTER, there is the State Regulatory Agency for Radiation and Nuclear Safety, which manages issues related to radiation protection and nuclear safety.[7] (State regulatory Agency for Radiation and Nuclear Safety, n.d.).

On an entity level (i.e. FBiH and RS), there are two Ministries of Environment (i.e. Federal Ministry of Environment and Tourism and Ministry of Spatial Planning, Construction and Ecology of RS) responsible for developing and implementing environmen-

[7] State Regulatory Agency for Radiation Safety and Nuclear Safety is established with the purpose of performing administrative and professional operations in the field of ionising radiation. In line with the Act and other regulations, the Agency independently perform regulatory control over safety of radiation sources, radioactive waste safety, and transportation safety. The Agency is an independent administrative organisation and execute its authorisations under direct supervision of the Council of Ministers of BiH. The Seat of the Agency is in Sarajevo. As a part of the Agency, regional offices are established in the Republic of Srpska Entity, with the Seat in Banja Luka, in the Federation of BiH Entity, with the Seat in Mostar. The Agency is financed from the Budget of BiH institutions, and from independent sources.

tal policies, regulations, and programs within the respective entity; and two Environmental Protection Funds (i.e. Environmental Protection Fund of the FBiH a and Environmental Protection and Energy Efficiency Fund of the RS) responsible for funding and managing environmental projects and initiatives within the entity. In FBiH, cantonal level ministries also deal with environmental issues, mainly related to urban planning and protection of natural resources such as forests, agriculture and water. BD Government also has competence over environmental protection within the district's borders, and it establishes and enforces local environmental regulations and policies. The main institution for environmental protection is Department of Public Utilities of the Government of the BD. Finally, jurisdiction of local level governments (municipalities and cities) is defined by and Law on the principles of local government in the FBiH („Official Gazette of FBiH" no. 49/06) and Law on Local Government in RS („Official Gazette of RS" no. 97/16, 36/19, 61/21). where local authorities have certain responsibilities related to environmental protection within their jurisdictions, including waste management, land use planning, and infrastructure development.

In 2016, BiH officially applied for membership in the EU. As a requirement of the Stabilization and Association Agreement with the EU, BiH pledged to integrate the EU's environmental regulations into its domestic laws and make necessary changes to its administrative systems (European Commission, 2016). According to the Strategy for the Alignment of Regulations with the EU Acquis in the Field of Environmental Protection, the alignment of environmental regulations in BiH comprises four strategic planning documents[8], applicable nationally across the entire ter-

8 The Council of Ministers of BiH has approved the Environmental Protection Strategy, specifically the Environmental Approximation Strategy (EAS BiH), based on the proposal from the Ministry of Foreign Trade and Economic Relations. This strategy is a result of the EU-funded project aimed at strengthening Bosnia and Herzegovina's environmental institutions and preparing for pre-accession funds, known as EnvISBiH, which concluded in 2014.

The primary objective of EAS BiH is the strategic planning of the approximation process, aimed at establishing conditions conducive to environmental enhancement and the promotion of sustainable development.

ritory, including the entities and BD, developed concurrently to ensure optimal harmonization. The EU acquis for environmental protection, as outlined in these strategic documents, comprises eight categories of legislative instruments: water, waste, air quality and climate change, industrial pollution, chemicals, natural protection, and environmental noise. By implementing this environmental policy, the Council of Ministers fulfils its commitments in the EU accession process and establishes the prerequisites for securing financial resources from the Instrument for Pre-Accession Assistance (IPA) II[9] (Tabučić, 2017) and IPA III[10] in this domain.

Currently, data from the adopted strategies in 2022 by the entities and the BD show that the strategies for the period 2022-2032 propose cost projections for seven key sectors in environmental protection. The projection of the national budget in all areas is significantly lower compared to the budget categorized as „other," which includes loan funds, EU funds, and contributions from other international donors. This projection clearly indicates that the state is not prepared to bear the costs independently and is increasingly relying on external financial support to meet the requirements for EU accession and its obligations under the Paris Agreement by 2050.[11]

9 The Instrument for Pre-Accession Assistance (IPA) is the EU's main financial tool designed to support candidate and potential candidate countries in their political, economic, and social reforms on the path toward EU membership. Theare 3 IPA instruments (IPA 1-2007-2013; IPA II (2014-2020): IPA III (2021-2027). IPA II improved implementation of environmental policies with focus on waste, water, air and energy efficiency (EC, n.d.)

10 IPA III establishes a more adaptable financial framework that enables the reallocation of funds in accordance with the advancements of beneficiary countries. It emphasizes the importance of supporting the Green Agenda for the Western Balkans and fortifies the connection between funding and political and reform processes, with a particular focus on the rule of law.

11 The EU has pledged to carry out the Green Agenda by employing the Instrument for Pre-Accession Assistance (IPA III), together with instruments like the Western Balkans Investment Framework and the European Fund for Sustainable Development Plus. This program seeks to allocate a total of €9 billion in grants and €20 billion in investments during the period from 2024 to 2030. Gaining insight into the landscape of environmental funders and the flow of financing is essential for determining investment priorities for the future of BiH.

Development under international guidance: activities and investments of foreign agencies in Bosnia and Herzegovina

The war in 90s severely impacted BiH's economy, obliterating more than two-thirds of its economic output, which has struggled to recover due to several factors: a dominant public sector with limited private wealth generation, a consumption-oriented rather than production-focused economy, and a weak export sector (Čaušević et al, 2022).[12] At the beginning, the FDAs in BiH were established as the response to the challenges of peacebuilding by embracing democracy assistance as one of its core priorities. When it comes to environmental protection, FDAs invested in prevention of pollution caused by mines and unexploded ordnance (UXO), leading to the emergence of a multifaceted mine action sector. Later, agencies have created detailed programs to support democratization by integrating the policies of multilateral development organizations (Ateljević et al, 2013).

The primary source of this legal framework is the Law on International Technical and Financial Assistance (Official Gazette of BiH", number 10/12) and the Law on Amendments and Additions to the Law on the System of State Aid in BiH and „Official Gazette of BiH", number 39/20) which sets out the principles and procedures for the implementation of international development projects in the country. This law defines the role and responsibilities of FDAs in BiH and sets out the conditions under which they can operate. However, efforts of FDAs to advance EJ must consider the complex political, social, and economic context in the

[12] The devastating conflict in BiH between 1992 and 1995, as defined by the General Framework Agreement for Peace (GFAP), left the region profoundly damaged. Approximately 250,000 people were killed, with an additional 17,000 officially recorded as missing. Half of the pre-war population of 4.5 million was displaced, including 1.2 million who sought refuge abroad and nearly one million internally displaced (MOHRR, 2005). Economic collapse followed, with the GDP dropping to less than $500 per capita, or just 20% of its prewar level. The destruction of essential infrastructure, from transport to power networks, greatly contributed to this economic decline, while widespread social trauma, loss of jobs, displacement, and disrupted education deeply impacted the population's welfare and prospects (WB, 1999). Furthermore, the country's housing stock suffered immense damage, and over 4% of BiH's territory was covered in landmines, leaving long-lasting barriers to recovery and rebuilding (Nedić, 2006).

country and be guided by the principles of transparency, accountability, and participation (Transparency International, 2012).

As mentioned before, BiH is precluded from moving forward in meeting its international obligations due to fragmented, inconsistent, uneven legislative and regulatory framework (European Commission, 2020). Various FDAs in BiH work with different levels of authorities, depending on the aims and scope of their projects. Furthermore, there is an evident gap in the literature that thoroughly presents how investments entering the environmental sector are financially channeled within BiH. The bulk of existing reports focus on the assessment of environmental conditions, identification of future challenges and EU regulations which must be achieved. Thus, considering the information at hand it is quite difficult to pin down properly where and why various bilateral FDAs invested in environmental protection in BiH.

Most research and policy analyses in BiH focus on overarching patterns in the evolution of environmental policy, with little attention given to the involvement of FDAs in promoting EJ initiatives. According to Čaušević et al, 2020, FDA in BiH provide financial resources (e.g., loans and grants), facilitate the training of government officials, sponsor research initiatives at universities, and offer other forms of expert assistance to integrate climate change into the legal, economic, and socio-political domains of the country. Furthermore, these institutions support BiH's state and entity-level institutions in building their capacities and funding various projects related to climate change and environmental protection.

Also, the state government lacks a legal framework to address the interconnected issues of environment, climate, and sustainability. There is no comprehensive state-level environmental policy or strategy, aside from several strategic documents at the state and entity levels that cover water, waste, and general environmental management.[13] Therefore, the efficiency of envi-

[13] The strategic documents at the state-level are the Environmental Approximation Strategy of BiH adopted in 2017 at the country level, the Climate Change Adaptation and Low-Emission Development Strategy for BiH adopted in 2013, and the Strategy and Action Plan for Protection of Biodiversity in BiH 2015–2020 adopted in 2017. At entity and district levels, the documents are: the Water Management Strategy of the FBiH (2010–2022),

ronmental funding collaboration, coordination, and information sharing across many levels of governance is low and often results in unnecessary duplication. The absence of a consolidated tracking and reporting mechanism at the state or entity level poses challenges in evaluating the magnitude and influence of environmental funding supply. In the absence of a coordinating structure, it is difficult for governments to comprehend the alignment between the goals of different FDAs and national as well as international strategies, plans, and needs. However, authors Čaušević et al (2022) claim that by addressing and supporting mentioned concerns, it is possible to improve the institutional and legislative environmental frameworks and better the implementation and enforcement of various environmental laws in BiH.

Findings

Since 1995, various multilateral and bilateral FDAs have been active in BiH, agreeing with the establishment of their local offices. As previously noted, over the past three decades many of these agencies have implemented a diverse array of projects, with environmental protection emerging as one of the principal areas of focus. In this context, I examined the project portfolios and strategies on FDAs official pages. The paper examined previous and current projects implemented by bilateral FDAs and identified seven[14] that have actively contributed to environmental protection initiatives through project implementation over the past years. These seven agencies were chosen from confirmed records of executed environmental initiatives, setting them apart from others not directly involved in project execution inside BiH although participating in regional environmental programming

the Strategy of Waste Management (2017–2026) and the Strategy for Integrated Water Management (2015–2024) in RS, and the Environmental Protection Strategy of BD (2016–2026). At the same time, several key strategic documents have expired recently, such as the FBiH Environment Protection Strategy (2008–2018), the RS Air Protection Strategy (up to 2017), and the Nature Protection Strategy of RS (up to 2018).

14 According to previous research, the Italian development agency has also implemented projects, but an interview with its representatives was not conducted, so it was more difficult to categorize the agency into the mentioned groups.

or strategic commitments. Analysis revealed other FDAs which in their program mentioned involvement in environmental projects in BiH, nonetheless did not implement their projects trough established agencies in BiH. For example, Poland has not actively participated in BiH projects but its National Fund for Environmental Protection and Water Management under the „Polish Climate Support" programme intends to invest about EUR 2.4 million across various nations including BiH as specified in the 2022 Development Cooperation Plan of the Ministry of Foreign Affairs (Funds for NGOs, 2022). Though not through a committed development body, Slovenia has kept interest in environmental programs via its Ministry (Slovenian MFA, n.d). There are also cases of agencies that are active in the field of environmental protection in WB countries, but not in BiH—for example, France's development agency (AFD) has run initiatives in Serbia, Montenegro, and North Macedonia (Agence Française de Développement, n.d.). These instances show that whereas many FDAs claim strategic concern for environmental protection in the area, just a few have carried out such pledges in BiH.

Table 2: List of bilateral FDAs.

Name	Country	Sectors
Swedish International Development Cooperation Agency (SIDA)	Sweden	Air quality, sustainable energy
U.S. Agency for International Development (USAID)	USA	Rural development, energy transition, climate change
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Germany	Decarbonization, water management, energy efficiency
Swiss Agency for Development and Cooperation (SDC)	Switzerland	Disaster risk management, water management
Czech Development Agency (CzDA)	Czechia	Water sanitation, renewable energy
Japan International Cooperation Agency (JICA)	Japan	Air pollution, decarbonization
Turkish Cooperation and Coordination Agency (TIKA)	Turkey	Rural development

Locating the Environment in Agency Agendas

As mentioned, the first steps taken to conserve the environment in post-war BiH were mostly about removing mines, which were the most immediate hazards to people's safety and the land's usability. Over time, bilateral FDAs slowly added more environmental issues to their portfolios, especially when there were natural disasters (e.g. floods in 2014 and 2024). As mentioned, FDAs working in BiH have changed their methods and the level of sustainability built into their environmental programs over the course of almost 30 years of working with other countries. The work of agencies on environmental projects ranges from a few isolated interventions over the past 30 years to complex, long-term strategies within the broader framework of environmental protection. Drawing on observations from interviews regarding the continuity, institutional embeddedness, and thematic scope of their environmental engagement, agencies can be broadly grouped into four main categories:

Episodic or Emergency-Oriented Agencies; It includes agencies that have only few times implemented environmental projects which were related to a specific crisis. These include clearing landmines right after the war and giving technical and financial help during natural disasters like the floods in 2014 (i.e. The Austrian Development Agency (ADA) and the Danish International Development Agency (DANIDA)). Therefore, their involvement is reactive, short-term, and doesn't fit into larger environmental governance frameworks.

Intermittent but Collaborative Agencies; These organizations do not usually have clear or specific plans for environmental projects for BiH. As interlocutors mentioned, projects in both agencies are exceptional, country specific and not related with previous projects. However, agencies such as TİKA and JICA have long experience in implementing projects in BiH and take feedback from state institutions to provide targeted support (Interlocutors 1 and 2).

Thematically-Focused, Strategic Agencies: This group includes agencies that carry out long-term environmental programs with more clearly defined thematic priorities. They might not have detailed environmental plans; however, their actions are more focused on certain areas of the environment and are more programmatic. These agencies often renew or expand their work based on how well earlier projects went and how national requirements are changing. For example, CzDA, SDC are focused on water protection (Interlocutors 3 and 4)., while the SIDA is focused on the projects related to reduction of the emissions in air, water and soil (Interlocutor 7) and USAID is focused on energy transition (Interlocutor 6).

Institutionalized, Multi-Sectoral Environmental Agencies: The fourth group includes an organization such as GIZ, that take the most thorough and long-lasting approach to environmental projects. These groups have created environmental clusters or sectoral portfolios that cover a lot of ground and are closely tied to national policy frameworks (Interlocutor 5). Their help often covers a wide range of areas, from adapting to climate change and protecting biodiversity to transitioning to clean energy and managing the environment. These frameworks include ways to build capacity, enhance institutions, and coordinate work across sectors. Although a cluster has been established and the importance of environmental issues has been highlighted, the GIZ representatives are applying for projects to be implemented in BiH. At the time of application, the existence of the cluster reflects a serious and structured approach to these matters. However, this does not necessarily guarantee the sustainability of the cluster, especially if future government decisions shift investment priorities in a different direction.

Level of engagement in practice and modes of intervention

Examining the landscape of agencies working in BiH reveals two primary approaches to engagement. Some groups focus their work on the *local level* and are important partners for communities looking for long-term solutions. TIKA is very focused on

certain environmental problems and has a clear plan for how to impact them. One important reason for this approach is the complicated government system that was set up after the conflict.

Organizations that work at both the *local and national levels* take a different strategy. USAID and GIZ are two well-known, multi-faceted organizations that mostly have long-term, cooperative connections with government officials at all levels is what makes them strong. This category covers comprehensive support providing both technical expertise and infrastructure investment along with strategic policy guidance, such as support for policy development, regulatory reform, institutional strengthening, and capacity building in public administration. With mentioned experience and capacity, agencies can respond to the different needs of various types of government, which equips them with the capacity to strategically implement complex, multi-layered initiatives across various sectors and governance levels. In addition to their work on the ground, these groups together with the EU are the biggest financial supporters of environmental projects in BiH (International Aid Transparency Initiative- IATI, n.d.). Therefore, agencies mainly engage at the state and entity levels in BiH because all levels hold formal authority over environmental policies and strategic decision-making. Collaboration occurs through partner institutions within ministries at these levels, ensuring alignment with official government priorities.

There are also examples also strategically step in at the national level to meet specific regulatory needs that they have worked with their partners to find (e.g. establishment of regulatory water policies through the MEG project (implemented by SIDA, SDC, and CzDA) and the implementation of the National Energy and Climate Plan (NECP) by SIDA). These agencies are focused on providing technical knowledge and funding. (e.g. Green Economic Development Phase where SIDA invested 50% in energy savings in public buildings) or support for physical infrastructure (Ugljevik plant project by JICA, Greenhouses for Women Farmers in Kakanj by TIKA etc.). While their primary institutional partner is often MOFTER (or entity ministries), project implementation is typically carried out at the local level.

Inter-agency coordination and gaps

Environmental projects are occasionally implemented by FDAs in collaboration with other agencies. In general, interlocutors indicated that pursuing collaboration with other bilateral agencies is not standard, as it is challenging to achieve cooperation that satisfies the internal project metrics of both agencies. However, according to previous experience, interviewees mentioned examples of previous partnerships through their project implementation:

> In practice, collaboration between agencies in BiH often develops out of practical needs or shared interests. One common form is when an agency plans to implement a project but lacks an on-the--ground presence. In such cases, it relies on trusted partners with local experience. A good example of this is SIDA, which has frequently appointed UNDP[15] to deliver projects, taking advantage of UNDP's long-standing presence and operational capacity in BiH.

Collaboration also takes place through project proposals, where one agency reaches out to another with a concrete idea. Several representatives explained that proposals are often submitted directly to agency headquarters- which evaluate whether the proposed partnership fits within their strategic plans. This process is often formalized but still based on prior trust and shared objectives.

In some cases, agencies working in the same thematic area form longer-term alliances. These partnerships go beyond individual projects and aim for coordinated, sector-wide impact. A notable example is the Water Alliance[16], which brings together SIDA, SDC, and CZDA to jointly support improvements in water management and sanitation across the WB countries.

15 Project: Environment: Persistant Organic Pollutants (2019-2026).

16 'Water Alliance" was also presented where international partners act in cooperation to address water services issues in BiH. Water Alliance in BiH is the platform of the international development organizations active in the water services sector,with more than EUR 210 million invested in the sector over the past decade, more information: https://www.czechaid.cz/cs/file/da6ab596444c7323a54bce61b1e7cb24/26568/DCP_with_BaH_2030_en_final.pdf

The necessity and complexity of operating in a highly fragmented governance environment are reflected in the modes of cooperation adopted by development agencies in BiH whether through strategic coordination platforms like the Water Alliance, bilateral partnerships, technical assistance programs, or pooled funding mechanisms. Usually, these forms of cooperation serve as a response to institutional disorganisation and overlapping jurisdictions, providing pathways for more harmonized intervention (OECD DAC, 2003). Although coordination initiatives can improve efficiency and policy alignment, they are also limited by political dynamics, competing mandates, and power imbalances between international actors and local stakeholders (Chandler, 2006; Barnett & Zürcher, 2009). In such environments, cooperation is not merely a technical or administrative arrangement; it is inherently political and negotiated, influenced by local interest, governance arrangements, and donor priorities (Martin-Diaz, 2017). Therefore, in BiH and similar post-conflict settings, sustainable and equitable development outcomes are dependent upon the implementation of inclusive, transparent, and adaptable engagement strategies that are founded on mutual trust, long--term commitment, and local ownership (UNDP, 2021).

Conclusion

Most of the foreign development agencies established offices in BiH in 1995, after the war. BiH as a highly decentralized country, both politically and administratively prevents agencies from adopting a united or comprehensive approach. Development organizations that work on the ground typically must deal with a complicated network of institutions, from state and entity levels to cantonal and municipal authorities. Each of these has its own set of duties, priorities, and political dynamics. This complex network of governance can lead to the prolongation of procedures, create confusion, and make it difficult to ensure consistency or clear accountability. Because of this, agencies must invest a great deal of time, energy, and resources into building trust, fos-

tering cooperation, and carefully aligning their work with a wide range of actors across different levels of government.

The agencies' initial interventions were primarily focused on post-conflict recovery, particularly explosive ordnance disposal. Moreover, most of their activities two decades ago focused on providing technical support, making direct investments, and enabling conditions for displaced communities to return to their local areas. Over time, these engagements evolved into more comprehensive portfolios, including significant environmental programming. Much of the narrative surrounding these agencies with more complex portfolios is framed as supporting BiH path toward EU accession. While existing literature often highlights the contributions of these agencies, there is a noticeable lack of analysis concerning their specific approaches in BiH context. This paper aimed to provide an initial mapping of these approaches by examining their environmental agendas as reflected in strategic documents, the levels of government they engage with, the types of support they provide, and the nature of their cooperation.

Based on the interviews conducted, it became evident that within the environmental sector, development agencies operate along a wide spectrum — from those still focused on providing emergency interventions to those with highly developed, environment-specific clusters. In addition to technical and infrastructural support, several agencies have been providing long-term technical assistance in environmental policymaking. These are typically the agencies with continuous engagement at both the state and local levels. In contrast, other agencies operate solely at the local level, with limited or no interaction with a higher level of government.

The interviews showed that agencies cooperate in different ways, from formal partnerships to informal ways of coordinating their work. Agencies that have more broader mandates and multi-level engagement build stronger networks and work closely with both government agencies and other development partners. On the other hand, agencies that are more focused on their local area frequently do not work with other agencies outside of their immediate area.

Overall, fragmented institutional landscape in BiH not only forms how agencies operate but also limits the potential for coordinated long-term environmental governance. Different approaches—from localized service delivery to strategic policy engagement—reflects agencies' adaptation to both opportunities and limitations within the system. However, without stronger coordination mechanisms, the sustainability of these efforts remains uncertain. Further research can focus on how different models of collaboration affect institutional development and policy outcomes, how local stakeholders perceive and respond to agency involvement, and what factors contribute to the long-term sustainability of externally supported environmental initiatives. It would also be constructive to examine how agencies balance technical goals with political realities, and to compare approaches across bilateral and multilateral actors within the environmental protection area.

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When the implementation of strategies has had intended or unintended, desired or unwanted effects on the living conditions of a particular community, it is to be expected that those directly affected and their advocates or supporters would speak out, organise, and oppose the continuation of such public policies and those actors who have primarily contributed to the deterioration of their living conditions, due to such public policies were originally designed.

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