

# new problems and perspectives

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TYING CLIMATE JUSTICE TO HYDROLOGICAL JUSTICE

## *Abstract*

To date, climate justice has been modeled on global justice, giving rise to such notions as ecological space, ecological debt and carbon debt. I worry that global justice fails to compel compliance and ignores hydrological systems' role in cooling atmospheric temperatures. I thus opt to tie climate justice to hydrological justice, a form of global environmental justice that requires transparency and kinship, and proves more coercive since both burdens and targets are local. To demonstrate this view, I first distinguish global justice from global environmental justice. I next show the limits of Simon Caney's forward-looking approach to global justice, which commits diverse parties to just burdens to reach just targets in order to facilitate climate justice. I conclude by noting that modeling climate justice on hydrological justice proves compatible with the goals of the Katowice Climate Package, passed in 2018.

## *Introduction: Water as a buffer against climate variability*

Ever since Rio+10 delegates adopted the Bali Principles of Climate Justice at the Johannesburg Earth Summit, climate justice has been so singularly associated with CO<sub>2</sub> emissions (carbon) that activists, academics, and delegates routinely ignore vital solutions known to avert sea-level rise, such as collecting stormwater in settling ponds, bioswales, and berms, thereby reducing the volume of water entering rivers. By contrast, Cop delegates have primarily focused on carbon footprints, carbon credits, carbon trading, carbon sequestration, and most recently «carbon capture», whereby huge machines expend a lot of energy to literally suck CO<sub>2</sub> out of the air and transform it into electricity. This exclusive focus on reduced carbon emissions is akin to treating a disease's symptoms,

while ignoring other underlying illnesses, leaving problems to linger and blister as planetary sores.

I mostly worry that modeling climate justice on global justice, whereby nations agree to offset unequal burdens associated with implementing measures to achieve mutually-agreed upon targets yields two distinct disadvantages<sup>1</sup>. Derived from social justice, global justice proves useful for administering duties, commitments, and responsibilities owed other human beings, yet its focus on human relationships rather than the environment effectively disassociates treaty signatories from the air, land and water their efforts are meant to protect. Moreover, such a unilateral obsession with carbon reduction clouds people's awareness of low-cost, scientifically-proven remedies that curb CO<sub>2</sub> emissions, while cooling Earth, such as restoring wetlands, farming perennials, planting trees, preserving rainforests, and daylighting waterways. To remedy these problems, this paper proposes modeling climate justice on global *environmental* justice, which administers the duties, commitments and responsibilities that human beings owe their environment, which is home to human and nonhuman actors alike.

Given the dearth of scientific research connecting faulty hydrological systems to global warming, it's hardly surprising that Cop delegates have ignored hydrological options. Even so, one recent study credits 6% of sea-level rise during the 20<sup>th</sup> Century and 13% between 2000 and 2008 to groundwater depletion<sup>2</sup>, while others cite 10-30%<sup>3</sup>. Rather than recharging groundwater, as much as 30% of inland precipitation flows over land into rivers as stormwater runoff, which suggests that disturbances to the hydrological system are partly responsible for outcomes typically attributed to climate change. One 2007 scientific study stresses «the impact of changes in the water cycle on climate change.... [this] opens the possibility of a constructive solution to many of the problems associated with climatic changes»<sup>4</sup>. Timothy Green adds, «groundwater has been an historical buffer against climate variability»<sup>5</sup>. However, most «water-climate change» research takes the opposite tact: its focus is forecasting how rising temperatures and varying precipitation rates will impact water tables, flooding, runoff, water quality, energy use, food production, etc.<sup>6</sup>. Despite the lack of scientific evidence crediting a portion of global warming to dismantled or ill-functioning natural cooling mechanisms, whether rainforests, root systems, absorptive soils, groundwater catchment systems, surface water storage, or bio-

<sup>1</sup> Caney 2018: 666.

<sup>2</sup> Konikow 2011.

<sup>3</sup> James 2015.

<sup>4</sup> Kravčík *et. al.* 2007: 7.

<sup>5</sup> Green 2016: 98.

<sup>6</sup> *Ibidem*: 97-141.

diversity<sup>7</sup>, modeling climate justice on global environmental justice would at least commit parties to concordant actions in ways the Paris Agreement has not<sup>8</sup>.

To demonstrate global environmental justice's relevance for climate justice, I introduce hydrological justice, which is grounded in the principles of transparency and kinship. As we shall see, hydrological justice is comparative and normative like social justice<sup>9</sup>; yet unlike notions of climate justice modeled on global justice, it is both theoretically and practically binding, since access to clean, available water requires various users inhabiting particular hydrological systems (aquifers, watersheds, or ocean rims) to join forces to protect their shared resource, thus committing parties in ways that shared goals to reduce CO<sub>2</sub> emissions have yet to achieve<sup>10</sup>. One explanation for this failure is that the «act of self-determination involved in the pledge and review approach [is] too weak to achieve the huge reduction in Ghg emissions required to reach 2°C»<sup>11</sup>. Others like Larry Karp and Jinhua Zhao argue for tougher actions than are required by the Paris Agreement, such as «mandatory country-specific ceilings on Ghg emissions to guarantee the environmental outcome of the agreement»<sup>12</sup>.

The following points belie climate justice's compulsory status as it stands. 1) Paris Agreement signatories voluntarily set their own targets and identify strategies for meeting the shared goal of achieving 1.5°C climate stabilization, yet by 2018 they were rather on a path to reach 3.2°C. 2) Since each signatory has a shared responsibility to do its part, non-compliant nations like Australia, Brazil, China, or the United States, who get called out as «cheaters» pay a ridiculously low price for «business as usual», especially since it's at the world's expense. 3) Like climate change, the Covid-19 virus is a borderless, planetary death trap, motivating nations to protect their public health systems, while minimizing economic losses, yet some strategies terrify neighbors. Here I have in mind the way Sweden, whose deaths per million far exceed those of its neighbors, put Nordic nations on alert given its more lax approach to preventing community spread. This case's implications for the Paris Agreement (and global justice more generally) are vast, so I will circle back to this point.

In recent years, philosophers have replaced backward-looking notions of retribution with forward-looking approaches that motivate adherence. The construction of global environmental justice developed here takes a forward approach, since it proffers clean, safe user-managed hydrological systems as its

<sup>7</sup> Valessi, Spaid 2019.

<sup>8</sup> Mulvaney 2019

<sup>9</sup> Miller 1995: 171.

<sup>10</sup> Leahy 2019

<sup>11</sup> Cahill-Webb 2018.

<sup>12</sup> Karp, Zhao 2010: 532.

prize. Given the massive income disparities between developed and developing nations, punishing those who exacerbate environmental degradation, and thus incur ecological debts, typically proves disingenuous. Not only do penalties fail to deter polluters, but no amount of money can compensate environmental degradation. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (Ipbes estimates that 75% of Earth's surface is «substantially degraded»<sup>13</sup>. Victims may be recompensed, yet dire environmental gaffes requiring immediate remediation often go ignored. One of this paper's central claims is that a *just* construction of environmental justice discourages, rather than hastens environmental degradation<sup>14</sup>.

To lay the grounds for hydrological justice, whose primary resource (water) is widely recognized as a *commons*, I first distinguish global justice from global environmental justice. To do so, I review the philosophical work in global justice that gave rise to notions associated with climate justice such as *ecological space*, *ecological debt*, and *carbon debt*<sup>15</sup>. After pointing out that such backward-looking schemes tend to yield undesirable outcomes, I review Simon Caney's alternative forward-looking approach that aims to commit parties to actions meant either to mitigate climate change or to facilitate adaption. In light of nations having adopted different approaches to the Covid-19 virus, I worry that Caney's approach, which commits diverse parties to global targets is vulnerable to local burdens in ways that global environmental justice, which commits people to protecting local environments, is not, making global environmental justice the more durable option. To deter bad actors and compel compliance, hydrological justice employs transparency and kinship<sup>16</sup>. I conclude by noting that climate justice's ties to hydrological justice are compatible with the goals of the Katowice Climate Package, passed by Cop24 delegates in 2018.

### *Climate Justice's Origins in Global Justice*

Since the millennium, philosophers have conceived global justice in numerous ways, so as to accommodate the unequal distribution of natural resources such as arable land, forests, and minerals, as well as environmental conditions such as

<sup>13</sup> Europe is no better off. Consider that in 2011 the EU estimated that sprinkled among its 39 member and co-operating countries there were potentially 2.5 million sites with contaminated soil. By 2019, 45% of these sites were identified, yet only 51,300 sites had been remediated. <https://www.eea.europa.eu/data-and-maps/indicators/progress-in-management-of-contaminated-sites-3/assessment> (accessed: 26 September 2020).

<sup>14</sup> To appreciate the scale of environmental degradation, check out Edward Burtynsky's photographs.

<sup>15</sup> Anguelovski *et al.* 2014.

<sup>16</sup> Spaid 2010.

pollution, weather, and technological know-how, which generate vast economic and ecological disparities. For this paper's purposes, global justice's calibration of «rights and deserts» is non-comparative<sup>17</sup>. According to Charles Beitz, distinguishing principles of social justice as *comparative* from principles of global justice as *non-comparative*<sup>18</sup> means that social justice must be normative, while global justice is *historical*, since it concerns relationships between international economies and either domestic poverty or income inequality. Not all variants of global justice use international distributive justice or rely on retributive justice, but those meant to redress environmental degradation often do. I have in mind Thomas Pogge's «negative duties», Tim Hayward's «ethical obligations», or Beitz's global community's responsibility to improve the «material conditions of life» of those suffering «serious distress»<sup>19</sup>.

The process of recalibrating unequal economic distributions often involves schemes that leave «beneficiaries» to incur unanticipated costs. To help poorer countries economically benefit from water sources as a resource, wealthy nations have installed hydroelectric power plants, dams and pumps, but there have always been untold local costs as well, as when fish stocks fall off, dams break, or village wells dry up. Consider that the green revolution, which enabled India to feed its growing population, simultaneously destroyed seed saving initiatives, significantly reduced water supplies, and has put tens of millions of farmers into debt. Finally, when environmental damages occur and polluters are legally required to pay fines, poor recipients typically find more urgent uses for the income such as schools, sanitation or health, increasing the scale of degraded lands lost to economic productivity.

Girl scouts must abide by the ethos of leaving places exactly as they found them; not so transnational corporations. Given the lack of accountability when it comes to holding businesses or nation-states responsible for environmental degradation, Pogge and Hayward recommended charging each nation a tax calibrated to its resource extraction rate, such as Pogge's global resource dividend (Grd), rather than charging use taxes such as value-added taxes administered at stages along the production chain, as liberal democratic business practices often do. Although use taxes applied to individual businesses tend to encourage efficient practices (low carbon footprints, for example) and thus reduce overall costs, use taxes are widely considered bureaucratic nightmares, which is why Pogge and Hayward opted to tax extraction rates and ecological space that effectively penalize buyers rather than reward institutions for optimizing ecological space. Pogge himself noted that «Grd reform can produce great ecological benefits that are hard to secure in a less concerted way because of familiar collective-action

<sup>17</sup> Miller 1995: 171.

<sup>18</sup> *Ibidem*: 171.

<sup>19</sup> Pogge 2002, Hayward 2005, Beitz 2001: 110.

problems: each society has little incentive to restrain its consumption and pollution, because the opportunity cost of such restraint falls on it alone while the costs of depletion and pollution are spread worldwide and into the future»<sup>20</sup>. Pogge realized then that local burdens make achieving global targets difficult.

Such versions of global justice recognize that developed nations have benefited by exploiting poorer nations, and as reasonable people, they should share some of their benefits (distributively, not equally), based on some yardstick such as the developing nation's contribution to the developed nation's benefits. There must be some way to compel developed nations to own up to their unimaginably high ecological debt, which represents a sizeable piece of the global degradation pie.

Hayward notes that Joan Martinez-Alier identifies four types of ecological debt: 1) the dumping of hazardous wastes and storing of hazardous plants, 2) the «carbon debt» or disproportionately high level of fossil-fuel use, 3) biopiracy or patented indigenous remedies, and 4) environmental liabilities due to stolen resources<sup>21</sup>. There's no guarantee, however, that paying back *all* that nations and/or transnational corporations owe for environmental damages will change their exploitative practices, let alone attitudes. The slew of recent multi-billion dollar scams associated with cigarettes, oil spills, diesel emissions, opioids, mines, and airplanes suggests that profit motives override viable products and careful industrial practices.

Exemplary of climate justice's ties to global justice is the United Nations Framework Convention on Climate Change's (Unfccc) endorsement of the principle of «common but differentiated responsibilities» (Cbdr) which holds that the «developed country Parties should take the lead in combating climate change and the adverse effects thereof»<sup>22</sup>. As Edward Page points out, this «is also a key feature of Article 10 of the 1997 Kyoto Protocol to the Unfccc<sup>23</sup> and Principle 7 of the 1992 Rio Declaration on Environment and Development<sup>24,25</sup>. Climate justice tools modeled on global justice paradigms that employ retributive justice include carbon emissions trading programs, whether «cap and trade» or carbon taxes, since high emitters remunerate low/no emitters for the right to emit more, thus ensuring business as usual. Moreover, environmental wrongs caused by CO<sub>2</sub> emissions (flooding, acid rain, desertification, etc.) typically appeal to retributive justice to amend errors.

<sup>20</sup> Pogge 2002: 206.

<sup>21</sup> Hayward 2005: 193.

<sup>22</sup> United Nations 1995: 5.

<sup>23</sup> Grubb *et. al*, 1999: 289.

<sup>24</sup> United Nations 1992.

<sup>25</sup> Page 2008.

Such approaches to climate justice reflect the apparently uncontroversial view that developed nations generate far greater carbon footprints and are thus responsible for compensating developing nations for environmental damages caused by their negligence, lost economic opportunities owing to more expensive fuels that emit less CO<sub>2</sub>, and costs associated with transitioning away from fossil fuels. Climate justice claims that those least burdened by climate change and those who contribute most to aggravate it, owe it to those most burdened to alleviate their suffering, thus compelling behaviors in terms of rights and deserts. The basic idea sounds right: nations whose economies directly benefit from climate emissions (or are polluters or can afford it) have an ethical obligation (framed by Pogge as negative duty, Beitz responsibility, and Hayward ecological debt) to compensate those inhabiting lands most threatened by climate change (coastal cities, river cities, flooded farms, islands, rural villages), so that they can «ward off» the threat.

*The disconnect between climate change and either distributive justice or retributive justice*

Of course, developed nations are the major culprits here, so it's no wonder they are asked to shoulder the greatest burden. But to my lights, pecuniary schemes, whether Pogge's resource-extraction tax, Hayward's ecological-footprint tax or Beitz's distributive-justice tactics render climate justice untenable, as they effectively encourage business as usual; since the very actors who can most afford to pay not only continue to exploit environments elsewhere, but fines rarely result in remediation. Although such models extend John Rawls' notion of distributive justice, which reflects a socio-political and/or economic framework selected by the polis given its conception of fairness; environmental injustice is neither redistributable nor compensatory. Even if retributive justice's punishments are designed to dissuade future bad actors, pecuniary measures such as cash/carbon transfers neither reverse environmental degradation nor rehabilitate the environment. Distributive justice may be an effective tool for remedying global injustices, but it makes a farce of global environmental justice, when it compensates victims for burdens, yet fails to thwart environmental degradation.

In *The Law of Peoples*, Rawls actually warned against applying «international distributive justice» across borders, since he envisioned it working for communities «united by a common language and shared historical memories»<sup>26</sup>. In the end, the real beneficiaries of climate justice based in retributive justice are those transnational corporations that profit from environmental degradation,

<sup>26</sup> Rawls 1999: 24-25.

and sometimes their compensated victims, but not so local environments. As a result, the planet's vulnerability to climate change increases. For example, if a bulldozer destroys a groundwater catchment system, animals will thirst (and die) and plants transpire less, which warms the air, while reducing the poop available to nourish plants. Even worse, retributive justice is meant to redress damages, yet it is ludicrous when developed nations' business representatives, who know the potential harms of their products/technologies, sell them anyway, thus *intentionally* harming clients<sup>27</sup>. Sellers, who promote practices abroad that have already caused substantive environmental degradation at home, are immoral actors for sure. Retributive justice is meant to punish bad actors, but it rarely compels them to act differently. It's rather perverse to characterize court-ordered reparations *just* when transnational corporations knowingly sold governments destructive industries, outlawed technologies, or hazardous materials that caused permanent environmental damage or degraded lands remain toxic for decades to come. Were there not such massive economic disparities between sellers and victims, harmful actions would no doubt lead to revoked permits, visas, and licenses.

In contrast to schemes that legitimize developed nations' efforts to intentionally pilfer developing nations, global environmental justice aims to compel sellers to act morally and their victims to apply rewards toward remedying damages, since economic losses owing to degraded environments compound rapidly. Because global environmental justice prioritizes the environment, resource exploiters and industrial producers must be fiscally responsible and are legally accountable to uphold international standards and employ industry-wide standards. To ensure that sellers can't take advantage of clients, and thus harm local environments, global environmental justice employs the *principle of transparency*, such that the onus is on sellers to inform buyers. The principle of transparency thus reduces the chance for sellers, who furnish buyers financing schemes, expensive tools, and access to novel technologies to escape punishment by scapegoating clients' uninformed decisions. Sellers must show proof of their clients' understanding of their purchases.

### *The limits of global justice*

To sidestep problems associated with retributive justice, several philosophers have conceived climate justice in ways that privilege prevention in the form of

<sup>27</sup> Although this sounds like yesteryears' news, Danish engineering firm FLSmidth and its funders, the Danish export credit agency and Danish Pension Fund, were recently blamed for developing an opencast mine in 2014 that is responsible for environmental and agricultural losses in Teghut, Armenia. Home to 32 metallic mines, profits flow to foreign investors and Armenian oligarchs. Malling 2019: 8-9.



shared responsibilities. Before addressing what I consider the limitations of such schemes, I first review and analyze perhaps the most comprehensive approach, elaborated upon by Simon Caney in the *Oxford Handbook on Distributive Justice*. His forward-looking approach focuses on the potential harms (*just burdens*) people incur to achieve mutually agreed-upon outcomes (*just targets*)<sup>28</sup>. Given that his view emphasizes human beings, not their environments (he mentions Earth's climate once, but never once the environment), I consider his approach exemplary of global justice, not global environmental justice.

The comprehensiveness of Caney's approach is admirable, especially his *strong-integrationist* approach that stresses gathering a plurality of burdens to identify some general principle of justice that can be used to distribute responsibilities aimed at both mitigation and adaptation. He terms this approach *holism*, in contrast to *atomism*, which requires distinct principles to determine the distribution of responsibilities owing to the cost of each burden. What worries me, however, is the assumption that just because parties agree to just targets, as well as just burdens; they will voluntarily carry out their commitments to achieve their joint goals. I briefly touched upon this in the introduction, when I noted that Sweden's forgoing stringent tactics (e.g. closing all non-essential businesses, closing schools, mandatory confinement, and obligatory mask wearing) alarmed its Nordic neighbors. As it turns out, Swedes are unusual in other ways. Sweden consistently outranks every other nation on the Climate Change Performance Index<sup>29</sup> and it has the highest abortion rate in the EU, excluding recent EU-members.

Inordinately disciplined, Swedes willingly accept high burdens to achieve desired targets, yet they are also pragmatic: they won't adopt global targets whose local burdens seem extreme, which matches Pogge's earlier worry. Truthfully, there's no explaining the Swedes' game-changing approach to Covid-19, however it has applications elsewhere, most notably the Paris Agreement, or any other agreement, whose targets are global, yet its burdens are local. Even when targets are local, such as the need to protect parents and grandparents from Covid 19, some still resist the burden to self-isolate. The 2020 pandemic's take-away lesson, as well as the Paris Agreement's track record, is that both targets and burdens must be determined locally to achieve broad compliance. As a global target, «mitigating climate change» is a rather abstract concept that most people find difficult to wrap their heads around, especially when incurred local burdens are seen as benefiting people living elsewhere.

Implicit in the principle of international distributive justice is the view that wealthier nations should alleviate the suffering of those who «contribute most», which is just a *nice* way to describe those whom they most exploit.

<sup>28</sup> Caney 2016: 666.

<sup>29</sup> <https://www.climate-change-performance-index.org/> (accessed: 6 April 2020).

Consider a situation where two societies contain the same number of sufferers «whose relief is of equal urgency». Given the same urgency, Beitz argues that society's sufferers who contributed more, in terms of their allocation of burdens, should receive help first<sup>30</sup>. Global justice generates good reasons to move parties to feel obligated to assuage suffering, but such actions are seen as acts of beneficence, *not* solidarity. Regarding the practice of relieving victims of famine, even in cases where human negligence aggravated the crisis, Singer has challenged the «demandingness of reasons of beneficent – that is, about the degree of sacrifice in the satisfaction of one's own interest one is required to undertake in order to improve the situations of destitute persons with whom one has no special relationship»<sup>31</sup>. This is yet another example of global justice's failure to meet global targets when faced with local burdens. As we shall soon see, hydrological justice reinforces such special relationships, since it appeals to shared, cross-border hydrological systems. As briefly mentioned, its demandingness is derived from the kinship model, whereby human and nonhuman actors' livelihoods are interdependent.

So long as global consumers demand cheap goods produced by exploiting resources and labor, and powered by fossil fuels, unknown people's homelands remain at risk of environmental degradation. Equally worrisome is the way poor communities in dire straits are unlikely to redirect remuneration towards restoring their local environment. It's difficult to imagine a community repairing a bull-dozed catchment or planting vegetative cover when they desperately need new schools or sanitation. Just as the cycle of wealth swings higher faster, the cycle of poverty resulting from environmental degradation swings lower faster. Ignoring environmental degradation endangers inhabitants, and harms those living elsewhere, since people's lives are entwined with their environment.

Still, developed nations produce a disproportionately higher percentage of environmental degradation (90%) at home and abroad, due to factory farming, factory emissions, irrigation/watering lawns, drilling/mining natural resources, housing construction (causes soil erosion), so their citizens must also overcome both *ignorance* (oblivious to damages) and *negligence* (selfish choices). Although people are increasingly conscious of where and how their food, clothing, and energy are sourced, which leads to smarter purchases; barely anyone anywhere can imagine how to *dramatically* alter their lifestyles such that they reduce their 10+ tonnes of annual carbon emissions to the 1-tonne limit needed for the Paris Agreement to succeed. Such negligence weakens regulatory bodies, making climate justice normative, though hardly compulsory.

<sup>30</sup> Beitz 2001: 110.

<sup>31</sup> Singer 1972.

## *Hydrological justice's origins in global environmental justice*

Europeans first suffered intense water pollution during the medieval period, yet severe environmental degradation only reached developing nations in the last few decades. As noted earlier, schemes hatched by transnational corporations and international lenders to hasten developing nations' economic autonomy (factory construction, the Green Revolution, building dams, accelerated mining and drilling) are largely responsible for degradation of water sources. In 2010, the United Nations General Assembly finally passed The Human Right to Water and Sanitation (Hrws), which states «The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses». Although the right to water is a recent stand-alone right, it has long been considered a separate and individual right, since international and humanitarian laws established its fair access<sup>32</sup>. For the most part, permits and licenses that regulate usage specify resource allocation and fair technical practices, which legally establishes issues of contribution and distribution. By contrast, regulations and procedures for monitoring groundwater discharge must be strengthened, since they don't yet ensure accountability, reinforce management, and accommodate ecological disparities.

Rather than adopting global targets, global environmental justice's main thrust is the local *environment*, which situates nonhuman rights, such as legal rights for rivers, plants and all animals on par with human rights. Most important, the local environment is always right here under our feet, near us and around us, the main source of our sustenance, making it easier to recruit stakeholders willing to incur burdens to target its protection. To safeguard local environments, strategies related to global environmental justice not only redress, but prevent environmental degradation aggravated by gross economic, technology, and power imbalances between nations. Not only are remediation costs prohibitive, but environmental degradation is rarely reversible. Even when «fixed», it's never the same.

Although global justice and global environmental justice are both meant to cover transnational institutions and transborder constituents, the former focuses on redistributing unequal opportunities among global inhabitants, while the latter focuses on globally protecting local environments, with the view that this strategy commits local inhabitants to protecting their environment. Since water bodies are interconnected, the focus on *hydrological justice* effectively generates a global target, namely:

To ensure widespread adherence across particular water bodies, local users/ stakeholders commit to incurring *just burdens* in order to meet *just targets* that optimize the ecosystem

<sup>32</sup> Hardberger 2006.

functioning of the hydrological system on which all living beings depend. Securing this requires implementing and enforcing the principles of transparency and kinship.

Exemplary of moral cosmopolitanism, such that every human being and increasingly every nonhuman being «has a global stature as the ultimate *unit* [emphasis mine] of moral concern»<sup>33</sup>, hydrological justice demands governance by a local water board, modeled on a system akin to the «conference of the parties», thus permitting water users to regulate, monitor, and mandate epistemically-sound practices. Hydrological justice adds the impacts of agriculture, global warming, mining, deforestation, and surface water to my earlier conception of groundwater justice, thus creating a compelling and effective strategy for mitigating climate change by addressing hydrological systems that cool the Earth's temperatures<sup>34</sup>. Like hydrological justice, groundwater justice is a type of global environmental justice, focused on compelling stakeholders to protect groundwater, the source of 98% of Earth's available fresh water. Not only is groundwater 60 times more plentiful than lakes and streams, but it supplies 75% of EU inhabitants' drinking water.

Since all human beings require daily access to clean water in order to survive, one need not be seated behind Rawls' *veil of ignorance* in order to reject policies that constrain access to available water sources. Whatever harms parties downstream eventually harm users upstream, if not one's children. Focused on actual environments, global environmental justice compels moral action with epistemic consequences (measurable). Comprised of roughly 70% water, human bodies materially depend on their immediate hydrological systems. This physical link with the environment transcends ties ordinarily advanced by ecosystems servicing (economic, cultural, or health). Hydrological justice thus addresses questions concerning rights, distribution, and replenishment of water.

Grounded in the kinship model, hydrological justice gains its legitimacy from the fact that human beings are members of particular environments and are engaged in kinship relations with all living beings (plants and animals) inhabiting their environments, whose scale and scope entail hydrological systems and thus crisscross national borders<sup>35</sup>. With the kinship model, all living creatures engage one another, since nature provides for and sustains human life, and vice versa. As a result, «inaction risks *immoral* consequences, even as it grants nature mind-independence, but it also prevents human beings from exerting control or assuming jurisdiction»<sup>36</sup>. When Zimbabwe villagers were interviewed about water's importance, they claimed that «kinship was more often decisive

<sup>33</sup> Pogge 2002: 169.

<sup>34</sup> Spaid 2010.

<sup>35</sup> Spaid 2016.

<sup>36</sup> *Ibidem*: 80

than physical closeness to the water source; it seemed, however, that a sense of entitlement, safeness, trust, and water quality led people not simply to choose on the basis of physical closeness and cleanliness<sup>37</sup>. People inhabiting common hydrological systems thus share a responsibility to maximize their environment's wellbeing in terms of *ecosystem functioning*. Citizen-scientists can collect whatever data scientists request to monitor a hydrological system's ecosystem functioning. In addition to measuring atmospheric temperature, climate justice modeled on global environmental justice demands ecosystem functioning metrics, such as biodiversity<sup>38</sup>. Not only does biodiversity conservation mitigate CO<sub>2</sub> emissions, a point that the current construction of climate justice overlooks<sup>39</sup>; but it doubles as a bio-indicator of human cultural engagement<sup>40</sup>.

To establish the legitimacy of global environmental justice, whereby stakeholders have a right to ensure the protection of water bodies lying beyond national borders, several philosophers have found ways to coerce international standards in the absence of superseding authorities. As Philippe Van Parijs points out, «The complex system formed by the conjunction of border-crossing rules, some internationally negotiated, most unilaterally imposed, form a highly significant portion of a coercive global basic structure, which applies, be it differentially, to all of us and which strongly constrains, very unequally, where we can travel settle and work...But in today's interconnected world, the impact of these coercive laws on people's living conditions is conceivably greater than that of any other aspect of legislation»<sup>41</sup>. The idea of intra-community, transborder commitments is thus feasible. This matters since environmental degradation is never just local and stands to harm many more people along the supply chain (higher prices for goods and raw materials, creeping pollution, or eco-terrorism). Unlike a dry well, air pollution, or degraded lands, impotable water is never just here or over there.

It thus stands to reason that people unable to access basic UN water standards (50 to 100 L per day) ought to be compensated with drinkable water (invaluable unlike money) by whomever poisoned their well, so to speak. However, people require water for survival, so it's physically impossible to use transactional tools such as «ecological debts», water exchanges, carbon credits, or pollution dividends to balance water shortages/excesses, manage trade surpluses or offset water shortages. Moreover, making water transactional erases the notion of duty owed to members of one's hydrological community, and thus destroys the bonds of kinship. Similarly, local users who damage catchment systems or

<sup>37</sup> Derman 2003: 80.

<sup>38</sup> Scherer-Lorenzen 2009.

<sup>39</sup> Cbd 2009.

<sup>40</sup> Spaid 2015.

<sup>41</sup> Van Parijs 2007: 650.

over-pump wells owe it to their neighbors to fix the problem swiftly and efficiently. For example, a farmer who fails to eliminate nitrates from animal waste before farm runoff seeps into the groundwater is primarily accountable first to his local community, rather than the nation state whose distant regulatory offices engender lax enforcement. Likewise, farmers living near rivers owe it to «eaters» to plant cover crops during winter, so that water-logged fields absorb more rainfall and recover sooner.

Despite indigenous people's long history of usufructuary rights, common use laws, duties to recharge aquifers, and successful replenishment management schemes<sup>42</sup>, water-intensive businesses such as tanneries and post-Green Revolution agriculture have nearly obliterated what thousand-year practices perfected. What's more, Vandana Shiva, Bill Derman, and Carol Gould all credit indigenous people across the globe with having managed their local water resources for millennia, so water board participation is already entrenched in many communities<sup>43 44</sup>. In Africa, catchment councils and local water authorities were largely in place until Colonialism replaced them with bureaucratic notions of regulatory efficiency owing to some centralized nation state<sup>45</sup>. Even more interesting, when a lack of money aborted Zimbabwe's plan for Zinwa to fund new water-management institutions, the «local institutions and norms remain[ed] in place. Transformed indigenous knowledge and practices have arguably outlasted initial government efforts to change them»<sup>46</sup>.

Environmental degradation tends to harm swaths of people living across extreme distances, so global environmental justice must compel preventive measures that discourage accidents. To deter bad actors (cheats, thoughtless acts, short-cuts), global environmental justice requires transparency. As briefly noted, the principle of transparency forbids the withholding of vital information, such as the poisonous nature of chemicals like Ddt, which the United States outlawed in 1972, yet continued exporting until 1985. Viewed as a common resource, aquifers are rarely regulated, which leaves natural and cultural catchments vulnerable to damage, yet subjects users to self-regulatory laws.<sup>47</sup> Additionally, groundwater, the source of water for 50% of the world's inhabitants, lacks oxygen, which makes it susceptible to contamination. Had

<sup>42</sup> Derman 2003 offers a useful case-study regarding an indigenous people's water sense and their clashes with a nation implementing water reform.

<sup>43</sup> Shiva 2002.

<sup>44</sup> Gould 2004: 35.

<sup>45</sup> Derman 2003.

<sup>46</sup> *Ibidem*: 82.

<sup>47</sup> Recognizing the environmental hazards of depleting the Ogallala Aquifer, West Texas farmers no longer irrigate with locally drilled water.

American corporations publicized what scientists learned from the «dust bowl» of the 1930s, they could have averted a century of droughts, famines, and desertification across the globe. In the 1950s, India was awash in water, yet today it suffers water shortages due to predatory drilling. As previously noted, when vast profit margins obliterate the burden of punishment, distributive justice effectively rewards selfishness, affirming Rawls' earlier hunch that distributive justice is untenable across languages, let alone different economies. Economic losses are compounded all the more when compensated victims are not compelled to remedy environmental degradation (compensation admits to wrongdoing without having to rehabilitate the environment).

Had Beitz set his sights on sustainable environments, which he originally considered, rather than the global community's responsibilities, he might have found a way to blend two kinds of justices- one that is isolatable, yet appears *optional*, and another that is interdependent, and thus *compulsory*. Global justice is isolatable, since one can easily turn a blind's eye, as Paris Agreement cheaters routinely demonstrate, even though doing so disqualifies it as global justice. If one turns a blind's eye on global environmental justice, life on Earth withers and dies, making it the more interdependent of the two. Despite efforts to frame environmental degradation as over there, but not yet here, it eventually reaches everybody, making global environmental justice no less comparative than that of social justice.

Local governments must thus be empowered to mandate what burdens its citizen stakeholders must tolerate combined with inputs from those who live «abroad», yet share the same hydrological system, which sometimes puts them at risk of getting hit harder. When people living beyond a region's borders are harmed by violators upstream or upwind, they experience what Peter Singer terms «blowback ». With blowback, «the case for sanctions against a nation that is causing harm, often fatal, to the citizens of other countries [is] even stronger than that of South Africa under apartheid, since that government, iniquitous as its policies were, was not a threat to other countries»<sup>48</sup>. Until developed nations' citizens adopt far lower emission levels, rather than depend on emissions trading, «blowback» will remain an everyday feature of developing nations' citizens' lives. If global justice tenders a good-will «pay-back», unattended environmental damages render bad-will «blowback», whose consequences fester exponentially lest its victims coerce immediate remediation.

For moral cosmopolitanism to flourish, local regulatory bodies must gain access to invaluable know-how by sending observers to Unecce's Meeting of the Parties to the Water Convention (since 1997), which regulates and permits transboundary basins, evaluates benefits/hazards of each transnational institution's development projects, and identifies and tries liable suspects. To curb the

<sup>48</sup> Singer 2002: 50.

deleterious effects of «blowback», Singer argues for the development of institutions and principles of international law that override national sovereignty in cases where regional negligence causes problems elsewhere. «It should be possible for people whose lands are flooded by sea level rises due to global warming to win damages from nations that emit more than their fair share of greenhouse gases»<sup>49</sup>. As I've tried to demonstrate, being remunerated for damages doesn't necessarily remedy environmental degradation. By contrast, participation in self-governing international water boards, whose members are committed to maximizing the ecosystem functioning of nearby transboundary water basins, has historically engendered a time-tested spirit of transborder cooperation.

As already mentioned, a major goal of global environmental justice is to compel transnational institutions and local corporations to forego careless mining, industrial, and shipping practices. Although no amount of money raised as a tax on each nation's ecological space will prevent transnational corporations from continuing profitable, yet unsustainable practices (perhaps twitter shaming could be effective), it might make sense to use taxes collected from commercial-water use (farms and factories) to fund some governing body. Only after pay-to-play schemes are eliminated will the world's inhabitants envision inhabiting a shared planet, in whose wellbeing everyone has a stake.

Should one turn a blind eye on hydrological justice, it too fails as hydrological justice; yet the risk of «blowback» makes enacting hydrological justice compulsory, otherwise deaths are imminent. Hydrological Justice not only emphasizes the interconnectedness of environmental degradation and the role played by global warming, but it employs ecosystem functioning as a gauge whose transborder consequences are measurable, thus placing planetary wellbeing in citizens' hands. People either have easy access to clean, affordable (free is preferable) drinking water or not.

### *Climate justice's ties to hydrological justice*

Consider that fully half of the 158 Intended Nationally Determined Contributions (Indcs) submitted to Cop21 «ascribed importance to the agricultural sector», yet the vast majority of Cop delegates turned a blind eye on efforts to promote «regenerative agriculture», as if carbon-rich soil is taboo<sup>50</sup>. Despite the fact that African and Asian countries sought sustainable practices for soil and land, Cop delegates rarely consider agricultural reforms outside of «side events» such as «4per1000» (annually since 2015), «Koronivia Joint Work on Agriculture» (2017),

<sup>49</sup> *Ibidem*.

<sup>50</sup> <https://www.iass-potsdam.de/en/news/healthy-soils-and-climate-protection-global-landscapes-forum-sidelines-cop21-focuses-land-use> (accessed: 15 November 2016).



and «Speed Up the Cool Down» (2018)<sup>51</sup>. One week after IPCC warned that carbon emissions must be cut in half by 2030, Clara (Climate, Land, Ambition Right Alliance) issued «Missing Pathways to 1.5°C: The Role of the Land Sector in Ambitious Climate Action» (2018)<sup>52</sup>. This second report «shows how greater ambition to secure land rights, restore forest ecosystems, and move toward truly sustainable food systems, such as organic farming and agroecology, can help to limit global warming to 1.5°C by reducing global emission by 23 gigatons of CO<sub>2</sub> per year by 2050, eliminating the need for geoengineering technologies»<sup>53</sup>. Two months later, Cop24 delegates adopted the «Katowice Climate Package», which provides international guidelines for planning, implementing, and reviewing actions meant to halt climate change. Focused on greenhouse gas emissions, this «rulebook» mentions water only seven times, and omits soil altogether<sup>54</sup>.

So long as climate change exacerbates environmental degradation, caused by too little rain (desertification) or not enough absorption (flooding, leaching, erosion or extreme weather), then global justice proves an insufficient strategy for achieving global targets. Consider Venice, Italy, which regularly suffers «acqua alta». In November 2019 alone, it suffered five such days (> 140cm) out of 23 days recorded since 1936. Despite the unfathomable €5,5 billion investment in the Mose project, this solution falls short, since it not only ignores the hydrological system (the Venice Laguna watershed, the Adriatic Sea, and Venice's salt marshes), but it is designed to indefinitely trap within its raised arms all of Venice's waste that is ordinarily flushed out to sea, which will likely induce severe health consequences. Were climate justice framed in terms of global environmental justice then Venetians would be empowered to implement strategies to alleviate environmental issues such as falling low tides, rapid river flow, basin drainage, canyoning, fluvial disconnectivity, and dredged lagoons, all of which would lower sea levels<sup>55</sup>.

When modeled on global justice, climate justice has proven non-compulsory, leaving climate change to harm everyone, though hardly equally; as equator-adjacent, island-nations and coastal cities have been first to lose access to invaluable resources as lakes shrink, lands dry up and coastal waters rise. Global justice's appeals to obligation, sacrifice, or beneficence prove trivial. Exemplary

<sup>51</sup> <https://www.ifoam-eu.org/en/news/2019/01/11/post-conference-highlights-cop24> (accessed: 23 March 2019).

<sup>52</sup> <https://www.ifoam-eu.org/en/news/2019/01/11/post-conference-highlights-cop24> (accessed: 23 March 2019).

<sup>53</sup> <https://www.ifoam-eu.org/en/news/2019/01/11/post-conference-highlights-cop24> (accessed: 23 March 2019).

<sup>54</sup> [https://unfccc.int/sites/default/files/resource/Katowice%20text%2C%2014%20Dec2018\\_1015AM.pdf](https://unfccc.int/sites/default/files/resource/Katowice%20text%2C%2014%20Dec2018_1015AM.pdf) (accessed: 26 March 2019).

<sup>55</sup> Vallesi, Spaid 2019.

of climate justice's lack of demandingness is the recent International Energy Agency report indicating that global energy consumption and CO<sub>2</sub> emissions reached their highest levels ever in 2018. Add to that the 48% of Americans who aspire to a Green New Deal, yet US CO<sub>2</sub> emissions rose 3.1% over 2017 and oil and gas consumption rose 10%<sup>56</sup>, the highest jump since 1971, which is likely due to the fact that 70% of cars sold in 2017 were SUVs<sup>57</sup>. Even with Meatless Mondays, meat consumption keeps rising<sup>58</sup>. Global environmental justice is tasked with unmasking the discrepancies between targets and burdens that make the former untenable, otherwise justice is just an empty catchphrase.

I thus offer the following reasons for conceiving climate justice in terms of global environmental justice: 1) Global environmental justice's focus on hydrological justice incentivizes the development and adoption of many more scientifically proven methods for storing rainfall and cooling air, thus reinforcing the goals of invaluable Cop side-projects «4per1000», «Koronivia Joint Work on Agriculture», «Speed Up the Cool Down», «Missing Pathways to 1.5°C», and «Katowice Climate Package», whose goals (land rights, forestry, and agriculture) mandate water management. 2) So long as vast income disparities exist, international distributive justice rather hastens environmental degradation, since transnational corporations consider penalties peanuts. 3) Climate justice is as much a water problem as a carbon problem, so it makes sense to merge hydrological and climate justice. 4) The Paris Agreement is signed by 175 parties (174 nations and the European Union), all of which are inter-connected by myriad water bodies crisscrossing these nations.

Moreover, modeling climate justice on global environmental justice will deepen the relationship between hydrological justice and climate justice. Otherwise, climate change remains no more demanding than wearing masks was before Covid-19 started killing masses of people. Essential for combating climate change and sustaining life, hydrological justice safeguards life on Earth. Not surprisingly, hydro-politics scholar Shlomi Dinar considers water and security so entwined that nation-states should make environmental policies, especially those concerning water, part of their national security policy<sup>59</sup>. In contrast to the aforementioned inconsistencies concerning climate justice among philosophers and Cop delegates alike, hydrological justice offers both a more holistic and realistic approach, since it circumvents the politics associated with demonizing fossil fuels and shaming human actors, though it certainly condemns human inaction.

<sup>56</sup> <https://morningconsult.com/2019/02/20/green-new-deal-proponents-not-uniformly-behind-a-broadened-platform/> (accessed: 30 March 2019).

<sup>57</sup> <https://www.iea.org/geco> (accessed: 30 March 2019).

<sup>58</sup> <https://news.slashdot.org/story/19/05/05/1618259/global-meat-eating-is-on-the-rise-bringing-surprising-benefits> (accessed: 24 November 2019).

<sup>59</sup> Dinar 2003: 239.

Given climate justice's ties to hydrological justice, this paper concludes that successful implementation requires modeling both on global environmental justice since: 1) Global warming threatens both hydrological systems and climate change, yet addressing the former goes a long way toward alleviating the latter. The prior focus on CO<sub>2</sub> emissions has left hydrological systems such as aquifers, blocked/dredged (silted) rivers, and fast/disconnected rivers vulnerable, even though recharging groundwater, optimizing river flow, and retaining stormwater mitigate climate change. Functioning hydrological systems provide natural cooling systems, which are crucial for sustaining cooler air temperatures. 2) Since environmental degradation routinely harms other nations' citizens, hydrological justice compels cooperation from disparate communities because they share particular water bodies. 3) Since human beings' survival depends on easy access to clean water, tying climate justice to hydrological justice not only makes it more demanding, but makes it both morally just and epistemically sound, which is something everyone can wrap their head around<sup>60</sup>.

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