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# **Climate change, economics and the policy-assemblage: four policies and a materialist synthesis**

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## **Abstract**

Climate change policy is a contested field, with rival perspectives underpinning radically different policy propositions: from encouraging the market to innovate technical solutions to climate change through to the replacement of a market economy with an eco-socialist model. These differing policy options draw upon a variety of economic concepts and approaches, with significant consequent divergences in their policy recommendations. In this paper, we consider policy as assembled from a wide range of sociomaterial components – some human, others non-human. Using a ‘new materialist’ toolkit, we explore four contemporary climate change policies to unpack these policy-assemblages, and assess the different uses made of economics in each assemblage. We conclude that none of these contemporary policies is adequate to address climate change. Yet despite the incommensurability between how these disparate policies use economic concepts and theories, we suggest a materialist synthesis based on a comprehensive climate change policy-assemblage.

## **Introduction**

This paper focuses on the sociomaterial production of climate change policy, and the part that economics and economic theory plays – sometimes explicitly, but on other occasions implicitly and uncritically – within the climate change ‘policy-assemblage’.

With escalating global concern about environmental degradation and the effects of humanity on the planet’s climate, policy discussions around sustainable development have been of growing importance over the past 30 years. A series of high-level international treaties have been signed to limit greenhouse gas emissions, while activism to pressure governments to

implement these treaties have become part of the 21<sup>st</sup> century policy landscape. Despite these initiatives, there remains a lack of consensus over how precisely to achieve the objectives set out in documents such as the United Nations (2016) *Sustainable Development Goals*. Policy approaches vary across the political landscape, from marketised solutions entailing the innovation of green technologies (so-called ‘green capitalism’) (Zysman and Huberty, 2014) to radical alterations to the economic system, replacing a market economy with a socialist alternative (Baer, 2016). Most policy perspectives incorporate some aspects of economic theory, though focusing on different concepts or models. As a consequence, the actions proposed in differing policy approaches may conflict, or even be diametrically opposed.

This incommensurability increases the likelihood that climate change policy will be decided on the basis of economic or political preferences, rather than on the validity of the underlying science. Furthermore, the differing economic theory underpinnings prevent productive engagements between advocates of disparate policy perspectives. In this paper we employ an innovative approach to policy assessment as a means to both evaluate the adequacy and appropriateness of different policy options, and establish a climate change policy that can cut across policy positions founded within contradictory economic and political preferences. We begin by setting out an approach to policy-as-assemblage, which enables all the human and non-human component elements in a policy to be identified, along with those absent from the assemblage. We then review four major climate change policy perspectives, revealing both their strengths and their limitations (which derive in part from their differing economic underpinnings). To overcome the shortcomings of these differing policies, we conclude by offering a materialist synthesis of approaches, offering the foundations for a comprehensive climate change policy.

### **Policy, policy-making and the ‘policy-assemblage’**

Policy may be defined as an engagement or intervention that addresses an issue, event or interaction, with the aim of improving or reforming the social or natural world (Shore and Wright, 1997: 30-31; Taylor Webb and Gulson, 2012: 87-88). Conventionally, discourse analytic approaches have been applied to assess policies (Gasper and Apthorpe, 1996), while policy development and implementation have been explored by analysing the influence of

interest groups (Burstein and Linton, 2002) and/or institutional structures (Wiktorowicz 2003: 618).

Our work has been based upon a different – materialist – ontology of policy (Fox and Alldred, 2020). This approach draws upon a cultural geography literature that explores policy-making and implementation in terms of a ‘policy-assemblage’ (McCann, 2011; McCann and Ward, 2012; Prince, 2010; Ureta, 2014). ‘An implemented policy’, Prince (2010: 173) suggests ‘is an assemblage of texts, actors, agencies, institutions and networks [that] come together at particular *policy-making locales*’ (emphasis in original). Policy-assemblages are dynamic and unstable (Ureta, 2014: 305): a feature that has made this approach conceptually attractive when studying policy implementations on complex and contested topics (McCann, 2011: 145).

However, these authors have freely admitted that their conceptualisation of the policy-assemblage has remained largely descriptive (McCann and Ward, 2012: 43). We have sought to remedy this (Fox and Alldred, 2020) by situating the policy-assemblage firmly within a ‘new materialist’ (Coole and Frost, 2010) conceptual framework,<sup>1</sup> in order to establish an approach to policy-as-assemblage for analytical ends. This enabled us to consider what policies do and the extent to which they are adequate to meet their stated objectives. Our framing entails two distinct assessments: of the issue (Ureta, 2014; 306) or ‘event’ (the topic of a particular policy) and of the policy that aims to engage and influence this issue.

In terms of the former: the ‘event’ of anthropogenic climate change may be analysed as an assemblage of – at least – the following components (in no particular order):

oceans; atmosphere; greenhouse gases; the Sun; humans; human activities; industry

Natural and social science evidence suggests this climate change event-assemblage (EA) works as a consequence of the following ‘affect-economy’<sup>2</sup>: greenhouse gases prevent the Sun’s heat from escaping from the atmosphere; this increases the Sun’s capacity to heat the Earth’s oceans; humans use fossil fuels as an energy source; industrialisation and a market

economy massively increased fossil fuel use; consequent rising ocean temperatures is now producing global climate changes.

Policy-making to address climate change can be considered, within this ontology, as an event in its own right, and consequently may also be analysed as a material-semiotic assemblage. A climate change policy-assemblage (PA) comprises a multiplicity of elements and actors from scientific evidence to a range of stakeholders (Baer, 2012: 267; Dror, 2017; Yearley, 2014):

evidence of climate changes; relevant natural and social science theories; experts; policy-makers; stakeholders; energy producers; money; economic theory; social and political processes and perspectives; policy documents; audience

Within this PA, policy makers will be affected by the evidence of climate changes from scientific studies or from expert witnesses, and by theories explaining climate change. They will also be affected by economic and political considerations and theories, as well as particular perspectives or orientations (for instance, a commitment to protecting wildlife or an emphasis on achieving North/South global equity).

There is a dialectical relationship between an event-assemblage and the policy-assemblage that addresses it. This is summarised in Figure 1. In this dialectic, policy works as a consequence of two interactions. First, the PA must be capable of identifying the components and interactions within the EA (for instance, the interactions between humans, fossil fuels, the economic system, the atmosphere and the Sun). This will depend in part on the adequacy of evidence available. It follows that if evidence is not considered or economic or political factors not acknowledged during this policy-formulation activity, the PA may fail to identify potentially crucial aspects of the climate change EA.

*Insert Fig 1 about here*

Second, when implemented, a policy-assemblage must be capable of *adequately* and *appropriately* affecting the event it is targeting (as opposed to having little or no effect, or affecting other irrelevant processes) (Dror, 2017: 34-35). For instance, a global policy to replace fossil fuels with renewable energy sources will – according to the theory of anthropogenic climate change – have a beneficial impact by limiting greenhouse gas emissions. But this capacity to affect the event will depend upon many aspects of what a PA can actually do. If, for instance, a PA does not include adequate and appropriate resources or involve dominant economic or political actors, it may have little influence on events.

In the following section, we will use this dialectical interaction between EA and PA as the means by which to analyse four contemporary climate change PAs, and evaluate the likely success or failure of each policy. For each, we will pull apart the PA, to identify which components of the underlying EA it addresses. This will enable us to evaluate both its adequacy to analyse comprehensively the social and physical complexities of climate change, and its consequent capacity to achieve the changes that are needed to limit or reverse global climate change (for instance, by substantial reductions in greenhouse gases).

### **Climate change: four policy-assemblages**

In our research, we analysed four broad policy perspectives on anthropocentric climate change: ‘liberal environmentalism’, the United Nations policy approach, ‘green capitalism’ and a ‘no-growth’ policy. For each of these policies, we were able to ‘reverse engineer’ its policy-assemblage, in order to identify which elements of the climate change it addressed and which it ignored. For this special issue, we identify in particular the economic elements within the associated policy-assemblage, and assess how these contribute to the policy. This enables us to evaluate the adequacy of the each policy to fulfil an action plan that can address the current crisis of anthropocentric climate change.

#### Liberal environmentalism

The liberal environmentalism (LE) perspective formulates policies and actions to ameliorate the environmental impact of human practices, principally by efforts to alter individual or collective behaviour (Yearley, 2014: 98). It is well-represented in the focus of charities that

aim to conserve an endangered species and in popular TV documentaries on ‘the natural world’. In relation to climate change, LE encourages the public to buy low energy household appliances, switch to electric vehicles or use public transport or bikes, or eat less meat.

Some such ‘green’ behaviour-modifications have been informed by behavioural economic theories (‘nudging’), which acknowledge that human actions rarely conform to the ‘rational actor’ model of *homo economicus* (Schubert, 2017: 331). Significantly, however, LE formulates its policies and actions without critical assessment of the interactions between a market economy and environmental degradation (Bernstein, 2001: 3; Talshir, 2012: 18; Whitehead, 2014); nor does it challenge a liberal model of the environment as a resource to be exploited for human gain and well-being.

A policy to reduce meat consumption supplies an example of how these priorities and lacunae within the LE approach affect the interactions *between* policy and event assemblages outlined in Figure 1. The EA with which this policy perspective interacts includes the following elements (in no particular order):

animals; land; famers; feed; diesel; consumers; greenhouse gas emissions; atmosphere, the Sun

Behind this EA is an expectation that a shift in consumer demand away from meat will lead to changes that will reduce greenhouse gas emissions. However, the broader socioeconomic forces driving the production of meat protein (such as agribusiness interests, poverty, a shortage of grazing pastures, the low value of forested land, farming subsidies, population growth and the marketing of fast meat-based foods) are not considered. Excluding these powerful forces (most of which derive ultimately from a globalised capitalist economy) raises questions over the capacities of an LE policy to adequately reduce meat consumption globally. At best, consumers’ choices will have a marginal effect on reducing meat production and halting rainforest clearance if action to address the broader socioeconomic processes fuelling meat production and consumption are ignored.

These limitations of the LE approach undermine its adequacy and appropriateness as a policy intervention to limit anthropogenic climate change. By sidelining the needs of a market economy for sustained growth, it is incapable of addressing the complex social processes that are the drivers of anthropogenic environmental impacts.

### The United Nations and sustainable development

The United Nations (UN) has offered a consistent policy perspective on climate change and sustainable development, dating from the 1987 *Report of the World Commission on Environment and Development* (Brundtland, 1987) to its *Agenda for Sustainable Development* (UN, 2015). This approach sets out twin objectives of environmental sustainability and human socioeconomic development (Whitehead, 2014: 259), and argues that these are inextricably linked (Fleurbaey et al, 2014: 322). In its 2016 document *Sustainable Development Goals*, 13 of its 17 objectives focus upon the quality of human life (for example, ending poverty, achieving gender equality, access to clean water and affordable energy), with only three on the rest of the environment.

Unlike the LE policy perspective discussed previously, in the UN position, the role of economic growth in human development is made explicit. Hence, the climate change event assemblage (EA) that this policy position conceptualises comprises at least the following relations (in no particular order):

Earth; material resources; biosphere (animals and plants); humans; the global economy; poverty and wealth inequalities; economic development; social and political development; nations and governments; global North; global South; pollution; energy; greenhouse gases; future human generations

However, the insistence that environmental sustainability can only be achieved through economic growth (UN, 2015: 4) excludes any acknowledgement that it is indeed economic growth and the increase in human economic prosperity that has led to environmental degradation and climate change since the industrial revolution (Stern, 2007: xi; Wallis, 2010;

Yearley, 2014: 104). This foundational economic blind-spot – driven by the UN’s political imperatives to reduce North/South economic inequality (Whitehead, 2014) – consequently limits the capacity of this policy-assemblage adequately and appropriately to address environmental challenges.

### Green capitalism

The liberal environmentalist (LE) position considered earlier gains a couple of additional twists in positions that have been called ‘green capitalism’: perspectives often promoted by right-leaning politicians and some business leaders. While LE was generally silent on the negative effects on the environment of a market economy, green capitalism regards the market as the means whereby the environment will be protected from human deprecations, or even as its saviour.

Green capitalism is founded in one of two alternative propositions. The first argues that climate change represents a catastrophic failure of market mechanisms (Stern, 2007: i), but that with some revisions – top-down management, international trading of carbon, and innovative technology – a market economy can be made environment-friendly (see also Pearce et al., 1989: 153-171). For Stern, capitalist markets failed because the producers of greenhouse gases (primarily nations in the North) can avoid the full global consequences of resultant climate change, while affecting parts of the world not responsible for their production (negative externality). His recommendations were for intervention in market economies through regulation, taxation and international collaboration (Stern, 2007: xviii-xxi).

A second perspective transforms LE into a ‘neoliberal environmentalism’, in which entrepreneurialism and capitalism’s never-ending quest for profit will save Earth from climate change and other environmental degradations through environment-friendly technological innovation (Prudham, 2009: 1596). Proponents argue that a market economy is the best means to reverse these impacts through human ingenuity and entrepreneurialism, while ensuring the continuity of the economic growth that they argue has been the engine of both national and individual prosperity since the industrial revolution.

In both these manifestations, climate change policy is tied to market economics, though unlike the UN policy position, they de-couple climate sustainability from the social and political development of the global South. Green capitalist policies are founded on an event-assemblage (EA) comprising at least:

material resources ('the environment'); consumers; capital; industry; entrepreneurs; production; profit; growth; developing and developed nations and governments; energy; greenhouse gases; the Sun; climate; technologies

This EA is 'capitalocentric', with an overarching focus on the operation of the capitalist market and the accumulation of wealth: any benefits for the natural world are entirely incidental. The inherent wastefulness of competitive capitalist markets (Yearley, 2014; 106) and the endless drive for growth (Bosquet, 1977: 166) are ignored as sources of environmental degradation. Furthermore, the differential impact of climate change upon rich and poor, global North and South remain unacknowledged: inequalities largely produced by capitalist accumulation and globalisation. These economic lacunae again force us to conclude that a green capitalist policy-assemblage is inadequate and inappropriate to address climate change.

### No growth policies

Activists within the global Green movement and political Left have advocated a zero-growth economic system as a climate change policy position, and have been critical of liberal environmentalist approaches and the 'green capitalist' approaches just considered (Baer, 2012; Bernstein, 2001; Brand, 2012). These, they argue, simply sustain a market economy whose quest for continual economic growth has led to ever-increasing inputs of environmental resources (including fossil fuels), while concomitant growth in outputs contributes to inexorable rises in waste and pollutants (Daly and Cobb, 1994: 4; Fournier, 2008). This has not only led to environmental crises but also ensures social and economic inequalities between poor and wealthy, and an economic divide between global North and South. Advocates for zero-growth economics also require shifts in social relations to

achieve an equitable global re-distribution of resources (Randers, 2012: 105), or a 'sharing economy' (Heinrichs, 2012). For Baer (2012: 208), however, the adoption of a sustainable no-growth economics is predicated on the wholesale move from capitalist production to 'democratic eco-socialism'.

The no growth event-assemblage differs markedly from those previously analysed, but once again is selective over which elements of the climate change EA are included. This climate change event-assemblage comprises (in no particular order):

human consumers; finite non-human environment; market economy; industrialisation;  
production; profit; energy; waste; greenhouse gases; Sun; climate

This event-assemblage casts the capitalist economic system and environmental sustainability as fundamentally opposed, with the former wastefully plundering the Earth's finite resources. However, this event-assemblage understates the inertia associated with the wider political contexts of market economies (for instance, the vested interests within capitalist economies, the military-industrial complex that ties production directly to national or regional ideologies, the dependency of democratic societies upon taxation to fund welfare and a public sector) and the global character of growth-oriented market economics (Elbe and Long, 2020; Sell and Williams, 2020; Wright and Nyberg, 2015). This political edifice limits the potential for a swift shift from a capitalist to a no-growth economic model. Such a shift shows no sign of emerging among such political stakeholders, and is unlikely to be readily embraced by politicians or public any time soon in the world's major climate change polluter: the US. Once again, we are forced to conclude that this PA is inadequate to address the pressing issue of climate change.

### **Discussion: terminal incommensurability or synthetic opportunity?**

The policy-assemblage analysis that we have conducted on four differing policy positions on climate change has revealed the differing engagements each has with the material elements within the climate change event-assemblage, including economic concepts and approaches. More significantly, the analysis also reveals that all these policies are based on partial

acknowledgement of the complexities of the climate change assemblage. As a consequence, we conclude that none is adequate or appropriate to address these environmental challenges.

However, a policy assemblage analysis, unlike approaches such as policy discourse analysis (Gasper and Apthorpe, 1996), also supplies an ontological foundation upon which to design a critical policy assemblage that *is* adequate and appropriate. Key to this endeavour is a reversal of the conventional policy-development process. Rather than being driven by the political, economic or other ideological commitments of stakeholders, the first step must be to establish a comprehensive understanding of the climate change event-assemblage itself, based on a broad understanding of the relevant natural and social science (see for example, IPCC, 2013, 2014).<sup>3</sup> In place of the partial engagements that each of the four earlier policy positions reflects, this suggests a climate change assemblage comprising:

Earth; Sun; atmosphere; oceans; resources; animals; plants; humans; industry; consumption; greenhouse gases; market; capitalist economic model; profit; growth; nations; governments; global North; global South; ideologies; wealth and health inequalities

This event-assemblage is drawn together by a complex affect-economy comprising physical, chemical, social, economic and political interactions between assembled components, and acknowledges the interdependence of social and material worlds and how these interact in the era of anthropogenic climate change. As such, it can supply an adequate basis for a policy assemblage that has the capacity to capture the complexities of the affective movements in this event assemblage, and to formulate actions that will engage adequately and appropriately with these affects.

When analysing the four policies on climate change we reviewed earlier, we noted their very different emphases (for instance, upon economic development in the UN approach, market-driven technological innovation in the green capitalist perspective, and rolling-back the capitalist economic system in the no-growth model). But a policy-assemblage analysis reveals that this apparent incommensurability (particularly in relation to economic commitments) derives from the partiality of the event-assemblages upon which the different

policies have been founded. Each of these four event-assemblages incorporate parts of the comprehensive event-assemblage we have just set out. Consequently, a policy-assemblage based on this comprehensive analysis can be synthetic: drawing upon features of the different policies we have reviewed, while acknowledging the foundational differences and consequent contradictory recommendations that also flow from these policies.

Elsewhere (Fox and Alldred, 2020) we have set out some of the elements that can be incorporated into a comprehensive climate change policy. From the *liberal environmentalist* policy, a focus on environmental protection and efforts to change individual and collective human behaviour to lower energy and fossil fuel use, reduce consumption of other resources and the production of waste. From the *United Nations* policy assemblage, action to redistribute income locally and globally, recognising that poverty is one of the drivers of environmental destruction. From the *green capitalism* assemblage: support for technological innovation to limit and remove greenhouse gases from the environment. From the *no-growth* policy, action to limit economic growth and wasteful competition. These provide the foundation for incremental actions locally, nationally and globally to address the physical, biological, social, economic and political affects within the climate change event-assemblage. Some of the practical actions that flow from these are set out in Table 1.

*Insert Table 1 about here*

What this analysis also reveals is that despite the potential to synthesise some aspects of existing climate change policies, some incommensurability between policy objectives remains. This principally derives from the disparate use of economic theory and concepts underpinning different climate change policy-assemblages. As sociologists we shall make no attempt here to address the complexities of economic theory or transcend the irresolvable divergences between neoliberal and eco-socialist economics. Our proposition is a modest first step: a pragmatic (with a small ‘p’) response to climate change policy, based on a comprehensive and non-ideological analysis of climate change itself, and a focus on what a policy actually needs to *do* to be successful.

Clearly, the challenge of such a programme is immense, and to be effective will require new social, economic and political collaborations and alliances, both within countries and internationally. As far as possible, climate change policy needs to be removed from ideology and party politics, though we see progressive governments and organisations such as the United Nations and Intergovernmental Panel on Climate Change (IPCC) as key future players. For all these actions, economic and governance support will also be required by countries in the global South to move towards these challenging policies. Working through the economic implications of the policy initiatives that our synthesis implies, we respectfully leave to those better qualified for the task.

## Notes

1. New materialist ontology is predicated on two moves. First, it replaces notions of pre-existent, fixed entities such as bodies, animals, fossil fuels, atmospheric conditions and governments with *relational* materialities that gain form and continuity when disposed alongside other materialities within *assemblages* (Bennett, 2005: 445; Deleuze, 1988: 125; Delanda, 2016: 10). Second, new materialism considers that all the disparate materialities within an assemblage have capacities to affect, or to be affected by, other assembled relations (Deleuze, 1988: 101): humans are no longer the prime movers in this ontology. The collective ‘economy’ (Clough, 2004: 15) of *affects* within such an assemblage determines what it (and its constituent human and non-human relations) can do. The breadth of any relation’s *capacities* – be it human or non-human, biological or inorganic – will depend entirely upon the richness of its affective interactions.

2. See Note 1 for an explanation of ‘affect-economy’.

3. We acknowledge that the science rallied behind a policy can never be considered complete: our knowledge of climate change is continually being refined. Nor is it the case that scientific knowledge is independent of social processes: a comprehensive event-assemblage must include a reflexive social scientific component capable of recognising how knowledge is produced and used socially, politically and economically.

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