1 The Wicked Problem of Forest Policy

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INTRODUCTION

There is a global consensus that stopping deforestation is crucial for planetary health. Global efforts to curb deforestation, such as the Paris Agreement, the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD) programme, and the aspirational New York Declaration of Forests, involve significant international and cross-sectoral coordination. They also involve the creation of new institutions and governance mechanisms to accomplish the goals set out in these instruments. At the same time, national-level efforts to support human development, reflected in the United Nations (UN) Sustainable Development Goals (United Nations, 2016a, 2016b), aim to increase the welfare and wellbeing of populations living in poverty. Meeting these development goals will inevitably have cross-cutting effects on initiatives to address deforestation. In balancing these goals, policy-makers are confronted with wicked problems – or problems where there are moral considerations and where limited information is available for policy-makers. This book is focused on how wicked forest policy problems have been, and can be, addressed.

Forest Policy and Wicked Problems

For millennia, the decisions of human societies were largely responsive to environmental conditions. As our populations have grown, we have developed increasingly sophisticated institutions to govern natural systems, and our decisions are now largely oriented to how we behave in these systems (and avoiding the 'tragedy of the commons'). In a rapidly changing world, where population growth, unbridled

consumption, shrinking resources, ecological degradation and climate change are pushing natural systems beyond thresholds for sustainability, our ability to govern natural systems to meet certain policy goals is increasingly restricted.

Policy refers to the decisions and actions of public agencies to accomplish certain collective goals, and policy ranges from being symbolic, to procedural, to substantive in nature (Sabatier and Weible, 2014). Forest policy involves the decisions of public agencies to address collective forest goals, which can include maintaining forest health, conservation, creating forest access for Indigenous peoples, supporting forest product exports, and sustainable forest management. How policymakers develop policy, the issues they prioritize, the goals to be achieved and the types of policy instruments selected to achieve these goals, are defined through the 'policy process' (Sabatier and Weible, 2014).

The policy process involves both public and private actors who often form different advocacy coalition groups based on shared policy paradigms (values and worldviews) that aim to develop policy (or not to) on certain issues of importance to the advocacy coalition group (Sabatier, 1988). Advocacy coalition groups engage in policy and social learning processes and direct resources towards building political support for different policy pathways. They frame the issue as of primary importance (Gross, 2008). Policy is formed in this contested policy process, where policy pathways are legitimized through evidence and science (and policy lessons from elsewhere), and other policy pathways are discredited (Sabatier, 1988). The policy pathway adopted is not always that determined through scientific processes but it may simply be the pathway with the most powerful voice championing it (Arts and Van Tatenhove, 2004). Politics often trumps science, and this includes situations where science is ignored, or where politics influences the science. In both cases, our understanding of the problem becomes limited and the policy response is fundamentally flawed (Guston, 2007).

Wicked problems are common in forest policy. Wicked problems are often undefined and there is no consensus on the nature of

the problem or the solution. There are acute political and moral issues among competing stakeholders (particularly around the distribution of costs and benefits from forests), and there is often limited information on the problem (see Allen and Gould, 1986). In solving forest policy problems, decision-makers often pay too much attention to solving symptoms of a much deeper and intractable systemic problem that is impossible to solve (Head and Alford, 2015; Rittel and Webber, 1973). With increasingly more people on the planet, and with the unpredictable consequences of climate change, wicked problems are the new norm for forest policy.

Forest policy processes have attempted to deal with rapid change and wicked problems by including private actors in governance to provide broader input into policy decisions and to support the effective implementation of policy (Cashore, 2002). This new governance approach, which includes what Cashore describes as non-state market-driven governance mechanisms (such as forest certification), reflects a new governance paradigm where governments no longer have the reach, information, resources and capacity to deal effectively with wicked forest policy problems. This new governance paradigm offers more participatory forms of governance that engage stakeholders in forest policy decisions. More collaborative governance offers the promise of better policy by bringing more information to policy-makers, including broader insight into the goals, interests and values of citizens. Citizens can support policy-makers in collaborative governance by helping balance and integrate the oft-competing goals and values of citizens in policy, and in the process can help resolve conflict (Giessen *et al.*, 2016; Wondolleck and Yaffee, 2000). The success of collaborative governance, however, is constrained by inflexible political institutions, policy legacies, cultures and interest groups, which limit the kinds of policy developed and the problems these address (Arts and Van Tatenhove, 2004; Innes and Booher, 2016). This shift to more participatory forest governance is not linear, and there are reversions back to government from governance reflecting the ebb and flow of power and politics (Arts, 2014; Giessen *et al.*, 2016).

Transformative policy change to address wicked problems is restricted by our political institutions, which have a tendency towards path dependence and maintaining the status quo, even where this situation is no longer tenable (Pierson, 2000). External shocks and focusing events, such as the recent mega wildfires across the globe, and social and political learnings (or the lessons learned by policy-makers), can shift policy into new pathways (at different speeds). Policy pathways in forestry have proven to be particularly sticky – favouring industrial development and complex interactions with global markets, leading to a collective failure to deal efficiently with problems such as deforestation, illegal logging and the under-valuation of forests (Angelsen and Kaimowitz, 1999; Nepstad *et al.*, 2014). At the root of this failure to adapt to change is institutional design and culture – our forest institutions have not been developed to think holistically, to act reflexively, and to gear the internal incentives towards change and innovation (Nikolakis and Innes, 2017). In fact, many of the ways in which policy is developed treat all forest ecosystems and the people who are dependent on them as the same – a 'one size fits all' approach. Too often linear solutions are developed, when the problem is highly dynamic, interdependent and complex or wicked – these kinds of solution only worsen the problem and create super-wicked problems.

Literature on solving wicked problems has largely been generated by planners, informed by complex systems and organizational theories. The emphasis is on learning mechanisms to shift policy processes from conflict-driven or adversarial, to more collaborative, reflexive and learning-based approaches (see Innes and Booher, 2016; Senge, 1990). Learning is defined as 'a feedback process in which our decisions alter the real world, we receive information feedback about the world and revise the decisions we make and the mental models that motivate these decisions' (Sterman, 1994: p. 291). Learning organizations will play a crucial role in addressing wicked problems, but the observation by Peter Senge (1990: p. 7) that '. . .our primary institutions are set up for control rather than learning', still holds true

today; Senge adds that 'in an increasingly dynamic, interdependent, and unpredictable world it is simply no longer possible for anyone to 'figure it all out at the top'. The old model, 'the top thinks and the local acts', must now give way to integrating thinking and acting at all levels. While the challenge is great, so is the potential payoff' (Senge, 1990: p. 7).

Forest policy processes are highly politicized processes, often driven by interest groups, polls and electoral strategies, and shaped by corruption and self-interest. This book presents wicked problems and their solutions in practice, documented by authors from across the globe. In the final chapter, we interweave the various contributions to this book, connecting the different streams of theory and insights for practice.

FOREST GOVERNANCE

What humans need and want from forests is evolving at a fast pace, causing interdependent and complex problems that are often poorly articulated and the consequences not well understood. For instance, the UN Sustainable Development Goals, of which there are 17 in total, represent a global pact on securing humanity's survival on Earth. More than 190 countries endorsed these goals, which include achieving sustainable livelihoods, human health, equity, climate adaptation and natural resource governance outcomes. Goal 15 provides for 'Life on Land, sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss'.[1] Goal 15 determines that deforestation and desertification caused by humans and climate change both challenge sustainable development and entrench poverty. The goal to sustainably manage forests is cross-cutting, and a further 15 targets within Goal 15 are aimed at ensuring forests are conserved, restored and sustainably managed. Goal 15.1 states that we 'by 2020, [must] ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems

[1] See: www.un.org/sustainabledevelopment/

and their services, in particular forests, wetlands, mountains and drylands', is in line with obligations under international agreements. Goal 15.2 is to halt deforestation by 2020. There are also ambitions to 'integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts' (15.12) and to take action on matters such as poaching (15.10), and mitigate the introduction of invasive species (15.11) (among others).

Among the other Sustainable Development Goals there are further interactions with forests, but there are potential conflicts with other goals and uncertain consequences for forests. Goal 12 is seemingly consistent with more sustainable forestry: 'Ensure sustainable consumption and production patterns', or to 'do more and better with less'. Conversely, Goal 8 appears to be in prima facie conflict, with the aspiration being to 'Promote inclusive and sustainable economic growth, employment and decent work for all'. However, the condition in Goal 8 is to eradicate poverty and inequity while decoupling economic growth from environmental degradation (Goal 8.4).

There are numerous other goals and objectives that have been set for forests at the international level. Goals such as the Paris Agreement, the Aichi Biodiversity Targets (Target 5), the UN-Reducing Emissions from Deforestation and Forest Degradation (REDD) programme and the 10 goals set out in the New York Declaration on Forests (Goal 1 in particular aims to end all natural forest loss by 2030) may be consistent with or conflict with national, regional and local level goals. There are important interactions and complex trade-offs in achieving these goals, and they require innovative policy solutions. In many cases 'wicked problems' will arise, and these will require collaboration, experimentation and adaptive learning to be resolved, or at least tamed, in meaningful ways. New policy tools will need to be developed that both deepen and challenge concepts of democracy – and these include new forms of interaction between science, policy and stakeholders that function across boundaries, and disrupt classical conceptions of sovereignty (where the sovereign has

absolute power and control over public goods). New ways to sense and solve problems are both necessary and inevitable as the world becomes more interdependent and complex. The underlying question is how deforestation can be stopped while still achieving the development goals of a majority of the world's human population who want to advance their socioeconomic position.

Governance

Governing today is arguably more complex than at any other point in human history. The term 'governance' derives from the Ancient Greek word 'kubern' meaning 'to steer', and in practice involves the state steering a diverse network of public and private actors to achieve specific collective outcomes (Rhodes, 1996). Governance includes in its modern definition the 'regimes of laws, rules, judicial decisions and administrative practices that constrain, prescribe and enable the provision of publicly supported goods and services' (Lynn *et al.*, 2001: p. 7). Governance also refers to the form of modern collective decision-making, or the 'development of governing styles in which boundaries between and within public and private sectors have become blurred' (Stoker, 1998: p. 17).

Forest policy is increasingly formed in decentralized governance processes involving a diverse network of actors in decisions – these networks produce new policy goals and objectives, reflecting a broader portfolio of market and non-market forest values (Giessen *et al.*, 2016; Howlett *et al.*, 2009). Forest policy is no longer shaped only by local norms, laws and regulations; increasingly non-state rules influence forest policy, developed by global forest certification bodies, such as the Forest Stewardship Council or the Sustainable Forestry Initiative. These certification bodies often work closely with NGOs to develop forestry standards that go beyond that required by the state (McDermott *et al.*, 2015). Non-state rules may, in turn, influence and shape forest law and regulation – helping increase forestry standards in some jurisdictions (Cashore *et al.*, 2007). A trend towards global citizenship also influences forest policy, where the state is enmeshed in a web of international

agreements and commitments that influences domestic forest policy (Cashore, 2002; Pülzl and Rametsteiner, 2002).

What is the public good to be decided by forest policy-makers in this complex setting? How do policy-makers then achieve this public good? Policy-makers today use a mix of regulation and incentives to direct and steer diverse actors to achieve collective outcomes for often collectively owned forests. The transition to a governance approach can help resolve complex trade-offs and bring richer information to stakeholders through participatory approaches, and can support better policy decisions when combined with scientific evidence (Juntti *et al.*, 2009). However, some problems have limited information and acute moral qualities, making them difficult to solve – these are wicked problems.

WICKED PROBLEMS

The Nature of Wicked Problems

We live in an increasingly complex world with unique problems emerging in society, from local to global scales. Grint (2008) conceptualizes three types of problems confronting policy-makers: tame, critical and wicked problems. Tame problems are those where the solution is straightforward (and well known), information is readily accessible and feedback loops are circular. These types of problems may include solving disputes between different stakeholders, where the trade-offs are straightforward and easily solved through existing mechanisms. Critical problems are those that have crisis-qualities and where leaders must act decisively to solve the problem before it worsens – this may include issues like a localized and uncontrolled insect infestation in a forest. The response in this circumstance may be well established, and the results of the intervention clear. Wicked problems, as Head and Alford describe, are 'complex, unpredictable, open ended, or intractable' problems (2015: p. 712). Wicked problems create challenges for policy-makers in the problem-solving process – there is typically no consensus or clarity around the elements of the problem, and there is often contention among actors around the

appropriate solution (Roberts, 2000).[2] Buchanan (1992) writes that in wicked situations, 'decision making is not a simple linear process . . . [and] the problems addressed . . . in actual practice [do not] yield to any linear analysis and synthesis. . .' (p. 15). Wexler (2009) elaborates further that the term 'wicked' 'stresses' the 'dynamic complexity of wicked problems' (pp. 531–532). Wicked problems often change before they are solved, requiring a new solution to that formulated for the original problem. This pattern repeats itself in an unpredictable and non-linear way (Waddock *et al.*, 2015).

Rittel and Webber (1973: pp. 161–167) identify 10 properties of wicked problems that make them particularly unique and resistant to traditional linear problem-solving processes. (1) There are no definitive formulations of wicked problems, 'but [rather] the formulation of a wicked problem *is* the problem!' (p. 161). (2) Wicked problems have a no stopping rule – there is no complete solution. (3) Solutions to wicked problems are either good or bad for stakeholders, not true or false. (4) The consequences of interventions are difficult to measure or understand and can lead to a new set of negative consequences that must be addressed. (5) Solutions to wicked problems are a 'one-shot operation', as there is little opportunity for trial and error and each decision has significant consequences. (6) There is not an exhaustive set of solutions or directives for dealing with wicked problems. (7) Every wicked problem is unique at some level. (8) Each wicked problem is a symptom of another problem – marginal improvement in one problem does not necessarily result in an overall improvement. (9) How the problem is perceived, and the response

[2] Carroll *et al.* (2007) identify fire management of public forests in the US Inland Northwest as an example where the problem and solution are highly contested, creating a wicked problem. Carroll *et al.* document that different actors in this context see wildfire as a symptom of a much broader systemic problem. However, they disagree as to the cause of the problem (too much forest management or the wrong kind of forest management) and disagree on the proposed solution or suite of solutions (i.e. mechanical thinning, prescribed burning or a combination of these). This contest creates conflict and reduces cooperation on dealing with the root cause of the problem, and instead the problem of wildfire and wildfire risk is dealt with in a fragmented way.

preferred, is influenced by the worldview and interests of different actors, which leads to a discrepancy in approaches. (10) The decision maker has no margin to make wrong decisions, for the consequences of decisions have significant impacts on stakeholders.

Wicked problems emerge where power is fragmented, interests are highly divergent and there are high levels of uncertainty and complexity – the 'attraction' of this concept to policy-makers and academics alike is that it 'provide[s] additional insights concerning why many policies and programmes generate controversy, fail to achieve their stated goals, cause unforeseen effects, or are impossibly difficult to coordinate and monitor' (Head, 2008: p. 103). There are two aspects of wicked problems that are particularly important to forest policy that have been the focus of much methodological and governance innovation – the knowledge and moral dimension of wicked problems.

Knowledge and Moral Dimensions of Wicked Problems

Wicked problems have two qualities that make them unique and messy in the context of forest policy. First, there is limited knowledge around the problem and of the consequences of different policy options on highly interconnected and dynamic ecological and social systems (Allen and Gould, 1986). Second, there are moral considerations rooted in dynamic social contexts, where power, equity, livelihoods and rights combine in a potent way, often resulting in conflict (Satterfield, 2002). The knowledge and moral dimension of wicked problems make these difficult to solve (Wexler, 2009).

Knowledge of the problem is typically limited in wicked situations – it is often a new problem confronting policy-makers, and they are operating on the 'knowledge frontier' without precedent. Knowledge generated on wicked problems is usually not generalizable to other wicked problems in other contexts, which have their own unique and dynamic characteristics. Stakeholders may not share knowledge of the problem equally, which can generate some moral challenges. For forestry, information on the problem may be based on