Why setting a climate deadline is dangerous

DOI:
10.1038/s41558-019-0543-4

Document Version
Accepted author manuscript

Why setting a climate deadline is dangerous

Shinichiro Asayama (1,2), Rob Bellamy (3), Oliver Geden (4), Warren Pearce (5), Mike Hulme (2,*)

(1) Faculty of Political Science and Economics, Waseda University, Tokyo, Japan
(2) Department of Geography, University of Cambridge, Cambridge, UK
(3) Department of Geography, University of Manchester, Manchester, UK
(4) German Institute for International and Security Affairs, Berlin, Germany
(5) iHuman, Department of Sociological Studies, University of Sheffield, Sheffield, UK

* Corresponding author: mh903@cam.ac.uk

The publication of the IPCC special report on 1.5°C paved the way for the rise of the political rhetoric of setting a fixed deadline for decisive actions on climate change. However, the dangers of such deadline rhetoric suggest the need for the IPCC to take responsibility for its report and openly challenge the credibility of such a deadline.

In October 2018, the IPCC released its Special Report on 1.5°C (SR15), which concluded that global temperature is likely to reach 1.5°C above pre-industrial levels between 2030 and 2052 if the current rate of warming continues [1]. Sensational news headlines interpreting this as a 12 year deadline for the world to avoid catastrophic climate change [2] sparked widespread calls for urgent radical actions, ranging from the Green New Deal proposal in the USA, the youth activism of climate school strikes around the world, civil disobedience by the Extinction Rebellion group to the declaration of a climate emergency by the UK parliament. The world suddenly appears to have limited time in which to act decisively on climate change—and, if not, to be resigned to our climate fate.

This rise of 'climate deadline-ism' is, in some ways, a product of long-standing scientific (and political) endeavours to quantify what is "dangerous" climate change. First articulated as a peak 'temperature target', this was then converted to a finite 'carbon budget' and is now expressed as a fixed deadline after which policy interventions are deemed to be 'too late'. This discursive translation of 'danger' may help increase a sense of urgency, as evidenced by the recent emergence of a youth climate movement. However, it also creates the condition in which a 'climate emergency' is being rashly declared, a move that could lead to politically dangerous consequences.

Insomuch as the rhetoric of a 2030 deadline arises from political (mis)use of science in

setting an artificial deadline, this poses a crucial question to scientists, and specifically to the scientists in the IPCC. What is a *responsible* response to the politics of deadline-ism for the IPCC as the authoritative voice of climate science?

Quantifying 'dangerous' climate change

Over the last two decades, international climate communities have been discussing how to operationalise or translate the ultimate objective of the 1992 United Nations Framework Convention on Climate Change (UNFCCC)—preventing "dangerous anthropogenic interference with the climate system" [3]—into a concrete, quantitative policy target [4, 5]. While various target quantities were proposed (such as greenhouse gas concentration, ocean heat content or sea-level rise), global temperature emerged as the favoured indicator for quantifying a target level of climate change [6].

Since the mid-1990s, 2^{o}C of warming above the pre-industrial condition was increasingly adopted as the temperature threshold to avoid dangerous climate change [5]. The 2015 Paris Agreement introduced 1.5^{o}C as an alternative warming target [7]—although it seemed more a rhetorical aspiration at the time of the Paris talks. However, since the publication of the IPCC SR15 in 2018, much public campaigning has de facto reframed what is considered a "safe" limit of temperature change, from 2^{o}C to 1.5^{o}C.

The discovery of the near-linear relationship between a peak global temperature and cumulative CO_2 emissions [8] gave an opportunity for a different quantification of the climate challenge. The concept of a 'carbon budget' has reframed the mitigation challenge from a flow problem (i.e., how many emissions in a given year) to a stock problem (i.e., total allowable CO_2 emissions over a time period) [9]. Estimating the allowable carbon budget to limit global warming to a given level has quite rapidly become a central focus of climate modelling research and shaped the newly dominant policy paradigm [10].

Countdown to climate 'deadline'

The scientific effort to find a single number to summarise the mitigation challenge has resulted in one further move: translation of the carbon budget into an estimate of the time remaining before exceeding 1.5^{o}C becomes 'likely'. For example, Leach et al. [11] introduced a new metric—an 'adaptation/mitigation timescale'—to capture this thinking, i.e. calculating the remaining time until a given temperature target is exceeded if the current rate of warming continues. Instead of inferring from carbon budgets estimated by model simulations, Leach et al. [11] used observational data alone, an approach claimed to be more scientifically rigorous

than relying on models (see also ref. 12). Their approach provided an important basis for the IPCC SR15's estimate of the remaining time to reach 1.5°C—a likely range of 12-34 years from 2018 [1]. This is where the '12 years' rhetoric originates.

The discursive translation of the UNFCCC's objective of avoiding 'dangerous climate change' can hence be traced: anchored by a temperature target, converted to the quantity of cumulative CO_2 emissions and most recently recalculated into the time remaining to a 'climate deadline', i.e. the 'due date' for exhausting the remaining carbon budget at present levels of CO_2 emissions. This climate deadline has been given public expression through the 'ticking clock' metaphor; clocks that are constantly counting down each second until the allowable carbon budget is exhausted. For example, Concordia University in Canada (https://www.concordia.ca/news/climateclock.html) and the Mercator Research Institute on Global Commons and Climate Change in Germany (https://www.mcc-berlin.net/en/research/co2-budget.html) both operate countdown clocks on their websites, showing the time remaining before the carbon budgets for 1.5°C and 2°C are exhausted.

From a communication perspective this translation is understandable. Neither global temperature nor carbon budgets convey any great sense of urgency to non-experts [6], whereas time—and the associated notion of a deadline—is a metric that converts the abstract, statistical notion of climate change to a more recognisably human experience [13]. Rather than degrees Celsius rise in temperature or gigatonnes of CO_2 emitted, the ticking countdown clock sends an alarming message to the public of time slipping away.

Trouble with extending deadline

However, setting a near-term deadline to urge immediate policy actions could do the opposite to what is intended. The speed of the countdown to a climate deadline is set by the rate of CO_2 emissions. Emissions reductions slow the countdown. Achieving net-zero CO_2 emissions before exceeding 1.5°C would stop the clock. Net negative emissions through the use of carbon dioxide removal methods would 'turn back' the clock. While policymakers are urged to take policy actions to meet the deadline, they might instead be motivated to extend the deadline. There are several ways this might be done.

One way would be to shift some of the benchmarks [14]. For example, time could be 'added' to the clock by allowing a temporary overshoot of the temperature threshold. In overshoot scenarios, there are two 'deadlines' for the carbon budget, differing by how the budget is defined—either when a specific temperature threshold is first exceeded or else when the temperature returns to this threshold at a later point in time [15]. If the budget was defined in the latter way, overshoot could significantly extend the deadline, which would

provide policymakers with a source of political flexibility to avoid the appearance of policy failure [16].

Alternatively, policymakers might be trapped into more problematic practices of deadline extension. The psychology of 'scarcity' (or 'having less') [17] means that time scarcity elicits greater focus of mind, leading people to engage more deeply with the issue at hand. On the other hand, such a narrowing of people's attention means that other issues which appear to be less time-sensitive are neglected. Importantly, scarcity can also lead people to 'overborrow'—i.e. insufficient attention is paid to whether the benefits of borrowing outweigh its cost [17]. That is, when facing a tight deadline people will be likely to 'borrow time' by seeking extensions.

This might then open the door for another way to extend the deadline—using solar geoengineering, sometimes seen as an emergency stop-gap measure to slow the rate of warming or shave off overshoot above the temperature threshold [18]. Either way, the original deadline appears to have been met but in a roundabout way. Although doing nothing to reduce CO_2 emissions, solar geoengineering can stop warming quickly, in effect 'borrowing time' for emissions reductions through keeping global temperature constant. The problem is that the time borrowed through solar geoengineering can only be paid back by large-scale carbon removal. If such pay-back doesn't happen, the original deadline will need to be extended indefinitely [19]. This is the cost of 'overborrowing'.

The political danger of deadline-ism

Pushing hard to meet a deadline may also cause (unintentionally) dangerous political side effects. For example, deadline-ism incubates the political opportunism of declaring a climate emergency. It is no surprise that new political movements calling for the declaration of a 'climate emergency' in parliaments, cities, schools and universities have arisen in the months after the release of the IPCC SR15 (see https://www.theclimatemobilization.org/climate-emergency-declarations).

The rhetoric of emergency emerges from the worldview of millenarianism and its conception of 'compressed time' that calls for immediate actions before it is too late [20]. However, regardless of the original intentions, an empty call for emergency 'actions' can be interpreted in myriad ways. In the worst case, the emergency rhetoric could become 'stolen rhetoric', used as justification for solar geoengineering and potentially for more authoritarian forms of governance and regulation [20, 21].

A more fundamental problem with deadline-ism is that it might incite cynical, cry-wolf responses and undermine the credibility of climate science when an anticipated disaster does

not happen. The imagery of deadlines and countdown clocks offers an illusory 'cliff-edge' after which the world heads inevitably to its imminent demise. It promulgates the imaginary of extinction and civilisational collapse. However, the impacts of climate change are more likely to be intermittent, slow and gradual.

Of course this does not mean that climate change is not a serious challenge. The risks of unfolding climate change need to be taken seriously, but it would be a mistake to take the claims of a climate deadline literally. Nevertheless, the scarcity mindset created by countdown clocks narrows measures of policy success to the single metric of meeting a deadline—climate policies that merely 'hit the numbers' are created and valorised. Other considerations such as the justice or sustainability of policies get overlooked.

On top of this, the alarming message conveyed by deadline-ism will only ever resonate with particular social groups, mostly those that are already predisposed to heightened concern about climate change. To others, the message can be alarm*ist* and polarising, alienating them and restricting the possibility for crafting enduring bipartisan solutions. Climate change is a 'wicked social problem', one that must be resolved and renegotiated, over and over again [22]. Deadline-ism is at once both ineffectual and self-defeating.

The political responsibility of science

This rise of climate deadline-ism raises a central question about the role of science in politics. Despite good intentions, the rhetoric of a 2030 deadline is the political (mis)use of science for setting arbitrarily an artificial deadline [23]. Whilst the rhetoric is usually seen by scientists as a misleading interpretation of the IPCC findings [24], so far the IPCC and most climate scientists have kept silent, thereby implicitly appearing to endorse it. However, given that the IPCC's SR15 report helped create the condition for this rhetoric, as the institutional authority of climate science the IPCC should take responsibility for more actively engaging in political conversations around it.

After accepting an invitation from the UNFCCC to prepare a special report on 1.5^{o}C, the IPCC increasingly finds itself in a catch-22 position: operating under a singular regime of consensual policy neutrality, yet trying to meet the different expectations of governmental policymakers and a new generation of civic activists [25]. Now the IPCC faces a challenge to its historical stance of policy neutrality. To remain silent about the 2030 deadline rhetoric is perhaps a safe option for the IPCC. It can retreat into a comfort zone that appears to preserve its integrity as a policy-neutral advisor.

But because of the dangers of climate deadline-ism which we have outlined, this would be *irresponsible*.

The alternative would be to challenge the political rhetoric of 'science says we have only 12 years left'. This may invite a backlash from activists that the IPCC has become too political. However, the IPCC should recognise that the knowledge it produces is already unavoidably political. It should therefore act as a politically-responsible agent in the public sphere and challenge openly the credibility of this deadline rhetoric.

The rise of deadline-ism is but the latest example that climate science has an inescapably political dimension and that acknowledgement of this by the IPCC is long overdue. The IPCC can no longer hide its political responsibility behind the 'neutrality' of its science.

References

1. *Global Warming of 1.5°C* (IPCC, 2018).
2. Watts, J. *We Have 12 Years to Limit Climate Change Catastrophe, Warns UN* https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report (2018).
3. *United Nations Framework Convention on Climate Change* (UNFCCC, 1992).
4. Leemans, R. & Vellinga, P. *Curr. Opin. Environ. Sustain.* **26–27**, 134–142 (2017). http://dx.doi.org/10.1016/j.cosust.2017.07.010
5. Morseletto, P., Biermann, F. & Pattberg, P. *Int. Environ. Agreements Polit. Law Econ.* **17**, 655–676 (2017). http://dx.doi.org/10.1007/s10784-016-9336-7
6. Knutti, R., Rogelj, J., Sedlácek, J. & Fischer, E. *Nat. Geosci.* **9**, 13–18 (2016). http://dx.doi.org/10.1038/ngeo2595
7. Schleussner, C.-F. et al. *Nat. Clim. Chang.* **6**, 827–835 (2016). http://dx.doi.org/10.1038/nclimate3096
8. MacDougall, A. *Curr. Clim. Chang. Reports* **2**, 39–47 (2016). http://dx.doi.org/10.1007/s40641-015-0030-6
9. Millar, R., Allen, M., Rogelj, J. & Friedlingstein, P. *Oxford Rev. Econ. Policy* **32**, 323–342 (2016). http://dx.doi.org/10.1093/oxrep/grw009
10. Matthews, H.D., Solomon, S. & Pierrehumbert, R. *Philos. Trans. R. Soc. A* **370**, 4365–4379 (2012). http://dx.doi.org/10.1098/rsta.2012.0064
11. Leach, N. et al. *Nat. Geosci.* **11**, 574–579 (2018). http://dx.doi.org/10.1038/s41561-018-0156-y
12. Tokarska, K. *Nat. Geosci.* **11**, 546–547 (2018). http://dx.doi.org/10.1038/s41561-018-0175-8
13. Jasanoff, S. *Theory, Cult. Soc.* **27**, 233–253 (2010). http://dx.doi.org/10.1177/0263276409361497
14. Geden, O. *Nat. Geosci.* **11**, 380–383 (2018). http://dx.doi.org/10.1038/s41561-018-0143-3

15. Rogelj, J. et al. *Nat. Clim. Chang.* **6**, 245–252 (2016). http://dx.doi.org/10.1038/nclimate2868
16. Geden, O. & Löschel, A. *Nat. Geosci.* **10**, 881–882 (2017). http://dx.doi.org/10.1038/s41561-017-0026-z
17. Shah, A., Mullainathan, S. & Shafir, E. *Science.* **338**, 682–685 (2012). http://dx.doi.org/10.1126/science.1222426
18. MacMartin, D., Ricke, K. & Keith, D. *Philos. Trans. R. Soc. A* **376**, 20160454 (2018). http://dx.doi.org/10.1098/rsta.2016.0454
19. Asayama, S. & Hulme, M. *Clim. Policy* (2019). http://dx.doi.org/10.1080/14693062.2019.1623165
20. Heyward, C. & Rayner, S. in *Anthropology and Climate Change: From Actions to Transformations* (eds. Crate, S. & Nuttall, M.) 86–104 (Routledge, 2016).
21. Sillmann, J. et al. *Nat. Clim. Chang.* **5**, 290–292 (2015). https://doi.org/10.1038/nclimate2539
22. Grundmann, R. *Nat. Geosci.* **9**, 562–563 (2016). http://dx.doi.org/10.1038/ngeo2780
23. Evensen, D. *Nat. Clim. Chang.* **9**, 428–430 (2019). https://doi.org/10.1038/s41558-019-0481-1
24. Allen, M. *Why Protesters Should Be Wary of '12 Years to Climate Breakdown' Rhetoric* https://theconversation.com/why-protesters-should-be-wary-of-12-years-to-climate-breakdown-rhetoric-115489 (2019).
25. Hulme, M. *Nat. Clim. Chang.* **6**, 222–224 (2016). http://dx.doi.org/10.1038/nclimate2939

Acknowledgements

S.A. acknowledges the support of the Japan Society for the Promotion of Science, Grants-in-Aid for JSPS Research Fellow (17J02207). W.P. acknowledges the support of the Economic and Social Research Council Future Leaders Research programme, Making Climate Social project (ES/N002016/1)

ORCID

Shinichiro Asayama http://orcid.org/0000-0001-6817-3862
Rob Bellamy http://orcid.org/0000-0001-9592-705X
Oliver Geden http://orcid.org/0000-0001-9456-4218
Warren Pearce http://orcid.org/0000-0001-6884-3854
Mike Hulme http://orcid.org/0000-0002-1273-7662