A tale of two crises: COVID-19 and climate

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ABSTRACT

In response to the COVID-19 pandemic, governments around the world are mobilizing unprecedented public resources to mitigate economic collapse. However, these new programs run the risk of paying insufficient attention to the multiple sustainability crises we face. Climate change, in particular, threatens the very basis for continued human prosperity and requires an equal, if not greater, societal mobilization. In this policy brief, we argue that the response to the coronavirus outbreak also offers an opportunity to advance the climate agenda. Indeed, given that we have scarce resources at our disposal, it is essential that we synergize such efforts. We propose that this can be accomplished in two primary ways: (1) harnessing the disruptive forces of the COVID-19 pandemic to accelerate the decline of carbon-intensive industries, technologies, and practices, and (2) leveraging responses to drive low-carbon innovation. From these two strategies, we outline five principles of “sustainability transition policy” to serve as a guide during these challenging times.

Introduction

There is an emerging societal debate around the COVID-19 and climate crises suggesting that responses to the former, if designed carefully, may also help to address the latter (Galbraith and Otto 2020; Peters 2020; Steffen et al. in press). Despite major differences, we argue that the coronavirus outbreak presents opportunities to advance the climate agenda along with broader sustainability transitions in production and consumption (Cohen 2020; Rosenbloom and Markard 2020). Indeed, it is essential that the societal response to the COVID-19 pandemic (and its aftermath) attend to climate-change mitigation and adopt a synergistic approach where possible.

In the face of the economic collapse ushered in by the coronavirus outbreak, jurisdictions around the world are currently launching economic recovery programs of extraordinary size and scope. The goal is to mitigate widespread unemployment and re-stabilize core industries. However, these programs run the risk of neglecting climate considerations. For example, the German Council of Economic Experts, in its role as an advisory body to the government, submitted in March 2020 a 110-page assessment and policy report without a single mention of sustainability or climate (GCEE 2020).

Worse still, decision makers might channel pandemic response funds into carbon-intensive industries, reinforcing support for status quo trajectories. The Trump administration, for instance, appears poised to bail out the fossil-fuel industry in the United States (Krugman 2020) and the Canadian government is contemplating similar action (Fife, Graney, and Cryderman 2020).

Such responses are seriously misguided. Society should not throw good money after carbon-intensive businesses but rather leverage the COVID-19 pandemic to accelerate movement toward a low-carbon future. The main rationale is that our means are scarce and we face multiple overlapping crises. Given this reality, governments would do well to harness the disruptive forces of the coronavirus outbreak and leverage policy responses to drive the transition to a low-carbon society (Rosenbloom and Markard 2020).

Our analysis proceeds in the following fashion. We begin by arguing that the COVID-19 and climate crises both require immediate and significant action. We next assert that climate change can only be addressed through a fundamental transformation of production and consumption systems, drawing upon the literature on sustainability transitions to conceptualize this transformational challenge. Subsequently, we elaborate what is implied by a
policy orientation that (1) harnesses disruption and (2) leverages the response to the coronavirus outbreak to drive deep decarbonization. We conclude by outlining the five key principles of “sustainability transition policy,” detailing how they can help us navigate the challenges ahead.

Why we cannot wait to address climate change

Although it may seem sensible to reduce engagement with climate change to address the COVID-19 pandemic, this course of action would be shortsighted. Both crises pose extraordinary threats to human prosperity, though the locus, intensity, and immediacy of impacts are not equivalent. The coronavirus outbreak is marked by high-intensity impacts on individuals, health systems, and the economy over months or years, whereas climate change is defined by gradually building impacts on natural and human systems over decades and longer. While the climate crisis might appear less acute, a key issue is that the time to react is running out (Lund and Byrne 2020). The longer we wait the more likely we will be confronted with irreversible damages and negative impacts spiraling out of control (Lenton 2011). This is why the scientific community suggests that immediate policy responses are needed in both cases.

Another reason why governments cannot singularly address the COVID-19 pandemic is that it demands resources on a massive scale. There is limited money and political wherewithal to roll out vast new social, economic, and environmental programs. If states are now mobilizing unprecedented resources to mitigate the economic impacts of the coronavirus outbreak, similar means may not be available to address the climate crisis. Therefore, it is crucial that the financial and institutional capacities to mitigate economic collapse be leveraged to avert calamitous damages further down the road.

To highlight the need for leveraging is not trivial or commonsense. Experiences with earlier crises such as the 2007–2008 financial collapse or the millennium drought in Australia show that policy responses in times of critical need tend to focus on stabilizing incumbent industries and technologies rather than taking the opportunity to realize sustainable transformation (Fuenfschilling and Truffer 2016; Geels 2013; van den Bergh 2013). While the financial crisis spurred some investment in alternatives (e.g., the United States channeled about US$90 billion to clean energy under the roughly US$800 billion American Recovery and Reinvestment Act of 2009), this was far overshadowed by efforts to stabilize incumbents such as banks and automakers (e.g., the United States’ US$700 billion Emergency Economic Stabilization Act of 2008). Similarly, the Australian government responded to the Millenium Drought by making large investments in desalination plants, which promised to extend water consumption practices instead of pursuing major shifts in water use and reuse (Fuenfschilling and Truffer 2016). This tendency to return to established trajectories, despite significant disruptions, can be explained by deep systemic lock-ins.

Lock-in, disruption, and transitions

Climate change is a grand sustainability challenge that experience to date confirms is particularly difficult to resolve (Ferraro, Etzion, and Gehman 2015; Levin et al. 2012; Reid et al. 2010). One of the reasons for this dilemma is that deep lock-ins perpetuate movement in the current carbon-intensive direction. These lock-ins manifest through a range of factors, including longstanding industries and infrastructures, the accumulation of experience and sedimentation of cultural norms around established technologies and institutions, and the self-fulfilling expectations about the persistence of these arrangements (Mattioli et al. 2020; Unruh, 2000).

Socio-technical perspectives (Kemp, Schot, and Hoogma 1998; Rip and Kemp 1998) indicate that far-reaching changes in societal systems such as energy supply, transportation, and agri-food are difficult to realize due to complex interdependencies among technologies, infrastructures, regulations, businesses, user practices, and lifestyles. Engaging with the politics of transitions, lock-in, and resistance to change can also be understood as problems of vested interests—where influential actors seek to prevent major (policy) changes in climate policy and other domains (Meadowcroft 2011; Meckling and Nahm 2019; Shove and Walker 2007).

Yet, despite these strong lock-ins, established systems do change, sometimes even in fundamental ways. Such shifts have been referred to as socio-technical transitions in the innovation studies literature (Geels 2002; Rotmans, Kemp, and van Asselt 2001). Transitions are multi-dimensional (technological, institutional, political, sociocultural), far-reaching shifts in socio-technical systems. Research suggests that transitions tend to occur when established systems are disrupted by external shocks and alternative configurations (technologies, businesses, practices) are available (Geels and Schot 2007; Kemp, Schot, and Hoogma 1998).

A key insight from transition studies is that major shocks like the oil crises in the 1970s or the Fukushima nuclear accident in Japan in 2011 can cause fundamental changes in existing systems. Shocks can trigger new socio-technical
developments such as widespread innovation in renewable energy technologies during the post-oil crisis era but they can also accelerate transformations that are already ongoing such as the deepening shift away from nuclear post-Fukushima (Markard et al. 2020). Public policies can play a key role in harnessing these shocks and guiding systemic changes, for example, to address sustainability concerns (Voß, Bauknecht, and Kemp 2006; Smith, Voß, and Grin 2010). However, policies can also fail to capitalize on crises or work at cross-purposes from sustainability objectives, resulting in a return to established arrangements. A notable instance of this was the 2007–2008 financial crisis.

Another important insight from transition studies is that fundamental changes in production and consumption are required (McMeekin, Geels, and Hodson 2019). Deep decarbonization cannot be achieved by simply optimizing existing systems but only through radically transforming them (Rosenbloom et al. 2020). To be sure, the challenge we are facing is enormous: while initial estimates of the global carbon dioxide (CO₂) emission reductions stemming from the COVID-19 pandemic are approximately 5% for 2020, reductions of above 7% will be required every year to reach the 1.5 °C target (Storrow 2020).

Harnessing disruptive forces to accelerate decline

One strategy to address the climate challenge is to harness disruption. The coronavirus outbreak has seriously unsettled the vast majority of businesses, economic activities, and consumption practices. Despite having detrimental impacts, this dislocation may offer opportunities to break carbon lock-ins and open low-carbon pathways in domains such as energy supply, mobility, tourism, or consumption. Figure 1 depicts, in a stylized fashion, how decline and innovation go hand in hand as key processes of sustainability transitions. The disruptive forces of the COVID-19 pandemic can be used to accelerate decline—in other words, to "shift down" carbon-intensive technologies so that the transition occurs more rapidly than otherwise forecasted to be the case. This acceleration is particularly important as many carbon-intensive infrastructures and assets (e.g., power plants, pipelines, inefficient buildings and heating systems, vehicles, machinery) require replacements or upgrades in the coming years.

Jurisdictions that have implemented programs to address climate change or that have already embarked upon the phase-out of certain unsustainable industries may use the current disruption to accelerate the decline of carbon-intensive industries or practices. One example is coal-fired power generation. Several countries including Canada, Finland, Germany, and Italy have already decided to phase-out coal for climate and health reasons (see poweringpastcoal.org). From a climate perspective, it will be crucial to continue this course of action and to avoid using recovery funds to revitalize the coal industry. Even more, there is an opportunity to accelerate the ongoing phase-out: fiscal stimulus triggered by the coronavirus outbreak could be used to support early retirement or retraining of workers in coal mining and related industries. This acknowledges the very real human cost of the COVID-19 pandemic yet refrains from bailing out carbon-intensive firms (Adkin and Davidson 2020).

The German government, for example, has set aside billions of euros to help create new industries around energy-efficiency technologies in regions of the country that will be adversely affected by the closure of mining and the associated job losses (Oei et al. 2020). Of course, restructuring entire regional economies is a demanding, long-term endeavor for which ongoing strategies and long-term commitments will be required. Earlier experiences with industry decline in British coal mining show that there is a risk that these transformations happen at the expense of local communities (Johnstone and Hielscher 2017). Channeling recovery funds to former workers, regional development initiatives, and new businesses rather than incumbent fossil-fuel firms can be an important first step.

Leveraging policy responses to promote low-carbon innovation

In conjunction with harnessing disruptive forces, policy responses to the COVID-19 pandemic can be leveraged to build the systems of the future and to lay the foundations for desirable low-carbon pathways (Figure 2). On the one hand, this involves advancing green industrial strategies that seek to create new industries, services, and business models.
In this way, recovery programs can be used to expand industrial capacity in low-carbon innovations such as wind and photovoltaics, electric vehicles, heat pumps, and efficiency-enhancing technologies. Such investments would help to accelerate transitions that are already underway in the energy sector (Markard 2018). But similar efforts can also be envisioned for other sectors including, for example, advancing local food provision, organic farming, and non-meat alternatives in the agriculture sector (Reisch, Eberle, and Lorek 2013).

On the other hand, the coronavirus outbreak offers an opportunity to rethink consumption and lifestyles in a more fundamental way. We know that technological innovation can only get us part of the way and that major changes on the “demand side” are needed as well (Shove and Walker 2010; Alfredsson et al. 2018). Unfortunately, many technological improvements in the past have often been offset by increasing levels of consumption (Schor 1999; Sorrell 2009).

The current lock-down and other immediate responses have greatly affected our daily practices and lifestyles (e.g., slowing the pace of living, driving a resurgence in home cooking and baking, increasing the reliance on working remotely and e-commerce, along with limiting non-essential travel). Of course, not all of these changes have positive effects on greenhouse-gas emissions and other sustainability dimensions. And while several changes may be transient phenomena that have the potential to quickly disappear once restrictions are relaxed, the COVID-19 pandemic may catalyze processes of change that can be made last by building out support for a living wage or basic income, greater work-life balance or reduced working hours, and notions of sufficiency (in material accumulation but also travel and consumption in general) or self-sufficiency (local food and energy provision). The opportunity we have is to maintain and establish new low-carbon practices and, even more importantly, to reflect about (and ideally adjust) our needs in a more substantial way. Perhaps re-discovering the benefits of nearby vacations instead of flying to remote destinations, substituting high-frequency business travel with online meetings, and so on.

**Conclusion: Reflecting on sustainability transition policy principles**

Accelerating the decline of carbon-intensive industries, technologies, and practices along with promoting low-carbon innovation form important components of what has been recently termed “sustainability transition policy” (STP) (Rosenbloom et al. 2020). This policy orientation has been offered as an alternative to market-driven logics to address sustainability challenges. In this view, policy making must target systemic and co-evolutionary shifts in energy, agri-food, transportation, and other provisioning systems. These changes not only relate to technologies, infrastructures, and markets but also to actor coalitions, user practices, regulations, and so forth. The notion of STP is best thought of as a continuous, enduring process of policy making, including feedbacks, failures, policy learning, and adaptation (Edmondson, Kern, and Rogge 2019; Rotmans, Kemp, and van Asselt 2001; Voß, Smith, and Grin 2009). This policy making strategy involves a coherent sequence of interacting policy choices—drawing on a mix of instruments (Kern, Rogge, and Howlett 2019)—that together help drive socio-technical changes consistent with long-term pathways to decarbonization (Rosenbloom 2017).

In this concluding section, we lay out five principles of STP that can be used to re-embed climate considerations within responses to the COVID-19 pandemic. First, STP targets both innovation and decline. The former is important to ensure the development of alternatives such as low-carbon technologies as well as their associated businesses and opportunities. The latter is key, as discussed above, to erode lock-ins that perpetuate carbon-intensive arrangements, to support a re-orientation of incumbent actors, and to ensure the timely phase-out of obsolete technologies and practices.

Second, STP is tailored to transition phases. In early stages of a transition, for example, innovation policies can create niches in which new solutions are developed and tested (Raven et al. 2016; Schot and Geels 2008), while in later periods policies can support market formation and diffusion of more sustainable alternatives (Dewald and Truffer 2011; Jacobsson and Lauber 2006). Similar considerations apply to decline. Early on, it is important to signal the termination of certain technologies and consumption practices referred to variously as phase-out (Rogge and Johnstone 2017) or destabilization (Turnheim and Geels 2012)—through long-term
policy targets. Policies such as carbon pricing or specific phase-out regulations can then enforce and accelerate decline (Baranzini et al. 2017; Rosenbloom 2018). Such efforts must remain cognizant of the associated human costs of decline and related equity concerns (Healy and Barry 2017; Hughes and Hoffmann 2020), supporting households and communities as change processes advance.

The abovementioned phasing has particular relevance for the coronavirus crisis which is marked by short-term efforts to mitigate economic collapse and longer-term initiatives aimed at recovery (Steffen et al. in press). Immediate responses should avoid throwing good money after carbon-intensive industries. Instead, they should target sector-specific solutions that can be implemented quickly, have proven effective, and are robust across different future low-carbon scenarios. Examples include expanding new renewables and energy storage, introducing strict energy efficiency standards, prioritizing public transit and bicycles in cities, and providing incentives for electric mobility. Longer-term responses should target investments in infrastructures such as power corridors, train lines, hydrogen networks and public charging stations, as well as other innovations that will be key for more sustainable systems of the future—low-carbon transport, remote workspace technologies, smart cities, integrated e-mobility services, and sustainable tourism. Even more radical and emerging possibilities can also be supported at smaller scales, with a strong role for local and community-based initiatives that can be scaled up as they take hold (Sengers, Wieczorek, and Raven 2019).

A third principle is that STPs are “context sensitive” in the sense that low-carbon transition plans are attuned to particular sectors, jurisdictions, and regional circumstances. The underlying rationale is that there are major differences across sectors, industries, and jurisdictions that make some solutions more or less appropriate for specific contexts. Think of “difficult-to-decarbonize” systems such as agri-food, air travel, or heavy industry (e.g., steel and cement), which require specific, often even radical solutions like a reduction of consumption (flying less), a substitution of products (plant-based proteins, wood-based construction), or new business practices (emphasizing reuse and repairability rather than planned obsolescence) (Bataille 2020). An element of a long-term coronavirus response strategy could be to launch sector-specific innovation initiatives for deep decarbonization, with a particular focus on creating opportunities in those regions hardest hit by COVID-19 disruption.

A fourth principle is to carefully monitor the progress of the transition in order to avoid unwanted effects such as new lock-ins into “dead-end pathways” which are solutions that provide short-term improvements yet have limited long-term potential to reach decarbonization (Layzell and Beaumier 2018). These kinds of lock-ins are particularly problematic if they come with long-lasting infrastructures. For example, natural gas as a substitute for coal-fired power generation falls into this category (Rosenbloom 2020). It promises short-term gains but investments in new pipelines and storage terminals will demand long-term returns and use.

Finally, it is important to account for the crucial relevance of politics. Effective transition policies cannot be enacted without the support of key stakeholders. As a consequence, an important principle of STP is to build strong coalitions of actors (innovators, advocacy groups, new businesses, re-orienting incumbents) who will support the transition as it advances (Meckling et al. 2015). Currently, many incumbent actors that typically have strong influence on policy making are weakened—the state will be needed to ensure their survival. This represents a unique window of opportunity to strengthen the constellation of actors supportive of a transition by, for instance, actively guiding incumbents toward low-carbon business models (e.g., with the state becoming a shareholder) and supporting new or existing proponents (e.g., creating new funding programs for low-carbon innovators).

To clarify, incumbents can play a role in supporting change as they shift their business models over time (Steen and Weaver 2017; Turnheim and Sovacool in press). Bail outs for larger firms outside of the fossil fuel sector might accelerate this diversification process by imposing specific conditions such as equity shares, suspension of stock buybacks and specific sustainability commitments. Similarly, subsidies to industries such as automobiles and agri-food can prioritize more sustainable alternatives (e.g., electric vehicle sales targets and organic farming requirements) (Eriksen 2020). However, any effort to transition these sectors will need to remain attuned to context specific conditions.

Perhaps most importantly however, politics forms the backdrop for new narratives for change. At present, considerable discursive work is being carried out to enmesh responses to both climate change and COVID-19 (Galbraith and Otto 2020; Peters 2020). The idea of “building back better” (United Nations 2020) is already gaining traction and the leveraging approach we offer follows this logic (Rosenbloom and Markard 2020). But this says nothing of the multitude of other narratives that can help promote changes in lifestyles, institutions,
and business practices. The response to the coronavirus pandemic suggests that health, in particular, offers a promising way to realize rapid change. This is also borne out by the health-related storylines that have helped drive the phase-out of coal in certain jurisdictions (Isoaho and Markard in press; Rosenbloom 2018).

In summary, we have shown that strategies and approaches are available to address both the coronavirus and climate crises. Currently, there is a unique opportunity to use the disruptive forces of the COVID-19 pandemic and the associated recovery policies to accelerate the transition to more sustainable, low-carbon systems, industries, and lifestyles. As time is running out for effective climate policies and there are limited resources available to tackle overlapping crises separately, it is imperative for policy making to leverage these synergies.

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