



## Why setting a climate deadline is dangerous

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

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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 CO<sub>2</sub> 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 CO<sub>2</sub>  
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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> emissions. Emissions reductions slow the countdown. Achieving net-zero CO<sub>2</sub> 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 CO<sub>2</sub> 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>

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