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Planet over Profit? A Reality Check of Europe's Aspirational Climate Policies



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EXECUTIVE SUMMARY

The European Green Deal (EGD) aspires to become the transformational agenda putting the European Union's (EU's) economies and societies firmly on the path towards sustainability. This paper casts in doubt several presumptions inherent to it, notably that Paris Agreement-compliant emission reduction trajectories are complementary to strong economic growth. Moreover, it frames some of the trade-offs that will shape the reality of the green transition in Europe and beyond, showing that meeting the environmental, social and economic objectives all at the same time is for the most part just a mirage, even if a politically expedient one. Europe's leaders are asked to take these realities into consideration when designing EGD-related policies so as to avoid both problem shifting and raising unrealistic expectations among the public. The urgency of the crisis at our hands deserves nothing short of a sober assessment and an evidence-based response, in line with the physical realities and constraints of the world we live in.

INTRODUCTION

The globally prominent climate activist Greta Thunberg posted a short cartoon strip on her Facebook page in January 2021, demonstrating her growing frustration with international climate negotiations and conferences. In a scathing reflection of the state of climate action worldwide, she remarked (Thunberg 2021):

Bla bla bla nature

Bla bla bla very important

Bla bla bla ambitious

Bla bla bla green investments

Bla bla bla great opportunity

Bla bla bla green growth

Bla bla bla net zero emissions

Bla bla bla step up our game

Bla bla bla hopeful

Bla bla bla...

(while locking in decades of further destruction)

Despite Thunberg's pertinent criticism, words still matter. And there have been plenty of words on climate protection as of late, the Covid-19 pandemic notwithstanding.

Perhaps no other global actor has recently been more pronounced in making declarations, tabling commitments and increasing emission targets than the EU. Steered through the stormy waters by a climate-conscious and no less aspiring Commission led by Ursula von der Leyen and her heavyweight vice-president Frans Timmermans, Europe's climate ambition appears firmly in place... Only, is it really?

Admittedly, the bitter pill of the dire state of our natural environment and the related catastrophic outlooks for human civilisation as underscored by one scientific study after another may be best swallowed when coated in plenty of sugar. The same can be said about the pathways that, just perhaps, may lead us out of the current predicament. The EU under the newly-appointed Commission wasted no time when opting for an abundance of sweetener. After all, the fallout of the French *gilets jaunes* movement that started as a protest against stringent climate measures negatively affecting lower-income households has been very palpable at the outset of its mandate.

The result? Nothing short of the Commission's trademark transformative agenda – the European Green Deal.

However, what has started as a well-intended search for win-win solutions and positive narratives with the potential to mobilise public support may easily yield into a heap of wishful thinking. One can fret that rather than easing up Europe's pressure on climate and the environment, the EGD agenda may ease up little more than the pressure on Europeans' consciences. Prudence and honest assessment are therefore much needed qualities to prevent false expectations and misguided policy choices.

The questions this paper strives to address revolve around the conceptual integrity of the EGD and the expectations that the presented narratives bring not only to Europe's citizens but also to its businesses and public institutions. In the latter part, certain immanent environmental-social-economic trade-offs are framed, challenging the oft repeated notion that if carried out well, the European transition is bound to bring co-benefits to all people, the economy and, of course, the natural environment.

IDENTIFYING CONCEPTUAL PROBLEMS LYING AT THE HEART OF THE EUROPEAN GREEN DEAL

As a starting point, we take the EGD Communication from the Commission published in December 2019 (European Commission 2019). Wherever relevant, this is complemented by analysis and/or reference to other related documents. Therein, we identify and analyse several conceptual problems with the potential to undermine its coherence and/or credibility, departing from the understanding that the EGD aspires to be the transformative agenda that shall ensure the EU's qualitative leap towards sustainability and a future worth living.

Not Accounting for the Depth of the Crisis

The EU has the collective ability to transform its economy and society to put it on a more sustainable path. It can build on its strengths as a global leader on climate and environmental measures, consumer protection, and workers' rights (European Commission 2019: 2).

Only how deep a crisis our civilisation is facing becomes hard to overstate. Report after report, including the ones published by the Intergovernmental Panel on Climate Change (IPCC) or by Steffen et al. (2018), indicate that the state of the world's climate, the global biodiversity loss rate and many other environmental indicators affected by human activity from mining to industrial production to land grabbing to pollution are already at critical values and pacing into unprecedented, ghastly futures. This has led researchers and scientists to warn of an 'untold suffering' (Ripple, Wolf, Newsome, Barnard & Moomaw 2020) and vocalise the need for a 'cold shower' (Bradshaw et al. 2021) over the presently prevailing complacency and wishful thinking present among stakeholders as well as much of the expert community.

The EGD appears to downplay these dire outlooks and restrain from an honest summary. The word 'crisis' is wholly absent from the document as are many other terms one could expect to appear prominently when summarising our civilisational predicament, including 'breakdown' or 'collapse'. Instead, the climate and environmental crises – while acknowledged in mild words – are reframed into 'opportunities' in an economic sense. Rather than admitting to the deeply existential nature of the situation, the EGD goes a long way to offer a vision of a bright common future. But by omitting key realities, it runs the risk of undermining the urgency of the very message it strives to convey.

The Green Growth Imperative

It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use (European Commission 2019: 2).

A critical perception of economic growth as the ultimate policy driver is no longer a fringe view. Admittedly, in practice (neo)liberal economic thought with its innate aspiration for economic expansion continues to prevail around the globe. All the while, it has become

universally understood that the ever-increasing resource throughput and negative externalities that accompany our economic model are pushing human civilisation far beyond planetary boundaries. It would appear that increasingly complicated intellectual gymnastics are required to reason and defend the economic growth imperative.

While initially publications on the matter of limits to growth were largely limited to environmental economists (Meadows, Meadows, Randers & Behrens 1972; Raworth 2017), left-wing initiatives or NGO associations (Parrique, Barth & Briens 2019), recently the institutional mainstream began addressing it as well (Strand, Kovacic & Funtowics 2020). It is all the more remarkable that the European Commission has unequivocally sided with the growth paradigm when conceptualising the EGD.

Inherently then, the coherence of the EGD requires the notion of greenhouse gas (GHG) emission and resource decoupling. The economy of tomorrow shall aspire to be both a lot bigger and have a – in the view of the EU's 2030 and 2050 climate targets, substantially – reduced negative impact on earth's systems. This is a brave notion, as we shall demonstrate concretely on GHG emissions breakdown with the use of the Kaya Identity (see image below, Kaya & Yokobori 1997).

The Kaya Identity

$$CO_2 = population \times \frac{GDP}{capita} \times \frac{energy}{GDP} \times \frac{CO_2}{energy}$$

Source: Patt based on Kaya (2016)

Karstensen, Peters and Andrew (2018) in their study concluded that between 2009 and 2016, the average EU annual reduction in energy intensity stood at 2.1 per cent while its average annual reduction of carbon intensity of energy amounted to 0.8 per cent. Other things being equal, this would manifest in a nearly 3 per cent emission reduction per annum. However, (an initially meagre) economic growth of 1.1 per cent per year on average meant that the observed cuts in GHG emissions attributed to the EU amounted to 1.8 per cent per annum for that period.

We may presume an increased pace of the positive trend given the strong political push for decarbonisation, energy efficiency and heavy investment into low-emission technologies. The decreased energy intensity of the economy and carbon intensity of produced energy combined may thus reduce the EU's emissions per unit of GDP by approximately 4 per cent every year in the upcoming decade.

By 2017, EU-28 had cut its emissions by 22 per cent as compared to 1990 levels (Eurostat 2019). A further 4 per cent annual reduction into 2030 might bring the 55 per cent reduction target (amounting to just over 2,500 metric tons (Mt) of carbon dioxide equivalent (CO₂e) per year by 2030) within reach. An extrapolation of the same linear 4 per cent reduction trajectory into 2050 would lead to approximately 1150 Mt CO₂e annual emissions by 2050, amounting to an 80 per cent reduction compared with 1990 – nearing but hardly achieving the net-zero target (Jungwirth 2020). The net-zero or climate neutrality moment would of course require a complete, unabated decoupling of economic production from GHG emissions, which is something without any historical precedent.

This also means that (while Europe's population will arguably remain more or less stabilised) any non-marginal pace of economic growth is almost bound to bring the ambitious mitigation targets out of sight. An average 2 per cent annual expansion of the EU's economies could easily mean the EU would just about achieve its original 40 per cent emission reduction target by 2030 and get to no more than -60 per cent by mid-century. What is more, none of the above accounts for emissions that are embedded in international trade and which, if incorporated in the statistics, would inflate the EU's carbon footprint by about one fifth (Fezzigna, Borghesi & Caro 2019).

This is not to claim that decoupling of emissions and growth is principally impossible as there is mounting evidence that certain parts of the world do witness it, even accounting for emissions hidden in foreign trade (Hausfather 2021). Nevertheless, its observed (and legitimately expectable) pace of it is nowhere near sufficient for the EU to meet its ambitious emission targets.

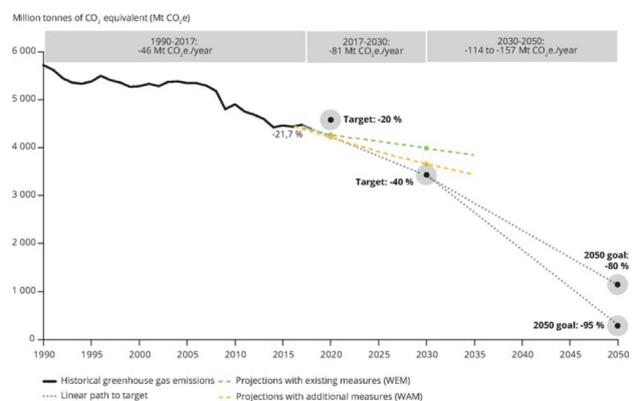
The Race to Climate Neutrality

The EU has already started to modernise and transform the economy with the aim of climate neutrality (European Commission 2019: 4).

In the past years, climate neutrality (also dubbed net zero or at times carbon neutrality, though there are certain conceptual differences) has become one of the buzzwords of our era. Rightly so, given the scientific consensus on the devastating impact of the unabated sputtering of anthropogenic GHG emissions on the state of the global climate (Powell 2017).

However, it is more than fair to ask whether this is a goal to be actually achieved, and if so, what would it require in practice. As we have shown above, economic expansion is a principal impediment to the desirable emission reduction trajectories. Admittedly, there is substantial remaining potential for emission abatement in the 'low-hanging fruits' such as the closure of coal plants. However, once these have been harvested, any further reductions, notably when directly affecting households, will likely become much more technically difficult, expensive and politically untenable. This puts in significant doubt the existing trajectories which tend to manifest an increasing or at least linear reduction trend in time. This would then of course equal to an even greater percentual pace of change on an annual basis.

Visualisation of EU emission reduction trajectories



Source: European Environment Agency (2019)

In its Clean Planet for all Communication (European Commission 2018), a point of reference to the EGD, the Commission's ambitious

decarbonisation pathways rely on at least two problematic assertions:

Carbon Dioxide Removal

Carbon dioxide removal (CDR) (in the EU framework, more often called carbon capture storage and/or utilisation) remains among the most contested concepts when it comes to exploring climate neutrality pathways. Even in the EU long-term climate planning, it plays an integral role (European Commission 2018: 7) despite the fact that the scalability and economics of the technology are put in doubt by many. Why, after all, should it ever be more efficient and cheaper to extract and burn hydrocarbons, and then (using an excessive amount of energy) suck the carbon from the atmosphere and try to store it once again, rather than to keep it in the ground in the first place? Does this not smack of a modern attempt at constructing a perpetual mobile? The fear of course is that relying on CDR will remain but a distraction from the necessity to massively cut down emissions in the first place (for biophysical and economic limits that the technology faces, Smith et al. 2015). After all, the promise of this technology is also what enables fossil giants such as Shell to table their own climate neutrality pledges (Shell 2021).

Bioenergy

The notion of climate neutrality presupposes that the world of tomorrow will run entirely on renewable energy sources. It is beyond the scope of this paper to investigate the negative externalities that may be associated with large-scale renewable energy sources (RES) deployment including their potential to threaten local biodiversity, as flagged by Spanish scientists' letter to Science (Serrano et al. 2020). Nevertheless, the issue of bioenergy deserves a specific mention. An integral part of decarbonisation pathways is linked to carbon accounting that relies on certain assumptions about what is and is not renewable. This has in effect led to a growing (and heavily subsidised) reliance on bioenergy, which in turn manifests in growing pressure on (not only) Europe's forests as its primary sources while also potentially increasing the EU's short-term emission balance. As warned by

a recent Joint Research Centre report (Camia et al. 2021) and further reported by *The Guardian* and *Financial Times* (Sheffield 2021; Ford 2021), this issue is currently not adequately addressed by EU legislation. All in all, heavy logging of forests for bioenergy could just be a textbook case of problem shifting in environmental policy. Moreover, it links to the issue of creative accounting of carbon sinks that has resulted in a whopping 5.5 gigatons of CO₂e gap between what is annually emitted and what is actually attributable (Grassi et al. 2021).

FRAMING THE IMMANENT ENVIRONMENTAL-SOCIAL-ECONOMIC TRADE-OFFS

Whenever arguments run into a dead-end, a recourse towards the sustainable development concept is a sure bet. Ever since the Our Common Future report was published (World Commission on Environment and Development 1987), it has become a truism that economic growth, social cohesion and environmental protection can be reconciled, requiring only the will and well-designed policies. Such is also the assumption inherent to the 17 UN Sustainable Development Goals (SDGs) ranging from the eradication of poverty through economic growth all the way to climate action. Unfortunately, this perspective wilfully resigns on the comprehension that the individual goals are indeed often mutually exclusive or detrimental. As we have observed in the past decades with growing urgency, it is almost always the natural environment, the biosphere and the state of global climate who (perhaps not least for a lack of individual agency) tend to be the ones 'left behind' (IPBES 2019).

The EGD as an overarching policy and public finance agenda runs the risk of becoming just as much of a 'candy store' as are arguably the SDGs. By striving to cover too much, by always opting for positive narratives and by offering something to everyone (but more to the wealthier and powerful), it may lose its focus and edge. Our critical perspective on this leads us to openly formulate several inherent trade-offs that will sooner or later need to be dealt with. The aim here is to translate the conceptual reality check

in several key areas. Admittedly, the EGD itself presumes (even if not names) such an exercise, claiming that ‘careful attention will have to be paid when there are potential trade-offs between economic, environmental and social objectives’ (European Commission 2019: 2).

Growth v Emissions

As demonstrated above, in spite of optimistic EU notions about ‘green growth’, with GDP and carbon still locked in a devil’s tango, strong economic expansion puts ambitious EU emission reduction targets principally out of reach. There can of course be no doubt about the massive sums of both public and private money required to fund the transition, and this may well be good for much of the business while sparking up employment, regional development etc. Nevertheless, on the whole, the European (as well as global) economy had better flatten out or even begin shrinking, shall the Paris targets remain within the realm of the possible. Indeed, at some point, a decision will have to be made as to what should be the driving political priority of our era – driving emissions and environmental impacts down, or yet again boosting the economy?

Climate Ambition v Impact on Households

The Commission, seconded by both the Parliament and the Council, is very attentive in pinpointing all of the presumed social benefits of the EGD, highlighting the concept of a Just Transition, and promising to leave no one behind. Nevertheless, it will become progressively difficult to imagine how households at large can be spared of (any) negative impacts of a sharply growing price of carbon in the EU (that may soon apply to new sectors of the economy under the EU Emissions Trading System reform) and stringent regulation that will be implemented in the buildings sector or in the form of emission limits for personal vehicles. Arguably, industries should be the ones bearing the brunt of the EU’s climate ambition but in the end, households will feel the impacts either directly (eg in higher energy payments) or indirectly (eg in increased

prices of products and services). Therefore, more public discontent is on the cards with enhanced climate ambition, leaving aside the unlikely option that the EU governments choose the path of a massive wealth redistribution scheme with the goal of narrowing the wealth and income gaps.

Energy Savings v Massive-Scale Renewable Energy Deployment

The EU’s grand fuel switch will not happen without hundreds of gigawatts of newly installed RES (particularly photovoltaics, offshore and onshore wind). Just like any other industrial activity, large-scale deployment of renewables is not without negative consequences. It is questionable how the rollout can ever be sufficient, expedient and principally non-destructive in a context of a chronically growing energy consumption. Energy savings are paramount, as all climate policy architects would agree. But how can energy consumption be capped in absolute numbers, rather than per unit as promoted by most policies in place (more often than not leading to the Jevons’ paradox and inadequate energy savings (Giampietro and Mayumi 2018)? The EU does not seem to be spending adequate time and capacity discussing this truly fundamental question. This matter then intimately links to the growth/decoupling question as discussed above.

With some insight now provided into several of the trade-offs, the principal question stands pertinent as ever – is it at all conceivable to invest our way out of our predicament whose essence lies precisely in overconsumption, overexploitation and unsustainable material throughput with all its negative externalities?

RECOMMENDATIONS TO EU POLICY MAKERS

Based on the aforesaid, we formulate the following set of recommendations aimed at EU policy makers:

Treat the Crisis as a Crisis

The climate and environmental crises are the defining points of our era; tackling them

head-on is nothing short of an existential matter for human civilisation. As well-elaborated by Thunberg in her 'our house is on fire' parable, these crises are to be tackled with utmost urgency, priority and resolution. However, none of those can be expected for as long as much of the world, including the EU, shies away from calling a spade a spade. It is all well and good to look for co-benefits and provide positive framings but without being vocal and adamant about the tragic consequences of inaction, the adequate responses will always be considered as over-reaching or even extreme by many. The EGD agenda should grasp this and reflect it in its wording.

Deprioritise Economic Growth

One of the key takeaways from our analysis is that the political linkage of rapid climate change mitigation – and even environmental protection at large – with economic growth is conceptually misguided and the related promise of both embedded in the EGD (with a view to the Paris-required annual emission reductions) is but a mirage. In reality, this narrative opens doors to corporate greenwashing while also sparking up unrealistic expectations among Europeans as regards the ability to drive emissions down while boosting the economy. This in turn threatens to gradually undermine the credibility and coherence of the EU's climate agenda. In short, growth must be deprioritised so that climate protection can flourish.

Transparently Name and Frame Trade-Offs

History has taught us that it is practically inconceivable to attain climate and environmental protection, economic growth and widespread social development at the same time, as these goals in many instances run counter to each other. Acknowledging this and openly formulating the related trade-offs rather than coming up with more empty promises may be legitimately expected from the EU institutions. A good and eventually constructive political dialogue can indeed only happen if credible information is made publicly available and alternatives are

identified and analysed. It may well be that this approach enables increased emphasis on environmental protection (that is closely related to the issue of livelihoods and rights of future generations) over other, more expedient points on the agenda.

Be Wary of Problem Shifting

Even though targeted political attention is very much needed on mitigating the climate crisis, problem shifting is a real concern. As we have shown in the example of bioenergy, the race to net zero is paved with all kinds of accounting tricks, intentional or otherwise. Undue reliance on (often as of yet non-existent, non-scalable and/or harmful) technological solutions obscures the negative environmental and at times other consequences they carry along. In this way, climate protection is at risk of being a 'one step forward two steps back' issue. The EU should be able to operate based on comparative analyses and make policy decisions based on data and complex analyses, rather than 'what feels or sounds right'.

CONCLUSION

The race for solutions to the unfolding climate and environmental crises that put the existence of our whole civilisation in peril faces two monumental and somewhat contradictory challenges.

On one hand, they require sustained attention and utmost prioritisation. Distraction is indeed not an option when one's house is in flames and all effort is required in putting the fire out. This conflicts with the natural tendency of political leaders to appeal to the short-term desires and expectations of their constituencies. We posit that decarbonising the EU's economies at a pace and scale deemed necessary (in line with the mitigation goals enshrined in international law) while ensuring continuous non-marginal growth of GDP is little but magical thinking. Massive redistribution of wealth may suggest a way forward but is hardly imaginable in our political reality. It is therefore yet to be seen whether and how the objectives of sustainability (on top of strong proclamations and long-term

goals) can become politically tenable. To paraphrase the picture reposted by Thunberg in the opening reference of this paper, all are up for a change but few are ready to change and none have what it takes to lead this change.

On the other hand, a strong focus on selected crises (typically climate), targets (such as GHG mitigation) or devotion to certain technologies (say photovoltaics) can yield ideas about silver bullet fixes while obscuring all else that matters. In reality, as we have noted throughout this paper, there are negative consequences inherent to any of the technological 'solutions' that strive to put us on a path towards a liveable future. Without seeing the sustainability landscape in all of its complexity (including for instance through the interplay of climate change and biodiversity loss), the risk of problem shifting becomes enormous. This in turn of course makes any solution-seeking that omits the notion of producing, consuming and polluting less a rather gruelling exercise full of principal obstacles and second thoughts.

The EGD is a much-needed ambitious political agenda with undisputable transformational potential. It is all the more important that the European Commission and other EU institutions reflect on the notions provided above when considering the design, implementation and evaluation of the related policies. Evading the traps of false expectations and internally conflicting policy design are stepping stones on a way to making this agenda credible and ensure it stands a chance to achieve its fundamental goal – guiding Europe's societies towards a sustainable way of living.

BIBLIOGRAPHY

- Bradshaw CJA et al. 'Underestimating the Challenges of Avoiding a Ghastly Future' (2021) *Frontiers in Conservation Science* Perspective article, available at <https://www.frontiersin.org/articles/10.3389/fco-sc.2020.615419/full> (last visited 5 April 2021)
- Camia A et al. (2021) *The use of woody biomass for energy production in the EU* Joint Research Centre report, available at <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/use-woody-biomass-energy-production-eu> (last visited 5 April 2021)
- European Commission (2018) Communication from the Commission COM(2018) 773 final: A Clean Planet for all, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0773&from=EN> (last visited 5 April 2021)
- European Commission (2019) Communication from the Commission COM(2019) 640 final: The European Green Deal, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640&from=EN> (last visited 5 April 2021)
- European Environment Agency GHG emission trend projections (2019), available online https://www.eea.europa.eu/data-and-maps/figures/greenhouse-gas-emission-trend-projections/109663_fig2-1-chart-greenhouse-gas.eps (last visited 5 April 2021)
- Eurostat Greenhouse gas emission trend, EU-28, 1990-2017 (2019), available online [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Greenhouse_gas_emissions_trend,_EU-28,_1990_-_2017_\(Index_1990%3D100\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Greenhouse_gas_emissions_trend,_EU-28,_1990_-_2017_(Index_1990%3D100).png) (last visited 5 April 2021)
- Fezzigna P, Borghesi S & Caro D 'Revising Emission Responsibilities through Consumption-Based Accounting: A European and Post-Brexit Perspective' (2019) 11 *Sustainability* 488
- Ford J 'The creative climate accounting of biomass' (2021) *Financial Times*, available at <https://www.ft.com/content/b4be7ced-6871-48ff-9b84-57e7fb-343fc1> (last visited 5 April 2021)
- Giampietro M & Mayumi K 'Unraveling the Complexity of the Jevons Paradox' (2018) *Frontiers in Energy Research*, available at <https://www.frontiersin.org/>

- articles/10.3389/fenrg.2018.00026/full (last visited 5 April 2021)
- Grassi G et al. 'Critical adjustment of land mitigation pathways for assessing countries' climate progress' (2021) *Nature Climate Change*
- Hausfather Z 'Absolute decoupling of Economic Growth and Emissions in 32 Countries' (2021) *The Breakthrough Institute*, available at <https://thebreakthrough.org/issues/energy/absolute-decoupling-of-economic-growth-and-emissions-in-32-countries> (last visited 3 May 2021)
- IPBES 'The global assessment report on biodiversity and ecosystem services: summary for policymakers' (2019), available at <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/> (last visited 5 April 2021)
- IPCC Reports (2021), available at <https://www.ipcc.ch/reports/>
- Jungwirth T 'Decoupling ru^ostu ekonomiky a emisí skleníkových plynů: realita, nebo magické myšlení?' (2020) Association for International Affairs - AMO, available at https://www.amo.cz/wp-content/uploads/2020/04/AMO_Decoupling_rustu_ekonomiky_a_emisi_sklenikovyh_plynu.pdf (last visited 5 April 2021)
- Karstensen J, Peters GP & Andrew RM 'Trends of the EU's territorial and consumption-based emissions from 1990 to 2016' (2018) 151 *Climatic Change* 131
- Kaya Y & Yokobori K (1997) *Environment, energy and economy: Strategies for Sustainability* Tokyo: United Nations University Press
- Meadows DH, Meadows DL, Randers J & Behrens WW (1972) *The Limits to Growth* New York: Universe Books
- Parrique T et al. 'Decoupling debunked: Evidence and arguments against green growth as a sole strategy for sustainability' (2019) European Environmental Bureau, available at <https://mk0eeborgicuyptuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf> (last visited 5 April 2021)
- Patt A 'Is reducing energy consumption important for climate change?' (2016) ETH Zurich, available at <https://ethz.ch/de/news-und-veranstaltungen/eth-news/news/2016/01/is-reducing-energy-consumption-important-for-climate-change.html> (last visited 5 April 2021)
- Powell J 'Scientists Reach 100% Consensus on Anthropogenic Global Warming' (2017) 37 *Bulletin of Science, Technology and Society* 183
- Raworth K 'exploring doughnut economics' (2017), available at <https://www.kateraworth.com/> (last visited 5 April 2021)
- Ripple VJ, Wolf C, Newsome TM, Barnard P & Moomaw WR 'World Scientists' Warning of a Climate Emergency' (2020) 70 *BioScience* 8
- Serrano Detal. 'Renewables in Spain threaten biodiversity' (2020) 370 *Science (letters)* 1282, available at <https://science.sciencemag.org/content/370/6522/1282> (last visited 5 April 2021)
- Sheffield H 'Carbon-neutrality is a fairy-tale' (2021) *The Guardian* available at <https://www.theguardian.com/world/2021/jan/14/carbon-neutrality-is-a-fairy-tale-how-the-race-for-renewables-is-burning-europes-forests> (last visited 5 April 2021)
- Shell press release 'Shell accelerates drive for net-zero emissions with consumer-first strategy' (2021), available at <https://www.shell.com/media/news-and-media-releases/2021/shell-accelerates-drive-for-net-zero-emissions-with-customer-first-strategy.html> (last visited 5 April 2021)
- Smith P et al. 'Biophysical and economic limits to negative CO2 emissions' (2015) *Nature Climate Change*
- Steffen V et al. 'Trajectories of the Earth System in the Anthropocene' (2018) 115 *PNAS* 8252
- Strand R, Kovacic Z & Funtowics S 'Growth without Economic Growth' (2020) European Environment Agency, available at eea.europa.eu/publications/growth-without-economic-growth (last visited 5 April 2021)
- Thunberg G Facebook status commenting on the One Planet Summit (2021), available at <https://www.facebook.com/gretathunbergsweden/photos/a.733630957004727/1322843321416818/> (last visited 5 April 2021)
- World Commission on Environment and Development 'Our Common Future' (1987), available at <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> (last visited 5 April 2021)



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