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PERSPECTIVE

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COVID and Climate: Similarities and differences

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Abstract

The cases of COVID-19 and climate change highlight the central role of scientific research which supposedly guides political decision-making. Models and scenarios assume a central role. However, science cannot tell us what to do. While it provides important facts and metrics, uncertainties remain and decisions are based on considerations pertaining to fundamental values. Apart from these similarities, my aim is to emphasize some significant differences. They relate to policy goals, international cooperation, data and metrics, values, and the time horizons involved.

This article is categorized under:

Social Status of Climate Change Knowledge > Climate Science and Decision Making

KEYWORDS

climate change, COVID-19, data and models, international cooperation

1 | INTRODUCTION

Debates about the role of expertise in policy making have highlighted the crucial, if sometimes uneasy, relationship between knowledge and decision-making.[1] Recent high-profile examples include climate change (CC) and the COVID-19 pandemic (C-19). In both cases there is an intertwinement between facts and values and a tension between scientific uncertainty and the justification of political action. This sometimes leads to political solutions that are perceived as unsound or unsatisfactory, too weak, or too strong. Both appeal to fundamental values, such as wealth and health, or freedom and solidarity.

In this paper I want to discuss some important similarities and differences between C-19 and CC. My main point is that the differences are more pronounced than the similarities. The argument has the following structure. In the first section (1) I will discuss some similarities. In the following sections five differences will be discussed: (2) policy goals; (3) international cooperation; (4) data and metrics; (5) values; and (6) time horizons.

The task I want to address is not easy. The main reason is that it is notoriously difficult to write about a case which is fast evolving in real time. Whatever one writes about C-19 now might be overtaken by events in a few months. In addition, the published social science research grows by the day, and it is impossible to "take stock" in a traditional sense. Nevertheless, with these caveats in mind, I embark on my task.

Several studies have compared C-19 to CC, emphasizing specific aspects. Buck et al. (2020) look at C-19 and solar engineering, highlighting the role of policy goals and metrics, models and scenarios, different time horizons and international cooperation. Baldwin and Lenton (2020) compare ozone depletion, CC, and C-19. They emphasize the need

for a science-led policy response and the dangers of disinformation campaigns. Hulme et al. (2020) compare the different meanings of the term "crisis" in both cases, Lidskog et al. (2020) compare the different spatial and temporal aspects in both cases. I will pick up some issues raised in these contributions, but also refer to other recent research about C-19.

2 | SIMILARITIES

CC has been described as a wicked problem, with the prospect that we only can manage the problem better or worse, not solve it once and for all (Grundmann, 2016; Rayner, 2006; Rittel & Webber, 1973). The verdict is still out with regard to C-19. The quick development of vaccines has given hope that successful pharmaceutical treatments will tame the problem. Initial enthusiasm has given way to a more sober assessment as the virus has shown several mutations which may hinder the vaccine effectiveness (Vogel & Kupferschmidt, 2021). Nevertheless, the availability of vaccines could be seen as a "technological core" which will be refined over time (Sarewitz & Nelson, 2008) so that the problem can be solved. Still, vaccine hesitancy may be another force that could limit such efforts (Jane et al., 2020; Jasanoff et al., 2021). Only the future will tell if C-19, like climate, will be a problem that requires our constant attention (Verweij et al., 2006).

In both cases scientific uncertainties persist. In climate science one of the most fundamental uncertainties relates to climate sensitivity, the long-term temperature increase as a result of greenhouse gas (GHG) concentrations, usually gauged as a doubling of pre-industrial concentrations. Scientists have come up with a range, not a definite number. The range is large enough to accommodate vastly different policy options (Grundmann & Rödder, 2019). In the case of C-19 there are arguably many more unknowns, not least due to the fact that this is a new disease and science needs time to construct an evidence base (Pearce, 2020).

No matter how developed the scientific knowledge base is, there is a political imperative to take decisions. While science provides information about knowns and unknowns, experts make judgments about what to do (Grundmann, 2018). In both cases there is scientific uncertainty, the stakes are high, and decisions urgent (Cairney, 2020; Funtowicz & Ravetz, 1993). The question of uncertainty is transformed into the question of what we should do, and the issue of precautionary action becomes pressing (Stirling, 2007).

The CC discourse in many countries is dominated by scientific voices. Scientists act as commentators in public, sometimes in a role of an open, sometimes of a disguised advocate (Pielke, 2007). Their narrative is that the science is clear, time is running out, and we need to act now. Massive GHG reductions are demanded to avoid catastrophic consequences. The alleged "scientific consensus" is the bedrock on which actions should be based. What is more, the communication of this consensus is seen as an important element in a strategy to bring about ambitious climate policies (Cook et al., 2013; for a critique see Pearce et al., 2017). Those who disagree are easily marginalized and ostracized as deniers, "merchants of doubt," or "anti-science" (Oreskes & Conway, 2012; for a critique see Grundmann 2013).

Similar to CC, scientists have been prominent in public. C-19 seems to be the natural domain of epidemiologists and virologists, with social scientists, including economists and psychologists, much more on the side-lines (Pearce, 2020). And like in the climate debate, attempts have been made to emphasize "the scientific consensus" (Alwan et al., 2020) with some commentators interpreting the C-19 case as a problem of misinformation. Extending the narrative on CC, where "merchants of doubt" are the culprits for stalling progress, a similar narrative denounces the "flood of fake news" which allegedly makes people blind to the challenge. I think such an interpretation is naïve and mistaken. Attempts at controlling the information infrastructure, for example by banning certain voices, or by emphasizing "correct information," will have the opposite effect from its intended goal. In both cases belief formation should be understood in terms of "cultural cognition" (Kahan, 2012). As a gamut of social science research tells us, rejection of official information is related to a lack of trust in public institutions (Hobson-West, 2003; Irwin & Wynne, 1996; Reicher & Stott, 2020), not a public misunderstanding of science.

A final similarity relates to the role of modeling which is evident in both cases. Climate models and scenarios have dominated scientific research and been communicated widely in public (Borie et al., 2021; Grundmann & Stehr, 2010). These can be useful tools to get an idea about possible future developments. However, there is always a risk to interpret model results as predictions which are then seen to be falsified by real developments, thus undermining their credibility. In CC, integrated assessment models (IAMs) have incorporated physical and economic aspects into ever more complex models (see Peng et al., 2021). IAMs have been criticized heavily, mainly on methodological grounds (see Pindyck, 2017). With C-19, epidemiological modeling, while dominant, has not included economic, social, or psychological dimensions. For better or worse, there are no IAMs in COVID-19. Nevertheless, in both cases models are used to justify policies. The use of best- and worst-case scenarios is a contested matter. Again, both extremes are used to justify policies.

To sum up, both cases are similar in that they show scientific uncertainty, pressure to take decisions, alleged science denial, and a central role of models and scenarios for legitimizing policies. I now turn to the differences.

3 | CLIMATE AND C-19: WHAT GOALS?

The policy goals in CC are stated explicitly in international commitments via the process under the UNFCCC: stabilization of climate, avoiding dangerous warming, that is, limiting a warming increase to under 2°C. This has been agreed by the Conference of the Parties in 2015. Nations are supposed to implement this policy through a "pledge and review" process. McLargen and Markusson (2020) argue that there was a shift in policy goals over time. It started in Kyoto (1997) with percentage emission cuts, followed by a focus on concentrations in Copenhagen (2009), then on cumulative carbon budgets in Doha and Durban (2011, 2012), and finally on temperature targets in Paris (2015). I would argue that while such differences between such goals can be detected, they are closely linked. The carbon budget is a numerical value that has its equivalent in a number that expresses atmospheric GHG concentrations, and in a number that projects future warming, via the concept and metrics of radiative forcing. In this sense there has been little change over time: the different metrics are subordinated under the policy goal of avoiding dangerous warming, and they can be translated into each other. I know it is more complicated than that, there are ranges of numbers, and model assumptions that can lead to different outcomes in models and scenarios. What matters for the present purpose are the stability of the main policy goal over time, and a battery of stabilized metrics.

With C-19 things are different. There are metrics that translate into each other, but only for a short time period. The number of infected people does not equate over time to a number of hospitalizations, ICU admissions, or deaths. Progress in treatment and prevention has changed these ratios fundamentally. New variants of the virus may change this again.

Governments were keen to promise a "return to normality" via eradication of the virus, vaccination, improved treatment, and non-pharmaceutical interventions. Sometimes some governments have stated the eradication of the virus as their goal, halting the spread of the disease, or keeping the health system going. Even after the roll-out of vaccines policy goals range from "zero-COVID" to "living with COVID."

4 | INTERNATIONAL COOPERATION

In 1992 an international governance structure was established by the UN which ever since has institutionalized CC as a topic for governments, and the legal instruments to deal with this issue through a mechanism of ratification of international treaties (Keohane & Victor, 2016). No such international governance body exists for C-19. Attempts at international coordination and cooperation are minimal (Brown & Susskind, 2020; Buck et al., 2020), although some collaboration is evident in vaccine development and delivery (Kupferschmidt, 2020).

The international body which is relevant here, the World Health Organisation (WHO), has a broad mandate which is "the attainment by all peoples of the highest possible level of health." In order to achieve its objective, it sees its function as being the directing and coordinating authority on international health work. It establishes and maintains effective collaboration with the United Nations, specialized agencies, governmental health administrations, and professional groups. It assists governments, upon request, in strengthening health services; furnishes appropriate technical assistance and, in emergencies, necessary aid upon the request or acceptance of governments (World Health Organization, 2005).

This brief comparison shows how in both cases we see a difference in the kind and scale of response strategies. While the IPCC provides unified metrics, it does not have an advisory function. CC is being addressed through internationally coordinated research (IPCC) and policy goals (UNFCCC), something which is lacking in C-19. The WHO does not provide standardized metrics (and it could not possibly do so, given the novelty of the disease and the lack of an established evidence base). But it does have an advisory function across its member states.

5 | THE ROLE OF DATA AND METRICS

Ever since governments started using data in a systematic way to aid decision-making and justify decisions, the interested use of data as political weapon was a major concern. This comment on 18th century England captures it well:

> Ministers, parliamentarians, and pamphleteers were all prepared to use numbers to establish or promote policy positions. Such debate was, of course, often self-interested and the numbers employed were unreliable if not downright lies—the point is simply to stress the evident willingness which existed to employ quantification as one weapon in the arsenal of the politician, commentator, lobbyist, and projector (Hoppit, 1996, p. 531).

As outlined above, the IPCC has developed an accepted toolkit of metrics. It has set up national GHG inventories, and agreed-upon methods to measure emissions and emission reductions. This task proves to become especially relevant after the Paris Agreement as countries engage in a pledge and review process where reliable and uncontroversial data is needed. A special Task Force developed and refines an internationally agreed methodology for the calculation and reporting of national GHG emissions and removals, and to encourage the use of this methodology by parties to the UNFCCC (Siebenhüner, 2003; UNFCCC, 1992).

As a result, to take one example, no country disputes the figures about their domestic GHG emissions. However, while the IPCC is able to frame the problem in specific ways, it is not in a position to provide advice to governments, it does not suggest policy measures to decision-makers (Baldwin & Lenton, 2020; Bodansky, 1993; Pielke, 2007; Sundqvist et al., 2018). Its mission is to be policy relevant, yet policy neutral.

In the case of C-19 relevant metrics include the number of infections and vaccinations, the reproduction rate, number of tests, hospital admissions, or mortality. Countries have different data collection and presentation systems. Even where they use the same software platforms, for example, the ArcGIS Experience Builder, the range, format, and detail of data are not comparable across countries. In addition, unreliable procedures at the national level make the problem worse (Clough, 2020). The authors of one of the platforms that present comparative data have complained that "[t]o properly monitor the impact of the pandemic we would need metrics that are unfortunately not available" (https://ourworldindata.org/coronavirus). This becomes a practical issue when countries impose restrictions on international travel, using inter alia data on infection rates. While the EU uses data from the European Centre for Disease Prevention and Control, countries like Switzerland and the UK do not. Furthermore, the criteria for compiling lists of "high risk" countries involve other aspects (such as the presumed prevalence of new variants) and are thus rather opaque. Governments also seem to follow a logic of reciprocity (retaliation) when adding countries to their "red" lists.

6 | THE ROLE OF VALUES

Where political decisions are justified by scientific information but the science cannot provide certainty or practical solutions, the role of values becomes especially important. No matter how much we know, what we see as a solution to a problem needs to resonate with our deeply held convictions about what is right and wrong (Hulme et al., 2020). These values enter the experts' judgment when developing courses of action. Those who are most vulnerable to CC impacts tend to be poorer nations, and future generations. In terms of values, solidarity and individualism are conflicting (Verweij et al., 2006). This value conflict manifests itself in the many difficulties and failures to implement effective climate policy goals.

The most vulnerable in the C-19 pandemic are the elderly and the socio-economically disadvantaged groups, often in poor health (Horton, 2020). The principle of (tacit) solidarity arguably underpinned blanket mobility restrictions, as the young had not to fear so much from the disease but were still included in the restrictions (Buck et al., 2020). Solidarity raises the question of fairness: if the burden from government controls falls disproportionally on different groups, interest mediation and cross subsidies are required. Again, in contrast to C-19, the UN has established several mechanisms to address some of these concerns, for example the Green Climate Fund.

Some prominent voices have made the case for freedom and economic well-being, pointing to dangers of totalitarianism and disastrous effects of C-19 restrictions on people's wealth and health (Celermajer & Nassar, 2020). Letting the virus spread among the young has been suggested, while still shielding the vulnerable from infection. Utilitarian arguments have been put forward about the trade-offs of continuing C-19 controls, and their overall negative social costs (see Eyal, 2020, p. 22 for critical discussion).

Protecting the vulnerable is a collective action problem. Allowing individuals taking personal risks is not a sensible strategy as this would make the spread of infections more likely. Government imposed controls may thus be required, which means limiting individual liberties. This leads to an interesting difference when it comes to government controls in the case of CC and the pandemic. Pondering the repeated failure of ambitious climate policies, Roger Pielke

Jr. established "the iron law of climate politics." It says that "when the environment and economy are presented as trade-offs, the economy invariably wins" (Pielke, 2010, p. 49). What we have seen so far in the C-19 crisis, this law does not apply here. Governments across the world have adopted measures that have severely hurt their economies. They seem to have struck a compromise between these different and opposing values which were embodied in epidemiologists' plea for restrictions on personal freedoms and other social groups wanting to go back to "normal" patterns of social interaction. The compromise is not stable but temporalized: public life has assumed a nervous rhythm of opening up and shutting down.

7 | CRISIS AND EMERGENCY

A final important difference between the two cases relates to the time dimension. Since the 1960s, scientists have thematized CC as a problem which will occur in the future. It is a long-term process where effects of human interventions are visible after decades to centuries. Climate scientists have warned the public about the problem, and tried to persuade them about the reality of the risk. Politicians by and large have now acknowledged the problem, but postpone difficult and unpopular decisions during their term in office. However, some effects of rising temperatures are manifest today and have prompted some protagonists to use the rhetoric of crisis and emergency.

The dynamics of C-19 is different. It plays out in days, weeks, and months. This difference in time horizons has led to a different sense of urgency, and to a focus on the level of decision-making which is quick and effective (Buck et al., 2020). The publics in many countries do not need to be convinced that there is a need for action. Governments have therefore been in the limelight. They have imposed restrictions that would have been difficult to imagine a few years ago. They are conducting large scale experiments with their populations, on their territories (Elden, 2007). This raises many questions, among them the proper acknowledgement of multiple forms of knowledge and normative criteria (Hulme et al., 2020), or the question where the most effective levers for intervention can be found, and if the national focus neglects the local, regional and international dimension. Given the short-term logic of the problem, consequences of policies become manifest during one term of office. National governments thus have the incentive to perform well, or play the blame game, and find scapegoats (Pearse, 2020).

8 | CONCLUSION

I have argued that despite some similarities between both cases, what stands out for me are the many significant differences. While both cases show limits in scientific knowledge and the important role of norms and values for decision-making, there are differences with regard to standardized data, policy goals, international cooperation, and time-horizons. In the climate case, standardized data are available which are linked to clearly defined policy goals. With C-19, such shared metrics do not exist, and the policy goals are shifting all the time. In both cases there is a focus on national dimensions of policy making, but CC also has global governance institutions which have established agreed metrics and policy goals. With COVID such goals are manifold, different across countries and over time. Climate is a long-term problem that has been postponed by governments, while C-19 is happening in real time, forcing politicians' decisions.

Different policies are developed on the basis of value commitments, and appeals to public support. I have focused on freedom and solidarity as partly opposing values, linking freedom to a logic of individualism and libertarianism, and solidarity to a concern about future generations, vulnerable people, and a public health ethos. Through international institutions, CC has established a more stable compromise between these, whereas C-19 still is in a fragile limbo. Here, government restrictions have led to unprecedented economic impacts. Such impacts were to be expected (stay-at-home orders lead to a slowdown of economic activity). It was therefore difficult to predict such interventions, given the prime goal of economic growth in most countries.

Does the comparison enable us to draw lessons? My focus has been on an analytical level and I do not think that some of the issues identified here could be changed at will, within short time periods. Compared to COVID-19, CC seems to be a slow moving issue. It has established international institutions and data infrastructures. COVID-19 is fast moving, and the building of international institutions has not been a priority, perhaps in the belief that the problem will

be over soon. This belief may turn out to be wrong. The hard work of developing international cooperation would seem prudent.

CONFLICT OF INTEREST

The author has declared no conflicts of interest for this article.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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ENDNOTE

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