7

Coordination

Laws for Making Links

Links with Other Chapters

- Chapter 1 explains how examples used in this chapter were chosen.
- Chapter 2 synthesizes key challenges related to coordination and introduces the CIRCle Framework of regulatory functions for addressing cumulative environmental problems.
- Chapter 3 sketches the landscape of laws that may respond to cumulative environmental problems.
- Chapter 4 ("Conceptualization") discusses rules for articulating what and who we want to protect from cumulative impacts (the "matter of concern") – a key issue for coordination.
- Chapter 5 ("Information") discusses rules for collecting and analyzing data and information about cumulative harm, which requires coordination.
- Chapter 6 ("Intervention") discusses how rules can influence behavior to ensure that cumulative harm stays within acceptable limits.
- Chapter 10 analyzes a detailed case study on the Alpine grasslands in South Tyrol, Italy, focused on vertical intergovernmental coordination.

7.1 COORDINATION AS A REGULATORY FUNCTION

Dealing with cumulative environmental harm to a matter of concern – from a national park to an aquifer used for drinking water – often means dealing with

multilayered laws. These laws engage a constellation of actors with relevant roles distributed across multiple vertical levels of government and across agencies of the same level of government, as well as with nongovernment entities. This makes coordination vital. Except in the simplest of situations, it is likely neither practical nor desirable to deal with cumulative environmental problems by relying on a single institution or level of government.[1] The Alpine case study (Chapter 10) points to this complexity: In the deceptively simple context of protecting grasslands, agencies at the level of municipalities, multi-municipality districts, the province, the Italian State, the European Union, and multiple international treaty bodies are potentially involved in relevant rules that span agriculture, nature, impact assessment, and landscapes.

Coordination is part of a broader framework of interlinking core functions that form the "CIRCle Framework" advanced by this book for regulatory systems to respond to cumulative environmental problems.[2] As well as coordination, regulating cumulative environmental problems requires conceptualizing the matter of concern, which is the focus of protection or restoration; gathering and sharing information about the matter of concern and threats to it, and undertaking regulatory intervention to address these threats to ensure that cumulative environmental harm stays within acceptable limits. This chapter lays out how mechanisms for coordination bring together relevant actors to advance these other three functions of conceptualization, information, and regulatory intervention, and resolve disputes and "drift" that arise along the way.

By focusing on legal mechanisms for coordination and how they can serve different functions that are important to addressing cumulative environmental problems, this chapter draws and builds on diverse literatures: multilevel governance typologies that tend to focus on coordination writ large (rather than in relation to specific functions);[3] regulatory literature that addresses conflict, undermining, and synergies between the different elements of an instrument mix for intervention,[4] and that analyzes the regulatory authority of

[1] Stefano Ponte, Christine Noe and Asubisye Mwamfupe, "Private and Public Authority Interactions and the Functional Quality of Sustainability Governance: Lessons from Conservation and Development Initiatives in Tanzania" (2021) 15 *Regulation and Governance* 1270–1285, 1272. See also Chapter 10.

[2] See Section 2.4 for an elaboration of the CIRCle Framework.

[3] E.g., Liesbet Hooghe and Gary Marks, "Types of Multi-Level Governance" in Henrik Enderlein Sonja Wälti and Michael Zürn (eds), *Handbook on Multi-Level Governance* (Edward Elgar 2010) 17–31.

[4] E.g., Michael Howlett, *Designing Public Policies: Principles and Instruments* (2nd edn, Routledge 2019) 260–263.

public institutions by reference to functions;[5] and legal literature on intergovernmental relations[6] and distributions of legislative competencies between levels of government and collaboration at "peak level moments" of decision-making such as rulemaking and adjudication.[7]

Section 7.1 explains, for present purposes, what coordination means in general (Section 7.1.1), and in the contexts of each of the other three CIRCle Framework functions: conceptualization, information, and regulatory intervention (Section 7.1.2). Section 7.2 then explores the key government actors involved in coordination and how legal systems implicate different relevant actors depending on how they distribute powers; and the role of nongovernment actors. Section 7.3 distils key legal approaches to supporting coordination for each CIRCle Framework function, and dealing with disagreements related to cumulative environmental problems, with a focus on resolving "vertical" disputes between levels of government. This vertical dispute resolution context is then illustrated in the European Alps case study.[8]

7.1.1 *What Is Coordination?*

As used in this book, coordination refers to links across laws and structures for repeated interactions among government agencies, levels of government, quasi-governmental, and nongovernmental actors (together, "actors") to address a cumulative environmental problem, facilitated by legal mechanisms. I use the term "coordination" to encompass interactions along a wide spectrum, from maintaining enthusiastic partnerships to resolving disputes among antagonists. Legal mechanisms may support coordination by providing a structure and an incentive for repeated interactions between actors in a general sense, or specifically in coordinating the carrying out of the CIRCle Framework functions of conceptualization, information, or regulatory intervention.

[5] See, e.g., Alejandro E. Camacho and Robert L. Glicksman, "Designing Regulation across Organizations: Assessing the Functions and Dimensions of Governance" (2021) 15(S1) *Regulation and Governance* S102–S122.

[6] E.g., Johanne Poirier and Cheryl Saunders, "Comparative Experiences of Intergovernmental Relations in Federal Systems" in Johanne Poirier, Cheryl Saunders and John Kincaid (eds), *Intergovernmental Relations in Federal Systems: Comparative Structures and Dynamics* (OUP 2015) 440, 479.

[7] E.g., Jody Freeman and Daniel A. Farber, "Modular Environmental Regulation" (2005) 54 *Duke Law Journal* 795–912, 824–825.

[8] See Chapter 10, especially Section 10.4.2.3 (re Natura 2000 sites).

Nonlegal factors will influence whether coordination is successful – among them, leadership, resources, and motivation.[9] Informal coordination is also important.[10] But legal mechanisms can help create conditions for success by addressing inherent disincentives to coordination.[11] Important disincentives include a problem being caused by many diverse contributors to harm, potentially with competing interests; engaging multiple and perhaps many government agencies with different goals that may pertain to narrow domains (e.g., biodiversity, water management, geoscientific information); and involving complex and prolonged accumulation of impacts, all of which make it difficult to establish and maintain fruitful interactions.

Coordination as used here relates to not just domestic government agencies but also includes quasi-governmental organizations, international and supranational institutions, and domestic and transnational nongovernment actors whose activities intentionally link with domestic government action (Figure 7.1). Other broader types of coordination can be important to deal with cumulative environmental problems, but lie beyond the focus of this book. This includes coordination that relates solely to private parties, such as groups of nongovernment stakeholders (outside scope since the present focus is public law regulation) and general public participation in government decision-making more broadly[12] (outside scope since large-scale cumulative problems can make direct participation by heterogeneous individuals, rather than groups and representatives, difficult and rare in practice[13]).

7.1.2 *Coordination as an Integrated Regulatory Function in the CIRCle Framework*

Across the functions of conceptualization, information, and regulatory intervention, coordination among actors provides opportunities to promote three characteristics that are critical to dealing with central challenges associated

[9] This is a central issue addressed by collaborative governance literature, e.g., Scott Douglas and others, "Pathways to Collaborative Performance: Examining the Different Combinations of Conditions under Which Collaborations Are Successful" (2020) 39 *Policy and Society* 638–658.

[10] See, e.g., Nicole Bolleyer and Tanja A. Börzel, "Non-Hierarchical Policy Coordination in Multilevel Systems" (2010) 2 *European Political Science Review* 157–185.

[11] For a fuller discussion of these disincentives, see Section 2.2.4.2.

[12] For a discussion of approaches to public participation in environmental contexts in domestic laws around the world, see Swatanter Kumar and others, *Environmental Rule of Law: First Global Report* (United Nations Environment Programme 2019) 116–131.

[13] Richard D. Margerum, "A Typology of Collaboration Efforts in Environmental Management" (2008) 41 *Environmental Management* 487–500, 493–494.

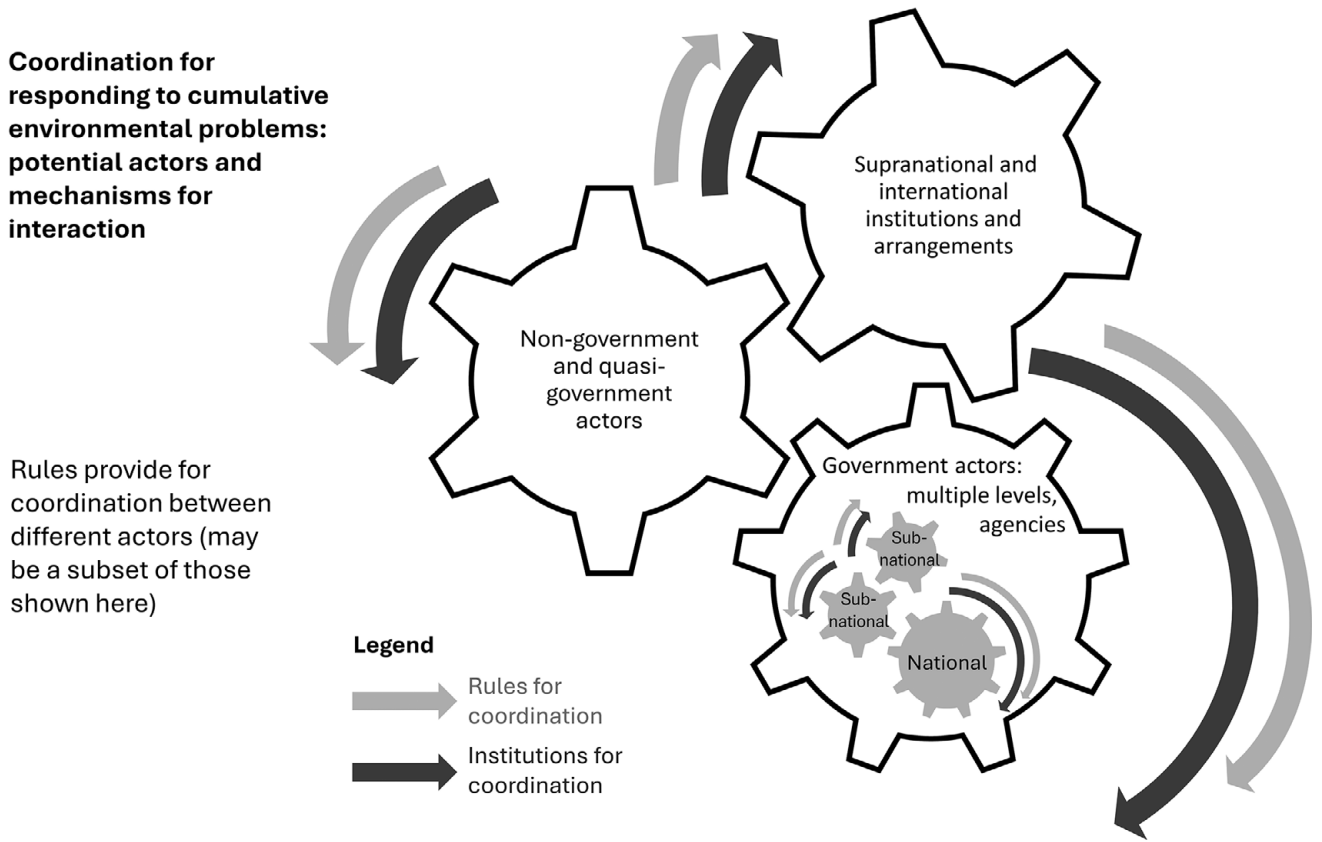

FIGURE 7.1 Coordination for responding to cumulative environmental problems: potential actors and interactions

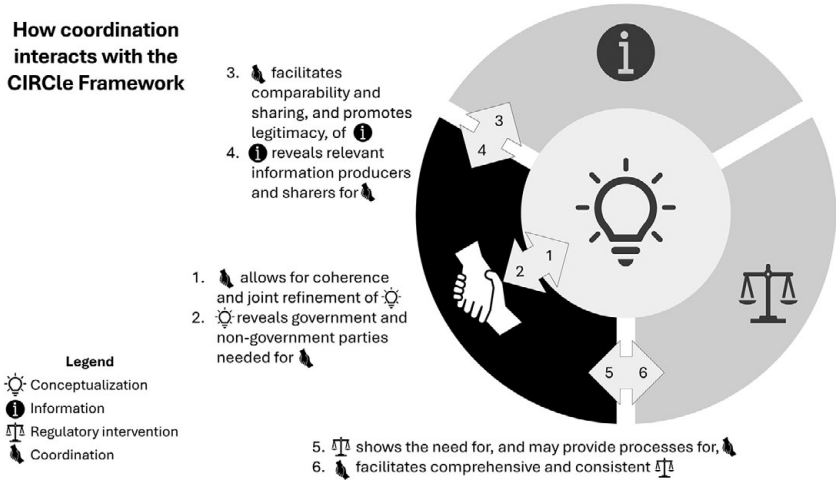

FIGURE 7.2 Integration of legal mechanisms for coordination with other CIRCle Framework functions, each necessary for regulating cumulative environmental problems

with cumulative environmental problems: comprehensiveness (which is also associated with fairness and legitimacy), alignment, and efficiency, which can affect each function. Coordination offers benefits by providing repeated opportunities to reveal gaps, new approaches, lack of alignment, and unnecessary duplication (Figure 7.2 (building on Figure 2.1, which depicts basic links between regulatory functions). Each of these characteristics is discussed in turn in relation to the CIRCle Framework functions. In each case, understanding which actors are involved in undertaking each function reveals the parties relevant to coordination mechanisms, and is the first step to using the CIRCle Framework.[14]

First, to comprehensiveness. The functions of conceptualization and information are *comprehensive* if regulations consider all key dimensions of a matter of concern and threats to it. For example, seeking to protect a river requires considering the watershed[15] and connected groundwater as well as the river itself, and providing for collecting information about these aspects and activities and threats that affect them. Regulatory intervention is comprehensive if all actions that may have cumulatively significant impacts are considered in designing interventions. In particular, comprehensiveness means not ignoring actions that are individually minor or traditionally exempt from rules if they may

[14] See Chapter 11 (Guidelines).

[15] Rebecca Nelson, "Sick City Streams: New Approaches to Legal Treatments" (2020) 43 *Melbourne University Law Review* 748–821, 770.

have cumulative impacts that would cause unacceptable harm.[16] Coordinating actors helps make these functions of conceptualization, information, and regulatory intervention more comprehensive by letting actors share information about the condition of matters of concern and threats to these matters, and share expertise and knowledge about innovative approaches to intervention.[17]

Coordination between levels of government and with nongovernment actors may also indirectly increase the comprehensiveness of functions by creating an awareness of other viewpoints – including by revealing motivations of contributors to cumulative problems, and the likely degree of resistance to a proposed regulatory intervention – and providing an opportunity to build legitimacy to support rules. This information-revealing role is also important as regards the public. If the distance between a regulatory actor and a local public is too great, a regulatory actor may misconceptualize the matter of concern in a way that omits important public views, overlooks key local information, or risks significant noncompliance with a regulatory intervention that is locally considered illegitimate.[18] If too close, a regulatory actor may omit the "bigger picture" of cumulative change in conceptualizing the problem, collecting and analyzing information about it, and intervening.

Secondly – alignment. I use this as a "catch-all" term for the following kinds of conditions: The conceptualization function is carried out coherently[19] such that the relevant actors conceptualize the matter of concern in a mutually reinforcing way, or at least not in a mutually undermining way; data and information are collected and analyzed in a way that is interoperable to facilitate aggregation to understand cumulative change;[20] multiple regulatory interventions are consistent in that they enhance, or at least do not reduce, each other's effectiveness. Coordination that allows actors to negotiate improves implementation of interventions by building support for aligned outcomes,[21] such as a shared understanding of what matters, interoperable information systems, and acceptable interventions. Policy alignment[22] becomes more challenging with more regulatory actors and as delegation

[16] See Section 6.5.2 re comprehensiveness of intervention.
[17] Sarah Fox, "Localizing Environmental Federalism" (2020) 54 *UC Davis Law Review* 133–194, 155, 180, 190, 193.
[18] Margerum, "A Typology of Collaboration Efforts," 496.
[19] This use of the term "coherence" in the context of conceptualization mirrors its use in the policy design literature to describe alignment of policy goals (see Section 1.2.1), though here, conceptualization has a more specific meaning than "goals"; see Chapter 4.
[20] See Section 5.3.3.
[21] Margerum, "A Typology of Collaboration Efforts," 495 (citing many other works), 498.
[22] Ibid 496–497.

grants discretion to an implementing government.[23] Chapter 8 reveals regulatory incoherence between different conceptualizations of "who matters" in the management of groundwater in California. Chapter 10 shows regulatory consistency between interventions designed to preserve and restore Alpine grasslands in South Tyrol, Italy.

Thirdly – efficiency. Coordination can reveal unnecessary duplication between the efforts of different actors. Duplication can be inefficient if a regulatory actor goes to significant effort to undertake information or intervention functions in the same way as another.[24] Importantly, what amounts to duplication is case specific. While overlapping responsibilities may cause conflict and tension between actors who hold them,[25] redundancy may also valuably enhance democracy and insure against agency capture and policy instability.[26] Valuably, agencies or levels of government with overlapping responsibilities may also address different parts of the problem in space (corresponding to their territorial jurisdiction) or use diverse but synergistic regulatory interventions directed toward different categories of contributors to the cumulative environmental problem.

The issue of transaction costs associated with coordination is also important. However, research on complex governance arrangements suggests that different parties to coordination arrangements will face different transaction costs (especially if the problem involves heterogeneous interests), and that these will also vary with local contexts.[27] Accordingly, other than noting the issue, the question of designing legal mechanisms to deal with the cost of coordination for each of the CIRCle Framework functions remains for future empirical research.

[23] Robert D. Cooter and Michael D. Gilbert, *Public Law and Economics* (OUP, 2022) 265 (delegation increases "diversion of purpose").

[24] Kristen A. Goodrich and others, "Toward Improved Sediment Management and Coastal Resilience through Efficient Permitting in California" (2023) 72 *Environmental Management* 558–567, 565 (in relation to permitting processes for intervention). This definition of duplication should be distinguished from the way that term is used by some scholars to indicate that multiple regulatory actors have regulatory authority relevant to the same matter. That situation would not necessarily be classified as duplication here because different actors may address different parts of the problem in space using synergistic regulatory interventions, as discussed next in the text.

[25] E.g., Ponte, Noe and Mwamfupe, "Private and Public Authority Interactions," 1279–1280.

[26] Camacho and Glicksman, "Designing Regulation across Organizations," 26; section 8.3.2.2 in relation to changing priorities in relation to the cumulative concept of environmental justice at the US federal level compared to California. See also Chapter 10, n 126 and accompanying text.

[27] See generally, Mark Lubell and others, "Transaction Costs and the Perceived Effectiveness of Complex Institutional Systems" (2017) 77 *Public Administration Review* 668–680.

In relation to coordinating regulatory intervention, there is also an argument for coordination based on fairness. Cumulative environmental problems involve diverse actors undertaking diverse activities that likely involve different regulators and other affected communities. This introduces the real risk that without some degree of coordination, different sorts of activities will attract interventions that vary in the burdens they place on contributors to the problem and affected communities in ways that are not clearly justified and may be unfair. This points to coordination for regulatory intervention considering the distributional impacts of interventions.[28]

While laws do not guarantee consensus or otherwise successful coordination, which is influenced by many factors, such as leadership and trust,[29] formal rules can provide precision and clarity about responsibilities and a formal requirement or incentive initially to come to the table and to keep coming back. Efforts at formalizing coordination arrangements should, however, consider existing informal rules that deal with certain elements of the problem, both to learn from them and to avoid undercutting existing, effective measures.[30] In some cases, legal mechanisms may formalize existing informal arrangements,[31] whereas in other cases, laws may establish these mechanisms for the first time.[32]

7.2 COORDINATION WITHIN, BETWEEN, AND BEYOND GOVERNMENTS: KEY ACTORS

To establish the context for discussing legal mechanisms for coordination, we first ask: Which government actors have competencies related to the environment? Answering these questions involves examining constitutional distributions of power, other horizontal and vertical distributions of lawmaking power,

[28] Philippa England, "Leaders, Laggards and Blame Games: Responsive Regulation and Environmental Change in the Catchments of the GBR" (2021) unpublished manuscript 25.

[29] Nicola Ulibarri and others, "Drivers and Dynamics of Collaborative Governance in Environmental Management" (2023) 71 *Environmental Management* 495–504, 499.

[30] Note that sometimes informal arrangements are established after formal arrangements: see Section 10.4.2.3.

[31] E.g., the multilevel Interagency Review Team used to review mitigation banks under the US Clean Water Act: Palmer Hough and Rachel Harrington, "Ten Years of the Compensatory Mitigation Rule: Reflections on Progress and Opportunities" (2019) 49 *Environmental Law Reporter News and Analysis* 10018, 10021.

[32] E.g., the planned establishment of a new Australian federal agency, Environment Information Australia, in part to facilitate access to environmental data across governments: Department of Climate Change, Energy, the Environment and Water (Australia), "Budget 2023–2024: Protecting, Repairing and Better Managing the Environment" (2023) 2–3, www.dcceew.gov.au/sites/default/files/documents/protecting-repairing-and-better-managing-the-environment-fs.pdf, archived at https://perma.cc/HK7Q-C7ZQ.

and intersections between government actors and quasi-governmental and nongovernmental actors. Each relevant agency identified must have legal authority to collaborate to support more specific coordination mechanisms.

7.2.1 *Constitutional Responsibilities Related to the Environment*

Constitutions vary in how they allocate power related to the environment among levels of government.[33] Environmental protection is an objective for both the federal and Länder governments in Germany.[34] Italy's national government has exclusive power to protect the environment and ecosystems, though it legislates to grant autonomy to some Regions for this purpose and there are some areas of concurrent power, such as fishing and agriculture.[35] Canada's constitution reveals a "patchwork" of federal powers relating to the environment, based on navigation and shipping, criminal law, and trade and commerce, overlaid on a "carpet" of broader provincial powers relating to property and civil rights and ownership of most natural resources.[36]

Allocations of legislative power over the environment, and the degree to which it is exercised by different levels of government, can change. Accordingly, intergovernmental coordination to address cumulative environmental problems may need to adapt over time. Shifts in power over the environment may occur with evolving statutory implementation of express constitutional environmental provisions, which are now widespread,[37] or with negotiated federalism that stems from constitutional allocations of power affected by uncertainty or "gray areas," as in the United States.[38] Regulatory authority may expand in scope in response to actions that give content to another legislative power. This occurs in Australia, where the federal legislature relies significantly on the government's ratification of international environ-

[33] See generally, e.g., Mariachiara Alberton and Francesco Palermo (eds), *Environmental Protection in Multi-Layered Systems: Comparative Lessons from the Water Sector* (Koninklujke Brill NV 2012); Francesco Palermo and Karl Kössler, *Comparative Federalism* (Hart 2017); Kalyani Robbins (ed), *The Law and Policy of Environmental Federalism* (Edward Elgar 2015).

[34] Palermo and Kössler, *Comparative Federalism*, 391–393.

[35] Ibid 393–396.

[36] Sari Graben and Eric Biber, "Presidents, Parliaments, and Legal Change: Quantifying the Effect of Political Systems in Comparative Environmental Law" (2017) 35 *Virginia Environmental Law Journal* 357–419, 374, citing Meinhard Doelle and Chris Tollefson, *Environmental Law: Cases and Materials* (Carswell 2nd edn, 2013).

[37] Roderic O'Gorman, "Environmental Constitutionalism: A Comparative Study" (2017) 6 *Transnational Environmental Law* 435–462, 437.

[38] Erin Ryan, "Negotiating Environmental Federalism: Dynamic Federalism as a Strategy for Good Governance" (2017) *Wisconsin Law Review* 17–39, 37.

mental treaties, which attracts power to legislate to implement them.[39] Political changes at national or state levels may lead governments to preempt lower-level interventions or withdraw from policy areas, enabling other levels to intervene. This was illustrated when the US federal government's withdrawal from the Paris Agreement triggered state-level attention to emission reductions.[40]

7.2.2 *Vertical and Horizontal Regulatory Complexity beyond Allocations of Competencies*

Consistent with observations in multilevel governance scholarship,[41] cumulative environmental problems often engage a much more complex constellation of regulatory actors vertically and horizontally than constitutional arrangements reveal. Environment-related laws may divide responsibilities for different dimensions of a problem among multiple different actors, vertically and horizontally. Like constitutional arrangements, these divisions may change with time and political developments.[42] An agency may have responsibility influenced by, for example:

1. the *location* of a matter of concern relative to jurisdictional and property boundaries, for example, on federal, state, or local public land, or on private land in a territorial jurisdiction;
2. the *designation* of the matter of concern, for example, species that are listed as endangered or have other similar status, or land or water that has a special conservation status such as a national park or protected water body;
3. types of *impacts* or *actions*, including omissions and background effects that impact the matter of concern, for example, withdrawing and using water, polluting the air, failing to control feral animals, or increased peak heat due to climate change; and
4. types of *entities* that undertake activities that threaten a matter of concern, for example, roads authorities, private corporations, special-purpose local districts, or owners/lessees of land, which may involve different corresponding government actors with responsibilities in relation to these entities.

[39] Lee Godden and Jacqueline Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (OUP 2010) 127.

[40] Fox, "Localizing Environmental Federalism," 145–146.

[41] E.g., Paul Stephenson, "Twenty Years of Multi-Level Governance: 'Where Does It Come From? What Is It? Where Is It Going?'" (2013) 20 *Journal of European Public Policy* 817–837, 817.

[42] Moritz Reese, "Distribution of Powers" in Emma Lees and Jorge E. Viñuales (eds), *The Oxford Handbook of Comparative Environmental Law* (OUP 2019) 678–702, 690.

Vertically, different levels of government may be engaged by even a spatially limited matter of concern, as the case study on Alpine grasslands demonstrates: four levels of domestic regulation and supranational and international laws influence relevant matters across nature, landscape, agriculture, and impact assessment laws.

Regulatory authority related to a cumulative environmental problem may also span agencies at the same level, triggering a need for horizontal coordination.[43] This may be a side effect of jurisdictional boundary-drawing that does not match an environmental resource, for example, as demonstrated in the well-studied problem of interjurisdictional water resources.[44] Horizontal regulatory fragmentation may also be intentional. In Queensland, Australia, separating mining and environment agencies is intended to help agencies transparently pursue conflicting economic and environmental policies in influencing mine authorizations.[45]

7.2.3 *Nongovernmental and Quasi-governmental Actors*

Much environmental legal scholarship dealing with nongovernment actors focuses on their role in challenging administrative decisions, but nongovernment actors may also play important ongoing roles in regulatory systems for responding to cumulative environmental problems.[46] They may seek to intervene to address the problem or represent those undertaking activities that contribute to the problem or are affected by it in coordination initiatives to

[43] E.g., Gwen Arnold, "When Cooperative Federalism Isn't – How US Federal Interagency Contradictions Impede Effective Wetland Management" (2015) 45 *Publius – The Journal of Federalism* 244–269, 245–246; Dave Owen, "Cooperative Subfederalism" (2018) 9 *University of California Irvine Law Review* 177–227.

[44] Mark Elder and Christian Loewe, "Introduction and Context – Global Environment Outlook (Geo-6): Healthy Planet, Healthy People" in Paul Ekins, Joyeeta Gupta and Pierre Boileau (eds), *Global Environment Outlook (GEO-6): Healthy Planet, Healthy People* (United Nations Environment Programme 2019) 3–19, 11; Palermo and Kössler, *Comparative Federalism*, 383; Arvind Lakshmisha and Andreas Thiel, "Legitimacy, Shared Understanding and Exchange of Resources: Co-Managing Lakes Along an Urban–Rural Gradient in Greater Bengaluru Metropolitan Region, India" (2023) 71 *Environmental Management* 523–537, 530.

[45] Jacqueline Peel, "An Environmental Revolution in the Queensland Mining Industry or Just a Changing of the Guard – An Analysis of the New Regime for the Environmental Regulation of Mining under the Environmental Protection Act (Qld)" (2001) 20 *Australian Mining and Petroleum Law Journal* 137–147, 140. See also Rebecca Nelson, "Regulating Hidden Risks to Conservation Lands in Resource Rich Areas" (2021) 40 *University of Queensland Law Journal* 491–530, 504–514.

[46] See, e.g., Will Reisinger, Trent A. Dougherty and Nolan Moser, "Environmental Enforcement and the Limits of Cooperative Federalism: Will Courts Allow Citizen Suits to Pick up the Slack?" (2010) 20 *Duke Environmental Law and Policy Forum* 1–62.

solve it. Nongovernment actors can bring together heterogeneous local stakeholders and contribute local knowledge and resources.[47] Organizations that represent contributors to a cumulative problem can offer governments important information about likely resistance to or acceptability of regulatory interventions. Some organizations may act as intermediary organizations that "buffer" community distrust of government[48] or build legitimacy, although the relationship between stakeholder participation and legitimacy is not straightforward.[49] Nongovernment actors are not confined to the divisions and silos that affect government actors, and they may draw on norms beyond legal rules, for example, in the case of faith-based environmental organizations.[50]

Interactions between private and public actors may be complementary (pursuing shared or aligned goals), competitive (involving struggles to monopolize political authority or displace another's interventions), or coexistent (involving divergent goals and strategies, and sometimes overlapping interventions),[51] and their nature may change with time.[52] The focus here is on the use of legal mechanisms that support involving nongovernment actors in legal systems for addressing cumulative environmental problems in an ongoing complementary way. This applies a legal lens to what Cashore and others term "collaboration" in the sense of "active, voluntary and conscious partnership between public and private governance … established through direct communication."[53]

Between nongovernment actors and public actors lie quasi-government actors, such as state-owned enterprises, quasi-autonomous nongovernment

[47] E.g., see generally Lakshmisha and Thiel, "Legitimacy, Shared Understanding and Exchange of Resources."

[48] Casey L. Taylor, "Partnerships, Lawsuits, and Competing Accountabilities in CCAA Agreements" (2023) 71 *Environmental Management* 655–669, 663–664.

[49] E.g., Alba Mohedano Roldán, Andreas Duit and Lisen Schultz, "Does Stakeholder Participation Increase the Legitimacy of Nature Reserves in Local Communities? Evidence from 92 Biosphere Reserves in 36 Countries" (2019) 21 *Journal of Environmental Policy and Planning* 188–203, 198–199.

[50] E.g., Jens Koehrsen, "Muslims and Climate Change: How Islam, Muslim Organizations, and Religious Leaders Influence Climate Change Perceptions and Mitigation Activities" (2021) 12:e702 *WIREs Climate Change* 1–19, 7–12.

[51] Benjamin Cashore and others, "Private Authority and Public Policy Interactions in Global Context: Governance Spheres for Problem Solving" (2021) 15 *Regulation and Governance* 1166–1182, 1172.

[52] Margerum, "A Typology of Collaboration Efforts," 494; Cashore and others, "Private Authority and Public Policy Interactions," 1167–1168, 1176.

[53] Cashore and others, "Private Authority and Public Policy Interactions," 1173. See also Mary Gleason and others, "A Transactional and Collaborative Approach to Reducing Effects of Bottom Trawling" (2013) 27 *Conservation Biology* 470–479, 478. See also note e in Table 7.3 and accompanying text.

organizations (NGOs established and given authority by a government),[54] and importantly for present purposes, associations of local districts and inter-jurisdictional bodies. In the context of cumulative environmental problems, they provide for coordination either by linking up public and private entities or by helping small jurisdictional units to voice common concerns.[55]

7.3 COORDINATING KEY FUNCTIONS TO ADDRESS CUMULATIVE ENVIRONMENTAL PROBLEMS

Environment-related laws and administrative arrangements around the world present a rich trove of real-world coordination mechanisms to address cumulative environmental problems. This section opens with overarching reflections on broad approaches to coordination – institutions and rules. It then illustrates diverse approaches to coordinating actors in relation to each of the key CIRCle Framework functions of conceptualization, information, and regulatory intervention, in turn. As for other chapters, the examples provided here are illustrative. They draw out diversity in geography and approach, rather than attempting to be comprehensive or to uncover the most successful or best performing options, the demonstration of which would require further empirical work. The chapter concludes by discussing legal mechanisms for resolving disagreements and disputes, with a focus on coordinating government actors.

It is important to acknowledge the implications of aspiring to coordination for dealing with cumulative environmental problems. Coordination takes time, sometimes a long time.[56] Some would argue that where cumulative harms are urgent, there is no time to coordinate or build consensus among many diverse actors. Rather than urgency justifying ignoring coordination and taking a regulatory steamroller to any of the functions discussed here, an alternative is to use precaution – responding to an urgent need with an urgent but temporary response that allows more time for proper coordination efforts, as discussed further later.

[54] Howlett, *Designing Public Policies*, 170–176.

[55] The issue of rules for the design of these organizations goes beyond the present scope, but is an area of active research. See, e.g., Saba N. Siddiki and others, "How Policy Rules Shape the Structure and Performance of Collaborative Governance Arrangements" (2015) 75 *Public Administration Review* 536–547; Michael Kiparsky and others, "The Importance of Institutional Design for Distributed Local-Level Governance of Groundwater: The Case of California's Sustainable Groundwater Management Act" (2017) 9(1):755 *Water* 1–17.

[56] E.g., Patricia N. Manley, Jonathan W. Long and Robert M. Scheller, "Keeping up with the Landscapes: Promoting Resilience in Dynamic Social-Ecological Systems" (2024) 29(1):3 *Ecology and Society* 1–13, 7.

7.3.1 *Overarching Reflections: Institutions versus Rules and Power Structures in Coordination Mechanisms*

Across all the mechanisms discussed here, two major formal approaches to coordination emerge. One centers on general or special-purpose institutions tasked with coordination, the other on rules and power structures for coordination. Institutions may support interactions between actors, usually, though not always, across multiple functions. Institutions include intergovernmental councils,[57] executive forums, joint institutions and specialized agencies, and some kinds of intergovernmental agreements.[58] They allow for regular "vertical" meetings of federal and subnational representatives, "horizontal" meetings of representatives at the same level of government, or both.[59] In some cases, a specific agency or bureaucrat may be tasked with coordinating the consideration of environmental effects across government agencies.[60] By contrast, rules-based coordination is associated with one or more legal mechanisms that support specific functions in the CIRCle Framework without creating a separate coordinating institution. Coordinating rules may appear in the form of detailed joint planning processes, or less detailed duties to cooperate with, consult or notify other actors, such as a requirement of agencies generally to "proactively engage" underserved communities and nongovernmental actors to inform regulatory plans.[61]

Considering the challenges that characterize cumulative environmental problems[62] permits some theoretical observations about possible advantages and disadvantages of coordinating institutions versus rules. Institutions that deal with multiple CIRCle Framework functions provide theoretically greater scope for integrating functions – a vital element of the CIRCle Framework[63] – compared to rules that appear in narrower contexts. Integrating functions is especially important where change requires adaptation, for example, where information about new impacts

[57] Johanna Schnabel, *Managing Interdependencies in Federal Systems: Intergovernmental Councils and the Making of Public Policy* (Palgrave Macmillan 2020) 3.

[58] See generally, ibid.

[59] Ibid, 3. See also Anika Klafki, "Legal Harmonization through Interfederal Cooperation: A Comparison of the Interfederal Harmonization of Law through Uniform Law Conferences and Executive Intergovernmental Conferences" (2018) 19 *German Law Journal* 1437–1460, 1451–1454.

[60] E.g., State Development and Public Works Organisation Act 1971 (Queensland) s 25.

[61] Joseph R. Biden, "Modernizing Regulatory Review (Executive Order 14094)" (April 6, 2023) 88 Federal Register (US) 21879 s 2(c), now revoked by Donald J. Trump, "Initial Rescissions of Harmful Executive Orders and Actions (Executive Order 14148)" (January 20, 2025) 90 Federal Register (US) 8237 s 2. 88 Federal Register 21879 (USA) s 2(c), now revoked by Executive Order 14148 of January 20, 2025, 90 Federal Register 8237 (USA).

[62] See generally, Chapter 2.

[63] Section 2.4.

requires new interventions. However, cumulative environmental problems that accumulate slowly may not attract the sustained attention of coordination institutions that deal with a wide range of issues, including some that seem more pressing or prominent. Duty-based mechanisms require fewer resources than institutional mechanisms because they do not involve resourcing a dedicated institution, and they are inherently adaptable because they lack a defined structure. However, a duty by itself cannot create a meeting mechanism in the same way as more detailed arrangements, nor can it provide funding or staff to facilitate ongoing interactions.

A further overarching observation relates to the different distributions of power among relevant coordinating actors. As the examples show, some coordination mechanisms reflect equality and require consensus, while others compel lower-level governments to act consistently with higher-level governments, or vice versa, in relation to a regulatory function. Some even repose powers in independent bodies rather than any one level of government.

It is not possible to pick a universal "winner" among these approaches. Designing the right mechanism will depend on contextual factors, including the environmental problem itself, resource availability, the diversity and number of relevant actors, how environmental legal competencies are allocated, the political system, and the function at issue. Coordinating interventions to respond to the cumulative effects of waste disposal in the federal nation of Palau (with 22,000 people across 16 states and a vast, largely maritime territory)[64] will necessarily involve different considerations than those most relevant to regulating the gathering, sharing, and analysis of data and information about cumulative environmental effects on faunal biodiversity in the quasi-federal state of Italy (with fifty-nine million people and numerous layers of government across a relatively small territory).[65] Additionally, collaborative governance literature highlights the dynamic nature of collaborations,[66] which raises the possibility that different legal mechanisms may best serve coordination at different stages or levels of maturity of coordinating actions to deal with a cumulative environmental problem.

7.3.2 *Coordinating in Conceptualizing a Cumulative Environmental Problem*

Conceptualizing a matter of concern involves developing a clear idea of what matters, its spatial boundaries, and cumulative threshold conditions that

[64] Palau Government, "States" (n.d.) www.palaugov.pw/states/, last accessed March 20, 2025, archived at https://perma.cc/69P6-YEMT; United Nations, "UNdata: Palau" (n.d.) https://data.un.org/en/iso/pw.html, last accessed March 20, 2025.

[65] United Nations, "UNdata: Italy" (n.d.) https://data.worldbank.org/country/italy, last accessed March 20, 2025; Section 10.3.2.

[66] Ulibarri and others, "Drivers and Dynamics," 501.

distinguish acceptable from unacceptable conditions.[67] Where multiple actors are involved, this requires articulating and adjudicating the conflicting values that underlie environmental disputes,[68] and reaching shared understandings of goals among those seeking to solve a joint problem.[69]

Table 7.1 sets out legislative examples of coordination processes associated with formally articulating the key dimensions of conceptualization, noting that stakeholder engagement per se is important but not unique to cumulative environmental problems, so lies outside the present scope. The examples involve different configurations of vertical and horizontal coordination by governmental agencies, quasi-governmental agencies, and nongovernmental actors at different scales, from a small water body to jurisdiction-spanning aquifers, to a species over its entire distribution.

7.3.3 *Coordinating in Relation to Information*

The intergovernmental relations literature tends to view information sharing as the lowest form of commitment to intergovernmental coordination,[70] at least when pursued in isolation and in a generic rather than a problem-specific context. Without coordination about information, though, the design of interventions to address cumulative environmental problems may overlook key contributors to the problem or declining trends in the condition of the matter of concern, or actors may collect information with inefficient duplication or in a way that precludes aggregation to reveal cumulative impacts. Information sharing may also be a politically palatable starting point for broader coordination.[71]

Mechanisms that facilitate general information sharing, such as the public data clearinghouses discussed in Chapter 5 on Information, and further

[67] See Chapter 4.

[68] See generally, Daniel Sarewitz, "How Science Makes Environmental Controversies Worse" (2004) 7 *Environmental Science and Policy* 385–403.

[69] E.g., Albert V. Norström and others, "Principles for Knowledge Co-Production in Sustainability Research" (2020) 3 *Nature Sustainability* 182–190, 186; Taylor, "Partnerships, Lawsuits," 662–663; Chris Ansell and Alison Gash, "Collaborative Governance in Theory and Practice" (2008) 18 *Journal of Public Administration Research and Theory* 543–571, 560. See also Chapter 2.

[70] Schnabel, *Managing Interdependencies*, 60.

[71] Miranda A. Schreurs, "Multi-Level Governance the ASEAN Way" in Henrik Enderlein, Sonja Walti and Michael Zurn (eds), *Handbook on Multi-Level Governance* (Edward Elgar 2010) 308–320, 311; Rebecca Nelson and Meg Casey, "Beyond the Traditional Governance of Trans-Jurisdictional Groundwater: Unconventional Approaches to Cross-Boundary Aquifer Management in the United States" in Janice Gray, Cameron Holley and Rosemary Rayfuse (eds), *Trans-Jurisdictional Water Law and Governance* (Routledge (Earthscan) 2016) 138–156, 142–145.

TABLE 7.1 *Mechanisms for coordination to conceptualize cumulative environmental problems*

Legal mechanism	Illustrative examples
Coordination in designating a matter of concern, including spatial elements	In India, the Andhra Pradesh Water, Land and Trees Authority, which is comprised of representatives from multiple state government agencies, independent experts, Indigenous groups, Scheduled Castes and women, may declare "over exploited areas" of groundwater, which triggers a time-limited moratorium on new wells.[a] It may delegate this function to a variety of local authorities.[b]
	The designation of a biocultural Biodiversity Heritage Site in India engages its complex multitiered system of statutory biodiversity entities: a subnational State Biodiversity Board recommends a site to the state government, which designates the site after having consulted a Biodiversity Management Committee that may be constituted at a variety of local levels; rules for the site are determined by the state government in consultation with the Central Government.[c] Though its implementation is perceived as slow, this system is praised for its biocultural and participatory approach.[d]
Coordination in developing shared goals/thresholds for a common matter of concern	In the US state of Texas, multiple local-scale groundwater conservation districts that overlie groundwater management areas undertake joint planning processes to determine "desired future conditions" for groundwater.[e] A state agency uses locally determined desired future conditions to provide each local district with scientific information on available water corresponding to these conditions as the basis of local planning.[f]
Coordination in setting restoration goals	A quasi-government organization, Melbourne Water, develops a statutory strategic plan to restore the Yarra/Birrarung River in Melbourne, Australia. The strategic plan must give effect to a "long-term community vision document" prepared using community codesign. Among other things, that vision document identifies community values and priorities for land adjoining the river. An independent Birrarung Council with membership drawn from

Legal mechanism	Illustrative examples
	Aboriginal, environmental, agricultural, and community groups advises the government on the development of the strategic plan, which translates the community vision into performance objectives.[g]

[a] Andhra Pradesh Water, Land and Trees Act 2002 (Andhra Pradesh, India) ss 3, 11.
[b] Ibid s 7.
[c] Biological Diversity Act 2002 (India) ss 37, 41, as amended by the Biological Diversity (Amendment) Act 2023 (India) s 27.
[d] Aparna Watve and Vishwas Chavan, "Conceptualising Framework for Local Biodiversity Heritage Sites (LBHS): A Bio-cultural Model for Biodiversity Conservation in Maharashtra" (2020) 22 *Asian Biotechnology and Development Review* 61–82, 65–66.
[e] Texas Water Code § 36.108.
[f] Texas Water Code § 36.1084.
[g] Yarra River Protection (Wilip-gin Birrarung murron) Act 2017 (Victoria, Australia) ss 17, 20(1)(a), 48. See also Nelson, "Sick City Streams," 768–770.

described here, also give regulatory actors and stakeholders access to information. However, they do not necessarily allow for coordination involving interaction, which makes it more likely that the information produced will be used in decision-making processes.[72] More interactive information-related mechanisms include intergovernmental agreements, joint agencies established to address a specific problem, and coordination arrangements that apply to specific decision-making processes about cumulative impacts, such as project-level and strategic impact assessments. Nongovernmental actors may play an important role in triggering or facilitating information coordination between governments, or partnering with governments using these mechanisms.[73]

Table 7.2 sets out examples, including those that provide for general advisory functions as a form of coordination of information, noting that there is some overlap with advice about intervention, discussed next. Chapter 9 describes the coordination that produced the strategic assessment of cumulative impacts on the Great Barrier Reef, triggered by an environmental NGO sharing with the World Heritage Committee information about growing unaddressed cumulative impacts on the Reef; a subsequent research and development program for climate adaptation and restoration is cofunded by governments and NGOs.[74]

[72] Norström and others, "Principles for Knowledge Co-Production," 186.
[73] E.g., Table 7.4 row 2.
[74] Sections 9.3.1 and 9.5.3.

TABLE 7.2 *Mechanisms for coordinated information initiatives to address cumulative environmental problems*

Legal mechanism	Illustrative example
Intergovernmental advisory council/ agreements to share information	Germany's *Umweltministerkonferenz* is a formally constituted, multilevel environmental ministerial conference with many working groups undertaking activities that are transparently communicated.[a] Its activities include coordination relating to information, e.g., developing uniform indicators on the impact of climate change on the water sector.[b]
Problem-specific intergovernmental advisory body	For Pacific Island nations, multi-stakeholder, multilevel advisory councils are central to informing climate change adaptation measures.[c] Tuvalu's statutory National Advisory Council on Climate Change advises on matters related to climate change, disasters, and sustainable development. Its members include representatives from a wide range of government agencies, umbrella groups for nongovernment organizations, and a church representative.[d]
Multilevel agency with information-related functions	An agreement between a dozen federal and state agencies and stakeholder groups for water allocation and management in California's Bay Delta involved creating a position of Lead Scientist and an Independent Science Board to develop credible information, in part to deal with "combat science" and distrust of data produced by different agencies.[e] A multiagency, multilevel Data Assessment Team met weekly to analyze technical data about water quality, fish, and flows, and make recommendations about interventions.[f] Ultimately, a statutory "Bay-Delta Authority" was created as "an honest broker, a source of information, and a procurer of science," with membership from state and federal agencies, the public, and others.[g]
Joint intergovernmental committee dedicated to information issues	A formal Compact between the US National Park Service and the state of Montana establishes a federal–state Technical Oversight Committee to assess the cumulative impacts of development affecting the hydrothermal system that supports geysers in Yellowstone National Park (an information function) and makes associated intervention-related recommendations about groundwater appropriations proposed under state law.[h]
Duty of cooperation in assessing cumulative impacts of a project	In considering cumulative and other impacts under Canada's federal Impact Assessment Act, government has a duty of consultation and cooperation[i] that applies

Legal mechanism	Illustrative example
	to jurisdictions with relevant powers, duties or functions; the term "jurisdiction" is defined broadly to include agencies, bodies, authorities, Indigenous governing bodies, a government of a foreign state, or an international organization.[j]
Coordinated strategic planning requirements and a multilevel, interagency coordination committee	South Africa's National Environmental Management Act ("NEMA") requires intergovernmental coordination and harmonization of policies, legislation, and actions relating to the environment. Certain national departments and every province prepare plans for this purpose and to promote consistency in the exercise of environmental functions. Every organ of the state must exercise its functions in accordance with the plans. Under an earlier version of the legislation, a statutory Committee for Environmental Co-ordination also sought to "promote the integration and co-ordination of environmental functions" by state organs and advance the objectives of the coordination plans.[k]

[a] "Konferenz der Umweltminister des Bundes und der Länder (UMK)" (n.d.) www.umweltministerkonferenz.de/, last accessed March 19, 2025, archived at https://perma.cc/U5JU-CHPW.

[b] Umweltministerkonferenz, Circular Resolution 26/2023, "LAWA-Konzept Klimafolgenmonitoring für den Wassersektor – Schlussbericht der LAWA-KG Klimaindikatoren" (2023) www.umweltministerkonferenz.de/umlbeschluesse/umlauf2023_26.pdf, archived at https://perma.cc/7SHQ-4GDK.

[c] See generally, Kate Morioka and others, "Applying Information for National Adaptation Planning and Decision Making: Present and Future Practice in the Pacific Islands" (2020) 20:135 *Regional Environmental Change* 1–12.

[d] Climate Change Resilience Act 2019 (Tuvalu) ss 19–20; "NACCC – National Advisory Council on Climate Change," Tuvalu Climate Change Portal (n.d.) www.tuvaluclimatechange.gov.tv/naccc-national-advisory-council-climate-change, last accessed March 19, 2025, archived at https://perma.cc/959B-5R69.

[e] Freeman and Farber, "Modular Environmental Regulation," 845–846.

[f] Ibid 850.

[g] Ibid 855–856.

[h] Montana Code Annotated 85-20-401 art. IV(J)(1) (US National Park Service - Montana Compact) See *Progress Report: Yellowstone Controlled Groundwater Area Technical Oversight Committee 2014–2018* (2019) https://dnrc.mt.gov/_docs/water/controlled-ground-water-areas/191212_5-year_Report_2018-web-sm.pdf, archived at https://perma.cc/4UKA-J67Q.

[i] Impact Assessment Act 2019 (Canada) s 21.

[j] Ibid ss 2 ("jurisdiction"), 21, 22(1)(a)(ii) (considering cumulative effects).

[k] NEMA 1998, as amended (South Africa) ss 7 (now repealed), 11(1), (2), 12(a), 16(1), (a) (the plans are known as environmental implementation plans and environmental management plans). See also E. Couzens and M. Dent, "Finding NEMA: The National Environmental Management Act, the De Hoop Dam, Conflict Resolution and Alternative Dispute Resolution in Environmental Disputes" (2006) 9(3) *Potchefstroom Electronic Law Journal* 1–51, 15, citing NEMA s 2(4)(l).

7.3.4 *Coordinating Regulatory Intervention among Governments, Legal Areas, and Cumulative Environmental Problems*

Coordination can promote synergies and comprehensiveness in regulatory intervention, help discover and address inconsistencies, and avoid unnecessary duplication and gaps in responding to cumulative environmental problems.[75] Table 7.3 includes examples of both institutions and rules for these purposes.

Coordination mechanisms can also encourage structured intergovernmental and government–NGO interactions that deal with intervention (Table 7.3). Nongovernment and quasi-government actors can support regulatory intervention by government in various ways. As a preliminary matter, they can help define the regulatory modes (strategies and approaches)[76] that constitute acceptable interventions. The Intergovernmental Panel on Climate Change is tasked with identifying climate change response strategies, which involves advising on plausible mitigation pathways through their assessment reports, including as to technologies such as geoengineering and carbon capture and storage as well as reducing emissions.[77] Nongovernment actors may also reinforce the use of regulatory sticks or facilitate local take-up of regulatory carrots and advice to fill gaps in the implementation of regulatory interventions (in both cases, promoting comprehensiveness[78]). Governments may broadly encourage this role, for example, through incentives for NGOs to fund private protected areas to complement public lands dedicated to conservation purposes.[79] Local nongovernmental collectives or transnational NGOs can help deliver incentive payments that governments or they themselves fund; and governments may link with private sustainability standards – a form of regulatory sermon – through environmental agreements, arbitration, trade, or energy policies.[80]

[75] For a discussion of these points, see Section 7.1.2.

[76] See Sections 6.2 to 6.4.

[77] United Nations General Assembly, Resolution on Protection of Global Climate for Present and Future Generations of Mankind, December 6, 1988 (UN Doc A/RES/43/53); Intergovernmental Panel on Climate Change, "Reports" (n.d.) www.ipcc.ch/reports/, last accessed March 20, 2025.

[78] For a discussion of comprehensive intervention, see Section 6.5.2.

[79] Nelson, "Regulating Hidden Risks," 494–496.

[80] For a synthesis of key themes in the literature on private standards organizations, see Luc Fransen, "Beyond Regulatory Governance? On the Evolutionary Trajectory of Transnational Private Sustainability Governance" (2018) 146 *Ecological Economics* 772–777, especially at 773 for links with governments. See also Duncan J. Snidal and Kenneth W. Abbott, "The Governance Triangle: Regulatory Standards Institutions and the Shadow of the State" in Kenneth W. Abbott and Duncan J. Snidal (eds), *The Spectrum of International Institutions: An Interdisciplinary Collaboration on Global Governance* (Routledge 2021) 52–91, 55 (coordination in the context of standards).

TABLE 7.3 *Mechanisms to recognize regulatory inconsistency and promote synergies in coordinating interventions to address cumulative environmental problems*

Legal mechanism	Illustrative examples
Interagency institutional mechanism to consider interactions between interventions	In the United States, the national-level Office of Information and Regulatory Affairs was established to consider how regulatory interventions interact through a communication and review process for existing regulation; a process for agencies to notify the Office of their regulatory plans so that other agencies could alert the Office to potential conflicts; and a centralized review process for "significant" regulations, about which the Office could advise in relation to consistency with policies and actions of other agencies.[a]
Rules to consider interactions between interventions	In the US state of Washington, legislation directs the Department of Ecology to consider the potential for existing statutes to conflict with the policies of "water resource programs" and to submit proposed statutory modifications to resolve any issues.[b]
Plan to assess consistency of interventions	The European Common Agricultural Policy requires each member state to adopt a national "CAP Strategic Plan". A Plan must set out the interventions that the member state uses to meet environment-related objectives, expressly demonstrating how interventions are "mutually coherent and compatible" for individual objectives, and how interventions are consistent and complementary *across* objectives.[c]
Coordinated intervention by governmental and nongovernmental actors	With an agreement in place for ongoing funding from international nongovernmental organizations (NGOs) to offset a loss in commercial fishing revenue, the Republic of Kiribati declared a 410,500-km² marine protected area in the uninhabited Phoenix Islands, including a no-take zone.[d] An NGO-funded trawl permit buyout has also occurred in the United States.[e]

[a] William J. Clinton, "Regulatory Planning and Review (Executive Order 12866)" (September 30, 1993) 58 *Federal Register* (US) 51375 ss 2(f), 4(c)(2)–(4), 5, 6(b); Office of Information and Regulatory Affairs (US), "OIRA" (n.d.) www.reginfo.gov/public/jsp/Utilities/faq.myjsp#oira, last accessed March 19, 2025, archived at https://perma.cc/BBM3-CDX3.

(*continued*)

TABLE 7.3 (*continued*)

[b] Revised Code of Washington § 90.54.040(3). For a similar example in South Australian land use legislation, see Planning, Development and Infrastructure Act 2016 (South Australia) s 57(1).
[c] Regulation 2021/2115 of the European Parliament and of the Council of December 2, 2021 on Common Agricultural Policy Strategic Plans, [2021] OJ L435/1 (CAP Regulation), preamble (101), (102), arts. 104, 109(1)(c), 118(2), 139(3)(b).
[d] Phoenix Islands Protected Area Conservation Trust Act 2009, as amended (Kiribati) ss 6, 26; Rebecca L. Gruby and others, "Policy Interactions in Large-Scale Marine Protected Areas" (2021) 14:e12753 *Conservation Letters* 1–9, 4–6.
[e] Gleason and others, "A Transactional and Collaborative Approach," 476–478.

While considering these potential benefits, regulatory designers should be attuned to the potential for NGO involvement to create conflict and inconsistency between regulatory interventions. For example, regulatory carrots that funnel revenue to powerful NGOs rather than resource-poor communities may exacerbate power imbalances, causing conflict,[81] and private standards may undermine state regulatory instruments.[82]

Coordination mechanisms can also address interventions at the interface of different cumulative environmental problems (Table 7.3). This raises the challenge of anticipating and dealing with connections between problems in the first place. These connections can arise in different ways. Sometimes the same activity contributes to two different cumulative environmental problems, which invites considering "stacked" interventions that deal with both problems. We see this in the Great Barrier Reef case study: Both grazing and coal mines lead to greenhouse pollution and water quality threats to the Reef,[83] with the potential to better link interventions dealing with these impacts. In other cases, an intervention to deal with one cumulative environmental problem makes it more difficult to deal with another (as in the Alps case study: Rewilding initiatives that reintroduce large predators to their historical ranges are perceived to discourage traditional grazing that is required to maintain biodiverse grasslands[84]). Responses at the interface between cumulative environmental problems might involve prioritizing interventions that fulfill multiple objectives and avoiding or compensating for interventions that adversely affect the nontarget problem.[85]

[81] See generally, Ponte, Noe and Mwamfupe, "Private and Public Authority Interactions."
[82] E.g. Pablo Pacheco and others, "Governing Sustainable Palm Oil Supply: Disconnects, Complementarities, and Antagonisms between State Regulations and Private Standards" (2020) 14 *Regulation and Governance* 568–598, 576–578.
[83] See Section 9.2.2.
[84] See Section 10.5.
[85] Guy Pe'Er and others, "How Can the European Common Agricultural Policy Help Halt Biodiversity Loss? Recommendations by over 300 Experts" (2022) 15:e12901 *Conservation Letters* 1–12, 6.

7.3.5 Resolving Disputes, Gaps, and Drift in and through Coordination

Finally, legal mechanisms for coordination can also address the potential for resolving disputes about inconsistent approaches, implementation gaps, or "drift" where multiple levels of government play different roles in addressing a cumulative environmental problem (e.g., lower-level government implementing higher-level mandate). Perhaps most prominently, rules for preemption give one level of government the power to override another.[86] In some jurisdictions (e.g., the United States, Australia, Germany, Brazil, and Canada), federal law generally overrules inconsistent state law.[87] Similarly, local laws may be overridden by provincial or central laws – as sometimes occurs in relation to local rights for nature laws[88] and some classic problems of cumulative impact, such as plastic bag bans and pesticide restrictions.[89] By contrast, non-preemption or "gold-plating" allows concurrent intervention where more protective local approaches prevail (Table 7.4). Such rules do not remove the need for coordination, though, since alignment and integration are also required in situations and for functions that are less likely to attract rules of preemption, such as rules for information.

Implementation gaps and drift are different problems that can arise where administrators may have significant discretion as to implementation.[90] Some European member states can be reluctant to implement and enforce European environmental directives.[91] Local-level Chinese governments face stronger individual incentives to promote economic development than implement national environmental laws,[92] as may US states, which share some

[86] Fox, "Localizing Environmental Federalism," 152.

[87] Sandra Zellmer, "Federal Pre-Emption and Displacement of Environmental Statutes and Common Law Claims," in Nicholas S. Bryner, Robert L. Glicksman and LeRoy C. Paddock (eds), *Elgar Encyclopedia of Environmental Law* Vol. II (Edward Elgar 2016) 96–107, 99.

[88] E.g., Elizabeth Kronk Warner and Jensen Lillquist, "Laboratories of the Future: Tribes and Rights of Nature" (2023) 111 *California Law Review* 325–393, 386–388; Peter Doran and Rachel Killean, "Rights of Nature: Origins, Development and Possibilities for the Island of Ireland" (Environmental Justice Network Ireland Civil Society Briefing Paper, January 2022) 2, https://ejni.net/wp-content/uploads/2022/01/EJNI-Briefing-Paper-Rights-of-Nature-Jan-2157.pdf.

[89] Fox, "Localizing Environmental Federalism," 154.

[90] See, e.g., Andrew Macintosh and Lauren Waugh, "Compensatory Mitigation and Screening Rules in Environmental Impact Assessment" (2014) 49 *Environmental Impact Assessment Review* 1–12, 1, 8–11.

[91] Sara Dillon, "The Mirage of EC Environmental Federalism in a Reluctant Member State Jurisdiction" (1999) 8 *NYU Environmental Law Journal* 1–73, 8–9, 12.

[92] Huiyu Zhao and Robert Percival, "Comparative Environmental Federalism: Subsidiarity and Central Regulation in the United States and China" (2017) 6 *Transnational Environmental Law* 531–549, 544–547.

TABLE 7.4 *Mechanisms to address drift, implementation gaps and disputes in coordinated interventions for cumulative environmental problems*

Mechanism	Illustrative legal example
Avoiding drift by retaining central role in cumulative impact decision-making	In Australia, statutory "bilateral agreements" allow a state to conduct environmental impact assessments and approve developments for the purposes of national law.[a] However, the national legislation expressly precludes agreements that would allow a state to approve the narrow categories of developments that require national cumulative impact assessment,[b] in the context of concerns that these developments require a higher level of accountability.[c]
Higher-level step-in power to remedy lack of lower-level implementation	In Canada, the national government may take emergency action to protect an endangered species if a provincial government fails to do so, and the relevant minister must make a recommendation to do so if "the species faces imminent threats to its survival or recovery."[d] In practice, emergency orders are rarely made, and only in response to nongovernmental organization (NGO) agitation, but national intervention may also result in voluntary conservation agreements between the provincial and national government to address the problem without issuing a formal order.[e]
"Fallback" higher-level intervention in the absence of coordinated multilevel, multi-stakeholder intervention	In the US state of Washington, state law imposes a default volumetric limit on permit-exempt groundwater wells used for domestic purposes due to cumulative impacts on salmon streams in certain watersheds. Local plans can lift these limits if they provide for offsetting the impacts on streamflow of permit-exempt water use. A plan must be agreed upon by federally recognized Indian tribes, the state departments of ecology and of fish and wildlife, each relevant county and city, the largest irrigation district, water service provider, and representatives of residential construction and agricultural and environmental interests. The state department of ecology may "step in" if no plan is approved by a deadline,[f] which has occurred on several occasions.[g]

Mechanism	Illustrative legal example
Right to non-preemption or stricter lower-level intervention than required	The exercise of environmental powers by the European Union (EU) does not prevent member states applying "more stringent protective measures."[h] This occurs in practice, e.g., various member states have adopted pollution limits on nitrogen dioxide, particulates, sulfur dioxide, and benzene that are stricter than EU air quality law requires.[i]
General multilevel oversight and dispute resolution in environmental coordination	Under South Africa's National Environmental Management Act (also discussed earlier), the Director-General of the National Environmental Management Authority monitors how public organs comply with coordination plans prepared by national and provincial governments.[j] Noncompliance is addressed through a conflict management process involving conciliation and arbitration.[k]

[a] Environment Protection and Biodiversity Conservation Act 1999 (Australia) s 3(2)(b), (c), pt 5; Department of Climate Change, Energy, the Environment and Water (Australia), "Shared Environmental Assessments with States and Territories" (n.d.) www.dcceew.gov.au/environment/epbc/approvals/state-assessments, last accessed March 19, 2025, archived at https://perma.cc/YQV5-6FP8.
[b] Environment Protection and Biodiversity Conservation Act 1999 (Australia) s 46(1). National cumulative impact assessment requirements only apply to unconventional gas and large coal mining developments: Rebecca Nelson, "Breaking Backs and Boiling Frogs: Warnings from a Dialogue between Federal Water Law and Environmental Law" (2019) 42 *University of New South Wales Law Journal* 1179–1214, 1195–1196.
[c] Stephen Hunter, *Independent Review of the Water Trigger Legislation* (Commonwealth of Australia, 2017) 24, https://oia.pmc.gov.au/sites/default/files/posts/2017/09/independent_review_of_the_water_trigger_legislation.pdf, archived at https://perma.cc/KCU7-TMUJ.
[d] Species at Risk Act 2002 (Canada) s 80.
[e] Julee Boan and Rachel Plotkin, "In a Rut: Barriers to Caribou Recovery" in Andrea Olive, Chance Finegan, and Karen F. Beazley (eds), *Transformative Politics of Nature: Overcoming Barriers to Conservation in Canada* (University of Toronto Press, 2023), 85–106.
[f] Revised Code of Washington § 90.94.030(3)(h).
[g] E.g., Nooksack, Snohomish, Cedar-Sammamish, Deschutes, Kennedy-Goldsborough and Kitsap: Department of Ecology (State of Washington), "Watershed Planning" (n.d.) https://ecology.wa.gov/water-shorelines/water-supply/improving-streamflows/watershed-planning, last accessed March 19, 2025, archived at https://perma.cc/2NFT-EQDQ.
[h] Consolidated version of the Treaty on the Functioning of the European Union [2016] OJ C202/1, art. 193. For similar examples in the context of Australian water law and US air pollution law, see Water Act 2007 (Australia) s 40, and Palermo and Kössler, *Comparative Federalism*, 385.
[i] Lorenzo Squintani, *Beyond Minimum Harmonisation: Gold-Plating and Green-Plating of European Environmental Law* (CUP 2019) 79.
[j] NEMA ss 16(1)(a), (2).
[k] NEMA chapter 4. For a similar interjurisdictional dispute resolution example in the context of Australian water law, see Water Act 2007 (Australia) Sch 1 (Murray-Darling Basin Agreement), cl 140.

environmental enforcement responsibilities with the federal government under a cooperative federalism approach.[93]

Solutions to implementation gaps and drift include introducing meaningful oversight between coordinating parties.[94] This might mean, for example, allowing one level of government to "step in" to undertake a function if a lower level fails to do so, as the state is empowered to do in response to local failures in the California groundwater case study.[95] Oversight may be supported by "fallback" legislative arrangements that apply even if coordination fails, including by facilitating action by "outsiders", such as a nongovernmental actor or even another nation that is free from relevant political pressures (Table 7.4). More pointed disputes in coordinating regulatory intervention are addressed by dispute resolution mechanisms established by legislation or intergovernmental agreements (Table 7.4).

7.4 CONCLUSION

This chapter has set out the key roles and benefits of coordination for dealing with cumulative environmental problems and important categories of coordinating actors: government agencies and quasi-governmental actors at all levels, and nongovernment actors representing those contributing to, affected by, or seeking to deal with the problem. It has presented a diverse range of rules and institutions to support coordination in relation to each CIRCle Framework function: conceptualization, information, and intervention, as well as dispute resolution generally. These examples represent diversity in many ways: geography, the actors they bring to the table, their reliance on institutions versus rules, and the power dynamics they reflect.

That the examples are numerous supports the basic proposition that it is valuable to give regulatory form to structures for coordination. However, their existence does not necessarily mean that they are used in ways that effectively address cumulative environmental problems. Challenges may still remain even with formal coordination mechanisms, and important empirical questions arise about how the forms of coordination discussed here deal with issues such as transaction costs and sustaining fruitful interactions over the long term. But formal coordination mechanisms should help address key disincentives to coordination that are pronounced in cumulative environmental problems, helping not only to bring key actors to the table but also to keep them coming back.

[93] Reisinger, Dougherty and Moser, "Environmental Enforcement," 6–7, 16–27.
[94] Edwin Alblas and Josephine van Zeben, "'Farming out' Biodiversity: Implementing EU Nature Law through Agri-Environmental Schemes" (2023) 17 *Earth System Governance* 100180, 7.
[95] Section 8.4.2.7.