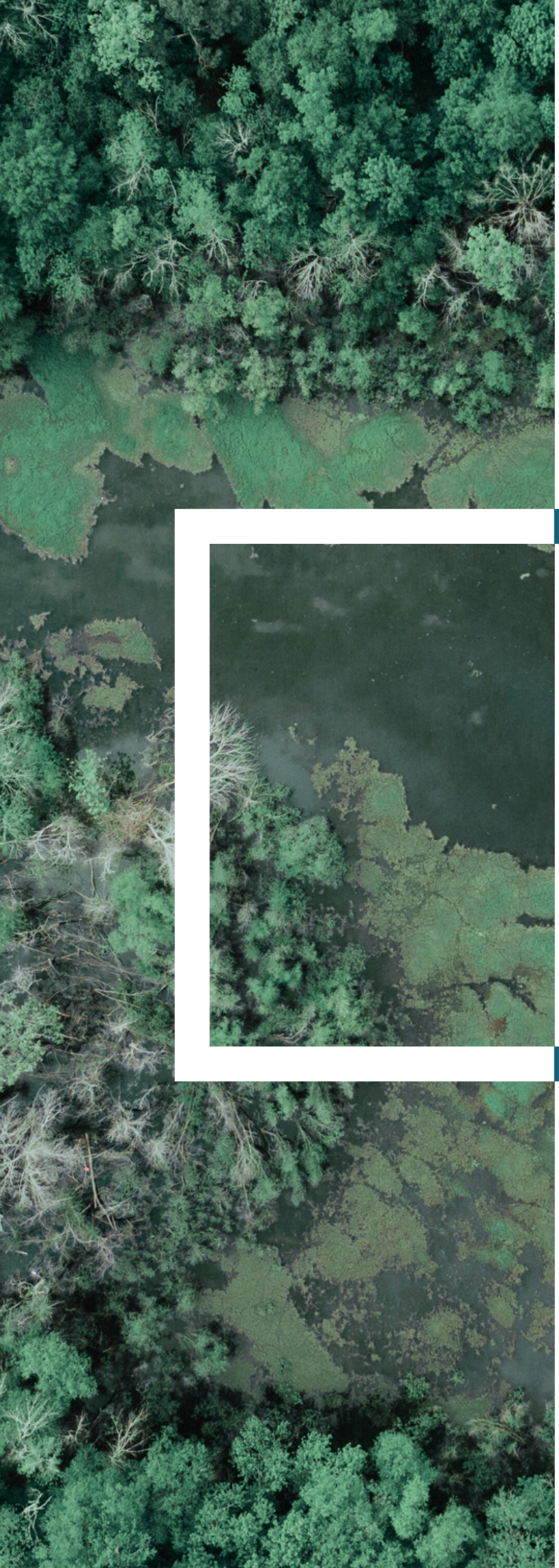

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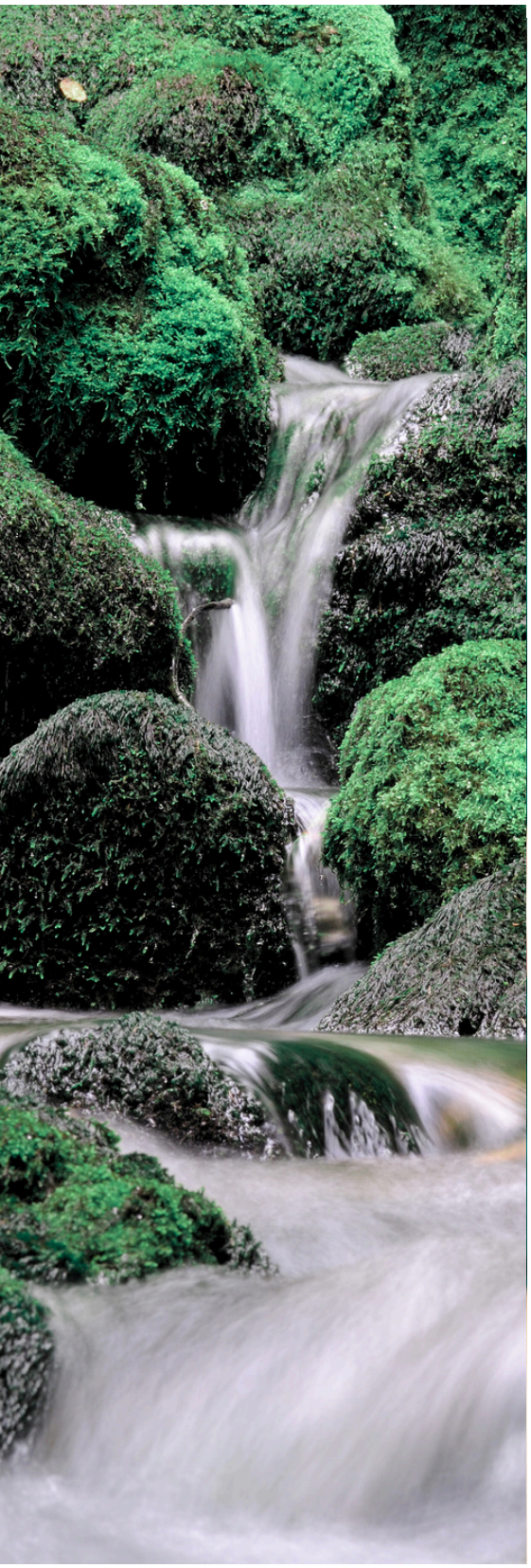
Mladen Domazet

ETHICS OF SUSTAINABILITY AND GLOBAL ENVIRONMENTAL JUSTICE

Network of Education Policy Centers



INTRODUCTION

Our relationship to the living planet and each other is in a particular predicament right now. To the best our knowledge this is a unique point in Earth's natural history, as well as in recorded (human) history.

It consists of the unprecedented impact of civilisational activities (predominantly motivated by economics) on the sustainability and regular functioning of the biosphere, and one of the sharpest changes in planetary geophysical conditions since the last major meteorite impact. On top of it all, our society is largely aware, or can easily be made aware, of the severity of change and our role in it. We are also theoretically capable of strategizing how to alleviate the drivers of sudden change and the impact of civilisational activities.

Yet, hitherto as a global population we have not implemented the recommended alleviating measures, almost exclusively blaming some (other) subgroup of the global human population for the inability to do so.

As the previous article (Reconstructing sustainability and inclusion in environmental education) states: everything starts with ourselves. After reconnecting with nature, we must reconnect with our role within the planet-humanity union, in order to discuss how to build schools fit for global justice and sustainability.

We will briefly survey the various moral philosophies contributing to current unsustainability and the instruments for corrective strategies. It is up to the learners themselves to seek out more information and engagement in the wider world. This manual drops hints along the way, but options for research, wonder, enchantment and engagement with these topics are almost limitless today.

Each segment is followed by a set of questions designed to test comprehension and challenge the current view on environmental education.

These questions are not only asked to inspire reflection, but also to elicit action. They serve as prompts for educators to consider how these intricate and interrelated concepts can be integrated into their teaching practices, empowering them to foster a more inclusive, sustainable, and justice-oriented educational environment.

MATERIAL AND SOCIAL DATA OF (UN)SUSTAINABILITY

A story told in numbers

The images in this manual illustrate the severity of the global predicament introduced above. With a little context and instruction on how to interpret them, they can be used to swiftly present the situation or to open up discussion about the direction, intensity, drivers and expected consequences of global change we are experiencing. Some refer to scientific projections (with the sources of projections or images named), others present the near-historical trend and the current state of global climate change drivers.

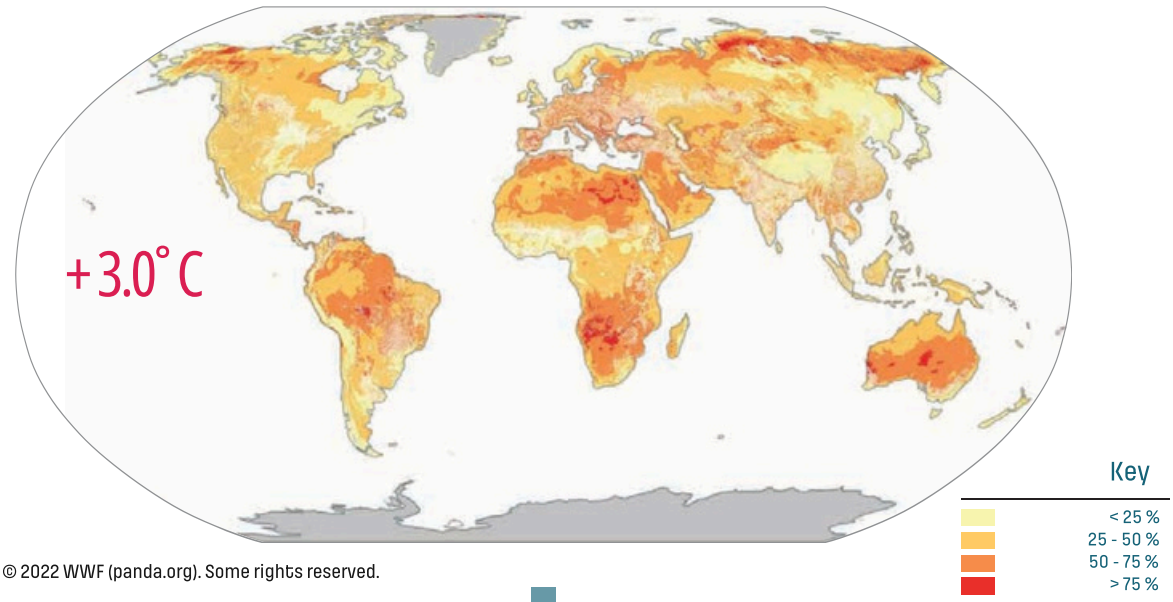


Figure 1: Projected loss of terrestrial and freshwater biodiversity compared to pre-industrial period at average global warming expected by the end of this century under business as usual (including current climate change mitigation measures). [1]

The higher the percentage of species projected to be lost (due to loss of suitable climate in a given area), the higher the risk to ecosystem integrity, functioning and resilience to climate change. Colour shading represents the proportion of species for which the climate is projected to become sufficiently unsuitable that the species becomes locally endangered and at high risk of local extinction within a given area.

This is the most significant projection for our discussions about ecological justice laid out in the preceding article. At the average global surface temperature rise of 3 °C (popularly: three degrees Celsius global warming) the projected biodiversity loss in many terrestrial regions (Northern polar region, equatorial Africa and America, the Mediterranean, southern African temperate zone and Australia) is greater than 50% of known species; and even over 75% in some of those zones. Such a biodiversity loss is equivalent (and possibly even worse than) the planetary mass extinctions from tens of millions of years ago. In the past they signalled a major restart for life on Earth, but also possibly long periods of low activity until life 'gets back on its feet' (wings, flippers, and the like). This image is a warning of the mass extinction coming later in this century if humanity does not invest serious efforts to halt the drivers of climate change and shore up resilience against biodiversity loss.

A motivationally positive narrative in a 'civil society response to the challenge of limiting global warming to 1.5°C while also paving the way for climate justice' enjoined us not to be disinterested bystanders in the 6th mass extinction "on the only habitable planes we have access to".[2] We could think of the global civilisation we now participate in as a reflective pinnacle of material transformation of human role in the biosphere, from an insignificant biped to a greatest collective material force on the planet. As such, it could be a story of awakening, learning and taking responsibility. In Slavic languages this coincides with the translation of the English term 'degrowth' – odrast. Whatever we end up calling this intellectual transformation, it will need to dissolve the myths that we uphold now, the stories we explain the flow of our experiences in and agree on a set of principles guiding the collective construction of future 'ecojustice' stories. This building block is dedicated to the principles of sustainability and global justice.

- How can the concept of biodiversity and ecological resilience justice be integrated into the existing curriculum to help students understand the importance of living natural world?
- How might the prediction of extinction affect students' emotional response to the living world and their expectations from the future?
- What are some practical classroom activities that could help students appreciate the role of biodiversity in contemporary life in their hometown? What about in the rural regions of southeast Asia? And in the urban suburbia of North America?

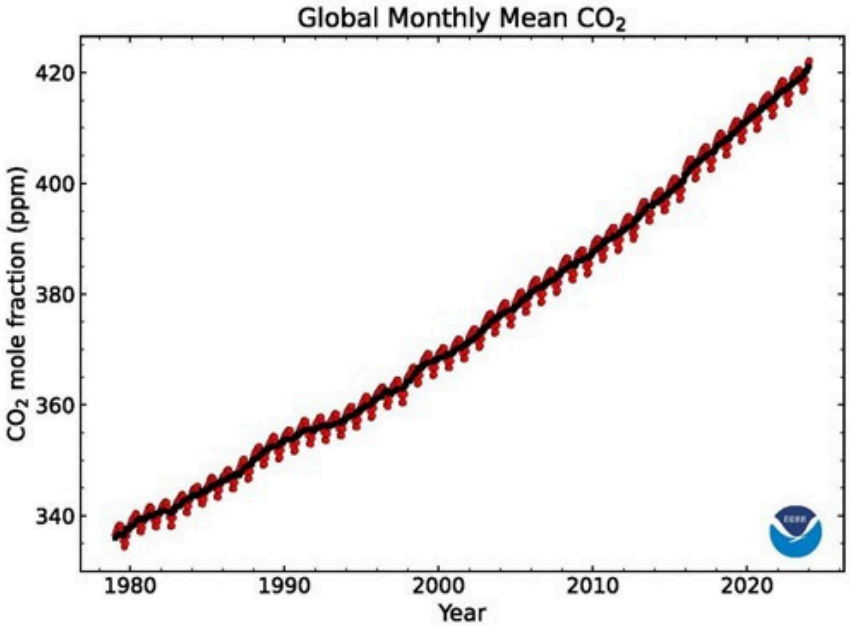


Figure 2: Global monthly mean concentration of carbon dioxide in the atmosphere (red line) and annual trend (black line) from 1980 to 2024. Based on direct measurements compiled by US government agency NOAA.[3] Carbon dioxide in the atmosphere warms the planet, causing climate change. More information about data and related process can be found at the source webpage.

This figure shows the change in the average monthly carbon-dioxide (CO2) concentration in the atmosphere from 1980 to today. The concentration in 1980 was just under 340 ppm (a 'unit' the concentration in a gaseous mixture such as the atmosphere is expressed in), which is just under 350[4] ppm, the upper safe limit set by scientists. In the 1980s the global population was aware of carbon-dioxide's role as climate change driver, as well as of its source in fossil fuel burning. The major global fossil fuel companies were aware of the role that the use of their product played in the predicted runaway climate change. They devised the strategies to deny their role, obfuscate possibilities of coordinated global action and prevent the political initiative to address this. By early 1990s, the safe limit had just been passed and there was declarative global agreement at the famous UN Rio Summit to address this issue. The concentration of carbon dioxide in the atmosphere had continuously risen ever since and continues to rise to this day.

- Why is the black line near straight, whilst the red line oscillates around throughout the year?
- What is the overall trend for both black and red lines in the 1980-2024 period?
- What is estimated to be the carbon dioxide concentration around the pre-industrial time, say in 1750?
- What do you remember or know about the world and everyday life in different parts of the world, at the period when atmospheric concentration of CO2 was last around the safe level of 350ppm?

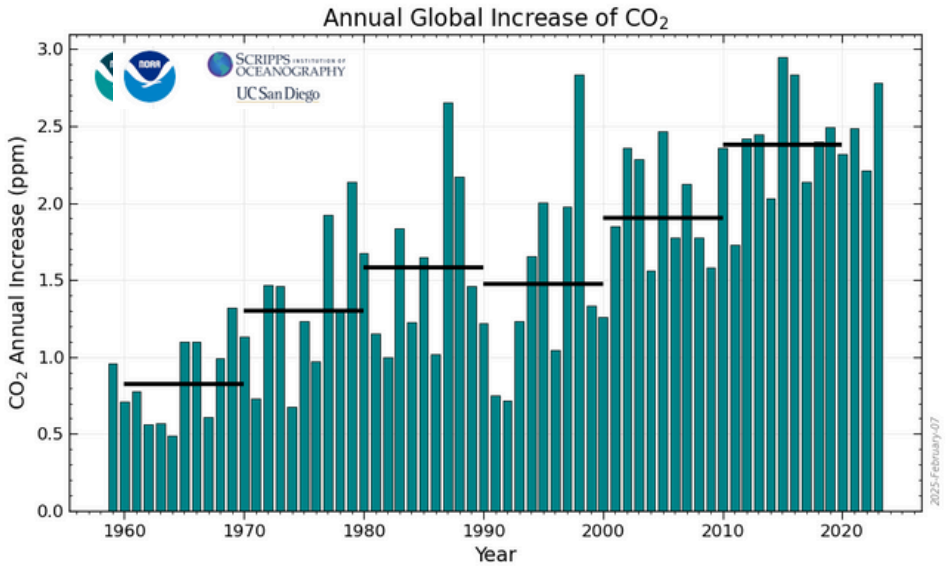


Figure 3: Annual mean carbon dioxide growth rates based on globally averaged marine surface data. In the graph, decadal averages of the growth rate are also plotted, as horizontal black lines for 1960 through 1969, 1970 through 1979, and so on.[5]

This figure shows the annual global increase of carbon dioxide concentration in the atmosphere, or the annual addition to the average carbon dioxide concentration, since 1960. Given that the alarms about rising carbon dioxide concentration were first raised in the 1970s, that by the 1980s resistance from some quarters was strategized and that by the 1990s global coordinated action was promised, there is a surprising lack of change in the global trend of adding ever more carbon dioxide to the atmosphere. In other words, globally the most economically productive section of humanity keeps adding more and more climate change-driving gas to the atmosphere, despite proclamations about associated dangers.

The overall trend is one of increasing annual increases, even though not every year exhibits greater increase than the previous. In fact, the 1990s were the first overall decade with a lower rate of increase (though still an increase in total atmospheric concentration, as the growth rate was positive) than the preceding decade. We are still not seeing a clear sign of even levelling off of the annual increase in concentration, let alone the necessary annual and decadal decreases in concentration to return to the safe level (see Figure 2).

- What is the reason for the average decrease in the growth rate of contribution to the atmospheric carbon dioxide concentration in the 1990s? What has changed with global industry and economy?
- What is the name for progressively ever larger increase in the value of some variable, as opposed to a steady increase year on year?
- How can the concept of carbon dioxide emissions reduction be illustrated in classroom discussions? How can it relate to equitable solutions for atmospheric carbon dioxide concentration (Figure 2)?

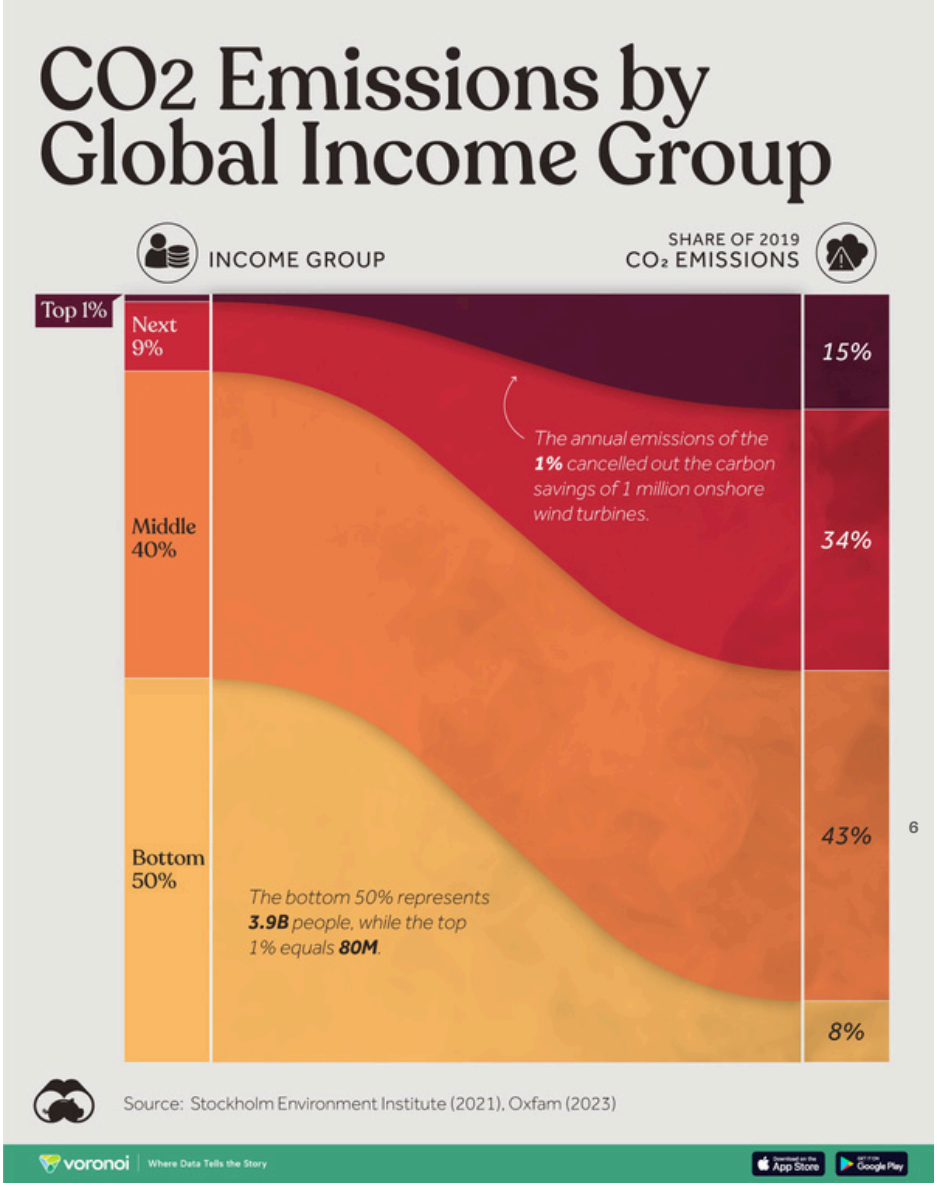
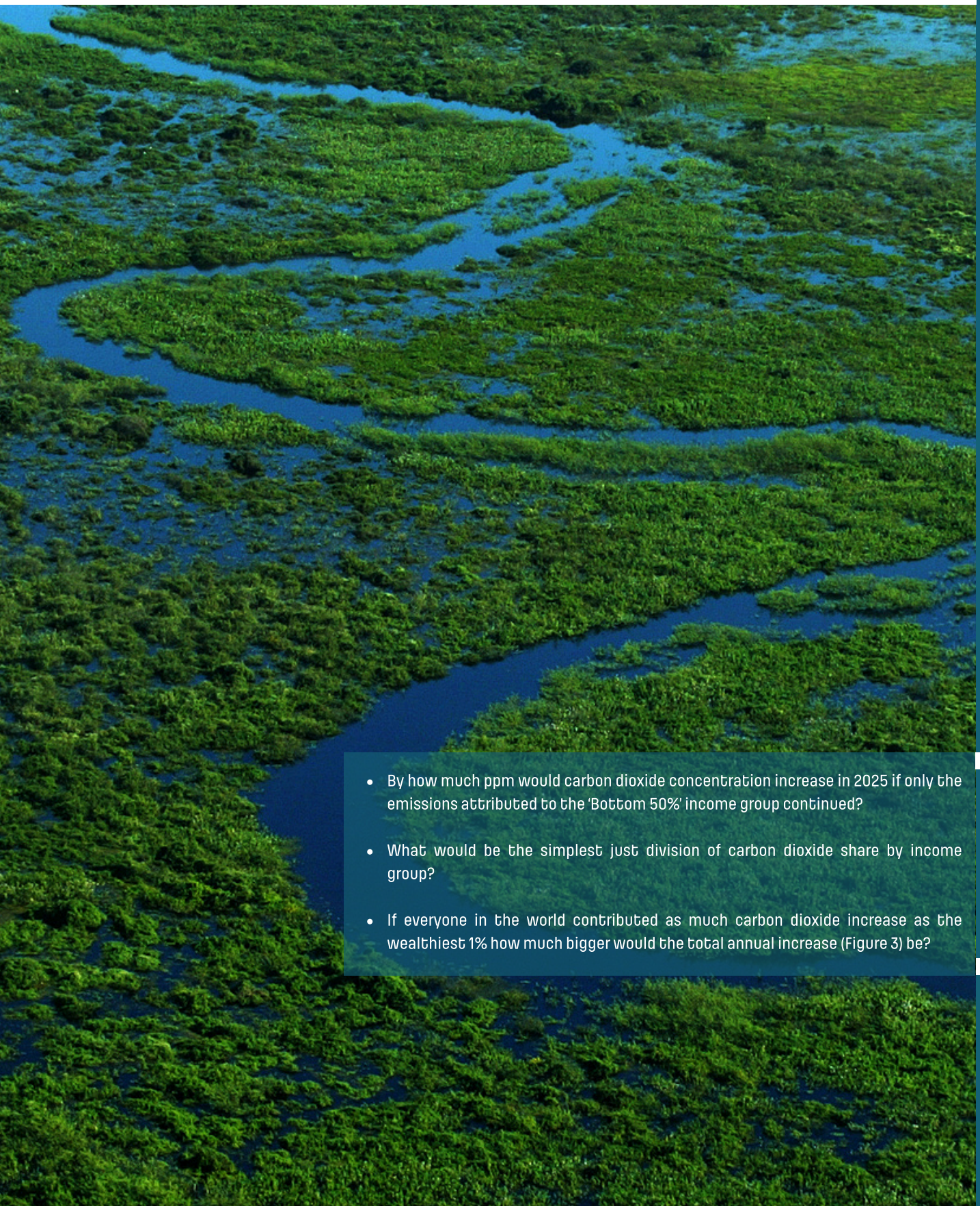


Figure 4: Annual carbon dioxide emissions in 2019 broken down by global income groups. The data for this image comes from the Emissions Inequality Calculator, created by the Stockholm Environment Institute. [6]

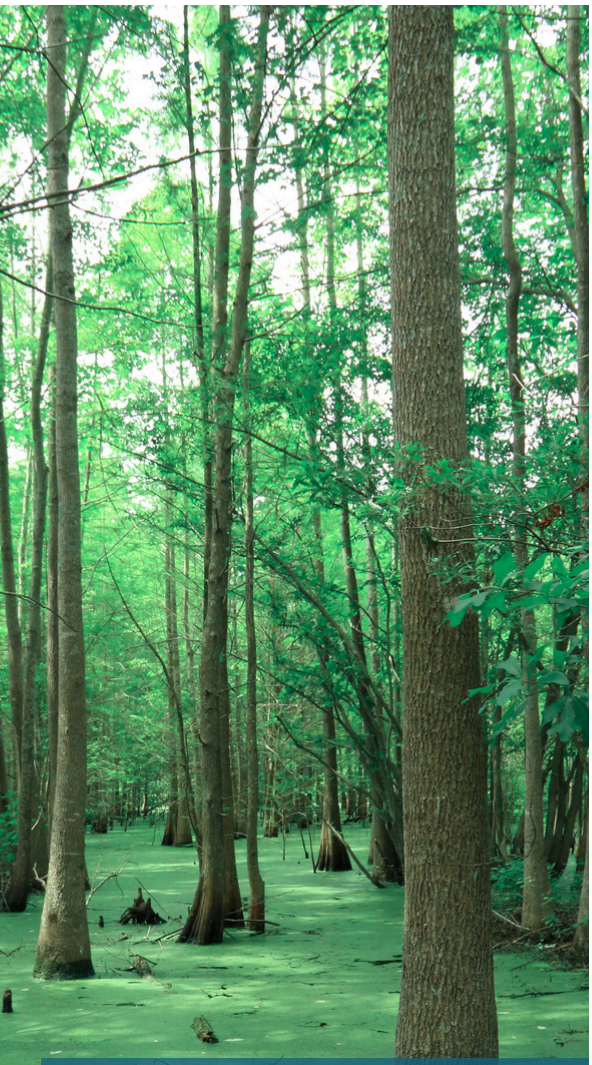
The final figure shows the proportion of global annual carbon dioxide emissions attributed to the consumption of people from different global income groups. It thus disambiguates the global 'humanity' into people belonging to different income groups. People from the bottom 50%, representing almost 4 billion people contribute only 8% of annual global emissions. If they continued their annual emissions at the current rate whilst all others stopped, the global annual increase in atmospheric carbon dioxide concentration would drop by over 90% - it would almost stop (compare to **Figure 3**). On average, people in this group make 2,800 EUR per year (233 EUR per month). [7]

Together with the next 40% of the global population (just over 3 billion people, making 90% of the global population together with the previous group) the emission proportion reaches 50% of annual emissions that contribute to the atmospheric carbon dioxide concentration. People in this second group on average earn 16,500 EUR per year (1,375 EUR per month) in income, which is closer to the income band of our project participants. The remaining 10% wealthiest people around the world, contribute to about 50% of global annual carbon dioxide increase.



- By how much ppm would carbon dioxide concentration increase in 2025 if only the emissions attributed to the 'Bottom 50%' income group continued?
- What would be the simplest just division of carbon dioxide share by income group?
- If everyone in the world contributed as much carbon dioxide increase as the wealthiest 1% how much bigger would the total annual increase (Figure 3) be?

"..one group has gained more from the costs and risks shared by all."



- Could you name one ethical principle that a world aimed at sustainability should introduce to start changing the present situation? An example of ethical principle for application in medicine is: "one should not practice evil or do harm".
- Under what conditions is utilitarianism preferred to an ethics of contractarianism (full community agreement on any action) or precaution principles (rather don't do anything if you are unsure of the possible damage)?
- What educational topics (or existing school subjects) already introduce the situation of '8 billion people and limited resources'?
- What tools or strategies could help all 8 billion people, with limited resources and varying abilities to access them, agree to and follow a sustainability plan?

ETHICAL PRINCIPLES OF (UN)SUSTAINABILITY

It is unsurprising given the importance we attach to economics in contemporary life, that our dominant ethical framework has long been shaped to fit the dominant economic philosophy.[8] Like any academic domain, it is actually only a part of a large field of moral philosophy, as there are varied and nuanced answers to these fundamental moral questions. But the major differences in positions and approaches are relevant to the data presented above and can be considered without lengthy specifications of specific disciplinary jargon. In accordance with the philosophy of ecological justice, we must address positions related to distribution of well-being, sacrifice and exposure to risk of both rich and poor, young and old, the present and the future, and finally humans and non-humans.

The last has to some extent already been discussed in the previous article (Reconstructing sustainability and inclusion in environmental education). The issue between the present and the future is exemplified by the current contributions to the increase in atmospheric concentration of carbon dioxide, which is a climate change driver (see **Figure 3**). Opposed to that are the projected mass extinction zones experiencing almost total loss of biodiversity by the end of this century (see **Figure 1**).

By that time, most of us contributing to the carbon dioxide concentration will not be alive to experience the projected losses. These issues become more apparent between the contemporary young and old, and the poor and the rich. In both cases one group has gained more from the costs and risks shared by all, than the other.

Utilitarianism vs. Contractarianism

In modern times, Western philosophy has categorized possible answers to these questions in two main groups: utilitarian and contractarian. Between these two (simplified) extremes lies a field of possible in-betweens and it is up to individual communities to find the one that best fits their worldview and expectations of justice. Nonetheless, we need a global overarching framework that could accommodate this multiplicity of micro-arrangements without bringing them into conflict. This very set-up is already directing us towards some form of contractarianism (J. J Rousseau and I. Kant, for example), as it seeks an agreement – a sort of contract – between different communities.

- How does our current educational curriculum reflect or reinforce the dominant economic philosophies, particularly utilitarian and contractarian principles?
- In what ways might this influence students' understanding of justice, equity, and sustainability?
- How can our school leadership ensure that our policies and practices consider and address ethical concerns caused by disparities between the young and old, rich and poor, present and future?
- What role can our school play in promoting intergenerational and socioeconomic equity in our community?

Utilitarianism. championed by J. Bentham, J. S. Mill and H. Sidgwick, in general seeks to maximize the total amount of happiness (utility of human existence, we live to be happy) aggregated across the whole of human (and someday even more-than-human) population. It assumes that there is a single rational and true method of ascertaining the situation that contains this greatest amount of happiness (utility). Rather than deal with a gaggle of opposing positions and worldviews, it researches and advocates the universal adoption of the best overall way 'to do things'.

The long history and nuances of the philosophical debate need not concern us here, but their connection to the forms of organisation of exploitation of nature and labour bear insight into the issues opened up in preceding paragraphs. It is important to introduce the connection of utilitarianism to the global capitalist economics and the latter's role in the contemporary threats of catastrophic climate change and biodiversity collapse.

In early modern times philosophers like John Locke* posited that my expropriation of natural resources does you no harm, as there is enough resources for you to use them in the same way if you wish. Moreover, my desire to use them was a consequence of some entrepreneurial motivation that resulted not only in profit but also in novelty commodities available to all (with the money to buy them).

The global capitalist economics of today is supported by the liberal and utilitarian perspective that creation of economic value is the ultimate utility. Out of inert resources, human activity and accumulated know-how create a product of market value. In strictly economic terms, a new value has been created where previously there was none, and the sum total of this value is the ultimate new 'utility' for the global human population.

Regardless of how fairly or unfairly it is distributed within the human population, it is greater once it has been processed into economic value than what it would become when left in its long-term natural state. In less abstract terms, economic activity today prefers the creation of immediate 'value' over other interests of the non-economic actors.

*Confusingly, though considered 'a father of modern liberalism' which is close to later utilitarian positions in economic theory, Locke is actually a very early proponent of the contractarian camp, who greatly influenced the stated champions of contractarianism like J. J. Rousseau. Philosophy quickly becomes confusing as throughout history people experiment with positions and alternative perspectives on a multitude of issues. For simplicity we can say that Locke's early philosophy aims to result in utilitarian outcomes from an initial contractarian position–an agreement that the rationally optimally productive arrangement is also the best for everyone. It is also important to note that Locke's original contract predominantly includes rich white northern European males.

"..we must understand the very conditions of liveability as–a resource."

- How could we justify the present-day inequalities of wealth as resulting in compensating benefits for everyone, and especially the poorest?
- Why would the 'veil of ignorance' prevent individuals or groups from organising social principles that would favour particular interests? Can you imagine yourself entering in an agreement with your colleagues, but without knowing your own position?
- What is the sacrifice involved in the social role of teaching, from the perspective of sustainability?
- What would the reward (or permitted inequality) be accorded to the teachers in a 'fair' world favouring ecological justice, from the perspective of John Rawls' 'veil of ignorance'?

GUIDING JUSTICE AMID SCARCITY

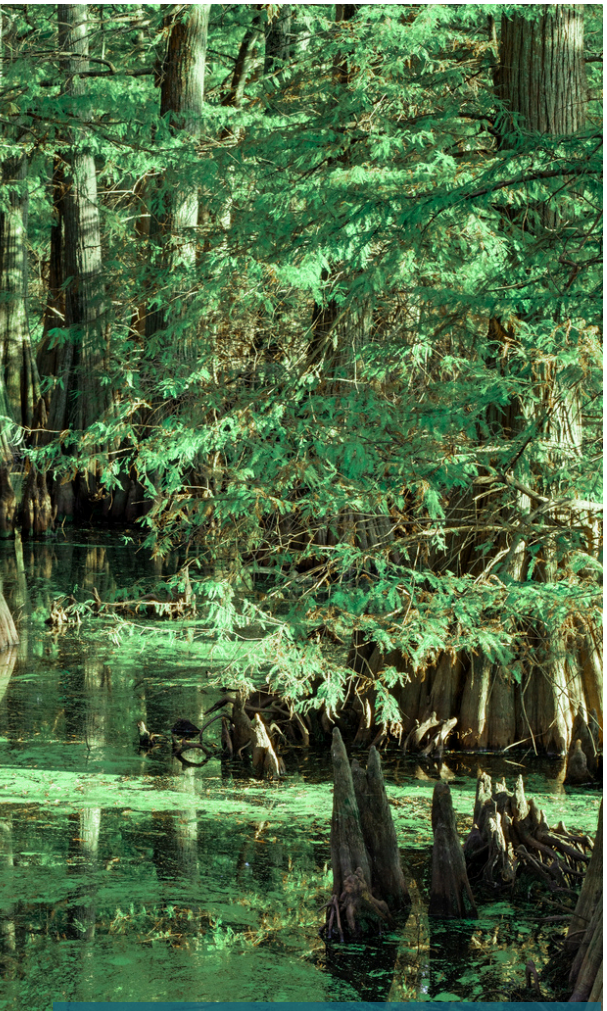
Since Locke's original proposals, we have discovered global (that is, final) limits on the available resources, a 'full planet' in the words of ecological economist Robert Constanza.* When the forthcoming needs of the future generations are accounted for, the pile of available resources is even more strictly bounded.

Moreover, we must understand the very conditions of liveability as–a resource. A resource that is required to keep the multitude of differently specialised species that make up a rich biodiversity –alive. The sinks for the waste products of our (economic) activity, such as the biosphere's processing of carbon dioxide from the atmosphere can also be considered 'a resource'. They cannot be replaced by a human action or an artifact and have been freely available to all humans. In recent times, the very availability of fresh, unpolluted, air to breathe has been an illustrative limited resource. It is taken for granted until it becomes scarce or unavailable, resulting in great alarm.

Liberal philosophy contributes the aversion to increasing command and control of productive activity by some social structure or group. The entrepreneurial producers venture into resource extraction and production without proscriptions from the government or some social council. The value created is expected to trickle down from those who gather most of it to everyone else, thus increasing the overall 'utility'. A world in which more overall value is created in highly unequal conditions (none trickles down, for example) is preferred to the one in which less overall value is distributed evenly among all. The latter did not optimise the total utility it could gain from its resources and endeavour. In extreme, and sadly very close to the present state of our world (consider the 50% climate change contribution from only the richest 10% of the population in Figure 4), utilitarianism prefers a world that is super rich in material products and highly unequal. We can imagine a world much less abundant in material products that are shared equally among all people, but need to think of the appropriate guiding principles, and the relation to some other factual value like sustainability or wellbeing, over the present utility.

A liberal deviation from utilitarianism, that nonetheless does not command that the distributions of goods (wellbeing, happiness, basic services, risks of natural collapse) should be equal, is the introduction of social norms based on John Rawls' 'difference principle'.[9]

*Robert Costanza is Professor of Ecological Economics at the Institute for Global Prosperity (IGP) at University College London (UCL). His transdisciplinary research integrates the study of humans and the rest of nature to address research, policy and management issues at multiple time and space scales, from small watersheds to the global system.



- How can the school curriculum and practices reflect the understanding that we live on a "full planet" with limited resources? What changes can we make to ensure that students appreciate and act on the idea of sustainable resource use?
- How might we use Rawls' concept of the "veil of ignorance" to help students and staff think more deeply about fairness and justice in our school policies and practices? How can this thought experiment guide us in creating a more equitable school environment?
- How do we address the disparities in resource distribution and wealth within our school community? Are we encouraging students to think about the broader societal implications of these inequalities?

It is a form of contractarian moral theory (based on a real social contract, not abstract and absolute calculation of the utility value) supposedly updated for the present age. Namely, the traditional contractarian ethical frameworks were unable to put forth a worldview that was as all-encompassing as utilitarianism ('there is a real value out there and it can be measured or at least approximated'), or that was not based on highly subjective judgments that were presented as all-encompassing.

Rawls challenged us to think what kind of social arrangements free and rational people would agree to in an original position of equality and 'innocence'. This original equality is the equality of mutual respect and right to speak, but total ignorance of one's and others' physical abilities, social status or access to material resources (natural or produced). It is even an ignorance of what generation these people live in relative to the history of humanity, i.e. a true ignorance of whether they are the 20th century's modernisers or the 21st century's climate survivors.

The hypothetical 'veil of ignorance' prevents individuals or groups from organising guiding principles so as to favour particular interests. If it is hard to imagine such a thing, you can think of social positions being divided after the agreements were reached by lottery, so that no participant knows what position they will eventually draw in a lottery.

Rawls contends that a society based on the principles that are agreed from this position would be seen as 'fair' by all. Any inequalities accepted under such principles should then be seen as necessary for the achievement of some greater common good. For example, someone in the society has to be a doctor in order to cure others and based on the sacrifices that 'doctoring' assumes, the socially bestowed rewards should be equally forthcoming and exclusive to those responsibly working on 'doctoring'.

In general, Rawls considered that there would be two dominant ruling principles governing this 'fair' society: **(1)** extensive basic liberties, and **(2)** inequalities of wealth are permitted only when they result in compensating benefits for everyone (and particularly for those that are most needy – the worst off). This was supposed to provide an ethical framework for liberalism with any acceptable level of inequalities. A sort of a moral justification for the global situation the world is in, without recourse to historical and geographical contingencies.

"We must reconstruct new and better stories, appropriate for the 'full world' and 'planetary boundaries' and make them meaningful and attractive to the next generation."

CORRECTING THE GLOBAL ECOLOGICAL (IN)JUSTICE

As soon as we try to play the game of 'veil of ignorance' (and the Rawlsian proposal indeed comes from Game Theory, another intellectual buttress of neoliberal economics), we realise how utterly inapplicable it is to the real situations. Even if we could submit to a lottery of social position and future skills education (where anyone could be a doctor given enough social support and training), there is just no way to avoid being aware of our generational position. The present generations seem to be the bridge between the generation that could still pretend to believe in development without any lasting consequences (the ultimate ecomodernisers of later 20th century) and the generation that will face the global onslaught of consequences (even while taking the benefits of preceding development for granted). Unlike the Rawlsian ignorants, we must be aware of our role in history and are utterly unable to escape this temporal position. Just like shoring up environmental sustainability and securing future generations against already unavoidable climate impacts, we must take proactive steps to correct the injustice inherent in the dominant worldview.

We must reconstruct new and better stories, appropriate for the 'full world' and 'planetary boundaries' and make them meaningful and attractive to the next generation. Again, there is an ethical framework behind such calls for action too, for example along the lines of 'communitarian justice' championed by Isaiah Berlin.* It sees the ultimate liberty within society not in doing what one wants under constraints of what has been agreed upon with others (even if behind the 'veil of ignorance'), but in the self-mastery that responds to the role of a person and community in the greater historical flow. Needless to say, the present global predicament invites the 'middle 40%' **(Figure 4)** to take up this role for the benefit of all and of the future generations that are presently unable to speak up. The ethical frameworks introduced above and the principles that they introduce to guide social organisation, variously accentuate the individual right to prosper and the collective right to sustainability on the only living planet we know of.

* Isaiah Berlin was a Russian British social and political theorist, philosopher, and historian of ideas. Berlin distinguished 'negative liberty' (an absence of coercion or interference in private actions by an external political body) and a 'positive liberty' (a self-mastery, which asks not what we are free from, but what we are free to do). He maintained that values are human creations, rather than absolute truths to be discovered, and therefore conflicting values may be equally valid and yet incompatible. As such they may come into conflict with one another in a way that admits of no resolution without reference to particular contexts of a decision. Combined with positive liberty's demand to get engaged in the political decisions, this presents a meaningful task for the present generation to both respect liberties, agree on the sustainable course of action and respect the peculiarity of the present global moment.

Whilst the trends from **Figures 2** and **3** are remorseless and already exhibit adverse effects on our daily lives, the inequalities hold the key to addressing the issue of sustainability with global environmental justice.

Billions of people the world today live without access to electricity or clean water. They cannot even begin to invest into their education even if given the time, and don't have the proper nutritional intake to fully develop physically and neurologically. They need economic growth, creation of new economic value (as food, education, electricity or even clean water mostly as commodities with market value), to enable them to gain the benefits of modern life. But the global development model that revolves around economic growth is destroying the planet and cohesion of the global human community.[10] It is dangerous for the very possibility of sustainability of the entire living planet. What we need before we can agree on the justice proposal for the whole planet (a contractarian justice aware of our unique generational position), and before we plan the inspiring historical role for the century that rouses us from the slumber of indifference about the 6th mass extinction[2] (communitarian justice about shared prosperity and sustainability), is a measure of balance between aspirations and constraints.

Doughnut economics can supply the compass[11] for navigating such paths between overburdening the planet and society with selfish appropriation and underperforming on the generational role of shoring up natural resilience and providing a material foundation for the good life for all. Initially doughnuts measured the national contribution to the crossing of planetary ecological boundaries and the national attainment of development and growth goals. But such doughnuts were silent about the reasons for global unsustainability and injustice. Moreover, they just ascertained the fact that inhabitants of rich countries largely already lived far over the planetary limits, whilst the inhabitants of the poor countries largely lacked basic social foundations.[10] It said nothing about the environmental protection provided in poor countries and miserable social conditions entrenched in rich countries (on top of the externalised environmental costs).

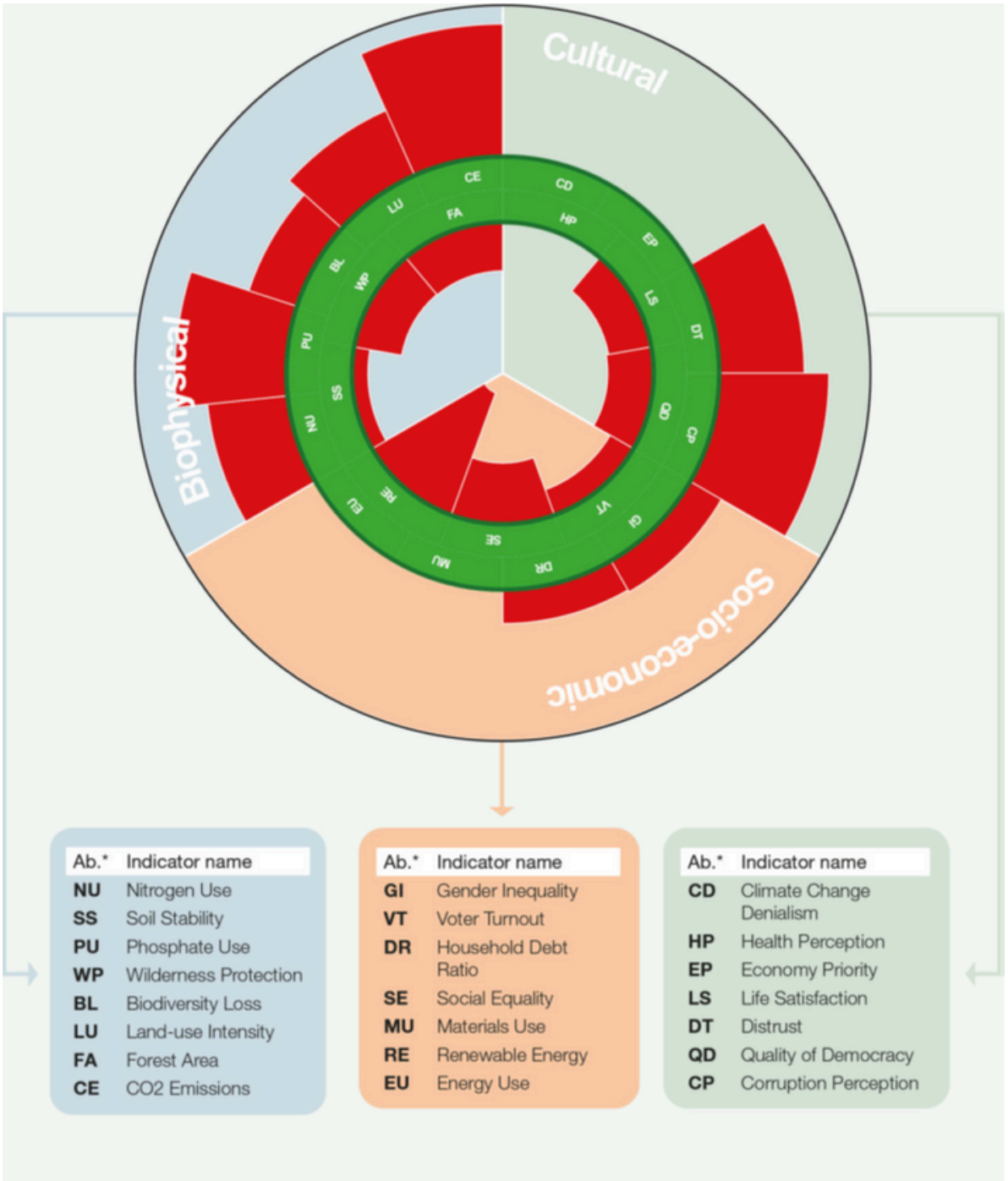
Degrowth doughnuts simply included natural protection and restoration aspirations and social and cultural constraints on the good life, into the compass.[12]

Climate change remains the biggest challenge and the greatest motivator of re-thinking how to achieve global justice through redistribution. Research has shown that under present global level of inequality, and relying on the economic growth imperative, climate change drivers would rise by further 20% to provide energy, housing, food and transport at the minimum dignity level for all.[13] Even attaining the minimum level envisioned under the current social contract would make climate stabilisation hard to achieve and maintain. On the other hand, according to our **Figure 4**, this could be almost offset by eradicating the luxury consumption of the richest 1% of the global population.

Further research into quantifying some of the doughnut measures for the whole planet assures us that "it is theoretically possible to satisfy the basic needs of 10.4 billion people within ecological limits."[14] For that all economic sectors require large scale transformations, including what we produce, for what purpose and at what level of quality and output. Furthermore, as most significant for individual lifestyles, dietary transformation to essentially vegan diet with no further cropland expansion is required.

For example, in the degrowth doughnut for a country from **Figure 5**, with per capita national income equivalent to that of the Middle 40% group from **Figure 4**, intense agricultural pollution (nitrogen, phosphate and land use change) and carbon dioxide contributions are largest contributors to global environmental unsustainability. But equally problematic is the popular perception of widespread corruption in the society, preventing coordinated action and trust in fellow citizens (Distrust).

Despite being among the reasonably wealthy countries of the European Union, and not living on a globally unsustainable per capita energy use, this country heavily underperforms on the non-fossil (renewable) energy supply to the population. This is far from the global requirement for a just and sustainable world in terms of a fossil-free energy system, as calculated by Hauke Schlesier and colleagues.[14] Social equality, defined as abolition of any segment of population living 'at risk of poverty' (as specified by a special index of EU's statistical agency Eurostat), also remains a strongly underperforming development goal.

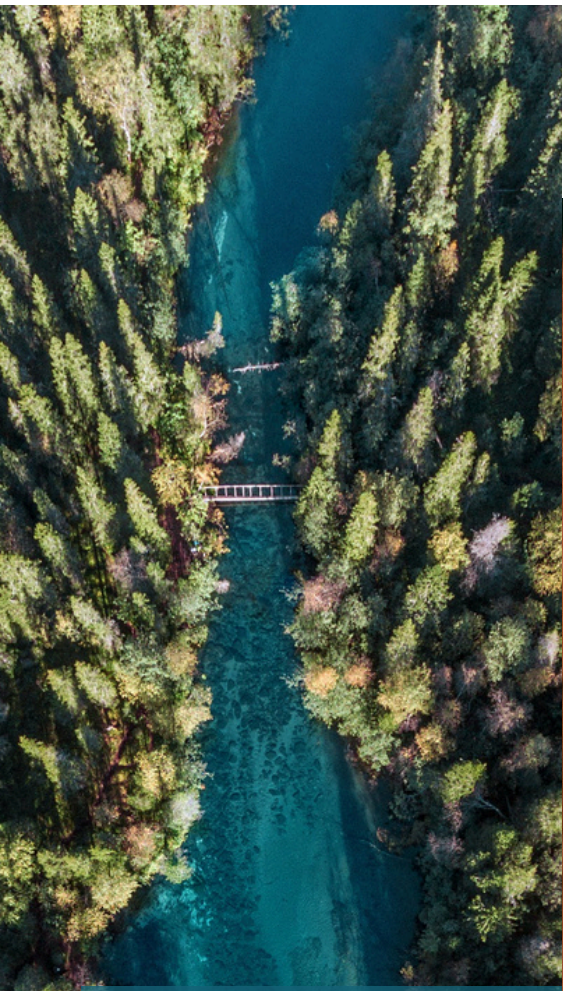


Ab.*	Indicator name
NU	Nitrogen Use
SS	Soil Stability
PU	Phosphate Use
WP	Wilderness Protection
BL	Biodiversity Loss
LU	Land-use Intensity
FA	Forest Area
CE	CO2 Emissions

Ab.*	Indicator name
GI	Gender Inequality
VT	Voter Turnout
DR	Household Debt Ratio
SE	Social Equality
MU	Materials Use
RE	Renewable Energy
EU	Energy Use

Ab.*	Indicator name
CD	Climate Change Denialism
HP	Health Perception
EP	Economy Priority
LS	Life Satisfaction
DT	Distrust
QD	Quality of Democracy
CP	Corruption Perception

Figure 5: Degrowth doughnut profile of an Eastern European nation in 2021. It shows the limit transgressions and foundation shortfalls (or lack of them) in biophysical, socio-economic and cultural measures. It was used to assess the global justice and sustainability priorities against the political programme expressed in the nation's Clean Development Strategy.[15]



- Identify areas or topics in the existing school subject curriculum that inform the current unique predicament in global development. What would those areas be in art, history, mathematics, biology, physics, language?
- What elements (measures, indicators, quantified concepts) would you like to see included in degrowth doughnuts? Which existing elements do you think they could replace?
- Describe in visual terms a world beyond capitalism at the end of this century? What does it smell like? What is the greatest threat to wellbeing in that world?
- How do our current school practices and policies reflect a balance between economic growth and the imperative of environmental sustainability?

Beyond abstract calculations, these transgressions and shortfalls are clues where our local societies' strategies should aim so as to contribute to the global contract of justice and sustainability. The situation from **Figures 2** and **3**, and predictions from **Figure 1**, warn us that as a planet we must move to the material processing and social distribution structures compatible with a 'sustainable and just society', or large parts of the planet will become uninhabitable and the prosperity of the middle, rich and super-rich **(Figure 4)** will also collapse.

It is possible to calculate what the global constraints are, in this case as goals for sustainability, and the global resilience and dignity (aspirational) foundations, as goals for future progress and legacy of our generation. We can then also calculate what the individual national contributions towards them are, as priorities in strategies of transformation **(Figure 5)**. In degrowth doughnuts, no nation attains a shortfall-free inner ring of the doughnut, as the current economic model hides great inequalities and does not produce universal happiness and wellbeing.

Changing an economic model takes us to the next and unexpected issue of EcoJustice – whether capitalism can structurally allow for an equitable distribution of resources. From the point of view of global justice, says Kohei Saito, capitalism is totally dysfunctional. "It simply does not work. [...] because it is based on externalisation and transfer, it is impossible to achieve a globally just world. The consequence of neglecting injustices is that humanity's very survival is at risk."[10]

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