How Should the Risks of Sea-Level Rise be Shared?

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Note to the reader: though I have cut two sections, this remains a long paper at 37 pages. Aimed as it is at policy makers and the New Zealand public, the paper contains a lot of rehearsal of ideas that are familiar to political theorists like yourself. *The heart of the argument is in section 4a, on pages 20-27; please skip to those pages if you are short of time or patience*. There is plenty to argue with in the rest of the sections if you find the time to read them: section 2a (on method), section 2b (a critique of the prevailing usage of ethical concepts in policy analysis), section 2c (a survey of some relevant concepts from applied ethics), section 3 (proposed ethical principles for policy analysis), section 4 (critical description of the New Zealand SLR policy status quo), and section 6 (answer to the title's question and suggestions for improvements in the New Zealand status quo). I am eager to hear about what if anything here is of interest to the political theory community outside New Zealand: lisa.ellis@otago.ac.nz.

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1. **Introduction**

Even if everyone in the world stopped emitting greenhouse gases today, our existing emissions have locked in sea-level rise for many decades to come. In New Zealand, we can expect homes to become uninsurable and even uninhabitable, inundation events that are now rare to become regular, businesses and infrastructure to need expensive defences or relocation, and—crucially--communities to be disrupted or even dispersed. We are used to thinking of natural hazards as unpredictable, one-off events like earthquakes. Now we are facing a predictable, accelerating, long-term threat to our collective wellbeing.

Each available course of action, including "no action," has ethical implications for New Zealand society. Only if we understand those implications can we choose the policies that express our consensus ethical values. Ethically robust policies for adapting to sea-level rise are resilient across time, space, and other conditions because they build ethical evaluation into dynamic adaptive policy planning. Attempting to achieve ethical perfection would be a mistake for many reasons. For example, while everyone has ethical values that tend to overlap and to produce large areas of consensus, still, important ethical differences are inevitable in a free, plural society (Rawls, 2001). Rather than pursuing a brittle and chimerical ethical perfection, policy makers should aspire to *ethical robustness* that is progressive and responsive to changing conditions and pervasive uncertainty (Ellis, 2008).

Although there is little doubt about the general nature of climate adaptation challenges to come, climate change adaptation policy is subject to high levels of uncertainty about specifics such as where, when, and how those challenges will manifest themselves. Sea-level rise thus presents what Stephen Gardiner has called a "perfect moral storm," combining certainty about the urgent need to adapt and uncertainty about times, places, and means (Gardiner, 2006). We are at risk not only of direct harm from sea-level rise, but of compounding that harm through the unintended consequences of policy making. Ethically robust policy practices can mitigate the latter risk by ensuring dynamic consideration of the ethical implications of sea-level rise policy decisions as we make and implement them.

Under the status quo, New Zealand risks facing an ongoing, accelerating moral disaster in the area of sea-level rise policy. If we do not take action, we can expect: delayed, expensive, and uneven responses to these new natural hazards, reactive responses to challenges that could have been mitigated or prevented, emergency measures imposed from above rather than community-led long-range planning, missed opportunities to enjoy the co-benefits accruing from long-term adaptation planning, and overall, a transfer of risk from the least to the most vulnerable. Though the injustices of the status quo in climate change adaptation policy are relatively invisible now, they are already threatening to exacerbate inequality and to undermine political agency. Moreover, there are gaps in the legal rules that we use to coordinate our other-affecting interactions that should be filled with deliberate, explicit, principled new rules for distributing the risks of sea-level rise. Now and over the next few years, New Zealanders will determine how the risks of sea-level rise will be shared. We should not miss this opportunity to ensure that our responses to the challenge of climate adaptation are ethically robust.

This working paper answers the question of how, in a principled way, we in New Zealand should distribute the risks of sea-level rise. The parameters of this question confine it to the domestic sphere of the present and future, excluding questions of responsibility for the emissions that are driving

anthropogenic climate change and international questions about adaptation aid and climate-change-driven migration. Taking sea-level rise and its impacts over the next century as a given, we ask how New Zealanders should organise their relations with each other so that our climate adaptation policy reflects consensus ethical norms.

It may help bring this question into focus if we imagine some glosses of possible sea-level rise policies that would probably not correspond with our consensus ethical norms. For example, we can imagine a possible climate adaptation policy that distributes adaptation resources based on the simple market value of threatened properties. Such a policy could be glossed as, "the rich get sea walls and the poor get moved." While it is unlikely that policy makers or citizens would explicitly endorse the ethical values behind such a principle, it is entirely conceivable that policies justified in other ways could end up effectively instantiating it. By paying attention to a policy's effective ethical value, we can ensure that our policies reflect consensus ethical norms. Towards the end of this working paper we will discuss some means of building such ethical moments into our dynamic adaptive policy pathways planning (see section 6b).

The effective policy of "the rich get sea walls and the poor get moved" violates, as we shall see in the paper, consensus ethical norms about equality. Other glosses of adaptation policies that would conflict with settled ethical principles might describe these policies as "a transfer of risk to the most vulnerable," "a gap in the rule of law," or "a lack of say-so in the future of my community." As we shall see in the course of this working paper, all four of these glosses represent avoidable instances of adaptation policy that is less than ethically robust.

Recent work on climate adaptation in New Zealand from the Parliamentary Commissioner for the Environment, the Ministry for the Environment, Local Government New Zealand, the Climate Change Adaptation Technical Working Group, and the various national science challenges, together mean that we have a good basis in physical and social science on which to build our inquiry into ethically robust adaptation policy. Rather than repeat the findings of these works, this paper will quickly summarise some basic background information about sea-level rise in New Zealand.

The ethically relevant fundamentals are these: many tens of thousands of buildings, key infrastructure including airports, railways, and roads, and more than a hundred thousand residents are at risk of serious loss and damage associated with sea-level rise within the next century (Bell et al., 2017). Net sea-level rise on the order of magnitude of millimeters per year might not seem like much of a threat, but the ethically relevant change is the increase in *frequency* and *severity* of inundation and other adverse events. With a meter of sea-level rise, which moderate-to-high emissions scenarios predict could occur in about a century (Bell et al., 2017), the kind of inundation events that Wellington now experiences once every hundred years would occur at every tide (Parliamentary Commissioner for the Environment, 2015). We are already experiencing increased frequency and

severity of inundation events in some locations. New Zealand–wide we can expect both that this will vary by location, and that overall it will increase everywhere.

From an ethical perspective focused on adaptation justice, we can glean some key facts from the physical and social science currently available. Sea-level rise is locked in and accelerating, though there remains uncertainty about specifics. Increasingly frequent and severe events mean that policy debate is evolving away from the frame of "present sacrifice to mitigate uncertain future harm" and towards a more conventional problem-solving frame. However, the uneven distribution of risks mean that hard ethical questions remain even once most have accepted the need for investment in adaptation. For example, engineering solutions like sea walls and surge barriers transfer risk across space and time, often to those least able to vindicate their agency such as the relatively disadvantaged or future generations.

2. Background

2a. The method of critical description

In this research, we employ the *method of critical description* to analyse the ethical values implicit in status quo policies, including the way that local people on the ground experience those policies, in order to suggest ways to bring sea-level rise policy in line with settled ethical values. For example, a policy that distributes coastal defence resources according to the market value of threatened property (as in some regions of the United States) may be perceived as instantiating the rule, "the rich get sea walls and the poor get moved." A policy that looks rational on the face of it (spending more to protect more valuable property) can be problematic from a broader, more inclusive point of view. This aspect of sea-level rise policy will be discussed later in this working paper, but for now we should be able to see that a narrow conception of value as market value can lead to broadly irrational conclusions. Including sociocultural value in such calculations can help avoid ethically problematic outcomes that transfer risk to the most vulnerable.[1] We ask about the values that are implicit in adaptation policies in order to make those values explicit and compare them with consensus ethical principles.

For political philosopher Ian Shapiro, critical description (he calls it "problematizing redescription") is "a two-step venture that starts when one shows that the accepted way of characterizing a piece of political reality fails to capture an important feature of what stands in need of explanation or justification. One then offers a recharacterization that speaks to the inadequacies in the prior account" (Shapiro, 2002). Shapiro's examples are mostly drawn from the political science literature, but the method also works well for making plain the ethical implications of policies and policy processes. Returning to the problem of inattention to sociocultural value mentioned above, we

[1] In fact, as we shall see, recent New Zealand guidance recommends the inclusion of sociocultural value as a factor in climate adapation policymaking, and existing measures of value tend to include sociocultural value as part of a mix that also includes market value.

can say in a preliminary way here that an "accepted way of characterizing a piece of political reality," in this case, in pure market value terms, has "failed to capture an important feature," in this case, the sociocultural values not normally captured by market value and the implications for equality of ignoring those values.

Like Shapiro, Barnet and Paloutikoff argue that "theories of justice advise us that these choices about what to protect and what to let go should be made explicit…. In this way adaptation can arise through active . . . choices rather than de facto institutional processes" (Barnett & Palutikof, 2014; p. 238). An essential aspect of the method of critical description involves making *implicit* values realised by policy *explicit* and thus subject to people's ethical judgment. Schlosberg and his colleagues agree, arguing that rendering implicit values explicit not only makes deliberation possible, but moderates the ubiquitous power imbalances that characterise the adaptation policy (indeed, all policy) processes (Schlosberg, Collins, & Niemeyer, 2017).

Critical description as a methodological commitment requires adherence to the two-step process including, first, *identification* of the relevant consensus ethical values and the values implicit in existing policies, and, second, *comparison* of those two results. Often the results of critical description will point us to a third moment of analysis, recommended *emendation* of existing policies so that their values conform to consensus ethical principles (see section 6b).

The method of critical description is made formal in Shapiro's and others' recent work, but it has a much older pedigree. As early as Thucydides in the fifth century BCE, scholars have been producing descriptions of policies and institutions that illuminate their often hidden ethical implications (Thucydides, 2008). Much more recently the political philosopher John Rawls introduced his extremely influential *A Theory of Justice* with this claim:

> Justice is the first virtue of social institutions, as truth is of systems of thought. A theory however elegant and economical must be rejected or revised if it is untrue; likewise laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust (Rawls, 2009; p. 3).

Following Rawls, Shapiro, and others, we employ the method of critical description to compare existing policies and their implicit values with settled ethical conceptions to answer the question of how, in a principled way, the risks of sea-level rise should be shared.

2b. Policy literature

A crucial advantage of the method of critical description is that it prevents practitioners from conducting the kind of ad hoc ethical policy analysis that is unfortunately prevalent in the literature. There are two distinct styles of ad hoc ethical policy analysis that we seek to avoid via our method of critical description: (1) arbitrarily narrow conceptions of ethical norms, and (2) arbitrarily selected norms applied to practice.

First, most of the literature in applied ethics more or less arbitrarily selects a preferred ethical school of thought and then applies it to the policy problem without considering whether the school of thought is a good fit, sometimes for the policy, or at other times for the population in question. This results in work that is more useful for academic scholarship than it is for policy practitioners.

For example, Schlosberg (2012) argues that the "capabilities approach" associated with the philosopher Martha Nussbaum and the philosopher and economist Amartya Sen best captures the ideal of just adaptation to climate change. He provides compelling reasons for employing the capabilities approach, with its emphasis on socially relevant capacities rather than the distribution of resources or preference satisfaction: "A capabilities approach can bring social and political recognition of specific and local vulnerabilities and the effects of climate change on the basic needs of human beings in various places and under different conditions" (Schlosberg, 2012; p. 446). Even so, we have no reason to think that specific agents facing adaptation choices will conceive of themselves primarily as bearers of capabilities rather than, say, as subjects of a scheme of equal basic liberties (Rawls, 1999; p. 227), or as any other variety of theoretically described agent.

This working paper builds on classic work in adaptation justice done by Schlosberg and by Paavola and Adger as early as 2006 (Paavola & Adger, 2006). However, we reject the selection of a preferred ethical school, whether it is Nussbaum and Sen's capabilities approach as selected by Schlosberg, or Rawlsian liberalism as selected by Paavola and Adger. We have no reason to believe that New Zealanders prefer either of these ethical perspectives, or any other academic school of thought. Instead, our methodology is *freestanding among comprehensive doctrines* (to employ for a moment the scholarly jargon): critical description compares practices with consensus ethical values and is thus broadly ethical without relying on any particular school of ethical thought. It is *broadly ethical* because it presumes that New Zealanders (like any group of rational beings) will make judgments about the rightness and wrongness of states of relations among people, and though they will not always do this consistently and not always realise their judgments in practice, still those ethical judgments have moral authority for them. However, critical description is *freestanding* among different conceptions of ethics because it can in principle compare the values implicit in practices with any set of consensus ethical values. Critical description aims at enabling robust ethical practice—practices that people endorse as right in their procedures and outcomes—without paternalistically selecting a narrowly defined set of moral principles that everyone ought to endorse.

The second type of ad hoc application of ethics we seek to avoid by using the method of critical description is arbitrary selection from lists of common ethical principles. Too frequently, policy scholars mix ethical arguments in with other kinds of arguments, with the result that the ethical arguments either play no real role or play a merely rhetorical role. Long lists of mutually inconsistent principles as old as Aristotle (fourth century BCE) or as recent as Peter Singer (Singer, 1979) populate the "ethics" sections of policy papers, only to be referred to opportunistically as they support

the paper's pragmatic arguments. If you want to know whether a policy conforms to ethical principles, it is essential to be clear and consistent about the ethical principles in question. There is nothing wrong with pragmatic policy analysis referring incidentally to ethical limits (for example, to otherwise practical policies that might violate rights or conflict with a population's settled values, for example). The key is to be very clear, to be perfectly explicit, about what role the ethical arguments are playing; even more important is to be clear about when ethical principles are not in fact doing any real work in the argument.

Take for example the important recent work on funding climate change adaptation in New Zealand by Jonathan Boston and Judy Lawrence (Boston & Lawrence, 2018). This paper argues forcefully for creating and prefunding an EQC-like instrument for adapting to the risks of sea-level rise: gathering resources over several generations and beginning immediately, we need to act as soon as possible to reduce risk rather than relying on post-incident compensation or restoration mechanisms. The pragmatic arguments in the paper are compelling, and they do have important ethical implications. For example, Boston and Lawrence emphasize the intergenerational injustice of delay in funding adaptation, an injustice which is compounded by collective economic irrationality when every dollar spent on risk reduction saves at least three on later disaster costs. They are also interested in intragenerational equity, noting that our current fragmented system for addressing adaptation hinders more equitable solutions from being implemented.

However, Boston and Lawrence's use of ethical arguments is insensitive to inconsistencies among the many principles they list, ignoring disagreements among experts and among citizens. They list "two high-level principles," of "like treatment" and "fair opportunity" (21), taking equal treatment as a baseline and then introducing reasons to deviate from that principle such as the view that "people should not be discriminated against or suffer disadvantages for things over which they have no control" (21). They then add a grab bag of "material principles," including distributing resources according to need, and distributing burdens according to ability to pay, according to likely beneficiaries, or according to responsibility for damage. These high-level and material principles have no obvious connection to the three excellent ethical questions that follow them, asking whether intergenerational justice requires prefunding for the expected costs of climate change, whether intragenerational justice requires regional cross-subsidization, and whether fairness requires government to compensate anyone for climate change related losses (21-2).

Boston and Lawrence argue for prefunding based on the "polluter pays" historical principle of responsibility, but uncritically assign the "polluter" role to present-day taxpayers as a group (in fact, they do not seem to notice that this might be controversial, rather than, say, assigning it to representatives of the relatively few companies and industries responsible for most of the damage (Heede, 2014), nor do they attend to the weaknesses of the historical principle as pointed out by Paul Bou-Habib, among others (Bou-Habib, forthcoming; Caney, 2010)).

An essential question of ethical policy analysis is *who should pay?* Boston and Lawrence make a compelling case for public pre-funding of adaptation, but the strongest part of the argument is not the historical principle of "polluter pays" but pragmatic policy considerations. The people available to begin paying are the tax-and-rate-paying public, since the original polluters are long dead, many of the present-day ones are safely overseas, and the future ones are not yet taxable. Moreover, members of the public are much more disorganized than the other available candidate under the "polluter pays" principle, namely, the polluting industries who are organised to resist efforts to force them to pay via targeted rather than general revenue mechanisms (Layzer, 2012). Despite the fact that the private sector is orders of magnitude better resourced than the public sector, the public sector is more *available* from the policy perspective and thus the interpretation of the polluter pays principle that selects a broad rather than narrow responsible agent is the preferred option. As we can see, the real work in this argument is done not by the "polluter pays" principle, but by pragmatic political considerations about likely successful funding efforts.

Similarly, in discussing the case for national cost sharing, Boston and Lawrence use material principles (need, ability) that support the most efficient outcome, even though other listed principles (notably material principle 4, individual or sectoral responsibility) might militate against such a policy (23). They have good reason to call for cost-sharing as a necessary component of any equitable adaptation policy, but this policy is defended by pragmatically selected principles. Regarding compensation for loss and damage, Boston and Lawrence rightly note that the principles listed would incline us to compensate relatively poor people with little equity whose properties were bought long before sea-level rise became an issue, while we would hesitate to compensate wealthy families who against advice have recently built risky new assets on the coast (23-24). Rather than following these principles to their policy conclusions, however, Boston and Lawrence list a number of "relevant matters," including the statement that "there are robust *prima facie* grounds for compensation, at least in some cases," adding that even if the state says it will not compensate for risky losses, people will not believe it (24). Here again we have ethical principles considered and discarded in the face of pragmatic considerations.

"The Case for New Climate Change Adaptation Funding Instruments" does New Zealand a great service by setting the policy agenda for unfragmented, rational, and intergenerationally equitable solutions and by providing powerful reasons to take action without delay. The ad hoc quality of its ethical arguments simply reflects the norm in policy analysis, and, indeed, in public discourse. The conclusions of the present working paper align with those reached by Boston and Lawrence about the need for pro-active rather than re-active climate adaptation policy as well as the need for equitable funding solutions, even if the methods of the two projects differ. In fact, a consistent, focused application of the principle of intergenerational equity to the problem of funding climate change

adaptation in New Zealand over the long run would support the case for a Climate Change Adaptation Fund like the one for which Boston and Lawrence argue (Boston & Lawrence, 2018).

A more suitable model for ethically robust policy analysis is O'Neill and O'Neill's short "viewpoint" on the principled choices for flood insurance in the UK after 2013. They consider three principles ("pure actuarial fairness," "choice-sensitive fairness," and "fairness as social justice"), discarding the first pure market principle as inappropriate for a society with solidaristic commitments, but arguing that both other principles would support multiple possible flood insurance schemes that would satisfy ethical standards (O'Neill & O'Neill, 2012). They recognize the role that the public must play in making decisions about the distribution of risks of sea-level rise and that engagement must not merely function as a conduit to implement technocratic decisionmaking. They note that a principled stance eliminates some options, but does not specify a single outcome. Thus O'Neill and O'Neill's analysis is *freestanding* among different principles of justice, but critical description does some work by eliminating one of the three policy options available.

The policy literature varies, but overall it tends to refer to lists of principles without explicitly adjudicating among them, and the typical policy paper will use "generates efficient/rational policy outcome" as a tacit decision rule to determine which principle to apply in a given instance. There are some excellent candidate ideas in the policy literature, but they cannot answer the question of what would count as an ethically robust policy process or outcome.

2c. Ethics literature

At this juncture, this working paper's question of how, in a principled way, the risks of sea-level rise should be shared, seems to put us in a difficult position. On the one hand, we could follow the prevailing policy model and refuse to choose among candidate principles of justice, presenting all of the most promising candidates and making use of them in an ad hoc way. This has the advantage of presenting a non-partisan perspective in which everyone should be able to find something that they can endorse. But of course it has the serious methodological drawback discussed in the previous section, that the talk of justice does no real work in determining preferred policy options; what is deemed rational, pragmatic, or efficient from a plain common-sense perspective is selected, and then justified with the ad hoc ethical principle that best fits the policy of the moment. On the other hand, we could present a comprehensive ethical perspective, but as we have seen, this method paternalistically selects ethical principles for people that they may not themselves endorse. To escape from this dilemma, we have opted for the method of critical description, comparing policy practice with consensus ethical principles from a perspective that is freestanding among ethical schools of thought. However, before moving forward under the banner of critical description, we should learn what we can from the existing ethics literature.

The philosophical, political theoretical, and communications literature on ethically robust adaptation policy is new and thin, but also contains some interesting lines of argument. Though the

focus is mainly on global adaptation policy, there are some relevant ideas for this domestic project. For example, Bou-Habib's work on historical injustice and climate change is theorized at the global level, but his criticism of the historical principle for the distribution of responsibility for climate change applies just as well at the domestic level, as we saw in our discussion of Boston and Lawrence's employment of the "polluter pays" principle (Bou-Habib, forthcoming). Fundamental to both global and domestic sea-level rise policy is the issue of unequal distribution of risk. However, these issues play out differently at the two levels of analysis. Globally, those least responsible for climate change tend to suffer the most adaptation risk (IPCC, 2014). Domestically, the relationships of responsibility are patchy and less clear. In fact, there are good reasons to take a forward-looking approach, treating sea-level rise as a quasi-natural phenomenon in the domestic context and distribute responsibility according to need and ability (Boston & Lawrence, 2018). Domestically we distinguish between risky new development and existing at-risk development. So if you build on the coast today, you bear some responsibility as well as incurring some risk not of your own doing. If you inherit property, use the beaches, etc., you have only your portion of responsibility as citizen of wealthy country and inheritor of industrial emissions-related wealth, but no particular localized responsibility. In the domestic case, then, we have uneven distribution of burdens of risk, but no consistently inverse relation between responsibility and risk as we see in the global case.

Already in 2006, Paavola and Adger were applying Rawlsian principles to the problem of ethically robust adaptation policy on a global scale. They draw a broad picture of vulnerability, and then seek to focus resources on the most vulnerable through procedures that would identify vulnerability and allocate assistance accordingly. Although Paavola and Adger are operating at the global level of analysis, we can apply lessons from their work to the domestic arena. For the purposes of this working paper and its central question, we can ignore Paavola and Adger's first principle of adaptation justice, which is to avoid dangerous climate change, since climate change mitigation is beyond the remit of policies that take sea-level rise as locked in by existing emissions. Their remaining principles are relevant to our purposes, however. They recommend a forward-looking perspective focused on preventing future harm. Paavola and Adger adopt a Rawlsian "maximin" strategy that is popular in the global justice literature, advising policy to avoid transferring risk to the most vulnerable (Paavola & Adger, 2006). They define vulnerability not strictly as social disadvantage, but as a function of a person's exposure, sensitivity, and adaptive capacity vis-à-vis climate change (see also Orchiston & Stephenson, 2018). Finally, Paavola and Adger argue for procedures that insure equal participation for everyone. In sum, Paavola and Adger focus on the two main values of equality and agency, while advocating a strategy of not transferring risk to the most vulnerable (for a more recent argument along similar lines, see Sayers, Penning-Rowsell, & Horritt, 2018).

In addition to the new literature on adaptation justice, there are relevant philosophical literatures that can inform our understanding of key concepts in adaptation justice. For example, philosophers have contributed some important arguments to our understanding of the problem of moral hazard. Generally speaking, moral hazard occurs when we are tempted by circumstances to transfer our risks to everyone else. The classic example of moral hazard is no-fault insurance. If I know that I am covered for losses no matter how I behave, so the argument goes, then I have no reason to moderate my risky behaviour. Moral hazard is a problem because it leads to suboptimal social outcomes: we would all be better off if everyone minimized total risk, but without individual-level incentives to minimize risky behaviour, we will all pay more costs that we should have to pay. This leads to the classic tradeoff between the value of *solidarity* (sharing risk among many) and the value of *reducing moral hazard* (individualizing risk and thus sending rational price signals to encourage less risky behaviour).

Philosopher Gerald Lang recommends a general anti-moral hazard principle (the state will not compensate for losses associated with excessively risky behavior) that avoids making people responsible for things outside their control while also avoiding excessive state paternalism (G. Lang, 2009). "The Moral Hazard Argument should be understood as presupposing, or giving voice to, a principled reluctance to make the non-profligate subsidize the profligate. The basis for this reluctance is a certain notion of reciprocity, in which individuals contribute, to a degree consistent with their capacities and circumstances, to the maintenance of a shared social system of cooperation. The basic idea is that it would be unfair not to do one's bit to shoulder the burdens that are required to maintain such a system" (324). Lang's value of reciprocity expresses a commitment to the consensus value of equality, including the ceteris paribus rule not to transfer risk to the most vulnerable.

Maria Ferretti also appreciates the problem of how to compensate for losses that seem unfair (attributable to brute luck) while not socializing the costs of irresponsible behavior (Ferretti, 2010). However, Ferretti argues that philosophers have missed the main issue, which is that these schemes are supposed to support fair social cooperation, not just distribute things from the state to variously deserving individuals (504). Ferretti argues for a "non-welfarist" version of the "distribution of risk as a social burden." She argues against extending distributive justice accounts to risk, and she further argues that a preventive rather than compensatory regime is the better option, but adds that "a preventive approach, in order to deliver fair distributive effects, should be grounded in an account of risk as a burden of cooperation *independently* from the eventuation of its negative outcomes." Like Lang and Paavola and Adger, Ferretti endorses the consensus value of equality, but she also demonstrates the connection between realizing equality via the rule of law and guaranteeing that citizens are equally able to exercise their agency actively rather than merely receive distributions from the state in a passive way. A consensus ethical view cannot be limited to the value of equality since equality could be satisfied by a distributive, welfarist version of justice that treats citizens as patients

rather than agents. Thus Ferretti's line of argument leads us to the crucial idea that citizens' *relations with each other* with regard to risk transfer must be set on an ethical footing, one in which they are able to act rightly towards each other according to common rules that govern their conduct.

The general ethical argument runs as follows. We all have basic moral reason, but the world into which we are born fails to facilitate our duty to set our relationships on a right moral footing. We aim to be able to act in the world without doing injury to anyone else, yet it is nearly impossible to do this. For example, today's New Zealanders are born into a system of automobility that none of them chose, but that they must participate in if they are to engage with their fellow citizens without extraordinary effort (Maniates & Meyer, 2010). Day-to-day life in New Zealand is arranged to facilitate transport in personal vehicles, most of which burn fossil fuels and emit greenhouse gases. When a New Zealand family takes a driving holiday, they do not intend to damage anyone; on the contrary, by following the norms as they find them they should be able to treat everyone else fairly as they go about their business. However, each additional unit of greenhouse gases emitted to the atmosphere further contributes to ocean acidification, rising temperatures, and sea-level rise. Some of those most vulnerable to sea-level rise today live in the so-called Small Island Developing States (SIDS). The system of automobility into which New Zealanders and other members of advanced industrial societies are born means that their everyday behaviours damage the prospects of residents of SIDs, though they surely do not intend this damage.

Civil society and the rule of law should make it possible for us to act without injuring others; in practice, we never enjoy a perfect ethically robust system of rules but only a more or less gappy system to govern our interactions. We need a public legal order that can regulate our interactions so that we are all subject to a common rule (Rostbøll, 2016). All of this is basic political philosophy; it is relevant to the problem of climate change adaptation because the legal status quo in New Zealand includes wide gaps that interfere with our capacity to interact rightly with one another. The uncertainty surrounding sea-level rise adaptation policy in New Zealand, as we shall see presently, is such a gap in the public legal order.

As we have already seen, most of the ethical literature adopts the perspective of a particular school of thought rather than a freestanding view. For the purpose of answering the question of the principled distribution of the risks of sea-level rise in New Zealand, however, even the most attractive selection among existing philosophical schools will prove unpersuasive and paternalistic. First, any such work requires the "end-user" to take the basic commitments of the school on board before even beginning to reason about justice. Yet the public seems perfectly able to reason about justice, and especially to recognize injustice, without the aid of Rawls or any other philosophical guru. Second, it would be good to achieve the advantages of the policy literature's freestanding view from nowhere without its tacit resort to a kind of unprincipled pragmatism.

Perhaps the right perspective would be not a putative view from nowhere or a partisan scholarly view, but the view of a servant of the democratic public who is, after all, the ultimate commissioner of this work. As we have seen with the scholarly literature, the consensus ethical principles that best fit that role will have to do with *equality*, on the one hand, and *agency*, on the other. These two main principles are common to nearly every writer on the subject and thus represent a sort of practical overlapping consensus with regard to the content of ethically robust adaptation policy.

3. Ethical Principles

As we have seen, the scholarly literature provides some guidance for addressing the question of adaptation justice. For example, many philosophers would agree that the sphere of lawlessness arising from the lack of rules governing responsibilities in the face of rising sea levels is a bad thing that prevents us from relating to each other as equals. Philosophers also tend to agree that more democratic agency—that is, more ability for people to have a real say in the futures of their own communities—is all things considered a good thing. While there is no single philosophically verified answer to the question of how we should distribute the risks of sea-level rise, we can use critical description to compare the effects of different climate change adaptation policies with the values of equality and agency.

Equality is of course a complex value, but it can provide robust ethical policy guidance. Most fundamentally for public policy, we should respect *equality before the law*. In addition, *equality across time and space* matters. We need to make ethically robust decisions about trade-offs between *intergenerational* and *intragenerational* equality. The background principle of promoting *collective utility* vindicates equality by inhibiting some from benefitting at the expense of others.

Agency vindicates the idea that each should have a say in the policy that affects them, and implies robust engagement policies that provide real substantive choice and dynamic uptake of citizen values from across all social groups. The two consensus ethical values are, as we have already seen, deeply interrelated. For example, vindicating procedural equality can mean insuring that agency is distributed across all stakeholders including those who are most socially disadvantaged. Their deep interrelation does not mean that these values of equality and agency never conflict, however. As we shall see in section 4a, procedures that enhance the agency of local communities can result in irrational and unequal outcomes from the perspective of the whole.

Following from these two fundamental values are a set of ceteris paribus rules[2] that provide fruitful comparisons between the policy status quo and principled ideals. The most common of these

[2] Ceteris paribus rules apply "all things being equal." In brief, these are ethical rules of thumb rather than categorical imperatives.

in the literature is *do not transfer risk to the most vulnerable*. In addition, ethically robust adaptation policy should *eliminate gaps in the rule of law* and *reduce uncertainty* where possible.

These rules aim to set people in ethical relation to each other under common norms of behaviour. People are unable to interact with their fellow citizens justly with regard to the risks of sea level rise under the status quo partly because of the uncertainty they face about the rules that will apply to their decisions over time. The best outcome for everyone will be a coordinated outcome in which risks are distributed fairly, uncertainty is minimised, and those least well off are advantaged over alternative states of affairs. But no one under the status quo can pursue this outcome by acting alone because the institutions that would coordinate our activities are not in place, nor can we anticipate them with any certainty. The status quo and its gaps in the rule of law force people into impossible situations: we want to act fairly, to play by the rules, but we cannot follow rules that do not exist. Given the unevenness of existing rules, the arbitrary nature of a patchy and uncertain compensation regime, and the immediate advantages to be accrued by ignoring the social consequences of one's investment activity, everyone faces the temptation to externalize their risks while internalizing their benefits (from modest ones like continuing to enjoy a house in a low-lying area to larger ones like expecting society to cover losses from risky new investment; see the longer discussion at 4a).

Agency in ethically robust adaptation policy is threatened by the delivery of technocratic single-option imperatives. For me to have a say in the policies that affect me, I need to have more than one choice. So for example engineers may recommend managed retreat as the sole option for endangered communities without attention to other principles and values the communities might have (say, about the time horizons appropriate to an ethically robust adaptation policy). Expertise is of course essential to decision making in climate change adaptation, but it is no replacement for the agency of affected community members.

Agency is more than just the opposite of technocratic rule, of course. As Schlosberg and others argue, climate justice demands not only egalitarian policies but attention to issues of recognition and procedural justice (Schlosberg et al., 2017). Agency in ethically robust adaptation policy means that your principles are yours, not just something some academic or official insists upon. Group differences about settled ethical norms matter here, too, and need to be taken into account to vindicate local agency. Take for example the tradeoff between solidarity and pure market values for insurance risk discussed earlier. As we have seen, O'Neill and O'Neill set out three options on a range of values from pure solidaristic to pure market, arguing that only the more solidaristic options are culturally appropriate for the UK. A few years later a settlement between the UK government and the Association of British Insurers partially instantiates that middle course (see the longer discussion at section 2b). In New Zealand, traditionally solidaristic insurance decisions are moving toward marketized risk and reduced moral hazard, though the impact of this transition is only

beginning to get public attention. This transition is being presented as quasi-natural, or as a market response to changing risks. However, ultimately, the choice lies with the people of New Zealand about where on the continuum from solidarity to pure market risk they wish to place which policies. International re-insurers make their own decisions, but they make them in a context determined by political decision. It is a vindication of the consensus value of agency when a community selects principles that reflect its unique identity.

It is essential to recognize that there are necessary tradeoffs, even among consensus ethical values. The tradeoff between solidaristic insurance cover and reduction of moral hazard is well understood. Less well understood are the tradeoffs between different kinds of equality and agency, and between agency and equality themselves. It is easier to understand these tradeoffs from a policy perspective when they are arranged as paired alternatives:

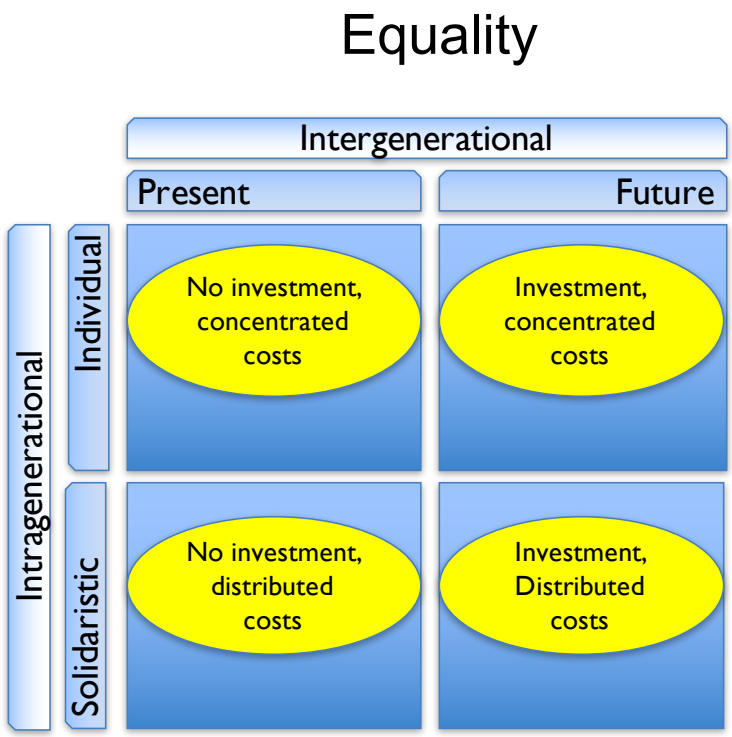


Figure 1: Tradeoffs between intergenerational and intragenerational equality

Arranging the tradeoffs among ethical policy options can help us demonstrate the range of choices with different implications for every given value. Here, we see that a policy that is focused on *intergenerational* fairness (say, an adaptation funding mechanism modelled on the EQC (Boston & Lawrence, 2018)) can have a range of *intragenerational* consequences depending on the details like broad or narrow bases of funding. There is no generally recognizable 'sweet spot' for tradeoffs such as these. We might be willing to tilt pretty far towards the future to prevent very costly damages, for

example. Different societies will express their agency by making different choices about these tradeoffs. These tradeoff diagrams help us to be explicit about what values the policy expresses, facilitating critical description.

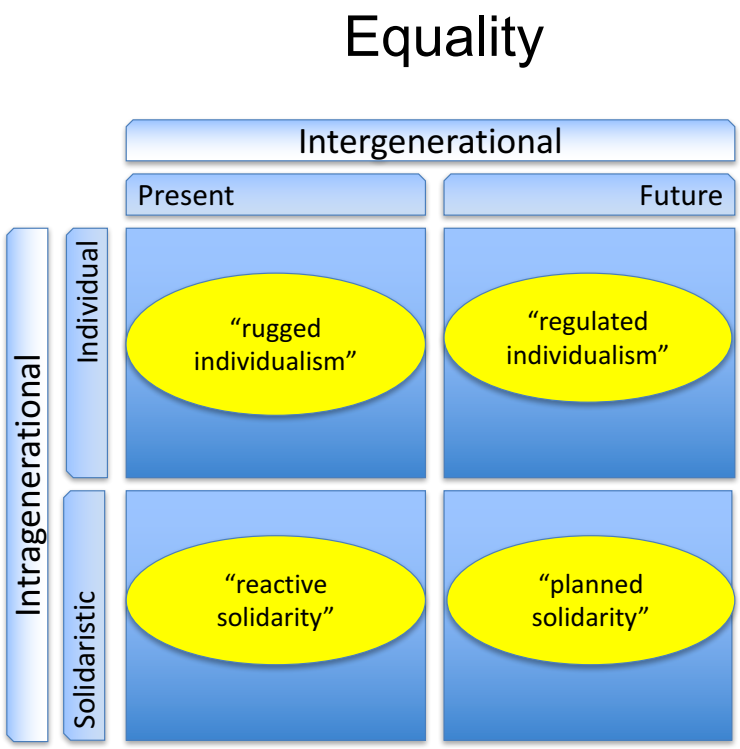


Figure 2: Four styles of equality policy

What kinds of sea-level rise adaptation decisions would entail implicit commitments to which of these ethical positions? Moving clockwise from the upper-left hand quadrant, we begin with the decision to prefer present interests to those in the future, while concentrating the costs of policies rather than distributing them across society. A decision to take no action in a location with at-risk existing development would effectively prefer the interests of present residents to those of the future, since any damage caused by increasing frequency and intensity of inundation events would be borne by future individual property owners (who would likely eventually face uninsurability but who would not transfer that risk to anyone else). The ethical upshot of this set of decisions could be characterized as "rugged individualism."

In the upper right-hand quadrant, costs are still concentrated rather than distributed, but the interests of the future are given more priority. A decision to require property owners to take steps to accommodate future sea-level rise at their own expense would effectively instantiate this set of choices; we could characterise this view as "responsible" or "regulated" individualism. In both upper quadrants, moral hazard is avoided, but the societal value of solidarity is also not expressed in policy.

In the lower right-hand quadrant, the interests of future generations are recognized but the costs are distributed across society (probably by general tax-based funding). A decision to build a sea-wall could effectively instantiate this set of choices, though you would have to presume that future generations care more about existing housing than accessible beaches. Other decisions that would effectively instantiate this set of choices would be managed retreat or adding infrastructure to accommodate rising sea-levels. We could characterise this set of decisions as "planned solidarity." Finally, in the lower left-hand quadrant, the interests of the present are preferred, but costs are distributed across society. A decision to provide post-event disaster relief for loss and damage due to sea-level rise would effectively instantiate this set of choices. We could characterise them as "reactive solidarity."

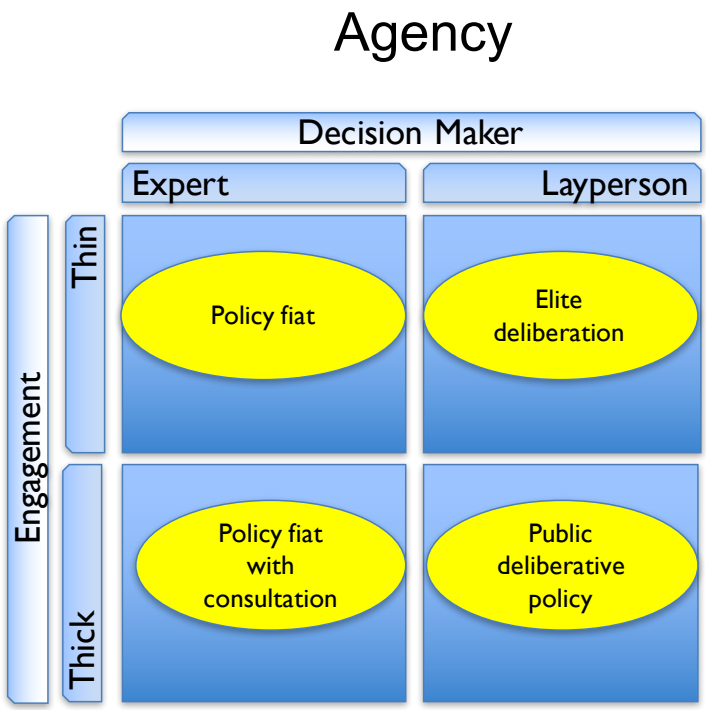


Figure 3: Tradeoffs between engagement and decision-making agency

There are tradeoffs for different dimensions of agency, as we saw for two dimensions of equality. If you separate the process of public engagement from the moment of determinative decision, you will see four broad patterns, each reflecting its own implicit values. You have "policy fiat" if you decide that managed retreat is inevitable based on expert testimony, for example. Your policy fiat can be softened with engagement if you pursue conventional public consultation, but this is still only a small step towards realizing the consensus value of agency. You would move to elite deliberation if you commission a citizen jury to consider possible managed retreat. If you combine the citizen jury process with an engagement campaign that includes multiple options and dynamic adaptive policy pathways planning, you would be closer to an agency-vindicating deliberative public policy. Different societies will choose different expressions of agency for different kinds of policies. There are always

some policies where fiat is the publicly preferred alternative, since exercising agency is costly in terms of time and effort. Generally speaking the more comprehensive the changes associated with a new policy are, the more societies should seek to approximate public deliberative policy.[3]

There is more to vindicating agency than recognizing tradeoffs, of course. The prevailing norm in New Zealand policy engagement today focuses on information provision by the state and on voluntarily attended community meetings. As we shall see in more detail in section 6a, current government guidelines for community engagement are relatively robust. However, conventional community engagement practices tend to amplify the voices of older citizens, the voices of property owners, and generally the voices of those with the most social capital (Putnam, 2000; Schlozman, Verba, & Brady, 2012). As the political scientist E. E. Schattschneider has written, "the flaw in the pluralist heaven is that the heavenly chorus sings with a strong upper-class accent" (Schattschneider, 1960). Given that those with the most at stake in climate change adaptation policy are members of younger generations and those not yet born, the status quo falls short when it comes to vindicating their agency.

One relatively new process that aims to overcome these common flaws in vindicating agency via community engagement is the citizen jury. This mode of engagement actively and deliberately constructs representative mini-publics, including younger and relatively disadvantaged people who tend to be overlooked in standard deliberative efforts. Their work is often compensated so that socially disadvantaged participants do not bear an excessive burden of participation. The work is substantial and well-supported, stretching from weeks to years under the guidance of professional facilitators. Crucial to the legitimacy of the citizen jury process is that the findings of the engagement exercise have some concrete effect. Normally they result in a proposal to the appropriate democratic governance body, whether that is the people as a whole via a referendum, or a city council, or some other entity. What matters for the citizen jury process is that a substantially representative group engages with a problem in a sustained way and makes effective, not merely expressive, proposals at the conclusion of the exercise.

An example of this process in action is the 2004 British Columbia Citizen's Assembly on Electoral Reform, a body charged with recommending changes to the electoral system of the province. It was composed of 160 randomly selected citizens who met every other weekend to deliberate on alternative voting arrangements. They recommended replacing the province's existing First Past the Post (FPTP) system with a Single Transferable Vote (STV) system. This recommendation was put to the citizenry at large with a referendum held during the 2005 provincial election. The referendum did not meet the supermajority threshhold, with only 57.7% of votes in

[3] In addition to tradeoffs among kinds of equality and agency, there are tradeoffs between these two consensus values. For example, as discussed in section 4a, distributed agency among uncoordinated local agencies can lead to unequal distribution of collective goods.

favour, although it did have majority support in 77 of the 79 electoral districts. Given the inconclusive results, the government called a second referendum and the STV was defeated with 62 percent of voters opposing (Fung & Fletcher, 2009). While the effort did not change the voting system in British Columbia, it did provide citizens with a means of evaluating the proposals that is richer and more representative than normal channels. Though it could have been more substantially representative and closer to the voters, the exercise did generate some increased social capital, at least among participants (A. Lang, 2007). More recently, a consortium of councils, iwi, and other stakeholders used a similarly intense and substantial community engagement process to make recommendations about local sea-level rise policy (see the discussion in section 6a).

4. General description of the New Zealand status quo

4a. Theoretical description of ethical relations under the status quo policy

The status quo in sea-level rise risk in New Zealand is a lot like a game of chicken. While there is a social expectation that the state will step in and compensate for losses in cases of natural disaster, there is no formal rule about this except in cases covered by the EQC, and even there we have significant uncertainty. Ad hoc government assistance in response to well-publicized losses is the norm. The situation is unfortunate from the point of view of achieving the best collective outcome, since it is rife with moral hazard, undermines rational insurance provision, and produces results based on arbitrary constellations of public discourse and political power. On the other hand, the social values on which the status quo rests are grounds for optimism about an eventual better settlement: New Zealanders have historically been committed to values like solidarity and fairness in protecting each other from natural hazard.

How, exactly, is the status quo in New Zealand adaptation policy like a game of chicken? In the following section I use simple game theory to make this clear. In game theoretical analysis, we model the incentives faced by presumably rational actors in a structured interaction. By thinking through the costs and benefits of the different available choices for each party, we can identify best outcomes and the existing barriers to reaching them.

The most famous game theoretical model is the prisoners' dilemma, in which players would benefit from coordinating their actions ("cooperating"), but if they cannot coordinate with each other, then each has good reason to protect their own interests at the expense of the other ("defecting"). The narrative background of the prisoners' dilemma is as follows. Two criminals cooperate to rob a bank together. They stash their loot, and then they are picked up by the police and put in separate cells where they cannot communicate with each other. The police have enough evidence to convict each prisoner of minor offenses, but without the testimony of at least one the prisoners they cannot prove any major offense. They therefore offer each prisoner the following deal: if you testify against your collaborator and your collaborator remains silent, you will be an essential witness and we will allow

you to go free while your collaborator will be convicted of the major crime. Everyone knows that if neither prisoner testifies, both will be convicted of minor crimes with short sentences. However, neither prisoner can be sure that the other prisoner will not be tempted to testify in exchange for freedom, leaving them to do a long stretch in prison. Since they face identical circumstances, they will make similar decisions, and both are likely to choose to testify rather than risk the long sentence they would receive if they stay silent while their collaborator testifies. If they could have coordinated their behaviour, they could each serve a short spell in jail, but facing separate decisions, they make the ones that are collectively the most costly.

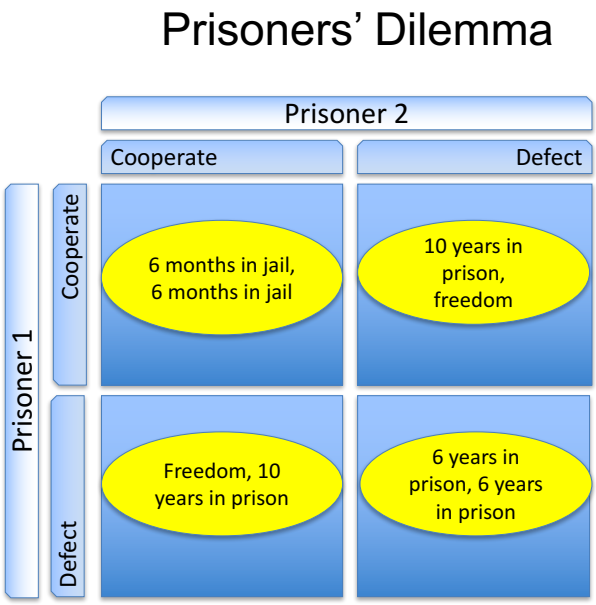


Figure 4: Prisoners' Dilemma

The usual status quo for prisoners' dilemma situations, then, is suboptimal outcomes for everyone acting in uncoordinated fashion (that is, everyone chooses to defect), while the best outcome would be one in which actors coordinated their choices and managed to achieve a more optimal outcome for everyone (that is, everyone cooperates). Since everyone faces the same sets of incentives, we would expect everyone to behave identically, even though everyone *wishes* that they could enjoy the benefits of widespread cooperation without having to cooperate themselves (that is, they are tempted to free-ride). Standard solutions to the prisoners' dilemma problem include pre-commitment mechanisms like promising to cooperate, regulatory mechanisms that insure cooperation through reducing incentives to free-ride, and privatization mechanisms that shift the costs of defecting back onto the players (again reducing their incentives to free-ride).

The classic modern example of a prisoners' dilemma in policy practice is climate change mitigation. It is in everyone's interest that we reduce greenhouse gas emissions, but if we do not somehow coordinate our activity, then each of us has an incentive to free-ride on other people's

cooperative behaviour. Since no one can be excluded from enjoying the benefits of a less polluted atmosphere, even those free-riders who continue to pollute (that is, who defect) will benefit if others reduce their emissions. But since everyone faces the same sets of incentives, all will make similar choices, and instead of enjoying the illicit benefits of free-riding, all of the non-cooperators will suffer the same suboptimal outcome of continued high levels of greenhouse gas emissions and their consequences (Higham, Ellis, & Maclaurin, 2018). As Garrett Hardin writes about this dynamic, "conscience is self-eliminating" (Hardin, 1968). In other words, this kind of problem is not solvable by individual moral action, but only through coordination mechanisms like pre-commitment, regulation, or privatization. The Paris Agreement of 2015 can be seen as an effort to resolve the collective action problem in which uncoordinated countries were unable individually to overcome the temptation to free-ride.

The game-theoretical model for risky coastal investment in the New Zealand context is equally illuminating, but structurally different from the classic prisoners' dilemma of greenhouse gas mitigation. Instead of a set of disorganized, similarly situated actors facing decisions to cooperate or defect, in risky coastal investment we have two differently situated actors: the investor, and society. It is better for society as a whole if assets are placed in less risky but still productive locations, and it is better for society as a whole to minimize losses. Therefore, society as a whole prefers to avoid investment in risky coastal property (and in fact, "avoid" is the option recommended by the Ministry for Environment for such properties). However, the set of incentives facing the investor is different. The investor prefers the highest return with the lowest risk; from the investor's perspective, the ideal circumstance allows one to reap excludable gains from risky investment, while reducing individual risk by transferring it to the public or someone else willing to cover it. There is nothing in principle unethical about the investor's stance, and in fact most property owners pursue a similar strategy by purchasing insurance cover. Unfortunately, under the status quo of uncertainty about the level of cover that the state would offer owners of risky coastal properties subject to sea-level rise, investors' natural incentive to transfer risk leads to a divergence of interests between investors and society. Investors prefer the high returns of investment in risky coastal property and they prefer low individual risk, with cover expected from solidaristic responses by the state to losses attributable to sea-level rise. Society prefers to offer solidarity in the face of natural hazards to its people, but also to reduce the level of moral hazard by building some market principles into its cover. Especially because those with high levels of investment in risky coastal properties are likely to be politically advantaged (older, wealthier, better organised, with access to legal services), the bet on solidaristic cover made by these investors is not irrational under the status quo of uncertainty. They may be more or less rationally

choosing to play a game of chicken with the state, betting that the state will cooperate and protect them from losses.[4]

If the status quo in relations between investors and the state is like a game of chicken, how might it evolve out of that situation? The classic solutions to "chicken" are pre-commitment and negotiation. Under the status quo, investors face strong incentives to hope for solidaristic cover from the state (and also incentives to use social power to translate that hope into reality). If the state could make a credible commitment to reduce and/or eliminate cover for risky investments, then these incentives would evaporate (but see Boston & Lawrence, 2018). Exposed to the real market risks of risky coastal investment, investors would calculate their risks free of moral hazard. Moreover, circumstances of certainty would allow investors and citizens to engage cooperatively rather than competitively, as fellow New Zealanders sharing risks and incentives equally rather than groups whose interests are invidiously opposed.

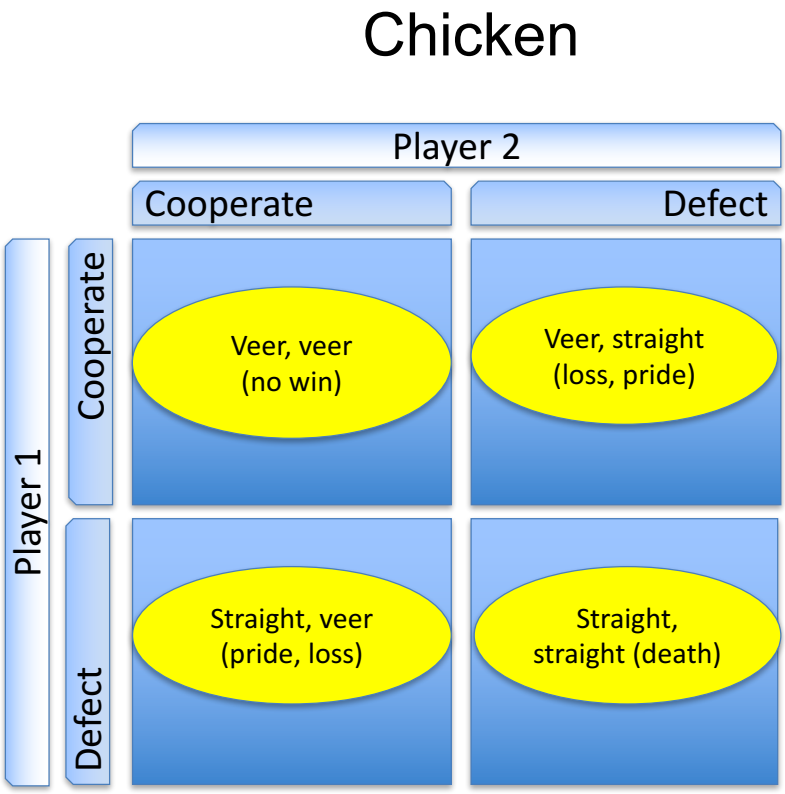
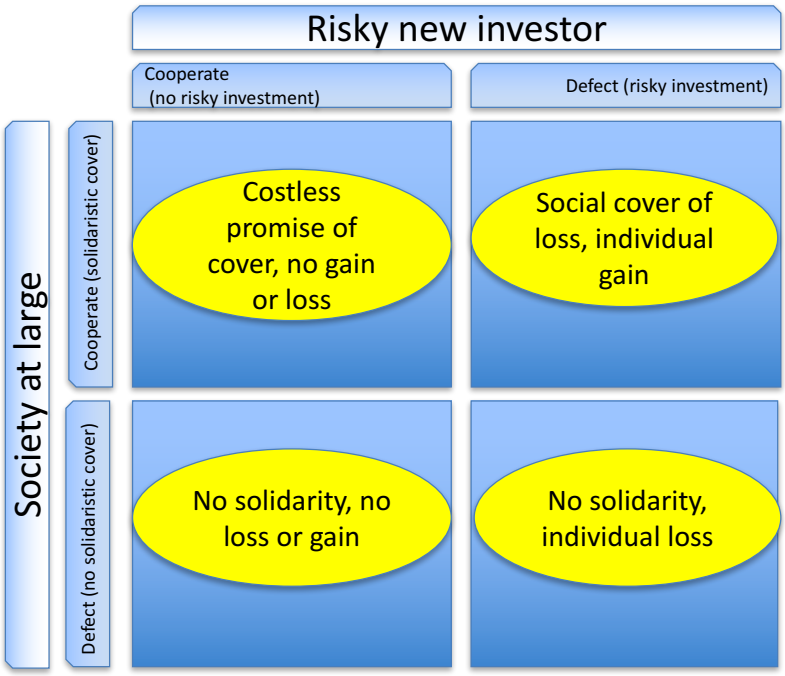


Figure 5 (above): Chicken

Figure 6 (below): Sea-level rise "chicken"

[4] A game of "chicken" is based an irrational competitive game in which two drivers head straight towards each other. At least one of them must swerve if they are to avoid a head-on collision. "Winning" occurs if one player maintains a straight path while the other one swerves, thereby supposedly demonstrating superior nerve and gaining a source of pride. The rationale behind "chicken" is that each is tempted to make gains at the other's expense by threatening both with a disastrous outcome.



We have seen, then, that *risky new development* can resemble a game of chicken in terms of the ungoverned relationships between investors and the public. Uncoordinated local policymaking about *at-risk existing development*, on the other hand, can look more like a variety of collective action problem called the tragedy of the commons (Hardin, 1968; Ostrom, Burger, Field, Norgaard, & Policansky, 1999) Ironically, as we shall see, this suboptimal collective outcome arises out of the vindication of community agency, illustrating a tradeoff between the two consensus values of equality and agency in some cases. Let us follow this logic through.

A common worry among residents of at-risk coastal developments, particularly those who live in relatively sparsely populated areas, is that state regulators will force them to accept managed retreat. As the advisors to the Clifton to Tangoio Coastal Hazards Strategy 2120 assessment panels noted with regard to coastal residents, one of the potential causes of negative wellbeing for them is "perceived 'oppression' by territorial authorities using regulatory powers to force retreat as the only option" (Bendall, 2018). The consensus ethical value of agency means that one should have a say in the policies that affect oneself and one's community. Processes that engage community agency should not only ask about people's choices among a set of options pre-selected by experts, but also about the standards themselves. (The Hawke's Bay community engagement process did this well, for example, by soliciting stakeholder views on how different kinds of value should be weighted in their multiple criteria decision analysis (MCDA) process (Bendall, 2018)). In the case of sea-level rise policy, a

conflict consistently arises over the selection of the appropriate time horizon—between expert assessment of options over the long run and communities' interests in the short and medium term. Respecting local people's discounting of the future by placing priority on shorter term interests is one way to vindicate the consensus ethical value of agency.

So far, so good for ethically robust sea-level rise policy making. The difficulty arises in this case when the uncoordinated vindication of multiple local communities' interests leads to a suboptimal outcome, considered collectively. Imagine a stakeholder process in which selection of dynamic adaptive policy pathways is devolved to the local level with centrally provided technical advice and legal norms (this is a good candidate for an ethically robust procedure on the face of it, vindicating local agency and equal treatment while minimizing uncertainty and unjust risk transfer). Each community recognizes that engineering solutions like sea walls can delay but probably not prevent eventual managed retreat (again, in this example we are abstracting away from real physical differences among localities). Everyone understands that sea walls and beaches are incompatible, and everyone has an interest in the continued existence of reasonably accessible beaches as part of sociocultural and recreational value. However, if each community makes its decision in isolated fashion, uncoordinated with other communities, each will choose to protect their property while hoping that other communities choose beaches over sea walls.

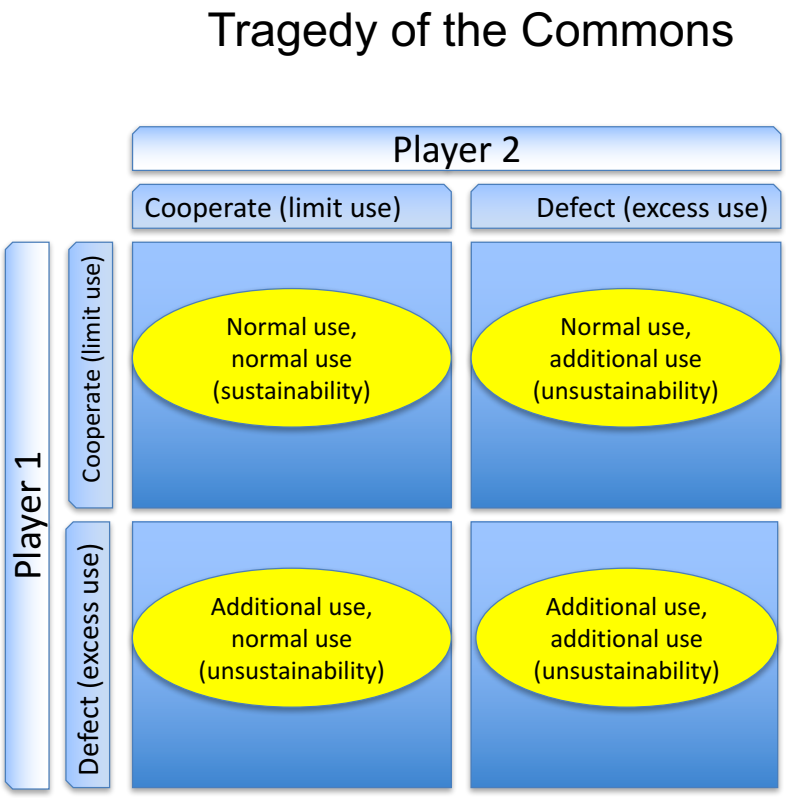


Figure 7: Tragedy of the commons

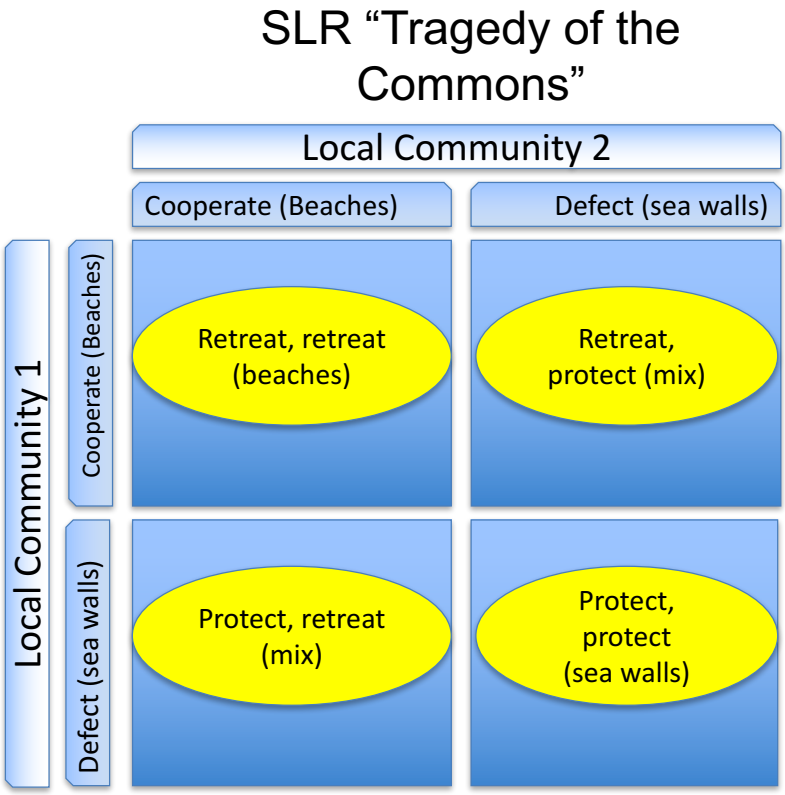


Figure 8: Sea-level rise “tragedy of the commons”

Beaches in New Zealand are a public, non-excludable good; everyone can enjoy them regardless of whose contributions make them possible. Sea-wall protected communities are also a public good considered from the point of view of the property owners protected by them, but considered from the point of view of the region as a collection of independent communities, they are a private good since they provide exclusive goods to a few at the expense of everyone’s opportunity to use the missing beach. Even though everyone recognizes the value of beaches, every community is tempted to free-ride on other communities’ beach provision while protecting their own properties with beach-unfriendly engineering solutions. Since (in our abstract example) every community’s incentive structure is the same, we would expect every community to behave similarly, to protect their excludable goods and free-ride on common resources, which would then disappear as a consequence of everyone’s free-riding. Everyone would end up with temporary property protection and no nearby beaches, which is not the choice any would have made. Pilkey has commented on this dynamic in the context of sea-level rise policy in the United States:

> As the scale of the rise becomes clear, we will do what we can to save our major cities, including armoring the coast, that is, building hard structures to hold back the waters. But we must realize that in building hard structures on beaches, we

> will ultimately lose the beach (which might have been the very reason for building next to the ocean in the first place). Even though this may be an acceptable loss in order to save large cities, it is not acceptable on a large scale. Why protect the homes of the few (and largely wealthy) at the cost of losing the beaches that so many of us enjoy? Also, the cost of armoring the entire U.S. coastline would be astronomical. In the end, we will likely choose to defend our major cities and move back from most other areas. (Pilkey, Pilkey-Jarvis, & Pilkey, 2016; p. 8)

Uncoordinated decisions about local engineering solutions for the challenges associated with sea-level rise thus present us with a textbook example of a tragedy of the commons. As famously analysed by Garret Hardin, "freedom in the commons brings ruin to all" (Hardin, 1968). Hardin's solutions included privatization of the common resource (not an option in the case of New Zealand's beaches) or regulation. Clearly, as we shall see in section 6b, ethically robust adaptation policy processes must not only build in agency respecting elements at the initial decision stage, but must also evaluate outcomes at the local and collective level. A policy that vindicates local agency by subjecting everyone to the suboptimal results of uncoordinated community-level free-riding regarding such an essential New Zealand value as access to beaches is clearly not ethically robust.

4b. Description of ethically relevant insurance considerations under the status quo

5. Cases: Risky New Development and At-Risk Existing Development (cut these two sections; happy to supply to anyone interested: lisa.ellis@otago.ac.nz)

6. How Should the Risks of Sea-Level Rise be Shared?

A robust ethical policy process for making decisions about distributing the risks of sea-level rise must vindicate the consensus ethical values of equality and agency. At the beginning of this working paper we set out four possible glosses of sea-level rise policies that would *not* be ethically robust according to our critical description. Any policy whose effective implemented value is "the rich get sea walls and the poor get moved" violates, we claimed, consensus ethical norms about equality. Equality was also at risk from policies that allowed "a gap in the rule of law" and "a transfer of risk to the most vulnerable." Finally, policy processes that denied agency were glossed as expressing, on an individual level, "a lack of say-so in the future of my community."

Equality. The most important immediate step New Zealand can take toward an ethically robust sea-level rise policy is to bring certainty and consistency into the legislative framework, ending the collective action problems and risk transfers associated with legal "gappiness." Central government

should also resource adaptation nationwide, so that community resilience does not vary with ratepayer capacity. Providing not only funding but regulatory consistency across geographical location (thus vindicating spatial equality) prevents the problem of being exposed to different burdens of risk depending on where one lives. As we have seen, this kind of spatial equality can conflict with community agency: although no set of policy processes can overcome the inherent tradeoffs that are part of ethical policy making, it should be possible to vindicate agency within an egalitarian boundary set by law.

Temporal equality is another, equally important element of the consensus value of equality: inaction and delay violate temporal equality because society needs to make decisions about pro-active risk reduction in order to prevent increasing losses for everyone over time. Moreover, youth and future generations are disadvantaged representationally and thus need active promotion of their interests. Attending to these aspects of equality should keep the New Zealand climate adaptation policy process from violating the rule 'do not transfer risk to the least advantaged'. Finally, vindicating equality requires us to perform regular ethical evaluation of *outcomes* as well as processes, and at multiple levels of analysis from the local to the national, lest we unintentionally implement policies that everyone rejects (like the loss of accessible beaches) or that might be glossed as 'the rich get sea walls and the poor get moved'.

Agency. 'Lack of say-so in the policies that affect me and my community' is a crucial problem with the New Zealand status quo and a problem endemic to the policy process world-wide. Expecting members of underrepresented groups to volunteer to attend conventional outreach efforts like community meetings is unrealistic. New Zealand climate change adaptation policies must employ an active effort to get socially disadvantaged and young people represented (as well as representing the unrepresentable like members of future generations and non-human beings). New institutions like the citizen jury, and recently instantiated processes like the one used in Hawke's Bay's assessment panels, offer significant improvements over the conventional consultation process in terms of vindicating agency. These processes vindicating agency at the local level must be supplemented by agency-vindication at the regional and national level in order to prevent uncoordinated local decision making from having suboptimal collective consequences (again, like a lack of accessible beaches).

6a. Existing Strategies for Community Engagement in New Zealand Climate Change Adaptation Policy

Of the many available sources of guidance on community engagement, we shall look briefly at four: the Parliamentary Commissioner on the Environment's 2015 report; the Ministry for the Environment's 2017 guidance for local government; the Ministry for the Environment's Climate Change Adaptation Technical Working Group's final report of 2018; and the Clifton to Tangoio

Coastal Hazards Strategy 2120 Final Report of the assessment panels (2018). All offer very promising guidelines for ethically robust community engagement strategies, though we will have some additional suggestions for future community engagement efforts in climate change adaptation.

In her 2015 report, the Parliamentary Commissioner for the Environment recommended that the central government in its guidance "include a standard process for council engagement with coastal communities" (Parliamentary Commissioner for the Environment, 2015). The guidelines issued by the Ministry for the Environment in December of 2017 do just this (see below). Some of the Parliamentary Commissioner's discussion of community engagement remains relevant, however. She emphasises that government can increase the negative consequences of sea-level rise suffered by residents if regulation comes "as a shock." Current processes that commission technical reports and then put the results on owner's Land Information Memoranda (LIMs) are too condensed and likely to surprise residents, especially given the difficulty of directly perceiving the threat of sea-level rise. Instead, the Parliamentary Commissioner recommends a slower process with clear communication. Additionally, she emphasises that communities should be involved not only as receivers of information, but as deciders of "what the trigger points for a change in management should be." From the point of view of both equality and agency, this last recommendation is critical: communities' agency can be undermined not only by policy fiat but also by technical determinations about what should matter to them.

As has just been mentioned, the 2017 guidelines issued by the Ministry for the Environment provides a great deal of high-quality social science and policy advice about community engagement (Bell et al., 2017). The guidelines emphasize that not only is effective community engagement the right thing to do, but it is also essential to the successful implementation of any climate change adaptation policy. Engaged policy making will be better because it will consider questions from more points of view, and the trusting relationships among stakeholders that are critical to policy success will be enhanced by effective engagement. Like the Parliamentary Commissioner in 2015, the Ministry for the Environment in 2017 emphasizes the need for early interaction with communities.

The 2017 guidance offers specific questions for councils putting together stakeholder groups; answering the questions should make the resulting groups "more rather than less inclusive." While the questions include an item about representing those without a voice, including future generations and natural entities, they do not address how councils might *actively* construct groups to include marginalized groups like the socially disadvantaged and the young. The guidance does cite literature on this problem, but does not include steps for remedying it in the guidelines. Similarly, the guidance lists citizen juries as a possible mode of community engagement, but does not specifically recommend any of the institutional benefits of citizen juries that distinguish them from conventional consultation such as compensation for participation or construction of a representative mirror of the citizenry.

Finally, the guidance very helpfully recognizes the need for regular, dynamic assessment and updating of the community engagement process.

The Ministry for the Environment's Climate Change Adaptation Technical Working Group (2018) comments in much less detail on community engagement than either the Parliamentary Commissioner (2015) or the Ministry (2017), and this is appropriate given the group's different purpose. Still, it will be useful to highlight a few things said by this group as they are relevant to the construction of an ethically robust community engagement process. First and most important, the group declares that "Every New Zealander has a role to play in adapting to climate change" (Climate Change Adaptation Technical Working Group, 2018). Given the inherently technocratic approach to climate adaptation policy that is necessarily part of the Technical Working Group's remit, this declaration is remarkable. The group goes on to emphasize the need for a dynamic adaptive policy pathways planning approach, including the flexibility that will enable local communities to make choices about their adapation plans. Although, appropriately, most of the technical working group's suggestions are aimed at elite-level implementation, still, they recognize the centrality of community engagement to New Zealand's climate change adapation effort.

Finally, let us look briefly at a recent community engagement exercise that empaneled residents of communities in the Hawke's Bay region to make proposals to their councils about short, medium, and long-term preferred adaptation policy (Bendall, 2018). Many of the best elements of the citizen jury model were incorporated into the Clifton to Tangoio 2120 Coastal Hazards Strategy, including broad representation, repeated substantial engagement over a long period of time under expert but non-voting guidance, and the formal proposal of the results of the process to democratic governing bodies. There were regular efforts to engage with the broader community as part of the exercise, and to disseminate information about climate change risks and about the process itself to the public. Assessment panel members not only responded to technical material presented by experts, they were guided through a process in which they made deliberative choices about the weighting of different values. Eventually they made choices among policy options based on combinations of a multi-criteria decision analysis, an economic analysis, and other information provided by their technical advisors. They also reported on self-perceived shortcomings of the process, including interestingly the perceptions of some that they had put managed retreat in the "too-hard" box (Bendall, 2018).

While the practical results of the process are still all in the future, the assessment panel process final report documents an ethically robust process that should serve as a model for other regions of New Zealand. In future applications of this process, it would be good to build in more representation of underrepresented voices, especially of the young and of people living in rental properties. In addition, information on whether there are ethically relevant patterns to the decisions of panel members to contribute a final vote or not would be useful; the final report does not address the

difference between the number of members who contributed final votes and the number of initial members. Worries about lack of socio-economic diversity and possible biases in participation rates are a permanent element of community engagement processes, of course. In any case, a quick look at the outcomes suggests that the community recommendations avoided socio-economic bias. A rough comparison of the outcomes of the assessment panels for the different at-risk communities of Hawke's Bay with these same communities' scores on the New Zealand Index of Multiple Deprivation shows *no* consistent association between a community's level of deprivation and whether the panel recommended defences like a sea-wall or instead recommended managed retreat (Bendall, 2018). It would be good to build this kind of test into future community engagement efforts, to make sure that the ethically non-robust outcome of "the rich get sea walls and the poor get moved" does not appear as an unintended consequence of the amplification of more privileged voices in community consultation efforts.

6b. Recommended Emendations of Existing Strategies

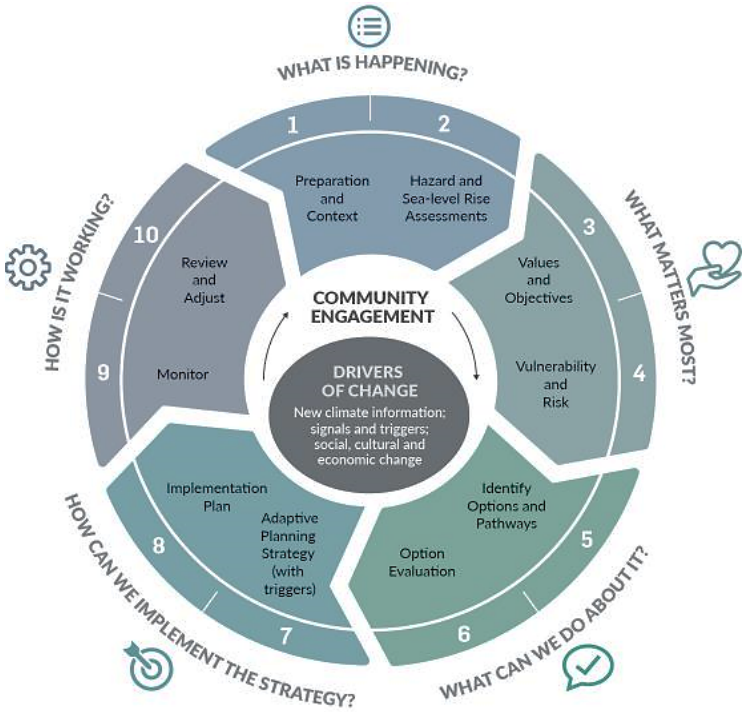


Figure 9: The Ministry for the Environment's 10-step decision cycle (Bell et al., 2017)

The Ministry for the Environment's 2017 coastal hazards guidance for local government provides a number of essential elements for an ethically robust climate adaptation policy process, as described above. There are two areas, however, where *ethical moments* need to be incorporated into the ten-step process in order to improve the robustness of both processes and outcomes.

First, building on principles already outlined in the guidance, government must *actively* seek to engage with community members across differences not only in geography or stakeholder group but also, crucially, across levels of disadvantage and across the generations. Engagement processes that rely on volunteer attendance at community meetings will predictably amplify the voices of older property owners and diminish those of younger renters, for example. Citizen jury mechanisms, including compensation for people's time and active outreach aimed at representativeness, can help government engage the whole community in these crucial processes. Efforts to engage even younger people via citizen science and schools outreach methods will also contribute to redressing the deficit in youth representation that characterizes the status quo in climate adaptation policy engagement in New Zealand. However, there is no reason in principle that secondary school children should not take part in citizen juries and other more formal engagement processes.

Second, at the outcome stage (numbers 9 and 10 in the 10-step process), *ethical as well as physical outcomes need to be assessed*. The guidance refers to "long-term consistency so that any identified decision triggers are embedded in a council monitoring system so changes over time will be signalled, and to ensure a long-term commitment by the council," among other monitoring principles (Bell et al., 2017), p. 242. However, there is no specific commitment to compare interim outcomes with consensus ethical values. As we have seen in the example of local adaptation preferences as a tragedy of the commons leading to the potential disappearance of accessible beaches, it is possible to have ethically robust decision procedures that lead to non-robust interim outcomes (see section 4a).

The best way to achieve the second of these modifications to the Ministry for the Environment guidelines to ensure ethical robustness would be to incorporate moments of ethical decision into our dynamic adaptive policy pathways planning (DAPP). The current state of the art in applying DAPP to climate change adaptation is set out in recent work by Judy Lawrence and Marjolin Haasnoot (see additionally, Haasnoot, Kwakkel, Walker, & ter Maat, 2013; Lawrence & Haasnoot, 2017). A crucial advantage of the DAPP is its flexible incorporation of evaluative moments that can shift pathways in response to ongoing evaluation of success according to multiple criteria. However, although existing models of DAPP distinguish among different schools of ethical thought, they do not build moments of ethical evaluation into decision points. The DAPP uses "hierarchical, egalitarian, and individualist" pathway preferences, with unfortunate unintended implications such as conflating environmental and egalitarian concerns into a single pathway. Rather than using these blunt "values" to choose paths, DAPP should build ethical values in as constraints that are themselves dynamically updated via community engagement. The policy makers should ask community members regularly, is the policy exacerbating existing inequality? Is the policy transferring risk to the most vulnerable? Is the policy vindicating the agency of all citizens? This process would be much more ethically robust than the existing DAPP policy of choosing one of three values clusters at the outset of the process.

Similarly, in the otherwise excellent DAPP for Clifton to Tangoio Coastal Hazards Strategy 2120, there are built in re-assessments every ten years for new global models or local scientific data as well as the efficacy of existing adaptation efforts, but no re-assessment of equality, agency, or the balance of risk transfer. The report rightly notes that these ethical questions are important. For example, the assessment panels' initial goals included two goals aimed at setting private landholders and public entities on a just moral footing (Bendall, 2018). What is lacking is incorporation of these ethical moments of judgment into the DAPP process.

Thus in addition to recommending additions to the Ministry for the Environment's ten-step community engagement model, as noted above, this working paper recommends adding ethical moments into the dynamic adaptive policy planning process used in climate change adaptation policy in New Zealand.

7. Summary and recommendations for further research

This working paper applies critical description to climate change adaptation policy in order to answer the question of how, in a principled way, to share the risks of sea-level rise. It identifies two consensus ethical values and some related ceteris paribus rules for ethical policy making. The working paper reviews abstract dynamics of sea-level rise policies as well as real cases of climate change adaptation policy. It arrives at some suggestions for making ethically robust policy decisions about adapting to sea-level rise. These are summarised here:

- New Zealand must bring certainty and consistency to its regulatory framework governing adaptation policy, in order to end the collective action problems and transfers of risk to the most vulnerable that arise from gaps in the present legal system.
- Adaptation funding must address both spatial and temporal inequalities, so that we do not transfer risk to the most vulnerable, whether that vulnerability is due to ratepayer capacity, membership in future generations, or another factor.
- Dynamic adaptive policy pathways planning must include regular ethical evaluation of both processes and outcomes. Monitoring of ethical outcomes should aim to prevent unintended consequences of otherwise egalitarian and inclusive procedures, such as the regional loss of accessible beaches due to uncoordinated local engineering solutions.
- Deliberative community policy planning processes must actively engage underrepresented voices such as those of youth and renters.

There are a few important avenues of research left incomplete at this juncture:

Given the disproportionate stake members of younger generations have in the success of climate change adaptation policies, it is critical to engage young people in the policymaking process: *How can the New Zealand climate adaptation policy process engage more substantially with young people?*

New Zealand is obliged to honour its Treaty of Waitangi obligations, and the fact of increasing coastal hazard will have important implications for them. Māori environmental knowledge as well as Māori management of natural resources will be critical elements of any successful sea-level rise adaptation policy. The Deep South National Science Challenge has funded projects in these areas, and the Climate Change Adaptation Technical Working Group report also addresses this challenge, but research deficits remain: *How can the New Zealand climate adaptation policy process realise Treaty obligations, promote Mātauranga Māori, and support Māori landholders threatened by sea-level rise?*

While this report has focused on the very general, consensus ethical values of equality and agency, more research is needed in two areas of ethical values specific to New Zealand. First, *What do New Zealanders think about ethical tradeoffs like the tradeoff between solidarity and moral hazard, and how are their ethical views different from those held by people in other places?* And second, *How are New Zealanders' views on the ethics of climate change adaptation policy changing as they experience sea-level rise and its consequences?*

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