



Why setting a climate deadline is dangerous

DOI:

[10.1038/s41558-019-0543-4](https://doi.org/10.1038/s41558-019-0543-4)

Document Version

Accepted author manuscript

[Link to publication record in Manchester Research Explorer](#)

Citation for published version (APA):

Asayama, S., Bellamy, R., Geden, O., Pearce, W., & Hulme, M. (2019). Why setting a climate deadline is dangerous. *Nature Climate Change*. <https://doi.org/10.1038/s41558-019-0543-4>

Published in:

Nature Climate Change

Citing this paper

Please note that where the full-text provided on Manchester Research Explorer is the Author Accepted Manuscript or Proof version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version.

General rights

Copyright and moral rights for the publications made accessible in the Research Explorer are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Takedown policy

If you believe that this document breaches copyright please refer to the University of Manchester's Takedown Procedures [<http://man.ac.uk/04Y6Bo>] or contact uml.scholarlycommunications@manchester.ac.uk providing relevant details, so we can investigate your claim.



1 **Why setting a climate deadline is dangerous**

2

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

5 (1) Faculty of Political Science and Economics, Waseda University, Tokyo, Japan

6 (2) Department of Geography, University of Cambridge, Cambridge, UK

7 (3) Department of Geography, University of Manchester, Manchester, UK

8 (4) German Institute for International and Security Affairs, Berlin, Germany

9 (5) iHuman, Department of Sociological Studies, University of Sheffield, Sheffield, UK

10 * Corresponding author: mh903@cam.ac.uk

11

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

17

18 In October 2018, the IPCC released its Special Report on 1.5°C (SR15), which concluded that
19 global temperature is likely to reach 1.5°C above pre-industrial levels between 2030 and 2052
20 if the current rate of warming continues [1]. Sensational news headlines interpreting this as a
21 12 year deadline for the world to avoid catastrophic climate change [2] sparked widespread
22 calls for urgent radical actions, ranging from the Green New Deal proposal in the USA, the
23 youth activism of climate school strikes around the world, civil disobedience by the Extinction
24 Rebellion group to the declaration of a climate emergency by the UK parliament. The world
25 suddenly appears to have limited time in which to act decisively on climate change—and, if not,
26 to be resigned to our climate fate.

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

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

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

39

40 **Quantifying ‘dangerous’ climate change**

41

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

49 Since the mid-1990s, 2°C of warming above the pre-industrial condition was
50 increasingly adopted as the temperature threshold to avoid dangerous climate change [5]. The
51 2015 Paris Agreement introduced 1.5°C as an alternative warming target [7]—although it
52 seemed more a rhetorical aspiration at the time of the Paris talks. However, since the
53 publication of the IPCC SR15 in 2018, much public campaigning has de facto reframed what is
54 considered a “safe” limit of temperature change, from 2°C to 1.5°C.

55 The discovery of the near-linear relationship between a peak global temperature and
56 cumulative CO₂ emissions [8] gave an opportunity for a different quantification of the climate
57 challenge. The concept of a ‘carbon budget’ has reframed the mitigation challenge from a flow
58 problem (i.e., how many emissions in a given year) to a stock problem (i.e., total allowable CO₂
59 emissions over a time period) [9]. Estimating the allowable carbon budget to limit global
60 warming to a given level has quite rapidly become a central focus of climate modelling
61 research and shaped the newly dominant policy paradigm [10].

62

63 **Countdown to climate ‘deadline’**

64

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

72 than relying on models (see also ref. 12). Their approach provided an important basis for the
73 IPCC SR15's estimate of the remaining time to reach 1.5°C—a likely range of 12-34 years from
74 2018 [1]. This is where the '12 years' rhetoric originates.

75 The discursive translation of the UNFCCC's objective of avoiding 'dangerous climate
76 change' can hence be traced: anchored by a temperature target, converted to the quantity of
77 cumulative CO₂ emissions and most recently recalculated into the time remaining to a 'climate
78 deadline', i.e. the 'due date' for exhausting the remaining carbon budget at present levels of
79 CO₂ emissions. This climate deadline has been given public expression through the 'ticking
80 clock' metaphor; clocks that are constantly counting down each second until the allowable
81 carbon budget is exhausted. For example, Concordia University in Canada
82 (<https://www.concordia.ca/news/climateclock.html>) and the Mercator Research Institute on
83 Global Commons and Climate Change in Germany ([https://www.mcc-
84 berlin.net/en/research/co2-budget.html](https://www.mcc-berlin.net/en/research/co2-budget.html)) both operate countdown clocks on their websites,
85 showing the time remaining before the carbon budgets for 1.5°C and 2°C are exhausted.

86 From a communication perspective this translation is understandable. Neither global
87 temperature nor carbon budgets convey any great sense of urgency to non-experts [6],
88 whereas time—and the associated notion of a deadline—is a metric that converts the abstract,
89 statistical notion of climate change to a more recognisably human experience [13]. Rather
90 than degrees Celsius rise in temperature or gigatonnes of CO₂ emitted, the ticking countdown
91 clock sends an alarming message to the public of time slipping away.

92

93 **Trouble with extending deadline**

94

95 However, setting a near-term deadline to urge immediate policy actions could do the opposite
96 to what is intended. The speed of the countdown to a climate deadline is set by the rate of
97 CO₂ emissions. Emissions reductions slow the countdown. Achieving net-zero CO₂ emissions
98 before exceeding 1.5°C would stop the clock. Net negative emissions through the use of
99 carbon dioxide removal methods would 'turn back' the clock. While policymakers are urged to
100 take policy actions to meet the deadline, they might instead be motivated to extend the
101 deadline. There are several ways this might be done.

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

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

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

118 This might then open the door for another way to extend the deadline—using solar
119 geoengineering, sometimes seen as an emergency stop-gap measure to slow the rate of
120 warming or shave off overshoot above the temperature threshold [18]. Either way, the
121 original deadline appears to have been met but in a roundabout way. Although doing nothing
122 to reduce CO₂ emissions, solar geoengineering can stop warming quickly, in effect ‘borrowing
123 time’ for emissions reductions through keeping global temperature constant. The problem is
124 that the time borrowed through solar geoengineering can only be paid back by large-scale
125 carbon removal. If such pay-back doesn’t happen, the original deadline will need to be
126 extended indefinitely [19]. This is the cost of ‘overborrowing’.

127

128 **The political danger of deadline-ism**

129

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

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

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

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

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

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

160

161 **The political responsibility of science**

162

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

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

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

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

185 The rise of deadline-ism is but the latest example that climate science has an
186 inescapably political dimension and that acknowledgement of this by the IPCC is long overdue.
187 The IPCC can no longer hide its political responsibility behind the ‘neutrality’ of its science.
188

189 References

- 190 1. *Global Warming of 1.5°C* (IPCC, 2018).
- 191 2. Watts, J. *We Have 12 Years to Limit Climate Change Catastrophe, Warns UN*
192 [https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-](https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report)
193 [exceed-15c-warns-landmark-un-report](https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report) (2018).
- 194 3. *United Nations Framework Convention on Climate Change* (UNFCCC, 1992).
- 195 4. Leemans, R. & Vellinga, P. *Curr. Opin. Environ. Sustain.* **26–27**, 134–142 (2017).
196 <http://dx.doi.org/10.1016/j.cosust.2017.07.010>
- 197 5. Morseletto, P., Biermann, F. & Pattberg, P. *Int. Environ. Agreements Polit. Law Econ.* **17**,
198 655–676 (2017). <http://dx.doi.org/10.1007/s10784-016-9336-7>
- 199 6. Knutti, R., Rogelj, J., Sedláček, J. & Fischer, E. *Nat. Geosci.* **9**, 13–18 (2016).
200 <http://dx.doi.org/10.1038/ngeo2595>
- 201 7. Schleussner, C.-F. et al. *Nat. Clim. Chang.* **6**, 827–835 (2016).
202 <http://dx.doi.org/10.1038/nclimate3096>
- 203 8. MacDougall, A. *Curr. Clim. Chang. Reports* **2**, 39–47 (2016).
204 <http://dx.doi.org/10.1007/s40641-015-0030-6>
- 205 9. Millar, R., Allen, M., Rogelj, J. & Friedlingstein, P. *Oxford Rev. Econ. Policy* **32**, 323–342
206 (2016). <http://dx.doi.org/10.1093/oxrep/grw009>
- 207 10. Matthews, H.D., Solomon, S. & Pierrehumbert, R. *Philos. Trans. R. Soc. A* **370**, 4365–4379
208 (2012). <http://dx.doi.org/10.1098/rsta.2012.0064>
- 209 11. Leach, N. et al. *Nat. Geosci.* **11**, 574–579 (2018).
210 <http://dx.doi.org/10.1038/s41561-018-0156-y>
- 211 12. Tokarska, K. *Nat. Geosci.* **11**, 546–547 (2018).
212 <http://dx.doi.org/10.1038/s41561-018-0175-8>
- 213 13. Jasanoff, S. *Theory, Cult. Soc.* **27**, 233–253 (2010).
214 <http://dx.doi.org/10.1177/0263276409361497>
- 215 14. Geden, O. *Nat. Geosci.* **11**, 380–383 (2018). <http://dx.doi.org/10.1038/s41561-018-0143-3>

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

237

238 **Acknowledgements**

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

243

244 **ORCID**

245 Shinichiro Asayama <http://orcid.org/0000-0001-6817-3862>

246 Rob Bellamy <http://orcid.org/0000-0001-9592-705X>

247 Oliver Geden <http://orcid.org/0000-0001-9456-4218>

248 Warren Pearce <http://orcid.org/0000-0001-6884-3854>

249 Mike Hulme <http://orcid.org/0000-0002-1273-7662>

250