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Environmental and Natural Resource Economics and Systemic Racism

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Abstract

This paper highlights some ways in which scholarly work in environmental and natural resource (ENRE) economics may be affected by and unintentionally further racial inequity. We discuss four channels through which these effects may occur: (1) prioritization of efficiency over distribution, (2) inattention to procedural justice, (3) abstraction from crucial historical or social contexts, and (4) a narrow focus on problems perceived as tractable. We offer specific examples of how racial inequity may be furthered by work in the field through welfare and valuation methods, policy modeling choices, and treatment of the commons. We document opportunities to improve the field by better considering how racial inequity may affect and be affected by ENRE analysis. ENRE scholars have tools that can mitigate systemic racism in access to natural resources and a clean environment, but work must be done to realize that potential.

Contents

1. Introduction	1
2. Foundations	2
3. Welfare Economics and the Measurement of Values	4
3.1. Biases in Individual Value Measures	4
3.2. Justice in Aggregating Individual Values	6
3.3. Anthropocentrism, Commensurability, and Consequentialism	7
4. Policy Analysis	8
4.1. Neglecting Equity-Relevant Complexities	8
4.2. Limited Policy Consideration Sets	10
5. Managing the Commons	11
6. Looking Forward	13
7. References	15

1. Introduction

Systemic racism is racial discrimination that extends beyond individual beliefs and interpersonal interactions to pervade institutions, policies, and unwritten norms. Extensive evidence shows systemic racism’s depth and breadth, both historically and in present-day society.¹ The human experience of environment and environmental policy is not independent of the world’s racial inequities. For instance, the US environmental justice movement has shown that the poor and people of color disproportionately bear environmental hazards (e.g., Bullard 1983). This paper examines how the work of environmental and natural resource economics (ENRE) itself may unintentionally uphold rather than work against status quo racial inequity. By evaluating common ENRE practices related to justice and racial equity, we can empower researchers in the field to refine existing methods and develop new tools to address systemic racism. Our work complements but differs from the expanding economics literature on environmental justice (Banzhaf et al. 2019), which studies unequal exposure to pollution and access to environmental amenities. We explore the relationship between race and the tools, models, assumptions, and recommendations of ENRE analysis itself. Our goal is not to quantify the role of ENRE in producing racist outcomes; rather, we highlight how race enters into ENRE’s methods and policy recommendations, perhaps without any scholar’s conscious intention, revealing opportunities for innovations in both positive and normative research.

We begin by laying out foundational background and definitions. We contextualize this discussion within the history of racial inequity in the United States, although we also describe how these issues apply internationally. We then discuss three areas in which the field’s approaches, when applied without considering systemic racism, can inadvertently maintain or exacerbate racial inequities: valuation and aggregation, policy modeling and analysis, and management of the commons. The paper concludes by discussing how ENRE research could better address issues of structural racial inequity.

Four overlapping themes weave through this paper. First, economics, including ENRE, continues to prioritize economic efficiency above distributional welfare. Second, economics studies outcomes more often than process and so neglects questions of procedural justice. Third, ENRE economists often overlook historical and institutional context—notably, racist systems that have produced tremendous inequality in wealth, income, property ownership, power, experienced environmental quality, and health care. Fourth, ENRE tends to study a narrow set of policies, focusing on those that

1 Racial inequity stems from many factors, including historical enslavement of (primarily Black) people of color (Logan 2022) and removal of Indigenous people from their land (Farrell et al. 2021); it also results from ongoing racial discrimination in domains ranging from health care (Bajaj and Stanford 2021) and policing (Boyd 2018) to labor, credit, and other markets (Lang and Kahn-Lang Spitzer 2020; Small and Pager 2020). Stratification economics (Chelwa et al. 2022)—an influential model of intergroup disparities—holds that “material benefits that redound to dominant groups” induce efforts to retain advantages through discriminatory practices (Darity 2005), so racial discrimination is unlikely to fade without conscious interventions.

are readily analyzed with modern empirical tools or perceived as directly related to the environment. These themes do not span the whole of the field's challenges with regard to racial equity; however, they showcase some ways ENRE methods and mindsets can inadvertently work to uphold systemic racism, and they thus demonstrate a need for deliberate attention to the racial implications of ENRE scholarship.

2. Foundations

Historically, ENRE, following norms of neoclassical economics more broadly, has not widely acknowledged the role of systemic racism in determining the distribution of experienced environmental quality, nor has it given significant attention to policies that combat inequities in access to natural resources and environmental quality. These oversights may be influenced by the lack of diverse perspectives in the field. ENRE economists are not racially diverse, perhaps in part because economics overall is experienced as hostile and presenting barriers to scholars of color (Bayer et al. 2020). Though comprehensive data are difficult to find, Kuminoff et al. (2022) find that registrants at the 2021 Association of Environmental and Resource Economists (AERE) conference self-reported as 62 percent White, 31 percent Asian, and only 2 percent Black. An analysis of a 2012 survey of AERE members shows that 87 percent of respondents identified as White (Haab and Whitehead 2017), and Hilsenroth et al. (2021) find that 78 percent of assistant, 87 percent of associate, and 90 percent of full professors in agricultural and applied economics departments identify as White. Economists also earn relatively high incomes; the mean reported salary for a new economics PhD was \$120,373 in 2021 (Jebaraj et al. 2021). Furthermore, relative to other PhD fields, economists tend to be extremely socioeconomically advantaged and generally unrepresentative (Schultz and Stansbury 2022).

Systemic racism is relevant to ENRE analysis because it affects many settings and markets that shape experienced environmental quality and access to natural resources. Labor market discrimination (Darity and Mason 1998; Bertrand and Mullainathan 2004) constrains employment opportunities and wages for people of color. Credit market discrimination in housing (Munnell et al. 1996) and the greater financial sector (Blanchflower et al. 2003) restrict wealth accumulation among people of color and thus their ability to invest in environmental quality and pollution avoidance. Discriminatory zoning policy (Hinds and Ordway 1986; Whittemore 2017) and behavior in the real estate market (Christensen et al. 2020) directly restrict the ability of people of color to live in neighborhoods with clean environments; discrimination may create other “frictions” that similarly limit choice relating to the environment.

Racial disparities in wealth, land, and exposure to environmental hazards reflect this ongoing systemic racism. The 2016 US Survey of Consumer Finances shows a median net worth of \$17,600 for Black households compared to \$171,000 for White households (Dettling et al. 2017). US Indigenous tribal land area has shrunk by 94 percent from its historical peak, and current tribal land experiences above-average levels of extreme heat and drought (Farrell et al. 2021). People of color are disproportionately likely to be exposed to air pollution (Colmer et al. 2020), live near toxic waste sites (Currie 2011)

and oil and gas infrastructure (Kroepsch et al. 2019), experience extreme urban heat (Hsu et al. 2021), and bear larger climate damages (Barbier and Hochard 2018). These inequities are not unique to the United States (e.g., Viel et al. 2011; Harper et al. 2009). Moreover, globally, these issues may arise on not only dimensions of race and ethnicity but also caste, religion, and social status, among others (Newell 2005; Laurent 2011). In short, evidence is growing of the negative impacts of systemic racism on environmental conditions that communities of color experience. However, documentation of the prevalence and magnitude of the problem in ENRE is far from complete. Crucially, how much ENRE methods and policy recommendations affect and are affected by these challenges remains unclear.

The evidence that does exist points to inequities in the distribution of both environmental outcomes and meaningful opportunity to seek better environmental conditions. However, an exclusive focus on distributive justice disregards procedural justice, which requires “fair, participatory, and inclusive structures and processes of environmental decision making” (Bell 2014) and is a standard element of environmental justice definitions.² Just processes give affected communities voice, treat them with respect and impartiality, and are transparent (LaGratta 2017). Procedural justice has intrinsic value by satisfying moral beliefs about recognition, agency, and respect, and instrumental value when the voices of people best positioned to observe environmental problems can influence policy outcomes. Distributive and procedural justice are complements: unequal starting points may create unequal outcomes regardless of a just process, and distributive fixes alone do not eradicate procedural neglect and disenfranchisement (Schlosberg 2004).

2 EPA states that environmental justice requires “equal access to the decisionmaking process to have a healthy environment in which to live, learn, and work” (EPA 2021).

3. Welfare Economics and the Measurement of Values

ENRE economists use welfare economics to determine the benefits and costs of environmental policies and make normative statements about the desirability of policy outcomes. These methods can perpetuate racial inequity in several ways. First, systemic racism can influence empirical estimates of the value of environmental services. Second, methods of aggregating environmental preferences can lead to estimates that further systemic racism. Third, how we use values and the types of values we privilege conflict with the value systems of many marginalized peoples.

3.1. Biases in Individual Value Measures

Nonmarket valuation captures societal values for environmental quality and natural resources. It allows public benefits of environmental improvements to be measured and weighed against (more easily observed) costs. However, some practices yield value estimates that disadvantage marginalized people.

Environmental economics has established that income is a major determinant of willingness to pay (WTP) and willingness to accept (WTA), two common welfare measures. Wealth also likely influences demand for environmental goods: for example, it enables down payments and reduces the cost of credit (e.g., Fuster and Zafar 2021), which facilitate investments that can improve experienced environmental quality. Because wealth and income are correlated with race (see Section II), value estimates are as well. Given that the marginal rate of substitution between income and environmental quality likely decreases in income (Fankhauser et al. 1997), income differentials ensure that estimates of WTP for environmental goods (and WTA for bads) will be higher on average for White people than for people of color even if their preferences are the same.³ Although little is known about the relationship between WTP and wealth, racial wealth gaps could cause an even bigger issue. As noted in Section II, White US households have 10 times the wealth of Black households. If, as is intuitive, WTP does vary with wealth, this vast disparity would yield substantial differences in WTP, even for relatively small WTP–wealth elasticities.

Estimates of WTP for environmental goods can vary by race even controlling for factors such as income (Whitehead 2000) because systemic racism affects measured preferences through more than just income and wealth.⁴ Sociologists have found that US minoritized people have preferences for recreation and nature opportunities that

3 Preferences certainly vary across people. We hold preferences constant in this thought experiment to illustrate that a discrepancy in measured value does not necessarily imply a difference in preferences.

4 Scholars note that race is not a fixed, biologically rooted concept but rather has been constructed by societies to demarcate groups (Chelwa et al. 2022); thus, variation found by race should be interpreted not as an inherent difference but as encapsulating the history of racial exclusion (Spriggs 2020).

are suppressed by present and historical experiences of harassment, violence, and exclusion (Davis 2019; Green et al. 2009). Racism can affect the actual preferences of nonminoritized groups as well. Backstrom and Woodward (2022) show that racial aversion causes White anglers to avoid areas where they might encounter non-White people, which would cause travel cost estimation to estimate lower values of recreation sites near communities of color than would be found in the absence of racial aversion. Policy informed by such values could suppress social investments in amenities for minority groups.

Another issue involves the choice between measuring WTP versus WTA when valuing environmental change. WTA should be used if people are considered entitled (albeit not necessarily legally) to the superior state of environmental quality; if not, WTP should be measured (Knetsch 2010).⁵ However, the profession has favored WTP estimates over WTA since the NOAA Blue Ribbon Panel on Contingent Valuation (Arrow et al. 1993). Because WTP values are typically smaller (Brown and Gregory 1999), using WTP undervalues the environmental quality change if WTA is appropriate. This promotes environmental injustice when the losses fall largely on marginalized communities. For example, the damages of the 2010 Deepwater Horizon and 1989 Exxon Valdez oil spills disproportionately harmed minority communities: Vietnamese-American fishers in the Gulf of Mexico (Lichtveld et al. 2016) and Native Americans in coastal Alaska (Carson et al. 2003), respectively. WTA would be the appropriate welfare measure for these incidents because oil spills take away environmental goods to which people had de facto rights (Knetsch 2010). However, WTP estimates were used to inform damage claims in both cases (Bishop et al. 2017), foreclosing the possibility of full compensation for affected communities.

Biases may be embedded in traditional estimation techniques for environmental valuation because nonmarket valuation overlooks frictions caused by racial discrimination (see Section II). For example, the travel cost method of valuing nature-based recreation amenities can produce lower value estimates for people of color than for White people even were they to have the same preferences, because scholars often implicitly assume access to a car when they use estimates of vehicle operation costs to calculate the cost of trips (Lupi et al. 2020). However, people of color are less likely to own a vehicle (Gautier and Zenou 2010) because of historically lower incomes and systemic racism in labor, credit, insurance, and automobile markets. As access to recreation sites is generally cheaper for people with a vehicle, this practice underestimates travel cost for people of color.

Racial bias in estimates of nonmarket values can also affect benefit transfer, which adapts studies' value estimates for use in a different site. Measured WTP for environmental goods increases with income, so adjustments for income differences improve value estimates from benefit transfer. But those adjustments can be problematic. It is common to assume the elasticity of WTP with respect to income⁶ is constant (Johnston et al. 2021). However, Barbier et al. (2017) find that it is smaller for low-income than high-

5 It can be difficult to determine relevant property rights, especially when that could have winners and losers.

6 This elasticity equals the percent change in WTP for environmental quality resulting from a 1 percent change in income.

income households. When the benefit transfer process uses a WTP–income elasticity that is too high for low-income and disproportionately minority people, it will underestimate their WTP for environmental quality. Benefit transfer work could allow WTP to be a nonlinear function of income (Johnston et al. 2021) or use benefit transfer factors that control for the distribution of both income and inequitable environmental quality exposure (Meza 2020), but these are not common practices.

3.2. Justice in Aggregating Individual Values

Aggregation can add another layer of racial bias. The idea that a policy is desirable if its benefits outweigh its costs corresponds to the existence of a Pareto improvement after transfers (i.e., a potential Pareto improvement). Benefit–cost analysis (BCA) has long informed US public choices, especially since Executive Orders 12291 and 12866, which required BCA for any significant new regulation and guided the analyses of regulatory impact, respectively. BCA has informed the design of policies ranging from the Clean Power Plan to the designation of protected areas. Within this context, ENRE economists play a key role in estimating environmental benefits and damages to inform public choices.

As discussed, people with lower incomes have lower WTP for environmental quality for a given set of preferences. Income and wealth disparities can thus cause similar investments in environmental goods (or cleanup) to appear to generate smaller benefits for people of color. When these values are aggregated, this could lead to recommending less investment in environmental quality for communities of color. For example, Kremer et al. (2011) estimate WTP for water protection in Western Kenya and show that a social planner using these estimates would choose less protection than if they used values typically assumed by health planners working in the Global South. These low WTP estimates, and their implication that water should be less protected, are natural consequences of the colonialism that suppressed income and wealth of people of color in Kenya. Some practices aim to counter that WTP variation by income and wealth (for example, the EPA does not use value of statistical life estimates that vary by income),⁷ but most nonmarket valuation research does not address this equity concern.

Formally, a BCA that simply adds up all WTP values will underweight the preferences of low-income people (Coplan 2017). As income and race are correlated (see Section II), it will also systematically underweight the preferences of people of color. Without compensation, policy decisions made based on it can exacerbate racial inequity; decisions about environmental regulations that have net benefits to society often have costs that accrue disproportionately to low-income groups. For example, low-income and minority populations are disproportionately harmed by coal-waste pollution from power plants that is permitted because it passes a benefit–cost comparison (Coplan 2017). Modern BCAs should build equity concerns into their analyses and can do so using existing strategies. For example, alternative BCA approaches can apply equity weighting to counteract the inequity embedded in the distribution of income and environmental damages (Adler 2016). Such practices are not, however, commonly used. For example, the EPA guidelines for BCAs do not recommend them.⁸

7 On the other hand, use of a value of statistical life that does not reflect people’s personal willingness to pay to reduce mortality risk can itself violate procedural justice by denying them agency in evaluating trade-offs.

8 See <https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses> (page A-7).

3.3. Anthropocentrism, Commensurability, and Consequentialism

Despite its limitations, the standardized BCA procedures can help government decisions that affect the environment to be less vulnerable to capture by powerful parties. Nonetheless, ENRE scholars should recognize how the concepts underlying BCA advantage the belief structures of dominant groups. In particular, neoclassical economists, including those in ENRE, generally take a consequentialist and anthropocentric view of welfare that makes sweeping implicit assumptions about commensurability—a view that is fundamentally at odds with the value systems of many marginalized cultures.

Anthropocentrism focuses on human well-being, and the well-being of nonhumans matters only insofar as it affects humans (Johansson-Stenman 2018; Carlier and Treich 2020). In contrast, some cultures' value systems account for nonhuman well-being directly, and some have nonconsequentialist values. For example, most Native American tribes seek harmony with a world consisting of intrinsically valued beings and nonbeings (Hammer 2002), and some South Asian cultures hold nonviolence to animals, earth, and self as a common value (Chapple 1993). Elements of the natural world in some Indigenous cultures are treated more like kin, rendering a focus on maximizing instrumental benefits from them immoral (Salmón 2000; Kimmerer 2020).

The monetization of benefits and costs also assumes a commensurability (in which everything is implicitly fungible) that conflicts with ideas of sacredness, intrinsic value, or kinship with the natural world. For example, the US government has not recognized the intrinsic value the Standing Rock Sioux perceive in lands they consider sacred, leading to intense conflict regarding the Dakota Access Pipeline (LaPier 2016). Other tribes have refused to accept hundreds of millions of dollars from the government in compensation for lands that the United States illegally seized from tribes because doing so would contradict the principle that land is to be held in common (Zerbe and Anderson 2012). Schlosberg (2004) relates this to justice in the form of recognition of communities' cultural identities.

Finally, some view the welfarism and utilitarianism underlying neoclassical economics as excessively narrow and not meaningful measures of well-being (Sen 1987), partly because a consequentialist framework makes choices based on outcomes and neglects the processes that yield them. This framework can conflict with other value systems, including those based on rights (Aldred 2006; Spash 1997), and more expansive, and commonly accepted, views of justice (Schlosberg 2004). Unjust decisionmaking processes limit representation of the interests of marginalized people, as with the Standing Rock Sioux's sacred lands (Johnson 2019), and promote unjust outcomes. Furthermore, many people inherently value procedural justice (Dolan et al. 2007) or agency (Sen 1987, 1999).

4. Policy Analysis

ENRE has sizeable influence on policy choice and design through economic modeling and rigorous quantitative analysis. However, that influence may not always promote racial equity.

4.1. Neglecting Equity-Relevant Complexities

Traditional models of policy impacts often overlook discrimination, transaction costs, information failures, and other factors that mediate the effects of policy on racial equity. Furthermore, econometric analyses often use simplified representations of race and gender that do not account for discrimination in the world from which the data emerge (Emmons and Ricketts 2017) or the socially constructed nature of these variables (Spriggs 2020).

Abstraction is necessary to build tractable models, but systematically omitting features that disadvantage communities of color can produce overly sanguine assessments of policies, institutions, and arrangements that can deepen these disadvantages. This means ENRE may champion interventions that will not accomplish the desired goals, fail to advise policymakers to compensate “losers” for harmful outcomes that models are not designed to see, or fail to prescribe an intervention that would address an environmental problem borne by groups that are invisible in scholars’ models.⁹ We present several examples of problems caused by abstraction.

First, some economic models assume people can sort freely to live with their preferred balance of cost and environmental quality. These simple models produce inaccurate results because of racial barriers in access to environmental quality. Housing in areas with better environmental quality is more expensive, as amenity and health benefits are capitalized into sale prices and rents (Bishop et al. 2020). Racial inequity in wealth and income (see Section II) and discrimination make it more difficult for racial minorities to live in areas with good environmental quality (Ladd 1998; Asiedu et al. 2012), and a link between hidden pollution and observable amenities can exacerbate this issue (Hausman and Stolper 2020). In the presence of sorting that correlates with race, if environmental improvements require moving away from similar households, this creates an additional cost for minority households (Banzhaf and Walsh 2013). Discrimination can operate through zoning decisions that increase exposure to polluting industries among people of color (Shertzer et al. 2016) or real-estate marketing systems that steer minority households away from low-pollution locations (Christensen et al. 2020). Similarly, White residents may act to keep racial minorities out of high-amenity neighborhoods by influencing zoning (Trounstine 2020) and make them feel unwelcome or threatened if they do move into a majority White neighborhood (Bell 2019).

Second, many ex-ante economic analyses of pollution policies make inaccurate

9 For example, models of “representative” agents erase differences in race, gender, and other dimensions of vulnerability.

predictions because they implicitly assume compliance (Gray and Shadbegian 2021); this assumption is prescribed in the EPA's BCA guidelines (EPA 2010, 5–9). However, polluters regularly violate standards (Andarge and Lichtenberg 2020; Zou 2021). Some recent research finds that pollution standards are less effectively enforced in low-income and minority communities (Li et al. 2019; Grainger and Schreiber 2019), although an earlier review (Konisky and Reenock (2015) report mixed evidence. Similarly, contracts for resource rights may have fewer environmental protections in communities with more minority households (Vissing 2015).

Next, studies of the effects of environmental policies on neighborhoods can yield misleading predictions by neglecting ripple effects through markets and relocation. Environmental policies can trigger gentrification and dissolution of minority neighborhoods (Gould and Lewis 2016). Brownfields, for example, tend to be located in neighborhoods with concentrations of racial minorities, who are also disproportionately likely to rent homes. As brownfields are remediated, rising housing values may therefore displace households of color (Lee and Mohai 2012; Freudenberg et al. 2011). The welfare effects are even complicated for home-owning members of a majority-minority community: while their homes increase in value, these gains may be offset by a loss of cultural critical mass and support networks if their erstwhile community is dispersed (Pettersen et al. 2006). Similar issues arise in managed retreat from flood-threatened areas, as policies to buy out households are structured to recommend retreat more often for low-income and minority communities (Siders 2019).

Last, economists often ignore realistic barriers to bargaining for rights to environmental quality, despite evidence that minimally regulated bargaining has racially inequitable outcomes (e.g., Vissing 2015). Coase (1960) posits that, absent transaction costs, private parties can strike efficient arrangements regarding environmental harm without government intervention. Policies such as EPA's "33/50" program that promote voluntary pollution reduction rest on this idea, and the Toxic Release Inventory is supposed to empower people to negotiate with polluters or move to cleaner communities (Sam et al. 2009). But, as Coase emphasized, transaction costs are often large (McCloskey 1998). In the context of bargaining for environmental quality, it costs time, money, and political capital to obtain necessary information and fight siting proposals. Because of discrimination and wealth inequality, these barriers are harder to overcome for people of color. Thus, abstraction from transaction costs promotes environmental policies that perpetuate racial inequity in sorting and bargaining settings.

ENRE scholarship incorporating these complexities exists, especially in the growing environmental justice literature, but the findings of this literature and analogous literatures outside economics are still not widely incorporated into other studies. For instance, some ENRE scholars have studied impacts of and solutions to environmental gentrification (Banzhaf and McCormick 2012; Banzhaf et al. 2019), but other papers estimating the benefits of urban environmental improvements only mention these concerns in passing, if at all.

4.2. Limited Policy Consideration Sets

Which policies we choose to study also affects racial equity. Eliminating racial disparities throughout society will require policies of broad scope and ambitious scale. In comparison, the set of policies studied by ENRE economists is narrow and anchored to the status quo with regard to race. We present three examples of this narrowness and then discuss potential contributing factors.

First, policy and investment are needed with regard to US water and sanitation infrastructure. At least two million Americans lived without access to safe drinking water and sanitation between 2010 and 2014 (Dig Deep and US Water Alliance 2019). Water infrastructure inadequacy is a problem in urban areas, where climate change–induced extreme weather events overwhelm aging combined sewer systems (Barnard et al. 2021; Aguilar 2021), and in rural areas, where poverty and remoteness can force households to live with raw sewage flowing on their properties (Flowers 2020). Black and Hispanic households and Native American households are 2 and 19 times as likely as White households, respectively, to lack indoor plumbing (Dig Deep and US Water Alliance 2019). Study of these topics in ENRE, however, has been limited (examples are Cutler and Miller 2005; Watson 2006).

Second, land taken from Indigenous communities could be returned to them. For example, creating the National Park System was made possible by removing Indigenous people from those lands through physical force or treaties signed under duress (Treuer 2021). One way to repair this injustice would be to return ownership and administration to Indigenous tribes (Treuer 2021). Acknowledgment and restoration of tribal control would counter the injustice and function as environmental policy by affecting conservation activity. However, ENRE economists have not studied land restitution as policy.

Third, reparations for Black Americans as redress for enslavement and discrimination could diminish the economic divide between Black and White Americans by closing the tremendous racial wealth gap (Darity and Mullen 2020; Darity et al. 2022). Wealth inequality is a primary cause of environmental inequality (e.g., Banzhaf and Walsh 2008). Therefore, reparations would likely, through sorting and increased resources to bargain and claim rights, reduce Black communities' disproportionate exposure to pollution. Other scholars have proposed reparations for climate change–related injustices (Perry 2020); ENRE scholars could make contributions to this type of policy analysis but largely have not.

These examples are symptomatic of systemic limitations in ENRE and economics in general. First, the continued primacy of efficiency in economics discourages research on policies that focus on equity. Second, ENRE's marginalization of procedural justice sidelines work on policies that target decisionmaking processes, such as zoning and permitting (Banzhaf et al. 2019) or settlement of court cases for corporate environmental wrongdoing (Campa and Muehlenbachs 2021). Third, homogeneity of ENRE scholars (see Section II) also likely narrows policy analysis, because lived experiences inform research. Finally, disciplinary norms related to research methodology shape what we study. Empirical analysis has been increasingly central to economics research over the past six decades (Hamermesh 2013) through the “credibility revolution” (Angrist and Pischke 2010). But prizing clean causal estimation narrows the policy set considered because, among other reasons, many policies that could reduce racial inequities have not been implemented, so they cannot be studied with these methods.

5. Managing the Commons

The “Tragedy of the Commons” (Hardin 1968; Gordon 1954) is deeply embedded in ENRE (Frischmann et al. 2019). In this model, a failure of property rights causes environmental problems, particularly resource (over)use in an open access setting with selfish agents. This model informs the economic discourse on open access resources (e.g., Leibbrandt and Lynham 2018) and climate change policy (e.g., Barrett 2020), among other arenas.

The open access model predicting overexploitation fits aspects of some environmental problems, such as highly migratory fisheries, but it is not perfectly applicable to other problems studied by ENRE scholars. In some cases, alternative models of governance and property ownership, including those held in community, better describe reality, and some newer literature has acknowledged this (e.g., Ferraro and Agrawal 2021). However, ENRE policy recommendations often revolve around establishing private, individual, and enforceable property rights. Implementing those recommendations sometimes ignores institutional and contextual complexities in ways that lead to predictably and systematically racially unequal outcomes.¹⁰ The perverse incentives generated by externally imposed property rights and the distributional consequences of such solutions rarely get much attention, and the institutions and voices of Indigenous communities of color are undervalued.

Scholars sometimes mischaracterize traditional modes of governance as property-rights failures and prescribe property rights-based solutions to reduce overuse. Ostrom notes that the tragedy of the commons model does not allow for realistic forms of collective or self-governance because it assumes away important aspects of behavior (Ostrom 2008). Ostrom (e.g., 1990) and others (e.g., Agrawal and Gibson 1999; Dietz et al. 2003) have shown that local institutions and community governance can promote environmental quality and resource conservation given certain conditions, which is reinforced by examples of successful traditional commons management (e.g., Brinkley 2020; Feeny et al. 1990).¹¹

Overuse of property-rights solutions is not a race-neutral scholarly choice, because in the modern day, many traditionally or commonly managed resources are held by Indigenous communities of color, especially in low-income countries (Wily 2011). Nor is it the case that otherwise sound ENRE ideas been poorly implemented. ENRE scholars note that, to implement market-based solutions, property rights must be formalized (Grainger and Costello 2014) and made secure and enforceable (Alix-Garcia and Wolff 2014), but, as stratification economics notes, economics has often promulgated the use of markets in policy without recognizing how economic, political, and social power can make markets

10 Additionally, scholars narrowly focused on property rights may ignore other causes, especially those related to history, context, and political power. For example, Aklin and Mildemberger (2020) argue that issues such as climate change are better understood as political problems in which powerful players impede solutions.

11 Local and Indigenous control can improve conservation: Dawson et al. (2021) find from 159 studies that conservation efforts with meaningful local and Indigenous participation are most likely to achieve positive environmental and community outcomes, and Becker and Ghimire (2003) argue that traditional Indigenous knowledge can protect ecosystems in common property systems, especially in conjunction with conservation science.

worsen inequality (Chelwa et al. 2022).¹² Wily (2011) argues that African land laws have failed to see traditional rights as real property rights and thus failed to protect them as new markets have been introduced. As a result, to participate in conservation markets, such as Reduced Emissions from Deforestation and Forest Degradation (REDD) or trophy hunting markets, property right formalization has taken away or dramatically curtailed rights of communities that had previously commonly managed a resource (Dooley et al. 2008; Ituarte-Lima et al. 2014; Griffiths and Martone 2009; Yasuda 2012).

The formalization of property rights to allow market participation frequently happens through uninclusive processes, denying Indigenous communities of color agency and procedural justice. For example, early REDD projects ignored concerns raised by Indigenous peoples, nongovernmental organizations, and social development specialists about human rights, land tenure, customary rights, equity, and local participation. In some cases, projects were started before communities had even learned about them (Espinoza Llanos and Feather 2011; Griffiths and Martone 2009). REDD+ was designed to do better by embracing goals such as Indigenous rights (Alix-Garcia and Wolff 2014; Angelsen et al. 2018). However, some REDD+ projects still do not incorporate local perspectives (e.g., Ituarte-Lima et al. 2014; Sunderlin et al. 2014); project documents sometimes are not translated for local communities (Ituarte-Lima et al. 2014) or community members simply do not understand the projects (Sunderlin et al. 2014). Local communities strongly objected to the Tanzanian government's policy to monetize wildlife for sport hunting and safari tourism, but their voices were ignored (Benjaminsen et al. 2013), and local Zambian communities were excluded from decisionmaking on creating and operating a game management area (Lindsey et al. 2014). This exclusion is procedurally unjust; furthermore, local voices have instrumental value in predicting problems like those we describe.

Markets for ecosystem services theoretically provide benefits by creating value that incentivizes ecosystem protection. However, that value also incentivizes those with financial capacity (usually governments and well-resourced private actors) to try to expropriate those values as rents. For example, in Africa, recent decades have seen a surge of private acquisitions of commonly held land (Wily 2011). In Peru, "carbon pirates" have convinced Indigenous communities to give up land rights on terms beneficial to commercial interests (Espinoza Llanos and Feather 2011). In Tanzania, state and private actors have seized natural resources for conservation markets, sometimes known as "green" or "blue" grabbing (Benjaminsen and Bryceson 2012). REDD projects have also resulted in conflicts over land and resources (Espinoza Llanos and Feather 2011). Even in an REDD+ project in Tanzania with extensive community engagement, social safeguards, good governance principles, and a pro-poor approach, imposing new property rights sparked land disputes between previously cooperative villages, restricted communities' access to assets they relied on, and brought economic and physical displacement (Scheba and Rakotonarivo 2016). Even if land is not expropriated, the surplus created by conservation markets may be. In northern Cameroon, the state claims the sport hunting revenues, while local communities near hunting reserves have been forced to migrate (Yasuda 2012). In Tanzania, the state took property rights to wildlife for sport hunting and tourism away from communities, at times violently (Lindsey et al. 2014).

12 Some new work studies the distributional impacts of markets introduced by policy (e.g., Hernandez-Cortes and Meng 2020).

6. Looking Forward

ENRE seeks to improve human welfare through better stewardship of the environment and natural resources. The field has made many important contributions through wiser policy, but some ENRE work can, despite good intentions, exacerbate racial inequity by prizing efficiency over equity, overlooking procedural justice, abstracting from equity-relevant complexities, and focusing on narrow conceptions of relevant problems. This paper has highlighted ways that key conceptual and methodological approaches in ENRE may unintentionally uphold and reinforce systemic racism, but we are optimistic that the field can innovate to address these problems.

Some innovations follow the lead of the scholars who are already advancing research on social and environmental justice. Our profession's notable recent interest in these areas, as illustrated by publications in top economics journals and plenary and thematic sessions at the 2022 AERE conference, offers an opportunity for ENRE scholars to pursue and be recognized for relevant research. ENRE researchers can explore ways to improve tools and models with greater emphasis on features such as distribution of welfare. Careful measurement of unequal impact is valuable (Sheriff and Maguire 2020), and scholars can build distributional concerns into benefit–cost analyses with equity weights (Fleurbay and Abi-Rafah 2016; Wagner et al. 2021). Research can further advance thinking about common ownership as a complex but well-defined type of property right (Ferraro and Agrawal 2021), and tools such as nonmarket valuation can be enriched to account for structural racism. Some ENRE models will need to be made more complex to reflect important context, although humility with regard to our models' predictive powers will always be needed.

Other innovations will need to bridge broader gaps to tackle thorny problems of environmental and racial injustice. ENRE research could engage more with procedural justice by bringing local knowledge or preferences into policy analysis (e.g., Walker and Baxter 2017) or conducting community engaged research (e.g., Lewis and Sadler 2021). The discipline should also reward work that is more ambitious in studying questions with racial justice implications even when causal identification is not possible, recognizing that suggestive evidence related to crucial questions is still important. In these efforts, ENRE scholars should engage more with environmental scholars in other fields and race scholars in all fields. That engagement could, for example, seriously entertain critiques of ENRE's conceptions of value and form multidisciplinary collaborations with scholars grounded in the study of race and racism. All of these changes must come from not only individual scholars but gatekeepers, such as journal editors and tenure-letter writers.

Other efforts in the field could complement these advances. Notably, those engaged in teaching can improve what and how they teach. Instructors and textbooks can present a broader and more balanced treatment of concepts, methods, and issues, with discussions of the social justice issues relevant to ENRE. Curricula could confront

rather than embed discriminatory elements.¹³ More generally, as students become more diverse, ENRE educators should contemplate how their teaching must evolve in response and the opportunities this diversity presents (Bayer et al. 2020). Current scholars can learn much from new students, particularly given the present limited demographic diversity of the field (which can be self-perpetuating). If ENRE better engages with issues of social inequities and racial justice, scholars passionate about racial equity may be more likely to persist in and share their insights with economics rather than leaving for other fields.

ENRE scholars should also be mindful of how their output will be used. Misuses of research show that researchers have an obligation to provide better guidance for users of their analyses. Rather than defer value judgments to downstream decisionmakers, especially when foreseeable judgments could damage vulnerable groups, researchers can communicate more thoroughly the normative implications of their work, including with regard to social and racial justice.

This paper is not the first to document most of these issues, but in presenting them together, it tells the story of a field that means well but could do better. The world is in a racial justice reckoning, and ENRE scholars (including we, the authors) would do well to learn how we are implicated and to work actively against racial inequity rather than perpetuating it (Kendi 2019). Although we have outlined several key issues and offer constructive suggestions, we recognize that we have not enumerated all the field's challenges and do not have all the solutions. Instead, we write this article in hopes of broadening the conversation. We invite all ENRE scholars and the general economics profession to take part.

13 For example, although Hardin's "Tragedy of the Commons" (1968) is often a reading in ENRE courses, it may be time to reconsider whether or how it should be taught. Doing so without acknowledging its troubling content and the eugenics zeitgeist it was part of (Oakes 2016) may alienate budding scholars.

7. References

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