

Intergenerational Justice Review



Issue topic:
**Personal Carbon
Footprint (Part I)**

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After the 2015 Paris Agreement and the IPCC's 2018 report, there was a widely-shared consensus that the 1.5 °C target is non-negotiable. Small island states and climate-vulnerable nations used scientific evidence to argue that a 2 °C target would expose them to unacceptable risks. But in 2024, for the first time in human climate history, the average global temperature was indeed 1.55 °C warmer than it was between 1850 and 1900. This threshold will most likely be broken again in the coming years as climate change accelerates.

The global community is responding to this with calls to do more. In the prevailing view, this is not meant as a strategy shift, but rather a strengthening of the agreed climate protection strategy based on Nationally Determined Contributions (NDCs). The dominant view is that the annual COPs (negotiations between the States) have been crucial in building international climate institutions, norms, and agreements. While this is true, these agreements have not delivered the necessary emissions reductions as greenhouse gas emissions continue to reach new heights each year. What if “more of the same” will not help? What if the whole approach to political, state-centric climate action is unlikely to succeed? What if individual action, not collective action, is the solution? Humanity's failure to meet the 1.5 °C target should at least prompt some consideration of this idea.

One strategy that has never been tried since the world community became aware of the climate crisis is the serious implementation of a Personal Carbon Footprint (PerCF). Let's imagine every individual on the planet had calculated their annual PerCF since the first IPCC report in 1990, year by year. A significant share of the 8 billion people that currently inhabit this planet would likely have reduced their PerCF because awareness would have led to action. It is debatable whether humankind would be better off in 2026, as we are in reality, without the PerCF at the heart of a climate protection strategy. Yet, it is difficult to imagine we could be worse off given the continued increase in greenhouse gas emissions over time.

This IGJR issue embarks on this thought experiment. It explores the PerCF as a paradigm shift, moving beyond the current top-down approach of state-level emissions targets. Without buying into this approach, we want to examine its premises further. In this paradigm, emission reductions are not solely a technical or policy challenge; rather, they are fundamentally a question of accountability and responsibility. The PerCF's underlying assumption replaces the motto: *'Politicians should solve the climate problem for us'* with, *'I should solve the climate problem as much as I can.'* Rather than treating climate action primarily as a task for state institutions, this approach places it squarely with every individual. Since NDCs have formed the centrepiece of humanity's climate protection strategy, the premise of such an alternative paradigm instead places Personally Determined Contributions (PDCs) as the centrepiece. This is not about politics; it is about me and you, him and her. The sum of all individual emissions is the total emissions of humankind, also known as anthropogenic climate effect. In a world defined by mass consumption and interconnected supply chains, individual choices regarding diet, travel, housing, and investment aggregate into collective outcomes.

Let's end this thought experiment about a strategy shift in humanity's ambitions to halt the climate crisis. Individual and collective responsibility are not mutually exclusive. Climate protection goals and projects must be facilitated from 'above', but they must equally be supported from 'below'. It is undisputed that the state must promote a net-zero society through guidelines and incentive structures, e.g. by pricing greenhouse gas emissions, expanding renewable energies, and promoting the energy-efficient refurbishment of buildings. The state must also guarantee the infrastructure for this change, by building hydrogen and CO₂ pipelines, electric car charging points, grid-scale energy storage and power lines.

Yet consumer decisions can drive sociopolitical change. If, for example, enough people chose trains and buses over short-haul flights out of ethical conviction, politicians would be incentivised to increase the frequency of non-airborne transport. Airlines would eventually stop offering these short flights because of a lack of customer demand.

PerCFs matter, but they matter within social, economic, and legal structures that both enable and constrain individual action. Understanding climate responsibility therefore requires attention to both personal conduct and systemic conditions.

This is the debate in which this issue's two original articles are situated. First, Adumaro Amabogha and Thomas Aneni explore how the PerCF can be equitably addressed to encourage reducing individual emissions in contemporary Nigeria. The article utilises consumption-based accounting and the subsistence-luxury emissions distinction to argue for a progressive bifurcated carbon tax, a national clean energy access fund, and a digital PerCF tracker.

In the second article, Masako Ichihara interrogates the legal avenues for establishing obligations for individuals to reduce their PerCF. By analysing the *Milieudefensie vs. Royal Dutch Shell* case and international human rights instruments, she argues that a legal foundation for individuals to reduce their emissions could be derived to maintain a stable global climate.

The issue concludes with two book reviews that further investigate the relationships between present and future generations. Firstly, Jason Adolph reviews the anthology *Phenomenology and Future Generations* (2024) edited by Mathias Fritsch, Ferdinando Menga and Rebecca van der Post, which attempts to re-establish the importance of the phenomenological (experience-centred) tradition for contemporary problems such as climate change. Secondly, turning to Germany, Ben Jagasia reviews *After Us, the Future* (2025), written by Marcel Fratzscher and only available in German. In this book, the president of the German Institute for Economic Research explores why the age-old promise of economic growth leading to positive outcomes no longer holds. Claiming that the present intergenerational contract has been broken, Fratzscher criticises the current presentism in German economic policies. He proposes a new intergenerational contract based on autonomy, universalism, and humanism.

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Beyond state policy: the personal carbon footprint, climate equity, and the bottom-up imperative in the African region and Nigeria

By Adumaro Rachel Amabogha / Thomas Aneni

State-centric, production-based climate governance has failed to deliver intergenerational justice, particularly for Africa. This paper reframes the debate around the personal carbon footprint (PerCF), arguing that consumption-based accounting more accurately locates moral responsibility and that the subsistence-luxury distinction is essential for equitable policy in developing economies. A Nigerian case study illustrates both the structural constraints inflating involuntary emissions and the rising luxury footprint of an urban elite. Three reforms are proposed: a progressive bifurcated carbon tax, a national clean energy access fund, and a digital PerCF tracker.

Keywords: Personal carbon footprint; climate equity; intergenerational justice; carbon tax; Nigeria

Introduction

The year 2024 stands as a historical marker, a point of no return in humanity's relationship with the environment. With global temperatures surpassing the critical 1.5 °C warming threshold relative to the 1850–1900 pre-industrial average (Copernicus 2024: 1), the international community has witnessed the failure of collective, state-centric climate action to prevent the breach of the limit deemed necessary to avert the most catastrophic climate tipping points (Esty/Moffa 2012: 777-791; Ötoker-Robe 2014: 27). As CO₂ levels are further increasing at a quick pace, it becomes clear that there is a profound political failure, manifested in inadequate Nationally Determined Contributions (NDCs) and a global reliance on insufficient market mechanisms and offsets. This necessitates a radical re-evaluation of climate governance, moving beyond the current top-down paradigm of state-level emissions targets. The collective inaction of the current generation has critically consumed the finite global carbon budget, placing an existential and disproportionate burden of adaptation and constrained opportunity onto the future; a direct contravention of the principles of intergenerational justice (Shue 2014: 366; Gardiner 2013: 397-413).

This article addresses the widening gap between political commitment and climate reality by examining the personal carbon footprint (PerCF): the total greenhouse gas emissions (CO₂ and equivalents, CO₂e) caused directly and indirectly by an individual's activities. The argument is that the widely shared recognition that "more must be done" (World Meteorological Organisation 2025: 12) must be operationalised through a necessary integration of individual ethical responsibility and robust structural governmental incentives. The state's critical role in pricing emissions and guaranteeing dependable low-carbon infrastructure must be supplemented by a powerful bottom-up driver, namely the aggregated ethical decisions and market signals generated by informed consumers and responsible citizens. Emissions reduction is not solely a technical or policy challenge. It is fundamentally a

question of moral accountability rooted in the consumer power of the present generation.

The objective of this analysis is threefold. First, it establishes the conceptual and ethical framework of the PerCF in a global context, highlighting the critical disparities inherent in a system dominated by historically high-emitting developed nations. Second, it analyses the unique emissions profile of the African region, where the PerCF is shaped more by acute energy poverty and the imperative for sustainable development than by discretionary luxury consumption, thereby requiring a distinct ethical lens (International Energy Agency 2022: 250). Finally, it conducts a focused case study on Nigeria, Africa's most populous nation and one of its leading economies, to develop concrete, innovative proposals for reform that integrate individual action with national policy (Federal Ministry of Environment of Nigeria 2025: 12). The article ultimately argues that a just and effective climate response, particularly within dynamic developing economies, requires a new social contract where structural support enables, and ethical duty drives, low-carbon individual choices, thereby fulfilling the vital mandate of intergenerational justice.

The ethics and methodological imperative of the personal carbon footprint

The PerCF is more than a simple accounting metric; it is the methodological nexus where global climate policy, economic activity, and individual ethical responsibility intersect. The PerCF serves as the necessary tool to translate the abstract political failure of states into the concrete moral duty of the consumer, thereby fulfilling the mandate of intergenerational justice (Gardiner 2013: 397-413). This section establishes the methodological basis of the PerCF, grounds it within the philosophy of climate equity, and argues for its indispensable role in reforming climate governance. The ethical and practical utility of the PerCF relies entirely on adopting the correct accounting framework, one moving beyond national boundaries to capture individual demand's true environmental impact. The dominant paradigm in international climate reporting remains the production-based approach, under which emissions are assigned to the country where they physically occur (Tukker et al. 2020: 4). This creates a structural accountability gap that systematically flatters high-income, import-dependent economies while penalising developing ones whose industrial output largely serves foreign consumption, a distortion with direct implications for how Africa's emissions profile is read and judged internationally. The alternative, consumption-based accounting, reassigns those embodied emissions back to the individual whose final demand drove their creation, tracing them across global supply chains via multi-regional input-output modelling. This reallocation is ethically more defensible: it respects the polluter-pays principle at the level of actual causal agency rather than

geographic accident, and it situates responsibility where purchasing power and therefore meaningful choice reside.

Under production-based accounting, the high-income nation records a successful reduction in its national emissions while the actual environmental impact is merely externalised to the developing world.

That said, endorsing consumption-based accounting as the correct framework does not resolve the considerable methodological disputes arising within it. Any user who genuinely attempts to calculate their PerCF across existing tools will find they disagree, often substantially. The German Federal Environment Agency's UBA CO₂-calculator, the Conservation International calculator, and the WWF Switzerland tool each nominally adopt a consumption perspective, yet each encodes different answers to contested questions of scope, system boundary, and emission factors. Aviation illustrates this sharply: most calculators apply a radiative forcing index multiplier to account for the additional warming caused by contrails and nitrogen oxides at altitude, but the multipliers in active use range from 1.0 to 3.0, meaning the same flight can yield figures differing by a factor of three. Food categories diverge similarly; definitions of dietary patterns vary across platforms, calorie personalisation is applied by some tools and ignored by others, and the treatment of packaging, retail logistics, and food waste differs throughout. Some tools allocate a per-capita share of public infrastructure emissions to each user; others exclude government consumption entirely. These are not trivial discrepancies. The concept's credibility depends on greater methodological transparency and, eventually, convergence around common standards, particularly in contexts like Nigeria, where data scarcity already complicates any bottom-up accounting exercise (Birnik 2013: 281-285).

Refuting the production-based model: carbon leakage and moral hazard

National climate action, as reported under the United Nations Framework Convention on Climate Change, relies on production-based accounting, which attributes emissions to the country where the greenhouse gas (GHG) is physically released. This framework, while essential for national inventory, suffers from a critical ethical and economic flaw: the phenomenon of carbon leakage (Davis/Caldeira 2010: 5689). Carbon leakage occurs when industrialised nations, facing domestic emissions reduction mandates, relocate carbon-intensive manufacturing and production, such as cement, steel, and consumer electronics, to developing nations with lower environmental regulatory standards. Under production-based accounting, the high-income nation records a successful reduction in its emissions while the actual environmental impact is merely externalised to the developing world (Peters et al. 2012: 3247-3276). The high-income nation claims domestic success while its ultimate contribution to global warming, driven by its sustained demand, remains undiminished.

The consumption-based emissions accounting model on which the PerCF is built corrects this flaw. It attributes all emissions, both direct and indirect (embodied), to the final consumer of the product or service, regardless of where the GHG was emitted (Peters/Hertwich 2008: 1401-1407). This is a critical distinction: emissions may be produced in China, but they are demanded and therefore attributable to the consumer in New York, London, or Lagos. The PerCF is thus a metric of attributable responsibility.

The complexity of boundary setting: direct versus embodied emissions

Accurately calculating the PerCF requires methodological rigour, primarily involving precise boundary setting around the individual's sphere of influence. The total PerCF is typically divided into two categories which correspond to the Scope 1 and Scope 3 corporate framework. Scope 1 refers to direct emissions from sources under an individual's direct control, such as burning petrol in a personal vehicle, using a home generator, or consuming natural gas for heating. They are the most noticeable and easiest for individuals to monitor and influence (Hertwich/Peters 2009: 6414-6420). Scope 3 emissions, by contrast, are indirect or embodied and account for most of the PerCF for affluent consumers, usually representing 60–80% of the total. These emissions encompass the GHGs released throughout the entire life cycle of consumed goods and services, including the upstream extraction of raw materials, refining and manufacturing processes, complex international supply chains, and the eventual disposal or incineration of products. To accurately trace these complex flows, the PerCF relies on Environmentally Extended Input-Output models or hybrid Life Cycle Assessment models (Wiedmann/Minx 2008: 11). This complexity underscores a crucial point: individual responsibility extends far beyond what happens in one's own home or car, encompassing the entire global supply chain financed by one's purchasing decisions.

Ethical disparities: climate justice, inequality, and the 10% problem

The PerCF is not a uniform burden; its distribution reflects a profound crisis of global inequality that must be addressed before any mitigation policies can claim legitimacy. The ethical application of the PerCF must differentiate between necessary subsistence and discretionary luxury. To treat all emissions as morally equivalent, whether they arise from a Lagos smallholder burning charcoal to cook a meal or a frequent flyer crossing continents for leisure, is to collapse a morally decisive distinction into a single, indifferent metric. The scale of this asymmetry is well documented and will be examined in detail in the following section. This concentration of responsibility is not incidental; it is a direct expression of structural inequality embedded in global consumption patterns. Any climate framework that ignores this distribution and demands equivalent sacrifice from unequal actors does not advance justice – it entrenches injustice. The PerCF, properly applied, is therefore a tool of proportional accountability rather than universal austerity. Only on this ethical foundation can mitigation policy claim both legitimacy and lasting political support.

The exponential link between wealth and emissions

Empirical data reveals a stark relationship between income and GHG emissions, often referred to as the 'Global 10% Problem'. Studies by organisations like the Stockholm Environment Institute consistently demonstrate the extreme concentration of consumption responsibility. The top 10% of global income earners are collectively responsible for approximately 49% of lifestyle-related emissions worldwide. Within this group, ultra-high-net-worth individuals generate annual gross PerCFs reaching several thousand tonnes of CO₂, primarily through private aviation, multiple residences, and yachts (Gössling/Humpe 2023: 1-4). Some of these individuals have invested in carbon removal schemes that can reduce their net PerCF, but such efforts are the exception rather than the norm and do not eliminate the broader environmental

impacts of high-emission lifestyles (Joppa et al. 2021: 1-4). Conversely, the bottom 50% of the global population, which includes much of Africa and the world's poorest communities, accounts for only about 10% of these emissions (Stockholm Environment Institute 2020: 1). This stark disparity means the moral and practical responsibility for climate mitigation falls overwhelmingly on the affluent minority, defined by purchasing power rather than geography. Emphasising individual responsibility in this context addresses the structural consequences of excessive consumption rather than diverting attention from them.

The ethical distinction: subsistence versus luxury emissions

To maintain legitimacy in developing economies like Nigeria, climate policy built on the PerCF must rigorously uphold the principle of common but differentiated responsibilities at the individual level. This requires establishing a moral floor for subsistence and a moral ceiling for luxury. Subsistence emissions are those tied to consumption necessary for securing a universally accepted, decent minimum standard of living, encompassing clean water, basic nutrition, education, reliable clean energy for lighting and cooking, and access to basic public infrastructure. For the energy-poor in Africa, these emissions are ethically protected by the human right to development (Shue 2014: 366). Luxury emissions, by contrast, result from purely discretionary consumption, which clearly exceeds the requirements for a decent minimum standard of living. Examples include frequent air travel, ownership of large high-emission vehicles, consumption of imported carbon-intensive goods, and excessive energy use for non-essential purposes. These emissions carry no ethical protection and are the morally appropriate and highest-leverage targets for progressive taxation and regulation.

It is important, however, to acknowledge the tension this distinction generates. Individual responsibility cannot be derived mechanically from a person's carbon footprint, even for non-subsistence emissions, because genuine moral accountability requires knowledge, decision-making capacity, and viable alternatives (Caney 2005: 319). A Nigerian middle-class household running a diesel generator is not making a 'luxury' choice in a morally culpable sense if no reliable grid power exists. This article, therefore, does not treat the subsistence-luxury boundary as a fixed technical threshold but as a *structural* one: luxury emissions are those arising where low-carbon alternatives genuinely exist and are reasonably accessible. This framing preserves the ethical force of the distinction while avoiding the injustice of holding individuals responsible for choices that structural failures effectively remove from their reach. The policy proposals in subsequent sections aim to broaden the scope of genuinely free, low-carbon choices.

Historical responsibility and climate debt

The analysis of the PerCF is incomplete without acknowledging historical responsibility. For much of modern history, industrialised nations in Europe, Asia, and North America have contributed the bulk of cumulative CO₂ emissions, shaping today's climate crisis. The United States remains the leading historical contributor, followed by China, whose cumulative CO₂ emissions recently surpassed those of the European Union, making it the second-largest historical emitter (Our World in Data 2025). This shift highlights that both the industrialised Global North and China carry substantial responsibility for climate mitigation. The low PerCF of the African region today is not a choice of sustainable living but a consequence of historical underdevelopment

and resource constraints (International Energy Agency 2022: 250). Conversely, the high PerCF of industrialised nations reflects the cumulative, uncompensated consumption of the global carbon budget since the industrial revolution. This dynamic creates a climate debt (Shue 2014: 366). The African continent's ethical claim for climate finance and technological transfer is strengthened by the PerCF data, which confirms that its current low emissions profile is the result of a crisis created elsewhere. The Global North and China bear a moral responsibility to provide the structural and financial assistance necessary for African nations to bypass the high-carbon, fossil-fuel-based phase of development. This responsibility is essential for effectively encouraging individual mitigation efforts within African states (Caney 2005: 319), as it enables these nations to invest in renewable energy and sustainable practices, which can reduce their carbon footprints.

Intergenerational justice, the carbon budget, and moral corruption

The fundamental justification for addressing the PerCF is rooted in the philosophy of intergenerational justice (Gardiner 2013: 397-413). This philosophy posits the current generation holds moral duties toward future, yet unborn, generations, primarily concerning the preservation of a stable global environment and the maintenance of conditions necessary for a just society. At its core, the argument is straightforward: those who are not yet born cannot negotiate, vote, or advocate for their interests, yet the consumption decisions of the present generation will determine the physical and ecological conditions they inherit. This temporal asymmetry, where the costs of today's emissions are borne by those who had no say in incurring them, is what gives the intergenerational justice framework its moral urgency in the climate context. In the Nigerian and broader African setting, this urgency is compounded by demographic reality: with the continent's population projected to double by 2050, the generation that will bear the heaviest burden of climate disruption is already being born into societies which contributed least to causing it.

The climate crisis is intrinsically an intergenerational equity problem because the carbon budget, which is the finite amount of CO₂ that can be emitted while limiting warming to an agreed-upon temperature target, is a scarce, non-renewable resource (Allen et al. 2018: 49-92). This budget must be understood as a fiduciary asset held in trust by the present generation. The current generation acts as a trustee, and its primary duty is one of prudence and preservation: every tonne of CO₂ emitted today is one tonne unavailable to the future. A high, discretionary PerCF is an act of intergenerational expropriation, actively stealing the future's right to a stable climate and clean energy choices. By depleting the budget, the present generation imposes massive and unjust burdens on the future, including forced adaptation costs, reduced economic opportunities, resource conflicts, and profoundly limited choices for energy transition.

The final ethical role of the PerCF is to overcome the problem of moral corruption and moral distance (Gardiner 2013: 397-413). Climate change is characterised by a "tyranny of the trivial" combined with vast, delayed consequences. Since the effect of any single person's flight or driving habit seems negligible on a global scale, and the catastrophic harm is temporally distant, individuals can easily rationalise inaction. The PerCF is the antidote: by quantifying an individual's climate impact, it transforms the vague, distant threat into an immediate, measurable ethical metric linked directly to daily life. It provides the moral salience

necessary to hold the individual accountable. The policy proposals in subsequent sections utilise this metric to harness behavioural science and nudge the individual toward ethical decisions, thereby formalising the bottom-up impetus that the 1.5 °C failure demonstrates is urgently needed.

Personal carbon footprint drivers: mitigation pathways and behavioural ethics

A deeper ethical analysis of the key PerCF drivers reveals how individual choices can generate systemic market signals, moving beyond simple reduction to driving transformative change. This matters because the aggregate weight of individual consumption decisions shapes the investment priorities of firms, the product development strategies of industries, and ultimately the policy ambitions of governments. When sufficiently large numbers of consumers consistently choose low-carbon alternatives, they do not merely reduce their footprints in isolation; they restructure the economic incentives that determine what gets produced, how it gets produced, and at what scale. In this sense, the ethical individual is not simply a passive subject of climate governance but an active participant in reorienting the broader economy toward sustainability. The following section examines three domains: transportation, food, and consumer goods, where this dynamic is most pronounced and where the gap between current behaviour and what justice demands is widest.

Ethics of emissions in transportation, food systems, and consumer goods

The ethical weight of the transportation PerCF must be focused on frequency over mere distance. While a long-haul flight is a high-emissions event, it is the frequent flyer, including leisure travellers and highly mobile business executives, who consume a disproportionately large share of the carbon budget (Gössling/Higham 2021: 1167-1179). This high-frequency consumption, which serves largely discretionary and non-essential purposes, is a prime example of a luxury emission demanding immediate ethical curtailment. Furthermore, the individual's choice of electric vehicles must be viewed through a full life-cycle lens: while operational emissions are zero, the embodied emissions in the battery and manufacturing must be considered. The most ethical transportation decision is therefore the highest-impact, lowest-cost option: investing in and utilising low-carbon mass transit, such as electric rail or bus rapid transit, thereby supporting a collective, systemic solution over an individualised, resource-intensive one (International Energy Agency 2022: 250).

Dietary choice is a high-leverage personal carbon driver, particularly due to its impact on methane and nitrous oxide. Methane, primarily from ruminant agriculture (beef and dairy), has a warming potential roughly 80 times that of CO₂ over a 20-year period, making dietary shifts an immediate climate mitigation strategy. Recent evidence shows high-income households drive disproportionate emissions not only through mobility but also through food consumption, with higher meat and dairy intake contributing substantially to GHG emissions (Bohmann/Küçük 2024: 421-429). The ethical individual must recognise their role in the consumption-land use nexus: the demand for meat, particularly beef, drives deforestation and land-use change, converting carbon sinks into emission sources. Choosing plant-rich diets offers an immediate, often cost-neutral path to substantial emissions savings, simultaneously promoting land preservation and biodiversity (Poore/Nemecek 2018: 987-992).

Furthermore, the embodied carbon emissions in consumer goods represent the most challenging sector for the PerCF, as emissions are hidden within opaque global supply chains. The ethical duty here is to move from the linear 'take-make-dispose' model to the circular economy paradigm (Princen 2005: 401). The individual's moral responsibility is to prioritise durability and repairability by choosing products designed for longevity and demanding extended warranty and repair services, as well as to favour access over ownership by utilising sharing, leasing, or subscription models to reduce the overall material acquisition footprint. This collective shift in purchasing values is the primary bottom-up signal needed to force the industrial sector to decarbonise its manufacturing and supply chains.

The African region's personal carbon footprint and the climate paradox

The African continent presents the most challenging and ethically charged context for the application of the PerCF. The region is defined by a profound climate paradox: it holds the lowest average PerCF globally, reflecting persistent energy poverty and limited industrialisation, yet it faces the world's highest vulnerability to climate change impacts (African Development Bank 2021: 180). Addressing the PerCF here requires an inverted ethical approach: one prioritising sustainable transition and access for the majority over simple reduction and taxation. The following sections examine the unique drivers, structural constraints, and inherent dualism of the African PerCF, establishing the imperative for an equity-first policy design that honours both global mitigation goals and the right to development.

Africa's contribution to the cumulative global stock of GHGs is negligible, typically estimated at less than 4% of historical emissions (United Nations Environment Programme 2023: 108). The average per capita PerCF in sub-Saharan Africa hovers significantly below the global average of 4.7 tonnes of CO₂e, with many nations recording figures below 1.0 tonne CO₂e per capita (International Energy Agency 2022: 250). This low metric is not a badge of environmental virtue but rather an empirical marker of structural constraints, limited access to energy, and underdevelopment. The PerCF, in this instance, serves as a diagnosis of energy poverty rather than environmental excess. Despite this minimal contribution to the cause of the crisis, the continent experiences disproportionate harm. Extreme weather events, including prolonged droughts, devastating cyclones, and destructive coastal erosion, directly threaten livelihoods, drive internal migration, and undermine food security (African Development Bank 2021: 180). The ethical position is clear: any international or domestic climate framework applied to Africa must safeguard the right to development (Shue 2014: 366). The PerCF must not be utilised as a mechanism to constrain the energy consumption necessary to lift populations out of poverty and adapt to a climate crisis created elsewhere.

Drivers of the African personal carbon footprint: subsistence, health, and land use

Most of the African PerCF is driven by a search for basic energy access, creating emissions categorised as subsistence emissions tied to the fulfilment of basic needs. The most significant contributor to the African poor is the reliance on traditional, highly polluting fuels for cooking and heating. Approximately 600 million people in Africa lack access to grid electricity, and nearly 1 billion depend on solid biomass, including firewood and charcoal, for cooking

(International Energy Agency 2022: 250). The inefficient, incomplete combustion of biomass is a major source of black carbon, a short-lived climate pollutant with a warming potential thousands of times greater than CO₂ while it remains in the atmosphere (Sun et al. 2022: 564). This dependency also creates a massive public health crisis: indoor air pollution from inefficient cookstoves is responsible for over 600,000 premature deaths annually in Africa, primarily affecting women and children (Health Effects Institute 2022: 23). In this context, the individual's carbon footprint is inseparable from their health footprint. The imperative is therefore not to reduce biomass usage, which is often the only available energy source, but to mandate and subsidise an immediate clean transition to liquefied petroleum gas, biogas digesters, or modern electric cooking powered by solar systems – a policy pathway directly linking climate mitigation with health improvement and poverty alleviation.

A substantial portion of African emissions is driven by the land use, land-use change, and forestry sector, particularly deforestation caused by clearing land for subsistence agriculture and charcoal production. The smallholder farmer's PerCF is intertwined with decisions regarding fertiliser use, irrigation methods, and forest clearing. These decisions are often constrained by poverty, insecure land tenure, and lack of access to climate-smart agricultural knowledge and technology. Mitigation here must focus on capacity building and resource provision, supporting the individual's transition to regenerative and high-yield farming, which minimises forest clearing (World Bank 2023a: 463).

The emerging threat: personal carbon footprint dualism and the urban affluent

While the average PerCF remains low, rapid urbanisation and widening wealth gaps across Africa, particularly in economic hubs such as Lagos, Nairobi, and Johannesburg, are creating a growing pattern of carbon footprint dualism. The urban affluent minority represents the African 'Global 10%', whose consumption patterns increasingly mirror those of high-income nations (Stockholm Environment Institute 2020: 1). This segment's PerCF is disproportionately driven by high-carbon mobility: the purchase of large, imported internal combustion engine vehicles, reliance on high-frequency domestic and regional air travel, and a lack of investment in public transport. Energy-intensive lifestyles, including the consumption of imported goods with high embedded energy, elevated levels of meat consumption, and reliance on private high-capacity diesel generators, compound this further. This dualism creates an acute ethical problem: the rising emissions of the few risks consuming the limited remaining carbon budget required by the energy-poor majority for basic developmental needs. The policy objective is thus to isolate and target the luxury emissions of this affluent minority, generating revenue that can be recycled to subsidise the subsistence transition of the poor, thereby honouring the principle of both intragenerational and intergenerational justice.

Structural barriers constraining individual action

In the African context, high PerCFs are often the result of systemic, structural failures which actively discourage low-carbon individual choices. The persistent failure of national electricity grids compels businesses and households to rely on personal petrol and diesel generators. This is not a luxury choice; it is a necessity for preserving food, powering businesses, and maintaining basic security. The individual's decision to run a generator is an unavoidable

emission that adds a significant burden to their PerCF, often doubling estimated national averages. This structural failure also imposes a significant economic opportunity cost: expenditure on imported fossil fuels drains foreign exchange reserves, stifles small business growth due to high energy overheads, and prevents investment in productive infrastructure.

Rapid, often unplanned urbanisation has similarly outpaced the development of transport and waste management infrastructure, serving as a physical constraint on ethical individual choice. In many African cities, urban travel relies heavily on motorcycles, buses, and cars, with limited safe and reliable mass transit generating high emissions. A notable exception is the rapid growth of electric motorcycles across East and West Africa: companies operating in Kenya, Uganda, Nigeria, Rwanda, and Benin have already deployed tens of thousands of electric motorcycles, which are particularly significant because motorcycles are the dominant mode for taxis and deliveries, and switching to electric has been shown to increase driver incomes substantially (Ndhlovu et al. 2025). This trend remains early-stage and geographically uneven, constrained by high upfront costs and insufficient charging infrastructure, but it demonstrates that leapfrogging to low-carbon mobility is viable where targeted investment and enabling conditions exist. For the individual who wants to utilise low-carbon transport beyond this, lack of safe cycling infrastructure, time inefficiency, and the non-existence of dedicated low-carbon corridors remain binding constraints. The primary policy lever must therefore be state infrastructure guarantees, without which the individual citizen remains trapped in a system that forces high-carbon consumption as the only viable choice for daily survival.

Policy implications: the mandate for equitable leapfrogging

The African PerCF profile dictates a radical departure from Western-centric climate policy. The ethical mandate is one of equitable leapfrogging: using the current lack of entrenched, fossil-fuel-based infrastructure as a strategic opportunity to jump straight to decentralised, low-carbon solutions, thereby avoiding the costly, carbon-intensive development paths of industrialised nations (United Nations Development Programme 2016: 50). Policy must integrate three priorities. First, dedicated financing mechanisms, such as a proposed national clean energy access fund, must be established and funded through external climate finance and internal luxury carbon taxation to subsidise the clean energy transition for low-income households. Second, mitigation efforts must prioritise the swift reduction of short-lived climate pollutants (black carbon and methane) through clean cooking and waste management reforms, as these provide immediate health benefits and short-term cooling, demonstrating tangible returns to the current generation while securing the future (Shindell et al. 2012: 183–189). Third, the PerCF must be used as a political and ethical tool to expose and regulate the rapidly growing, high-impact consumption of the affluent minority, ensuring their discretionary emissions fund the developmental needs of the majority. Structural support and individual duty are not strictly sequential here; they must advance in parallel, with each enabling the other.

Personal carbon footprint in Nigeria: a case study

Nigeria, as Africa's most populous nation and one of its leading economies, serves as a quintessential case study for understanding the paradoxes of the African PerCF. Its high population density,

rapid urbanisation, chronic energy deficits, and dependence on hydrocarbon exports create an environment where the individual's ethical capacity for low-carbon choice is severely constrained by systemic failures. The following sections analyse the key drivers of the PerCF in Nigeria, demonstrating how structural impediments translate into unavoidable high-carbon emissions for the majority, and shows how a small affluent class drives consumption-based emissions, which demand targeted policy intervention. It also presents sample footprint estimates to ground the ethical and policy argument in concrete numbers.

Nigeria's CO₂ emissions profile is dominated by the energy sector, but its climate complexity is rooted in two concurrent pressures: a vast, unfulfilled energy demand and a rapidly growing, young population. Despite its oil wealth, Nigeria faces one of the world's largest energy access deficits, with over 80 million people lacking reliable electricity (World Bank 2023b: 64). This deficit, combined with the removal of the petrol subsidy in 2023, profoundly reshaped the economic and environmental landscape, making low-carbon alternatives both expensive and inaccessible for many (Evans et al. 2023: 12). The average PerCF in Nigeria remains relatively low by global standards, but the rate of growth in consumption-driven sectors, particularly among the urban elite, poses a substantial long-term threat to the national carbon budget.

Estimating the personal carbon footprint in Nigeria across income tiers

A critical gap in the existing analysis is the absence of empirical PerCF estimates disaggregated by income group. Using publicly available consumption-based carbon calculators, notably the German Federal Environment Agency's UBA CO₂-calculator, the Conservation International calculator, and the WWF footprint tool, and calibrating inputs to Nigerian consumption patterns, it is possible to construct indicative estimates for three distinct income tiers.

For a *low-income household* in a peri-urban or rural setting, where solid biomass cookstoves, kerosene lamps, and occasional generator use meet most energy needs, the estimated PerCF is between 0.6 and 1.2 tonnes of CO₂e per year. This figure is predominantly influenced by black carbon and methane from biomass combustion and is structurally involuntary; the individual lacks realistic low-carbon alternatives. Notably, this footprint remains well below the widely cited 2.0 tonne per capita global sustainability threshold for a 1.5 °C-compatible pathway (TU Delft 2025).

For a *middle-income urban household* in Lagos or Abuja that relies on grid electricity supplemented by a small to medium generator (3–5 kVA), a fuel-powered car, and a mixed diet including some animal protein, the estimated resulting PerCF rises to approximately 2.5 to 4.5 tonnes of CO₂e per annum. The generator alone may contribute between 0.8 and 1.5 tonnes of CO₂e annually, depending on daily usage hours; this addition is necessitated by infrastructure failure rather than lifestyle choice. This figure sits at or above the global sustainability threshold, not due to luxury consumption, but because structural deficits compel ordinary citizens to adopt carbon-intensive coping strategies.

For a *high-income household* in the top income decile, characterised by ownership of multiple large-engine imported vehicles, a high-capacity diesel generator above 10 kVA, regular domestic and international air travel, imported consumer goods, and high-protein dietary patterns, the estimated resulting PerCF rises to between 10 and 25 tonnes of CO₂e per annum or higher. International business-class air travel alone can account for 5 to 8

tonnes of CO₂e per long-haul return flight. This group represents Nigeria's functional equivalent of the 'Global 10%' and is the appropriate primary target of progressive carbon policy.

These estimates, while indicative given the absence of Nigeria-specific household carbon accounting infrastructure, highlight several important policy realities. First, the structural constraint argument has empirical weight: the middle-income Nigerian's footprint is inflated by several tonnes relative to what it would be under reliable grid provision, making generator emissions a matter of state failure rather than individual choice. Second, the gulf between the low-income and high-income tiers, at roughly a factor of 15 to 25, confirms the subsistence-luxury distinction as reflective of a concrete and measurable division in consumption responsibility. Third, meaningful policy cannot adopt a uniform approach: targeting low-income Nigerians with any form of carbon pricing would be both unjust and politically counterproductive, whereas targeting the high-income tier would address the fastest-growing source of Nigeria's consumption-based emissions. The three calculators used for these indicative estimates do not produce identical results for the same inputs. The UBA CO₂-Rechner, grounded in the German Federal Environment Agency's methodology and calibrated primarily to European consumption, requires manual adjustment of emission factors for generator use and biomass combustion in sub-Saharan Africa. The Conservation International and WWF tools offer broader geographic adaptability but make different assumptions about food emission factors and the treatment of shared public infrastructure emissions. This divergence is itself an argument for the development of a Nigeria-specific PerCF methodology and calculator, a tool that would be an essential complement to the digital PerCF tracker.

Personal carbon footprint in Nigeria: generators, urbanisation, transportation, waste management, and agriculture

The single most consequential failure in Nigeria's infrastructure is the persistent collapse of the national power grid, necessitating the widespread adoption of private, standalone power generators. Millions of small petrol generators (known locally as 'I-pass-my-neighbour') and large diesel generators power homes, shops, and businesses for many hours daily. For the small business owner or household trying to preserve food and maintain security, running a generator is a necessity, not a discretionary luxury; it is a direct result of the state's failure to provide reliable power. The ethical mandate is therefore clear: the state must aggressively deploy decentralised renewable energy solutions, such as solar mini-grids, to eliminate this involuntary high-carbon footprint and restore the individual's ability to choose a low-carbon lifestyle. The incomplete combustion of diesel and petrol in these generators also releases high levels of black carbon and methane, short-lived climate pollutants which contribute to severe regional warming and other negative health effects.

Nigeria is undergoing rapid urbanisation, with cities like Lagos becoming megacities without commensurate infrastructure development, which forces a high-carbon mobility profile especially among the affluent and middle classes. High reliance on imported, often old and poorly maintained, internal combustion engine vehicles dominate urban travel, compounded by the lack of reliable, safe, and efficient mass transit. The sudden removal of the petrol subsidy in 2023 dramatically increased the cost of transport, disproportionately impacting low-income individuals and making the transition to costlier alternatives completely unviable

(Evans et al. 2023: 12). The infrastructure gap is equally acute at the individual level: choosing to walk or cycle is often made impossible by unsafe roads, the absence of non-motorised transport lanes, and general urban insecurity. The individual is thus structurally constrained from adopting low-carbon mobility even when they might otherwise wish to.

The introduction of mechanisms which financially reward low-carbon behaviour, such as the proposed digital PerCF tracker, and that target luxury high-carbon consumption, such as the bifurcated carbon tax, is essential for activating the bottom-up ethical duty required to meet NDC goals and secure intergenerational justice.

Waste management and agriculture contribute significantly to the national emissions profile through the individual's indirect influence. Lagos and other major cities generate vast quantities of solid waste; the absence of comprehensive formalised municipal waste management, recycling, and sanitary landfill infrastructure forces citizens to rely on illegal dumping or open burning, generating substantial collective methane and black carbon emissions that the individual cannot avoid. In agriculture, subsistence practices including the use of chemical fertilisers and traditional livestock management are a primary source of nitrous oxide and methane. Here, the individual farmer's PerCF is a function of necessity linked directly to food security; intervention must focus on providing subsidised access to climate-smart agriculture techniques and low-carbon inputs.

Government policies and initiatives on climate change in Nigeria

Nigeria's policy framework, while increasingly ambitious, still struggles to translate top-down commitments into bottom-up structural support for the individual. Nigeria's third NDC emphasises a 20% unconditional and 47% conditional emissions reduction target by 2030. Crucially, it explicitly focuses on "just transition measures" and developing a comprehensive "climate investment plan" (Federal Ministry of Environment of Nigeria 2025). These policies acknowledge the need to address energy poverty and socio-economic equity, providing a strong anchor for policy proposals that integrate PerCF reduction with developmental goals. The Climate Change Act of 2021 institutionalised the commitment to achieve net-zero by 2060 and established the National Council on Climate Change; however, the policy mechanisms for incentivising individual action beyond broad mandates for industry and state agencies remain largely underdeveloped, creating a vacuum which must be filled with targeted, PerCF-centric policy.

Public awareness and integrating the personal carbon footprint in Nigeria's development strategy

Public awareness of climate change, while growing, often remains disconnected from the concept of the individual's PerCF. The prevailing narrative correctly emphasises industrial emissions, gas flares, and government corruption. For the average citizen whose primary emissions are driven by the necessity of generating electricity or using high-carbon transport, the moral imperative to reduce their footprint is diluted by the perception that the problem is solely structural and corporate. To bridge this gap, policy must move beyond simple awareness campaigns to establish a tangible link between individual choice and national progress. The introduction of mechanisms which financially reward low-carbon

behaviour, such as the proposed digital PerCF tracker, and that target luxury high-carbon consumption, such as the bifurcated carbon tax, is essential for activating the bottom-up ethical duty required to meet NDC goals and secure intergenerational justice. The analysis of the PerCF in Nigeria confirms the failure to meet climate targets is not merely a political or corporate issue but a structural impediment trapping individuals in high-carbon choices. Consequently, fulfilling the mandate of intergenerational justice requires moving beyond passive state commitments to implementing innovative, equity-driven policies that activate the individual's ethical duty while simultaneously guaranteeing a viable low-carbon pathway. The following sections detail three interconnected, high-impact reforms designed specifically for a dual economy like Nigeria: the progressive bifurcated carbon tax, the national clean energy access fund, and the digital PerCF tracker.

The progressive bifurcated carbon tax

Traditional, uniform carbon taxes fail in high-inequality developing nations because they disproportionately burden the poor, who rely on basic, often high-carbon, necessities. The solution is a bifurcated carbon tax which explicitly distinguishes between essential energy consumption and discretionary luxury consumption, operating on two tiers that generate revenue while preserving equity. The first tier is a subsistence tax shield: all emissions related to basic needs, including liquefied petroleum gas for clean cooking, small-scale transport such as motorbikes used for public transport or delivery, and grid electricity below a minimum consumption threshold of approximately 50 kWh per month (International Energy Agency 2021: 386) are either exempted or minimally taxed. This safeguards the human right to energy access and shields the poor from regressive taxation, addressing justice within the currently living generation. The second tier is a luxury carbon surcharge: a steep, progressive tax levied exclusively on high-impact luxury goods and activities that constitute discretionary consumption by the affluent minority. This covers a CO₂-based tax on imported luxury vehicles, diesel used in large, high-capacity generators above 5 kVA, and a carbon surcharge on business class and first-class international air travel.

This bifurcation ensures the tax is not a punitive measure on the struggling majority but an accountability mechanism for the wealthy minority, forcing high emitters to internalise the external costs of their luxury PerCF on future generations. The feasibility of this structure depends on the ongoing development of Nigeria's administrative capacity. However, the bifurcated approach has precedent in existing fuel subsidy architecture and excise tax frameworks; it extends rather than replaces mechanisms already present in the Nigerian fiscal system, making implementation more tractable than a wholesale carbon pricing reform.

The national clean energy access fund

For the progressive bifurcated carbon tax to be ethically and politically tenable, the revenue generated from taxing luxury emissions must be demonstrably recycled back into subsidising the low-carbon transition for the energy-poor majority. This is the core function of the proposed national clean energy access fund. The fund would be capitalised by 70% of the progressive bifurcated carbon tax revenue, 100% of the fees from auctioned carbon capture and storage licences to the oil and gas sector, and international conditional climate finance. Its primary mandate is the mass subsidisation of essential clean energy technologies for the poor, delivered through three channels: decentralised renewables

(grants and extremely low-interest loans for solar mini-grids and subsidised solar home systems targeting displacement of petrol generators); the clean cooking transition (subsidies of 50–75% on electric cookstoves to eliminate reliance on firewood and charcoal); and urban mass transit investment (co-financing dedicated bus rapid transit lanes, electric commuter buses, and safe non-motorised transport corridors in congested cities like Lagos and Abuja). The national clean energy access fund translates the ethical duty of the affluent present generation into a tangible investment in the health and energy future of the entire population, fulfilling the core principle of intergenerational justice through wealth redistribution.

The digital personal carbon footprint tracker and gamified responsibility

To link the individual's ethical duty directly to the national climate effort, the digital PerCF tracker is proposed as a technologically innovative tool: a secure, government-backed application designed to deliver behavioural change through gamification and financial reward. The tracker would integrate with national identity verification systems and with the banking sector via a secure application programming interface to anonymously track major consumption categories for high-income earners, including monthly fuel purchases, electricity consumption above the subsistence shield threshold, and spending on high-carbon imported items based on customs data. All personal consumption data would be stored exclusively on domestic servers under the jurisdiction of the Nigeria Data Protection Commission, processed under end-to-end encryption, and made accessible to government agencies only in anonymised, aggregated form, ensuring full compliance with the Nigeria Data Protection Act 2023 and precluding any cross-purpose surveillance use.

The tracker's functionality moves beyond simple reporting to actively encourage individual ethical action through three mechanisms. PerCF benchmarking provides users with personalised weekly reports compared against similar income and location demographics, utilising social comparison to drive reduction (Allcott/Rogers 2014: 3003-3037). Carbon dividends reward users who successfully reduce their footprint below a national or demographic baseline with small, immediate financial rewards or vouchers redeemable for subsidised clean energy technologies. Transparency mechanisms require the platform to publish the performance metrics of government ministries and parastatals, ensuring the public sees the state is also held accountable, and thereby building the trust necessary for wide-scale compliance. The tracker is best understood as a medium-term policy objective, contingent on prior investments in digital public infrastructure, and the architecture proposed is deliberately modular: even a stripped-down version tracking only fuel purchases and utility consumption for households above a defined income threshold would generate meaningful behavioural data and demonstrate the principle at scale. The relevant precedent is not sophisticated Western emissions accounting systems, but Nigeria's own mobile payment infrastructure – bank verification number systems and mobile money platforms already demonstrate how complex digital financial tools can achieve mass adoption with appropriate institutional backing, and the path to a fully functional digital PerCF tracker runs through the same governance investments that Nigeria's broader digital economy agenda already demands.

Conclusion

The year 2024, marked by the definitive breach of the 1.5 °C warming threshold, stands as a crucial indictment of the sufficiency of state-centric climate governance. This paper has argued that protecting the environment, and specifically fulfilling intergenerational justice, must be powered by a complementary, bottom-up dimension: the PerCF and the ethical duty it represents. For a developing economy like Nigeria, this ethical duty is structurally constrained: most of the population is forced into high-carbon subsistence not through choice, but through the state's failure to provide reliable, low-carbon infrastructure. Indicative footprint estimates across income tiers make this concrete: the middle-income Nigerian's footprint is inflated by several tonnes relative to what responsible grid provision would allow, while the high-income tier generates footprints ten to twenty times larger, driven by genuinely discretionary consumption.

The key ethical conflict lies in the PerCF dualism, where the rising luxury emissions of a small affluent minority threaten to consume the carbon space desperately needed for the developmental trajectory of the energy-poor majority. To resolve this injustice, the paper has proposed an integrated three-part strategy. The progressive bifurcated carbon tax enforces proportional accountability by steeply taxing luxury emissions while entirely shielding essential subsistence emissions. The revenue generated is recycled into mass subsidies via the national clean energy access fund, funding solutions like solar mini-grids and clean cooking stoves and thereby eliminating the involuntary high-carbon footprint of the poor. The digital PerCF tracker provides the necessary feedback loop, utilising gamification and carbon dividends to reward low-carbon behaviour among high-income earners and effectively transforming abstract ethical responsibility into measurable, financially beneficial individual action.

These three reforms offer a model which developing nations more broadly may adapt. They prove the individual duty to protect the environment for future generations is only legitimate, effective, and sustainable when it is rooted in the current generation's structural freedom to choose a low-carbon life. By guaranteeing that structural support enables ethical duty, advancing in parallel rather than in strict sequence, this framework ensures the burden of climate action is borne justly, securing a viable future for all Nigerians, present and future.

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Exploring the legal obligation to reduce personal greenhouse gas emissions through climate litigation rulings

By Masako Ichihara

Against the backdrop of an accelerating climate crisis, legal frameworks are maturing globally. Due to litigation, they already establish legal obligations for states and private corporations to implement appropriate reduction regulations and measures for their greenhouse gas emissions. In contrast, no globally agreed framework legally obligating individuals to reduce emissions has yet emerged. This paper attempts to establish a legal basis for individual emission reduction obligations in light of this situation. Using international human rights conventions as a foundation, it argues that certain reduction obligations for individuals might exist, based on their respective circumstances. This conclusion is significant as a theoretical premise for incorporating individuals as key actors in future climate change countermeasures.

Keywords: Personal legal obligation to reduce emissions; climate litigation; personal carbon footprint; human rights

Introduction

To adequately address the worsening impacts of climate change and ensure humanity's sustainable survival and well-being, it has become an urgent imperative for humanity to drastically reduce global greenhouse gas (GHG) emissions based on the findings of climate science, such as the Intergovernmental Panel on Climate Change (IPCC), the world's most authoritative climate science body. Its reports (i.e. IPCC 2023) have obtained a central role in climate litigation (ICJ 2025: para. 156). This litigation is accelerating the maturation of legal frameworks – both domestic and international – that deem large-scale GHG emissions unlawful. Several global judicial bodies, such as the International Court of Justice (ICJ), the European Court of Human Rights (ECtHR) and the Inter-American Court of Human Rights, have affirmed that states and private entities bear obligations to reduce emissions in their relationships with citizens and have ordered compliance. The accumulation of such rulings has permeated the international recognition that climate change impacts can constitute human rights violations, reframing climate change – previously discussed primarily within the natural sciences – as a legal issue as well (UNGA 2022; Office of the United Nations High Commissioner for Human Rights 2021: 43–46). In July 2025, the ICJ issued an advisory opinion entitled *Obligation of States in Respect to Climate Change*. In this opinion, the ICJ (2025: para. 242) explicitly stated that states bear an obligation under international law to implement GHG emission reductions necessary to achieve the temperature goals set by the Paris Agreement. It further clarified that in the event of a breach, states bear an obligation to provide remedies, such as compensation for damages caused by the breach (ICJ 2025: paras. 446–455). Thus, while some issues remain, including effectiveness and legitimacy (Bodansky 2023: 191; Voigt 2025: XI–XII), a legal framework is gradually being established. Conversely, although individuals are also GHG emitters, no globally agreed-upon legal framework for assessing their emissions

exists, despite the large number of previous studies addressing this. Individual emissions take diverse forms, varying significantly based on economic living standards and lifestyle choices. Among these, some emissions reductions would not be detrimental to well-being (Baatz 2014: 10–17). As climate impacts intensify and the global carbon budget tightens, mandating reductions for at least these non-essential emissions is necessary (Hedberg 2018: 64). A carbon footprint refers to the total set of GHG emissions caused by an organisation or individual, or by a single event, service, or product (Climate Partner 2025). The Personal Carbon Footprint (PerCF) must not be confused with the Product Carbon Footprint. Both concepts are effective tools for measuring emissions, but only the former is discussed further here. Websites for calculating PerCFs are provided by multiple organisations (WWF 2025; Conservation International 2025; Umwelt Bundesamt 2025). Many countries have recommended individual emission reductions and climate-friendly lifestyles; however, these activities and outcomes remain so far voluntary initiatives for interested individuals. No country has legally mandated individuals to calculate their PerCF to date. Subsequently, reduction of individual GHG emissions is also not legally required.

There is the well-known temporal and spatial separation between the causal act and the occurrence of the result, which makes it difficult for individuals to recognise the impact of their actions.

As a result, individual emission reductions remain solely within the bounds of personal initiative and feasibility, failing to reach a level that significantly impacts global emissions (Pellegrino 2018: 813).

The reasons for the lack of progress in establishing a legal framework for individual emission reductions are diverse (Fragnière 2016: 799). Key factors include the inevitability of GHG emissions in modern human life, and that these daily emissions are protected by social human rights such as the right to an adequate standard of living. Moreover, there is the well-known temporal and spatial separation between the causal act and the occurrence of the result, which makes it difficult for individuals to recognise the impact of their actions. Due to these barriers, the prevailing stances regarding individual emission reductions are:

- a) they constitute a purely moral obligation (and some people even contest it as such),
- b) they constitute a legal obligation (but its legal enforceability remains contested).

Methodology: taking the Royal Dutch Shell case as a precedent

Given the above circumstances, this article attempts to establish a legal basis for individual emission reduction obligations. This aims to lay the groundwork for considering legal responses to individuals who fail to reduce their emissions.

Regarding methodology, it examines the precedent established by the Dutch court ruling in *Milieudefensie et al. versus Royal Dutch Shell pld.*, which clearly stated that Royal Dutch Shell (RDS), headquartered in the Netherlands, bears a legal obligation to reduce GHG emissions associated with its business activities. This ruling sets a precedent for legally clarifying emission reduction obligations for private entities rather than states. This paper reviews the first-instance and appellate court judgements in this case, attempts to transfer the legal arguments from a company to an individual, and derives individual emission reduction obligations. There are three key differences between an individual and a public entity such as RDS.

The first difference is the scale of emissions or, put differently, the degree of contribution to climate change. The scale of RDS's emissions, when combining all its branches scattered worldwide, accounts for a significant proportion of global total emissions. Its contribution to climate change, therefore, is by orders of magnitude higher than the share of the highest individual emitters on earth (Barros/Wilk 2021). Furthermore, measures taken by RDS to reduce emissions can sometimes result in reduced emissions by end-users, including citizens, for example, through the substitution of gasoline in vehicles with biofuels. In this regard, RDS generally could bear a greater obligation than ordinary citizens.

Above this minimum, the scope and degree of individual obligations to reduce emissions must be carefully considered, incorporating the reasons and circumstances for each specific emission.

The second point concerns the reason for emissions. A certain proportion of individual emissions is unavoidably generated by essential activities such as heating, cooling, and consumption-based lifestyles (Li/Chen 2021: 8). Mandating reductions in these emissions risks infringing on citizens' social rights, which are part of the second generation of human rights. At the same time, human rights are not without restriction; they may be subject to certain limitations based on public welfare and the human rights of others. A classic example is the provision in the fifth preambular paragraph to the International Covenant on Civil and Political Rights (ICCPR 1966), stating: "[r]ealizing that the individual, having duties to other individuals and to the community to which he belongs, is under a responsibility to strive for the promotion and observance of the rights recognized in the present Covenant." Therefore, there is a minimum emissions level below which no entity can go. Above this minimum, the scope and degree of individual obligations to reduce emissions must be carefully considered, incorporating the reasons and circumstances for each specific emission. In contrast, a company's emissions are usually divided into Scope 1, Scope 2 and Scope 3 emissions. Scope 1 constitutes direct emissions from RDS's own operations, such as burning natural gas on an offshore platform or flaring excess gas at RDS's oil fields. Scope 2 is the emissions from the energy RDS buys and consumes, for instance if its refineries use electricity from the grid. Finally, Scope 3 refers to emissions caused by RDS's products and activities outside its own operations, such as airlines burning RDS's jet fuel. Most RDS emissions stem from Scope 3 of the corporate activities. While these activities fall under the freedom of economic activity, the degree of restrictions that can be imposed from the perspective of public welfare may be broader than the scope of restrictions that can be imposed on individual human rights (Hayward 2007: 435). A typical example is the

restriction based on public welfare stipulated in Article 4 of the International Covenant on Economic, Social and Cultural Rights (ICESCR 1966), stating: "[t]he States Parties to the present Covenant recognize that [...] the State may subject such rights only to such limitations as are determined by law only in so far as this may be compatible with the nature of these rights and solely for the purpose of promoting the general welfare in a democratic society." This provision can be interpreted in accordance with the purpose of this article; it can be explained as follows: when a government gives people rights under this treaty, it can place limits on those rights only if a) the limits are set by law, b) the limits do not undermine the basic nature of the right, and c) the limits are genuinely needed to promote the general welfare of society in a democratic country.

The third point is the appropriateness of legal regulation. Means to encourage emission reductions are not limited to legal regulation. Diverse methods exist, including incentive-based approaches that provide benefits for voluntary reductions (Van de Ven/González-Eguino/Arto 2018: 857-863). The primary strength of legal regulation lies in its ability to forcibly ensure compliance, but it also has the weakness of potentially hindering actors' freedom to exercise their own creativity to devise solutions. Furthermore, legal restrictions on private individuals are generally imposed at the domestic legal level or below. Consequently, those subject to obligations may attempt to evade them by relocating to other countries, a strategy adopted by numerous companies (Mayer 2023: 168-169).

Case overview: Milieudefensie et al. v. Royal Dutch Shell pld.

In 2019, six environmental organisations based in the Netherlands, one environmental organisation based in South Africa, and 17,379 citizens filed a civil lawsuit against RDS demanding reductions in GHG emissions across the entire Shell Group. The lawsuit sought reductions not only in the group's direct emissions (Scope 1) but also in indirect emissions (Scopes 2 and 3). The plaintiffs made two claims. The first was a declaratory judgement that the Shell Group's massive CO₂ emissions constituted a tort against the plaintiffs and that the entire Shell Group had an obligation to reduce CO₂ emissions to levels consistent with the Paris Agreement (i.e. 45% by 2030 compared to 2019 levels, or at least by 25%). The second claim sought a judgement ordering the company to implement reductions equivalent to those in the first claim. The plaintiffs argued RDS had a duty under the unwritten law obligations stipulated in Article 162(2) of the Civil Code to formulate corporate policies to avoid dangerous climate change. They further contended that in interpreting this duty, the court could refer to international law and soft law, drawing on past precedents.

In 2021, the District Court of The Hague first ruled on the standing of the organisations (Civil Code: Art. 3:305), determining that the purposes stated in their articles of association must serve the interests of residents within the Netherlands (The Hague District Court 2021: para. 4.2.2). It denied the representativeness of the interests of the organisation based in South Africa and of future generations worldwide (para. 4.2.3). It also dismissed the claims of the 17,379 individual plaintiffs, finding their interests were represented by Milieudefensie (para. 4.2.7). Regarding the defendant's reduction obligations, the court interpreted the common law duty (Civil Code: Article 6:162(2)), referencing soft law such as international law and the UN Guiding Principles on Business and Human Rights (UNGPs). It considered RDS's influence

on business policy decisions within the Shell Group, the group's total CO₂ emissions, the severity of climate change impacts, the basis for RDS's legal obligations, and the scope and feasibility of the obligation (para. 4.4.2). Here, the court acknowledged that human rights provisions could not be directly applied to the defendant as a private company. However, it stated that human rights form the value foundation of society and thus constitute a regulatory framework applicable to the relationship between the plaintiff and the defendant. It cited Article 2 and Article 8 of the European Convention on Human Rights, along with Article 6 and Article 17 of the ICCPR, which contain provisions substantively equivalent to these (para. 4.4.9). It further cited the UNGPs as the basis for companies' obligation to respect these human rights. The court held that companies, as separate and independent entities from the state, also bear an obligation to respect human rights, and that this obligation encompasses not only passive duties but also positive obligations to act (para. 4.4.15).

Regarding the feasibility and nature of the defendant's obligations, the court examined each Scope separately. For Scope 1, it imposed an obligation to achieve reduction results, noting that RDS is in control of their emissions, among other factors (para. 4.4.23). Conversely, for Scopes 2 and 3, considering that RDS's control is indirect and emissions originate from entities outside the Shell Group, the court limited the obligation to a best-efforts duty (para. 4.4.24).

Based on the above rulings, the court ultimately granted the plaintiff's primary claim (45% reduction by 2030) under the second request (mandatory judgement) and dismissed all other claims. Regarding the first request (declaratory judgement), while RDS bears a reduction obligation going forward, the court ruled that RDS's CO₂ emissions resulting from its business activities are not illegal at this stage (para. 4.5.8).

In July 2022, RDS appealed the first-instance judgement, challenging aspects such as the court's insufficient consideration of the climate change measures RDS is undertaking.

In November 2024, the appellate court largely upheld the lower court's ruling but diverged on the specific reduction targets the defendant must meet, stating the court could not determine them (The Hague Court of Appeal 2024: para. 7.73). The judgement confirmed the underlying facts regarding RDS's climate change measures in greater detail than the first instance, including its stated emission reduction targets, the fuel sources it handles (such as not selling coal), and the trends in emissions by scope and fuel source since 2016 (para. 3.21-3.54). It then addressed standing, specifically the homogeneity of the public interest represented by Milieudefensie, which the lower court had not addressed. It confirmed that the nature and extent of climate change impacts vary among individuals, and that views on climate change measures also differ. It held that legal protection to safeguard individuals from climate change impacts can only be effectively achieved through class action lawsuits (para. 6.4), and that these individual differences do not undermine the similarity of the public interest represented by Milieudefensie (para. 6.5). Furthermore, in recognising the human right to be protected from dangerous climate change impacts (para. 7.17), it referenced the *KlimaSeniorinnen* judgement of the ECtHR to reconfirm "climate change is one of the most pressing issues of our times". Furthermore, as in the first instance, it held that since the defendant is a private individual, fundamental human rights are applied indirectly through general private law (para. 7.18). Similar to the first instance, it referenced multiple soft law instruments and held that human rights

provisions are effective even in private legal relationships. Consequently, the obligations borne by private individuals depend on factors such as the threat of danger, the degree of risk creation, and the capacity to address the danger (para. 7.24). Regarding RDS, the court recognised an obligation to reduce emissions, based on its status as a major CO₂ emitter possessing the capacity to reduce emissions (para. 7.17). The judgement then confirmed the EU Climate Change Act, stating that its reduction target (55% below 1990 levels by 2030) must be achieved not only by states but also by companies (para. 7.56). It held that, given the diversity of corporate sectors and sizes, the law and related legislation do not impose absolute reduction obligations on companies. Consequently, the 45% reduction mandated for RDS in the first-instance judgement was not automatically derived (para. 7.57).

Furthermore, while acknowledging that RDS's planned new investments in oil and natural gas operations run counter to the requirement to reduce supply to fossil fuel markets, the court determined they did not violate the social standard of care (para. 7.61). Next, regarding reduction obligations by scope, the judgement found no breach of legal duty by RDS for Scopes 1 and 2. This was based on reasons including RDS having largely achieved its own stated reduction targets, concluding that an imminent risk of future target failure had not been proven (para. 7.65). Regarding Scope 3, the court further held that the 45% reduction target mandated by the lower court could not be imposed on RDS. This was based on the greater diversity of reduction methods and approaches applicable to Scope 3 emissions, and the fact that RDS neither mines nor supplies coal, a relatively high-emission fuel (para. 7.75).

It further stated that while the reduction target itself is reasonable, it does not necessarily translate directly into a specific reduction obligation for a particular company (para. 7.106).

Subsequently, Milieudefensie appealed to the Supreme Court in February 2025. The Supreme Court held a hearing on May 22, 2026 (Milieudefensie 2026). The court's ruling is eagerly awaited.

Legal basis for individual emission reduction obligations

This section attempts to derive individual emission reduction obligations from the two judgements discussed above, while bearing in mind arguments about differences between companies and single individuals. The judgements address various issues, but the main points are the legal basis for emission reduction obligations, the applicability and extent of human rights provisions between private parties, and the feasibility and manner of fulfilling those obligations.

First, regarding the legal basis for the obligation to reduce emissions, the rulings identify the legal basis for the RDS reduction obligation in soft law, such as international law and the UNGPs. In this regard, the fifth paragraph of the preamble to the ICCPR can serve as international law potentially underpinning individual emission reduction obligations. Specifically, it is considered possible to interpret "duties to other individuals and to the community" (ICCPR 1966) as including a duty for individuals to reduce their emissions to maintain a stable climate, both currently and in the future. Also, Tremmel et al. (2024: 16), citing Shue (2017: 593), point out that two ethical principles, "do no harm" and "clean up your own mess", serve as guidelines in this regard. Specifically, individuals who emit GHGs in a manner that could harm others bear an obligation to reduce those emissions, in the sense that they are responsible for remedying the harm caused by those emissions. However, as already noted, a minimum must be

exempted. Examples of above-minimum emissions include leisure air travel, private car use, or energy consumption not essential for daily life. For these, it may be possible to establish a legal basis for an emissions obligation, as such emissions harm the stable climate of the present and future, thereby causing adverse effects on society.

Second, regarding the applicability and scope of human rights provisions to private individuals, human rights are fundamentally concepts governing the relationship between the state and the individual (Esen 2025). Therefore, they cannot be directly applied to relationships between private individuals. However, if we examine the ultimate basis for an individual's obligation to reduce emissions, it could be said to stem abstractly from the human rights of each individual: the right to live under a stable climate. Yet, in substance, it is more accurately grounded in the collective whole – all humanity or the global environment. If so, the legal relationship at issue here is not between private parties, but rather an asymmetrical relationship between the individual and the public interest. If we reframe this in terms of the relationship between the state and the individual, as human rights fundamentally presuppose, we can schematise it as a relationship where individuals, alongside the state, bear the obligation to realise and maintain the public interest of a stable climate – an indispensable foundation for human survival (Stockholm Resilience Centre 2025). If so, it is conceivable that individuals' legal obligations can be grounded in the realisation of the public interest. However, individuals rarely engage in actions like RDS's, which carry the risk of creating opportunities for others to emit by selling fossil fuel products. Therefore, it is reasonable to consider that the scope of the obligation should be limited to the passive reduction of one's own emissions, without extending to active obligations such as reducing emissions by other entities.

Regarding the applicability of human rights provisions, this constitutes a legal obligation borne by individuals to preserve and maintain the public interest of a stable global climate enabling sustainable human life now and in the future.

Moving to the third point – the feasibility and nature of fulfilling obligations – the scope concept used in the judgement for emissions classification originally targets corporations and may not be appropriate for direct application to individual emissions. Still, analogical consideration may be possible: direct emissions (Scope 1) could be the CO₂ that every person exhales; Scope 2 emissions could be those calculated using CO₂ calculators (Umwelt Bundesamt 2026), and Scope 3 emissions could be those generated by individuals' entertaining actions relative to other individuals.

To summarise the above, the legal basis for individual emission reduction obligations would be as follows. First, the foundational provisions include international law, such as the fifth paragraph of the ICCPR preamble. Regarding the applicability of human rights provisions, this constitutes a legal obligation borne by individuals to preserve and maintain the public interest of a stable global climate enabling sustainable human life now and in the future. As this differs substantively from scenarios involving corporations that mainly stem from their economic activities aimed at generating profit, human rights provisions are applicable. Concerning enforceability, individuals are exempted from reduction actions for emissions inevitably generated in the course of pursuing livelihoods that enable the enjoyment of social rights (at the

minimum level). On the other hand, for emissions beyond this level, there is a legal obligation to achieve reduction results.

Discussion: remaining challenges

Even if the legal basis for individual emission obligations is established as described above, this alone does not guarantee progress in climate change countermeasures. Further steps are needed: ensuring the fulfilment of these obligations and, beyond the scope of legal obligations, creating incentives for individuals to voluntarily reduce emissions. This section examines these two aspects.

First, to ensure compliance with obligations, a prerequisite is establishing criteria for determining compliance and ensuring public oversight of this determination. Here, the PerCF can serve as an effective metric. Legally requiring individuals to measure this and report it periodically to the competent authority would be an effective means. Carbon budget theory (Global Carbon Project 2025) involves calculating an individual's lifetime budget based on their socioeconomic circumstances.

Next, to motivate individuals to voluntarily reduce emissions, it would be effective for them to recognise the importance of a stable climate for future generations as a personal concern. One method, Future Design (Saijo 2025: 29), involves envisioning a future society free from current diverse constraints and obligations by adopting the perspective of future generations, then considering what actions are needed now to realise that vision. Its effectiveness has been confirmed through numerous practical applications. The following two examples may be illustrative. The first case is the Future Design workshop on the future of water supply policy in Yahaba Town, Iwate Prefecture, located in Japan's Tohoku region. The group of citizens who approached the discussion from the perspective of future generations, unlike a group that remained focused on the current generation, expressed support for owing cost to maintain social infrastructure in order to avoid shifting the burden of maintaining ageing water infrastructure onto future generations (Masters/Ramakrishnan 2024: 8-9). Furthermore, in a stakeholder-participatory workshop in Kyoto aimed at formulating climate adaptation strategies for the agricultural sector, participants suggested that policies should not simply endorse a focus on greenhouse cultivation for the sole purpose of climate change adaptation, but should instead prioritise policies that emphasise the sense of fulfilment farmers themselves derive from engaging with city council members (Ichihara et al. 2026).

Conclusion

This article attempted to establish a legal basis for imposing emission reduction obligations on individuals, analysing the first-instance and appellate court rulings in the climate lawsuit *Milieu-defensie et al. v. Royal Dutch Shell pld.*, which legally mandated emission reductions for private companies. As a result, based on international law, including the fifth preambular paragraph of the ICCPR, it established an individual's legal obligation to reduce emissions as a duty to preserve and maintain the public interest in a stable global climate environment – an Earth environment enabling sustainable human life now and in the future.

The legal foundation derived in this article remains at a preliminary stage and requires thorough verification and theoretical scrutiny in both practical and academic settings. Nevertheless, given the current global situation, in which legal frameworks imposing individual reduction obligations are needed yet no such framework has achieved significant consensus, the explanation of the legal foundation proposed in this paper is of considerable significance.

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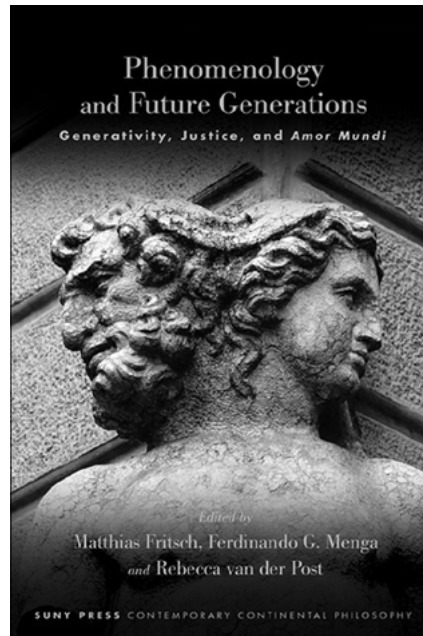
Matthias Fritsch / Ferdinando G. Menga / Rebecca van der Post (eds.): Phenomenology and future generations: generativity, justice, and amor mundi

Reviewed by Jason Adolph

At first glance, the study of first-person consciousness and experiences seems removed from the practical demands of intergenerational environmental justice. How can phenomenology, a theoretical branch of philosophy, speak to urgent global challenges such as climate change, biodiversity loss, and pollution? As this anthology demonstrates, phenomenology offers a distinctive lens for rethinking responsibility across time – revealing how our existence is interwoven with past and future generations of humans and other earthlings.

Phenomenology and Future Generations, edited by Matthias Fritsch, a professor in philosophy, Ferdinando Menga, a professor of legal philosophy and philosophy of politics, and Rebecca van der Post, PhD candidate in interdisciplinary humanities, engages with phenomenology to explore how ethical and political responsibilities towards future generations can be justified. Taking as its point of departure the climate crisis and the responsibility of handing over a healthy planet to future generations, the authors write at a time when the connection between generations seems to be disappearing. Presentism and individualism appear to dominate contemporary policymaking. Thus, the book's core aim is to examine how to reconfigure intergenerational relations through phenomenological concepts. Ten philosophy professors from Europe, Japan, and North America contribute to this discussion, which is centred on three thematic sections. The first section examines the concept of generativity to establish relations between generations that demand intergenerational sensibilities and responsibilities. The second part examines the dynamics of political responsibility across generations and how these dependencies and responsibilities can be indefinitely extended into the future without overburdening the present. The third section turns to relations between the self and the world, humans and the earth, humans and other earthlings, and how this love for the world creates a responsibility for present generations to pass on a world in which future generations can live meaningful lives.

In the opening chapter, Mario Vergani critiques Rawls and Parfit for treating generations as discrete and anonymous entities. Thus, they overlook the *inter* in intergenerational justice. He claims that generativity – the ongoing process by which life is transmitted through birth and broken by death – creates both continuity and rupture between past, present, and future generations. Thus, he also assumes that there is a plurality of generations in the present.



Vergani calls this an ethical time. The unforeseeability of future generations makes them genuinely 'being a new future' rather than 'extensions of the present'. Because individuals 'live on' in others after death, responsibility toward future others is responsibility toward the continuation of one's own existence. Vergani's concluding move is an ontological inversion: temporality stems from historicity, and historicity from generativity. Generativity is the irreducible trace that birth leaves in history, and because it always escapes totalisation, it grounds ethics open to the future.

Building on the future's unforeseeability, Bernhard Waldenfels frames responsibility to future generations in Chapter 2 as a phenomenological response to alterity. Referring to the ideas of Levinas, the future's ineliminable otherness calls us to respond – one that cannot be refused, since even

silence is a form of answering. This response is necessarily indirect or representative, because the future other is not yet present. For Waldenfels, generativity both connects and separates overlapping generations, both those alive and those currently not. This makes ethics fundamentally responsive and creative. The face of the future can neither be separated from, nor reduced to, today's living faces, since our lifeworld draws on the past and extends into the future. Thus, responsibility toward future generations is about leaving them a world in which they have the freedom to influence their own future.

Continuing with the concept of generativity, in Chapter 3, Burkhard Liebsch applies generativity to debates on intergenerational conflict, arguing that such discourse forgets the "prior generativity by virtue of which each one of us lives *on the basis of others and in relation towards others*" (80). To Liebsch generativity means a form of inter-temporal life that stems from another before one's birth and towards another after one's death. For him, present generations have a responsibility towards future generations to render the lives given in a liveable, acceptable, or affirmable way. This responsibility extends beyond the horizons of individuals who presently exist. Thus, the chapter concludes that the promise of birth extends beyond one's own time and, thus, depends for its realisation on others and on legal, institutional, social, and political conditions that themselves extend across history and generations, offering future generations leeway to explore their otherness.

In Chapter 4, turning towards responsibilities to future generations, Ferdinando Menga explores how future generations can be politically represented. He argues that representation in today's

democratic state is tied to the right to be considered human, which is denied to future people. Traditional ethical theories, he claims, sustain a “presentistic semantic” (113) that fails to motivate a morally future-oriented responsibility. For Menga, fulfilling intergenerational responsibility requires an ethico-anthropological revolution capable of bringing a new configuration of ethical subjectivity and moral motivation. Drawing on Levinas’s notion of the decentred moral subject, constituted by the command of responsibility arising from its exposure to alterity, Menga develops a future-oriented ethics. He concludes by proposing a legal-philosophical model of political representation as responsive substitution for future others, linking this to natality as the source of political renewal and continuity.

Continuing the engagement with Levinas’s the Other, Chapter 5 by Eva Buddeberg argues that the growing scope of the future demands moral considerations that transcend our immediate context. Building on Levinas, she shows how exposure to the Others in asymmetrical ethical relations universalises responsibility, extending it to all humanity, including those yet to come. We could be them, and they could be us. Yet Levinas offers no institutional answer to the incorporation of responsibility towards future generations. Buddeberg therefore turns to Apel’s and Habermas’s discourse ethics, which expand temporal horizons and embed intergenerational responsibility within democratic and legal practice. Institutions, she concludes, must remain open and adaptable to future generations’ needs.

Expanding on responsibility towards future generations, in Chapter 6, Hiroshi Abe examines Hans Jonas’s future ethics, focusing on responsibility toward the idea of ‘the human’ rather than specific future individuals. He argues that for Jonas to exercise responsibility towards future generations requires drawing on both the past and the present to preserve humanity’s continuity. This duty entails keeping the horizon of possibility open so that each generation can reshape the image of the human to their liking. Present generations thus bear a responsibility to enable the next generation’s freedom and an indirect obligation to sustain the chain of responsibility *ad infinitum* (161).

Continuing the exploration of intergenerational connectedness, Chapter 8 by Matthias Fritsch draws on critical theory to examine natal alienation – the forced separation of individuals from their social, historical and cultural context. Fritsch argues that agency is rooted in an intergenerational nexus, linking birth (natality) to past generations and death (mortality) to future ones. This non-linear temporality means the dead and unborn are “with us and of us” (188), challenging presentism and modern accounts of individualism. Fritsch employs critical theory to expose how presentism and natal alienation undermine agency, and to set forth a temporal ethics that reconnects individuals with their intergenerational contexts. Responsibility, he concludes, is not toward future generations as a collective but toward enabling future others to fulfil their own duties. While Fritsch offers a compelling critique of presentism, his account remains conceptual mainly, leaving open how these insights translate into institutional or political practice.

The final chapter by Kelly Oliver engages with Hannah Arendt’s *amor mundi*. It distinguishes between the earth, which is the necessity for our existence, and a world, which is the creation of our social interactions. Building on the assumption that plurality is necessary for worldliness, Oliver argues that we must enlarge this understanding to include other earthlings because they are indispensable to human existence. Because of the special bond we

share with other earthlings, she asks what happens when we consider ourselves belonging to the earth and imagine responsibility not only to humanity but also to the earth and all its creatures. Oliver proposes an earth (intergenerational) ethics based on a love of the earth, which commits us to an earthbound existence and to fellow earthlings. The responsibility is to avow our *amor mundi* so that it is in profound love of the earth that future worlds continue to be born. She, however, does not extend Levinas’s thought by examining how the alterity of non-human beings might impose moral obligations on us.

In general, the book is a valuable source not only for outlining the responsibilities that current generations have towards future generations, but also towards the planet. The anthology is technically demanding, assuming familiarity with different streams of thought from Husserl, Heidegger, Jonas, and, especially, Levinas. Non-phenomenologists might find it rather difficult to connect these different trains of thought to fully grasp the arguments.

Nonetheless, *Phenomenology and Future Generations* makes a significant contribution by reconfiguring intergenerational ethics through phenomenology’s insights into time, alterity, generativity, natality, mortality, and responsibility. Its core thesis – that generations are interwoven rather than isolated age cohorts – offers a compelling alternative to presentist politics and contractual frameworks of intergenerational justice. By grounding responsibility in the temporal structure of existence, the volume moves beyond specific obligations and argues that justice consists in enabling future Others to shape their own possibilities. Drawing on Levinas, several chapters emphasise the asymmetrical nature of this responsibility: it is not reciprocal but arises from the Other’s ethical demand, which precedes autonomy and choice. This shift from ego-centred phenomenology (cf. Husserl and Heidegger) toward an ethics of alterity is one of the book’s most original contributions.

It should not go unnoticed that the anthology’s goal of providing knowledge “capable of informing social praxis and of finding political, legal, and institutional expression into the future” (3) remains underdeveloped. While Menga and Buddeberg gesture toward institutional openness and responsive representation, these proposals are theoretical and lack engagement with existing models of intergenerational representation, such as those in Germany, Wales, Finland, Canada or Hungary. Greater attention to concrete mechanisms would enhance its practical contributions. Ultimately, the anthology adds a piece to the ethical map of moral arguments against presentism. It sparks discussions why and what responsibility present generations have toward future generations and the planet. With this the book achieved the continued relevance of the phenomenological tradition for solving modern problems. It is a relevant read for philosophers interested in how phenomenological concepts can be adapted to contemporary challenges, such as environmental justice and climate change.

Fritsch, Matthias / Menga, Ferdinando G. / Post, Rebecca van der (eds.) (2024): Phenomenology and Future Generations. New York: State University of New York Press. 273 Pages. ISBN 9781438499499. Price: Hardcover \$99, Paperback \$35.

Marcel Fratzscher: After us, the future: a new intergenerational contract for freedom, security and opportunities

Reviewed by Ben Jagasia

The common assumption is that economic growth leads to prosperity and greater opportunities for many people, especially the younger generation. In other words, economic growth is positive. In his book *After Us the Future* (*Nach uns die Zukunft*), Marcel Fratzscher – president of the German Institute for Economic Research – illustrates that these assumptions may no longer hold. He examines the phenomenon of a possible “gigantic redistribution from young to old” (16), which describes breaking the intergenerational contract in German society. Writing at a time when “over 80 per cent of people [...] are convinced that living standards will decline and future generations will be worse off” (203), the economist not only presents an analysis of how we got into the current situation but also proposes avenues for a new intergenerational contract. The introduction already underlines the seriousness of the present time. He claims that “the intergenerational contract in our [German] society has been broken” (12). The historical promise that children would have a better life than their parents no longer applies. Fratzscher attributes this to the fact that “[...] hardly any generation has robbed their children and grandchildren of as many opportunities for a good and self-determined life as the baby boomers have today” (12). He recognises the positive achievements of the baby boomers in recent decades, but simultaneously attests that all these achievements – democracy, climate, and a prosperous economy – are under threat today. Thus, the baby boomer generation lives by the motto “[a]fter us, the deluge” (14) and leaves behind a less liveable, more endangered world for younger generations. This situation forces young people to pay for the spiralling national debt and the steadily rising contribution rates for pensions, nursing care, and health insurance. This will increasingly limit their scope for future investment. All of this contributes to bleak “prospects for the younger generation” (17). From summarising the problems that arise regarding the distribution of burdens between young and old, Fratzscher develops, in the following parts, what a possible solution – a new intergenerational contract – might look like. The book is structured around three central normative pillars that Fratzscher sees as the foundation of a new contract: autonomy, universalism, and humanism. With the help of this three-part structure, he links complex issues – from wealth inequality and the climate crisis to democratic participation – to policies that are just to all generations. In the first pillar of this new intergenerational contract, Fratzscher focuses on human dignity and the associated material and social



basis of freedom. For him, self-respect is essential to human dignity. According to Fratzscher, performance-based justice must be complemented by a needs-based justice, i.e. the ability of individuals to realise their full potential and gain recognition. This theoretical foundation supports his call for political reforms that should become part of the new intergenerational contract. In his opinion, there is a fundamental need for a new definition of performance and a “community with a high degree of solidarity, security, and stability” (36).

Fratzscher sees many problems in our society as stemming from a decline in equal opportunities and social mobility. His analysis of wealth inequality is particularly noteworthy: “[...] 60 per cent of all wealth in Germany [was] inherited [...]” (39). The “lottery of birth” (39) often determines success in life more than one’s own achievements. To counteract this, Fratzscher proposes strengthening the

education system and promoting greater equality of opportunity between younger generations, across social and ethnic backgrounds, sexual identities and gender.

He also discusses good and meaningful work as an aspect of the right to self-determination. He emphasises the importance of testing the four-day work week in a pilot project to assess how to strengthen economic cohesion and performance. He also argues that technological change should be seen as an opportunity. Fratzscher furthermore considers the controversial topics of minimum wage and unconditional basic income, whereby he believes their positive aspects outweigh the negative. He advocates for a basic inheritance for young people to support their financial autonomy and security. In addition to ending child poverty by increasing child benefits and child allowance, he sees this as a way of ensuring the financial security of future generations. He calls for a “life chances or basic inheritance” that “[...] would ensure that every young person has an inheritance of €30,000 at their disposal after completing their education” (87).

The second part focuses on the ecological issue. For Fratzscher, climate protection is not a moral choice, but a question of freedom and prosperity: “[c]limate protection is smart economic policy and secures freedom for future generations” (99). This is the central thesis of his argument. He discusses the “uncontrollable costs for future generations” (99) caused by a lack of climate protection and how climate protection drives the economy.

He also addresses fundamental questions such as the property rights of future generations to an intact planet, and how we want

to define prosperity in times of declining economic progress. For him, this also raises the question of how we want to transform our society ecologically, socially, and digitally. This transformation is urgent and requires enormous investments.

It is crucial that we also impose restrictions on ourselves in areas such as nutrition and mobility because “what many people today perceive as sacrifice is necessary to secure prosperity and important freedoms in the long term” (124). Fratzscher also advocates concrete measures, such as eliminating subsidies for fossil fuels and introducing a CO₂ price. He also discusses social compensation mechanisms such as a climate allowance and a “climate reserve” (135).

Perhaps the most politically controversial part is the third, in which Fratzscher focuses on solidarity and social harmony in our society. This is a fundamental issue for Fratzscher, because “societies based on solidarity have almost always coped better with times of need than their individualistic counterparts” (140). Fratzscher starts by addressing the financial aspects of this solidarity. He criticises the German debt brake, arguing that “some debts today would be a prerequisite for rapid debt reduction in the future” (176). To prevent excessive government debt and intergenerational injustice, Fratzscher wants to limit government debt to nominal potential growth each year. On the other hand, debt should only be used for public investment, and all implicit and explicit obligations (both government debt and contributions to statutory social security systems) should be limited to 60% of annual economic output. The basic idea is that the state should invest for the benefit of future generations.

Fratzscher makes balanced pension financing the core of social solidarity. Considering demographic change, the financial burden on young people under the pension system is too high. Therefore, he proposes to make the retirement age more flexible, to include civil servants and the self-employed in the statutory pension system and to strengthen private pension provision. Fratzscher’s other proposals concern the transformation to an activating welfare state and greater solidarity with refugees, which would be in the common economic interest. He also advocates reforming the tax system.

In addition to the financial aspects, Fratzscher advocates a period of social service for baby boomers. He justifies this by saying that “it is [...] rather the elderly who must live up to their own responsibility towards the young and future generations” (170). He criticises the fact that baby boomers “[...] basked in the glory of their economic success and forgot to have children, to invest in good infrastructure and quality in daycare centres and schools, and to ensure humane immigration” (171). Fratzscher sees the advantages of such a model primarily in the signal effect it would send, but also in economic terms.

Fratzscher concludes by advocating for strengthening democracy. He is convinced that “a functioning democracy and a functioning capitalism [...] remain the best prerequisites for prosperity, justice, and the resolution of the current crises” (211).

After Us the Future by Marcel Fratzscher successfully addresses the problems caused by policies that are unjust to younger generations. In three parts, he outlines the goals our society should pursue to ensure a liveable future for young and future generations, and where action is needed. Fratzscher’s proposals are persuasive, for instance, considering the debt and investment policies. Because not all of the €500 billion special fund for infrastructure and climate neutrality that was approved by the Bundestag at the end of the last legislative period will be used for additional investment,

stricter rules are necessary. This would ensure the investments are truly additional and that the financial freedom of young and future generations is not constrained. However, questions should be raised about the feasibility of some proposals. For instance, the social service for pensioners before they go into pension appears, at first sight, a good idea. It remains doubtful whether there is sufficient political will to antagonise potential voters.

The book’s proposals are thought-provoking and discursively significant, but not the most practical. Ultimately, Fratzscher’s analysis of the present and his reform proposals are a plea for a new contract that puts intergenerational relationships on stable footing. According to the book’s subtitle, this will result in “freedom, security, and opportunities.”

It should also be emphasised that, despite his harsh analysis, Fratzscher draws an optimistic conclusion: “A new intergenerational contract is possible” (20). For anyone looking for arguments in favour of such a new intergenerational contract, this book is a must-read.

Fratzscher, Marcel (2025): Nach uns die Zukunft: Ein neuer Generationenvertrag für Freiheit, Sicherheit und Chancen. Berlin: Berlin Verlag. 224 Pages. ISBN 3827015278. Price: Hardcover €22 (only available in German).

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