From Sledgehammers to Scalpels

A New Framework of Legislative Design

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Democratic systems continue to generate substantial volumes of legislation despite increasingly polarized political environments. Although multiple disciplines analyze different facets of laws, the internal design of legislation has rarely been studied in a comprehensive and integrated manner. We introduce a novel conceptual framework to analyze legislation holistically through two dimensions, *versatility* and *precision*, and operationalized using six indicators: objects, subjects, instruments, dilution, derogation, and delegation. We apply this framework to four environmental laws of the European Union, revealing distinct legislative ideal types: *Swiss army knife*, high in versatility and precision (REACH Regulation); *scalpel*, low in versatility but high in precision (F-gas Regulation); *shotgun*, low in versatility and precision (Environmental Impact Assessment Directive), and *sledgehammer*, high versatility and low precision (Renewable Energy Directive). These examples show that, even within a single policy domain, legislative designs vary along two distinct dimensions. We demonstrate how our approach can be used to measure laws across domains, systems, and time. Our approach offers new insights into how laws function, adapt, and endure over time; enhancing our understanding of legislative dynamics in modern democracies.

Keywords: legislative design, EU, environmental policy, legislative versatility, legislative precision

Legislation is all around us. When people fill out forms to receive parental allowances, when they smoke a cigarette in public, when they buy meat in a grocery store—people are invariably bound by the power of the law. Even in an increasingly hostile global political environment, characterized by polarized societies and fragmented political systems, democracies continue to be extraordinarily productive in delivering new legislation (Adam et al. 2019; 2022). This legislation permeates all areas of public life, from child support to pension entitlements, from the tax code to the environmental code, from consumer rights to producer obligations.

Though legislation constitutes a key data source for scholars of public policy and law, analyses of legislation are often narrowly focused in their temporal, geographical or substantive context and, as a result, commonly use conceptual approaches that are tailored to specific research questions. For example, scholars of social policy often focus on matters of generosity and (re-)distribution (e.g., Esping-Andersen 1990), scholars of environmental policy often study the design of regulatory instrument mixes (e.g., Steinebach 2022), and scholars of tax policy largely focus on the existence of loopholes, derogations, and complexity (e.g., Hoppe et al. 2023). In addition, most theories of the policy process continue to conceive of the policy subsystem as the core venue in which legislation is formulated, negotiated, and evaluated. Though this analytical focus on the subsystem level has led to major breakthroughs in how we understand and explain policy design and change (Sabatier 1998; Howlett and Ramesh 1998), the lack of cross-fertilization across those 'subsystemic silos' also implies a failure to understand broader dynamics that govern the design of democratic legislation generally, eliciting multiple questions: Are there general logics behind the design, creation, and long-term survival of democratic legislation? Are legislative designs different between distinct policy areas? Are legislative designs specific to policy domains or institutional settings? Do legislative designs vary over time, and how are they maintained?

To answer these important questions, we need to compare the substance of democratic legislation across time, policy domains, and political systems. Doing so requires a conceptual framework that identifies the design of democratic legislation at a more abstract level than has been accomplished in the extant literature. Accordingly, we need a conceptual language that allows us to navigate across different legislative designs, and to identify their commonalities and differences. To set out such an approach, our framework integrates insights from comparative public policy and law to arrive at a fourfold typology of legislative design. This typology allows us to study legislative design across different levels of analysis; from individual legal provisions, to the entire law, to the broader policy domain, all the way up to the political system at-large.

We demonstrate the applicability of our framework using four EU environmental laws that serve as initial case studies. The development of this conceptual approach marks only the first step in our research agenda, and we conclude with a discussion about where we intend to take this approach empirically. Yet, we also contend that the development of this unified framework marks an

important contribution to studying legislative design, with implications for a diverse range of scholarship, policymakers, and street-level bureaucrats.

A New Perspective on Legislative Design: Concept and Measurement

Comparative public policy and legal scholarship share many research interests but remain oddly disconnected. The lack of interdisciplinary exchange has its roots in varying assessments on the role and meaning of legislation for democratic processes. Though policy scholars broadly view legislation as a vehicle for the communication of policy goals, instruments, and targets (e.g., Fernández-i-Marín, Knill, and Steinebach 2021; Howlett 2023); legal scholars are often more interested in matters of legislative drafting (Hart 2016; Nourse and Schacter 2002), legal ambiguity, and vagueness (e.g., Endicott 2011; Hadfield 1994), or the origins and consequences of legal complexity (e.g., Ruhl and Katz 2015; Schuck 1992). Accordingly, though both disciplines analyze legislation as their primary data source, they view this legislation through distinct conceptual lenses. Using the strengths of those different perspectives, we develop a comprehensive conceptual approach to systematically describe, measure, and compare legislative designs across laws, policy domains, political systems and time.

We start from the premise that the design of a law is a latent characteristic of its text and that legislative designs can take diverse shapes and forms. Combining insights from comparative public policy and law, we propose conceptualizing legislative designs along two analytical dimensions: *versatility* and *precision*. Versatility and precision are each constructed of three indicators. Versatility is determined through a combination of objects, subjects, and instruments. Precision consists of dilution, derogation, and delegation.

We first discuss the underlying conceptual considerations that we use to develop our novel typology of legislative design. Next, we outline how each of the six indicators can be measured and operationalized. Having done so, we show that combinations of versatility and precision produce four ideal types of legislative design: *Swiss army knife* (high versatility, high precision); *scalpel* (low, high); *shotgun* (low, low); and *sledgehammer* (high, low).

Versatility

The first dimension along which democratic laws can be distinguished analytically is the versatility of their policy substance. Reflecting Lasswell's classic definition of politics as a struggle over who gets what, when, and how (Lasswell 1936), versatility can relate to three different aspects: (a) the diversity of policy objects (*what* is addressed?), (b) the diversity of policy subjects (*who* is addressed?), and (c) the diversity of policy instruments (*how* is it addressed?). Rather than studying these components of legislative versatility in detail, the existing literature often resorts to the analysis of convenient, but crude quantitative measures, such as the length of the legislative text (e.g., Kousser 2006). Yet, though length can be interpreted as an important structural aspect of a law, it does not

tell us anything about the content of a law (Hurka, Haag, and Kaplaner 2022; Hurka and Haag 2019). Therefore, to better understand how laws can be designed, we need to think about the versatility in terms of *what*, *who*, and *how* policy is addressed.

Objects

We start by evaluating the *what* of policy; the specific issues discussed. In public policy research, objects are the content that is targeted by the policy (Fernández-i-Marín, Knill, and Steinebach 2021). For example, an environmental law might target renewable energy or the regulation of specific chemical products; a social policy law might focus on long-term care services or pension benefits; and a tax policy law might address corporate tax incentives or income tax thresholds.

The scope of policy objects can vary significantly. Whereas some laws are very specific and only address a narrow set of closely defined issues, others cover a multitude of different objects simultaneously. To illustrate this variation, compare a law that regulates access to abortion (e.g. the UK Abortion Act of 1967) with a law to tackle the climate crisis (e.g., the UK Climate Change Act of 2008). Though the regulation of abortion access can be a contentious political issue, it is typically discussed in a rather narrow fashion. As a result, Westlaw UK[1] only lists four different topics for the UK Abortion Act (abortion, childbirth, complementary or alternative medicine, and religious freedom). In contrast, the UK Climate Change Act is tagged with seventeen topics, ranging from low carbon technologies to shale gas fracking.

To capture this variation in policy objects, analyses can be guided by pre-established classification schemes such as policy issue taxonomies or governmental sector categories (Fernández-i-Marín, Knill, and Steinebach 2021). We therefore consider variation in the what of policy by measuring the diversity of policy *objects*, which serves as our first indicator of versatility.

Subjects

The *who* of policy is about the actors who are subject to the law (Howlett 2023). In public policy research, these are the subjects targeted by a law (Fernández-i-Marín, Knill, and Steinebach 2021). We therefore consider versatility in terms of the diversity of *subjects* that a policy contains. Subjects range from states, actors in the private and public sectors, or implementing bodies. Any group, organization, institution, or individual who is implicated by the law is considered as a subject.

A diverse set of subjects does not necessarily align with diverse policy objects, for example, a narrow agricultural law can be exclusively directed at farmers, while assigning distinct roles to diverse institutional subjects in the private (e.g., NGOs, farmers associations, or corporations) and public sector (e.g., ministries, state administrations, or governmental agencies). Having diverse subjects can

[1] http://uk.westlaw.com

help reconcile distinct preferences about the locus of authority—e.g., state versus market, individual versus collective—and balance competing demands over the structural design of a law. This diversity enhances the law's versatility.

To measure policy subjects, researchers identify or interpret the intended recipients of policy clauses, which may appear at the beginning of a law or be embedded in specific clauses throughout the text.

Instruments

Variation in the *how* of policy is expressed through the diversity of policy instruments (Fernández-i-Marín, Knill, and Steinebach 2021). Policy instruments are the 'tools of government' (Hood 1983; Hood and Margetts 2007; Linder and Peters 1989), and are defined as the actions states take to achieve certain policy objectives. Instruments are distinct from both objects and subjects. Even if a law is strictly focused on a narrow set of policy objects and involves only a limited set of subjects, it can still contain varying degrees of instrument diversity. For example, laws can contain taxes along with subsidies and can specify both rights and obligations. The variety of these instruments is therefore the third component of a law's versatility.

One challenge of measuring policy instruments is their variation across policy domains, reflecting underlying differences in objects, stakeholders, and contexts. For example, environmental policies frequently employ regulatory instruments—such as emissions standards or prohibitions on harmful substances—alongside market-based instruments like taxes or subsidies to incentivize desired behaviors. In contrast, social welfare policy tends to rely on distributive mechanisms including direct financial transfers and public service provision. Healthcare legislation often uses a mix of instruments—including regulatory instruments, planning instruments, and information dissemination—to manage specific challenges in this domain.

Given this domain-level variation, it appears necessary to institute a common typology that puts instruments into broader categories. The use of categories enables cross-domain comparison and helps identify whether certain types of instruments are transferable across policy sectors. For example, regulatory instruments—once typically associated with environmental policy—also appear increasingly common in welfare policy (Levi-Faur 2014; Trein 2020), such as in the regulation of private service providers. Within these categories, further coding can identify instruments and criteria that are specific to that domain.

As an initial application, we show how policy instruments specific to the environmental domain can be grouped into categories which can be used then across domains. To do so, we extend the classification by Steinebach (2022), offering a list of environmental policy instruments in the EU, and the OECD's Policy Instruments for the Environment (PINE) database ("Policy Instruments for the Environment (PINE) Database" 2025). As discussed above, to ensure cross-domain

generalizability, we combine these classifications by grouping instruments into four categories: *Regulatory Instruments*, which mandate or prohibit certain behavior; *Market-Based Instruments*, such as financial incentives or penalties; *Planning and Investment Instruments*, including strategic government planning; and *Information and Voluntary Instruments*, which provide information and opportunities. We present an overview of these categories and instruments in Table 1, contending that these categories are applicable beyond the EU case and the domain of environmental policy.

***Table 1**: Policy Instruments*

Category	Instrument	Description	Example
Regulatory Instruments	Obligatory standard	A legally enforceable numerical standard, typically involving a measurement unit, e.g. mg/l	Limit value for lead emissions in surface water, e.g., 50 mg/l
	Prohibition / ban	A total or partial prohibition/ban on certain emissions, activities, products etc.	Ban on importation of products containing chlorofluorocarbons
	Technological prescription	A measure prescribing the use of a specific technology or process	Installations have to be operated in accordance with the principle of 'best available techniques' (BAT)
Market-based Instruments	Tax / levy	A tax or levy for a polluting product or activity	Tolls and road user charges for trucks depending on the emission class
	Subsidy / tax reduction	A measure by which the state grants a financial advantage to a certain product or activity	Tax reduction for vehicles in series production complying with a regulation
	Liability scheme	A measure that allocates the costs of environmental damage to those who have caused the damage	Establishment of an emission trading system
Planning and Investment Instruments	Planning instrument	A measure defining areas or times that deserve particular protection	Action plans indicating the measures to be taken during times when there is a risk of the limit being exceeded
	Public investment	A specific public investment	Programs given financial support for the retrofitting of in-use vehicles and for scrapping old vehicles
Information and Voluntary Instruments	Data collection / monitoring programmes	A specific programme for collecting data	Establishment of measuring stations designed to supply the data necessary for the application of a certain regulation
	Voluntary measures	Voluntary agreements or commitments between the state and private actors or by private actors alone	Manufacturers can apply for the CO_2 savings achieved as a result of eco-innovation (if approved can used to contribute to manufacturer's specific emissions target)
	Information-based instrument	Information provided by the state or the polluters indicating the environmental externalities of a certain product or activity	Label on fuel economy and CO_2 emissions of a vehicle displayed at the point of sale.
	Other	Any instrument that cannot be assigned to the other categories	–

Note: Table adapted from Steinebach (2022). Principal adaptation is the addition of the categories.

Precision

The precision of a law can vary in three distinct ways. First, policymakers can frame the legislative text in clear or vague language (*dilution*). Second, policymakers can render legal provisions generally applicable or define various types of scope conditions (*derogation*). Third, policymakers can determine

the degree to which further details of the law can be defined by the bureaucracy (*delegation*). These indicators jointly define how precisely a law is designed.

Dilution

Dilution, the use of vague legal concepts and indeterminate legal scripture, leaves room for interpretation when legislative agreement is hard to achieve. It can be understood that for a vague term there is also a precise term, a condition present in well-known definitions (e.g., Chanell 1994). By using indeterminate legal scripture, policy makers effectively delegate the interpretation of the law to the implementers (Lipsky 1980; Schram et al. 2009) and ultimately to the court system (Vanberg 1998; Williams 2018). Though vagueness often carries a negative connotation in everyday language, from a legal perspective, vagueness is not inherently problematic (Endicott 2011), and we should avoid attaching normative value to vague legal texts. Rather, dilution should be assessed in relation to its potential functions as well as its interaction with other dimensions of legal precision and with the chosen policy instruments, with vagueness employed strategically and deliberately by policymakers as a means to pass legislation.

Measuring dilution involves systematically identifying and categorizing the presence and extent of imprecise terms, phrases, and concepts that afford varying interpretations during policy implementation. Such vague legal concepts can relate, inter alia, to matters of quantity (e.g., 'some', 'several', 'many'), time (e.g., 'from time to time', 'occasionally'), degree (e.g., 'considerable', 'relevant', 'substantial') and category (e.g., 'such cases', 'such measures') (Li 2017; 2019). Measurement approaches should therefore consider the normative implications of dilution, where, though ambiguity might serve pragmatic legislative goals in politically contentious situations, excessive dilution risks undermining policy coherence and enforceability.

Derogation

Derogation(s) are defined as opt-outs or exclusions from being subject to the provisions of a law (Müller and Slominski 2013). These opt-outs might be defined under specific circumstances, to particular groups like religious communities (Mariani 2020), or certain industrial sectors (Ekins and Speck 1999), or according to particular standards. Derogations may also be territorial in nature and allow federal sub-units to opt-out of an agreement (Duttle et al. 2017; Schimmelfennig, Leuffen, and Rittberger 2015; Schimmelfennig and Winzen 2020). Derogations are not policy instruments, but they can be *attached* to any policy instrument.

Derogations affect legislative design in several different important ways. A derogation can increase the precision of a law if it defines exact, objective scope conditions under which a given legal rule applies, for example, by providing an exception from legal rules for certain regions, products, or sectors. Yet, derogations can also lead to more ambiguity if the way the derogation is formulated

provides additional room for interpretation. Such derogations are popular devices to water down contentious legislation and achieve agreement (Bernauer, Prakash, and Beiser-McGrath 2020; Vannoni 2022). Accordingly, though exemptions to the applicability of a given legal rule are central components of any legislative design, the exact way that these derogations affect legislative design depends on their formulation.

Following the logic of linguistic patterns, derogation can be measured using a rule-based approach (Vannoni, Ash, and Morelli 2021). Rule-based or *strict derogations* (e.g., "shall not apply for a period of five years") make legislation more precise. In contrast, *permissive derogations* (e.g., "states may, in exceptional cases") make laws less precise. These types of derogations must therefore be identified separately. Strict derogations are defined by rule-based modal verbs such as 'shall', 'must', or 'will. Permissive derogations are instead identified through the use of permissive modals, such as 'may' or 'can', alongside derogation verbs such as 'not apply to' or 'allow exemptions'. In the case of strict modals with a derogation verb followed by a clear rule, the derogation makes a law more precise, whereas a permissive modal plus a derogation verb makes a law less precise. In both cases, the derogation can be followed by further specification, such as time in temporary derogations ("for a period of ... [date]"), or scope conditions ("less than ... [certain values] [measurement unit]").

Delegation

Delegation allows policymakers to give administrative agencies, executive branches, or other implementing entities varying degrees of rule-making authority (Anastasopoulos and Bertelli 2020; Epstein and O'Halloran 1999; Franchino 2004; Vannoni, Ash, and Morelli 2021). Delegation can help laws pass the legislative process. Leaving contentious issues unresolved and transferring the responsibility for conflict resolution to the bureaucracy may facilitate legislative agreement and promote the passage of a law. Yet, in other circumstances, the uncertainty introduced by outsourcing may prompt legislators to specify policy details more precisely within the legislative text. In both scenarios, the more authority is delegated, the higher the uncertainty over how the law will be implemented in practice, as per Lipsky's (1980) foundational insight that street-level bureaucrats exercise considerable discretion when laws delegate substantial responsibility—i.e., when legal texts are imprecise. Such discretion is often necessary for effective public service delivery, though can lead to unequal implementation (Adam et al. 2021; Brodkin 2011; Schram et al. 2009). Given the increased uncertainty in how the law will be implemented that comes with delegation, we consider delegation as our third measure of a law's precision.

Measuring delegation involves identifying and assessing the extent to which laws explicitly grant powers or assign responsibilities for detailed policy implementation or enforcement to these non-legislative actors. Measurement approaches foreground the language of constraint and authority in legislative text (Vannoni, Ash, and Morelli 2021; Anastasopoulos and Bertelli 2020), for instance,

delegation verbs (e.g., 'require', 'ought to', 'oblige') combined with different modal verbs (e.g., 'shall', 'may'). These studies show that delegations are also formulated positively (e.g., 'actor X shall enforce regulations'). As an example of this rule-based identification, Table 2 shows the lexical units and extraction rules used by Vannoni, Ash, and Morelli (2021).

***Table 2**: Rule-Based Identification of Delegation*

Lexical Units	
Strict modals	"shall", "must", "will"
Permissive modals	"may", "can
Delegation verbs	"require", "expect", "compel", "oblige" , "obligate", "have to", "ought to"
Constraint verbs	"prohibit", "forbid", "ban", "bar", "restrict", "proscribe"
Permission verbs	"allow", "permit", "authorize"
Extraction Rules	
Delegation	strict modal + active verb + not negation OR not permissive modal + delegation verb + not negation
Constraint	modal + not delegation verb + negation OR strict modal + constraint verb + not negation OR permission verb + negation
Permission	permission verb + not negation OR permissive modal + not special verb + not negation OR constraint verb + negation
Entitlement	entitlement verb + not negation OR strict modal + passive + not negation OR delegation verb + negation

Note: Table taken from Vannoni, Ash, and Morelli (2021).

Four Ideal Types of Legislative Design

In combination, versatility and precision present a two-dimensional space with four ideal types of legislative design (see Table 3). First, *Swiss army knife designs* are highly versatile and precise. These laws are versatile because they cover a variety of objects, subjects, and instruments, and their provisions are clear and unambiguous. Normatively, Swiss army knife laws seem particularly desirable, given their inclusiveness and clarity. Yet, these properties may also make them particularly hard to agree upon. *Scalpel designs* are defined by their narrow scope and high precision. Laws with these designs are not particularly versatile, as they are targeted to a limited set of objects, subjects, and instruments. At the same time, their provisions are clearly articulated and consistent, leaving little room for interpretation. *Shotgun designs* are laws that feature a narrow set of objects, subjects, and instruments that are addressed in a very imprecise manner. They are thus targeted to solve a very specific problem, but they do so in a way that is hard to control. Finally, *Sledgehammer designs* have a broad scope, and are also very imprecise. These laws connect a multitude of policy objects, address a broad variety of subjects, and employ various policy instruments simultaneously, yet the way these laws are formulated is associated with high degrees of uncertainty. Like a sledgehammer, such laws are very versatile, but the exact way they ultimately solve the underlying problem is hard to control precisely.

***Table 3**. Four Ideal Types of Legislative Design*

		PRECISION	
		Low	*High*
VERSATILITY	*High*	Sledgehammer	Swiss Army Knife
	Low	Shotgun	Scalpel

Accordingly, the design of a law is jointly determined by its versatility and its precision, which allows us to conceptually identify four different ideal types of legislative designs. The key advantage of this novel framework is that, due to its simple and abstract nature, it does not require us to focus on a particular policy type (e.g., regulative or distributive policies) or conflict dimension (e.g., restrictiveness or generosity) to distinguish the policy substance of democratic laws conceptually. Our framework therefore allows for the meaningful comparison of legislative designs across different hierarchical levels—law, domain, and system—for practically any policy that is expressed in a legislative text.

Empirical Application

We demonstrate the analytical usefulness of our conceptual approach through the in-depth analysis of four cases, which is why we rely on qualitative exploration instead of large-scale quantitative testing. Though such large-N analyses are our long-term goal, we believe that a careful examination of the underlying conceptual framework should precede the extension to a larger universe of democratic laws. Qualitative application provides a deeper and more nuanced understanding of the individual components that jointly define legislative designs and their interplay in actual legislation. Therefore, the goal of this analysis is to demonstrate the variance of legislative designs within a single policy domain and investigate the various ways in which the six indicators discussed above jointly define the character of a democratic law. We apply our framework to four laws within the same policy domain—environmental policy—to illustrate the ideal types.

It is important to emphasize that versatility and precision are continua along which legislative design can vary. As a result, the legislative designs described above are ideal types that we should not necessarily expect to often empirically observe in their 'pure' form, with most democratic laws being hybrids that combine elements of different legislative designs. Yet, to illustrate the usefulness of our framework, we present four case studies of legislative designs that come close to those ideal types. Though the framework allows for the study of any policy domain in any political system, its potential can best be assessed if we narrow our focus and hold policy domain and the institutional setting constant. We therefore focus this initial application on environmental legislation produced in the political system of the European Union (EU).

We think environmental policy is a productive domain to apply our framework for four main reasons. First, the environmental policy domain is relatively broad and established, giving us plenty of laws to choose from to identify the viability of the framework. Second, we see the potential for

variation along the dimensions of versatility and precision. For versatility, the domain is inherently policy-dense and multidimensional; environmental legislation typically covers a wide range of issues, such as climate change, pollution, biodiversity, and energy policy. Consequently, these legal texts may engage with a broad array of policy objects, subjects, and instruments. Accordingly, environmental legislative designs have the potential to vary across the indicators introduced above. In terms of precision, environmental law often operates at the intersection of national and supranational legal systems in the EU, meaning that environmental directives and regulations vary in the use of language, clauses, and delegation of rule-making authority. The potential for variance in both versatility and precision implies that environmental legislation are not "pre-determined" by a lack of design options, but that they can theoretically be designed in extremely different ways. Third, environmental policy is highly innovative in terms of instrument development and experimentation, with policymakers testing novel tools that reflect both regulatory and market-based governance logics (Jordan and and Zito 2013). This variation enables us to meaningfully distinguish between complex combinations of instruments in a single law, and more straightforward deployments of single instruments. Fourth, we think that environmental policy is normatively important, is often highly salient, and has implications for a variety of other policy domains.

We apply our framework to laws from the EU, which we think is a good test case due to its complex legislative environment (Häge 2013). As a supranational entity of sovereign states, the EU must reconcile diverse national interests, traditions, and political cultures, meaning we expect variation in terms of both the versatility and precision of legislative designs. The EU's institutional design inherently demands negotiation, compromise, and clarity in its legislative texts. Because EU legislation requires consensus among national governments and passes both the European Parliament and Council, laws are likely to vary in their precision. These features allow us to observe dilution, derogation, and delegation as strategic tools employed by legislators to manage disagreement, align interests, and ensure successful legislative adoption. The EU also has a relatively long history of environmental legislation and it is both one of the major emitters of greenhouse gases and one of the major economic powers of the world, making environmental legislative design normatively important. Other states around the world also watch policy developments in the EU and potentially align their own laws.

We start with a general reading of laws' versatility and precision before identifying each indicator using the measurement approach discussed previously. Policy *objects* in the EU context are typically stated in the first article outlining the law's scope and purpose. Additional information is drawn from EUR-Lex metadata, including EuroVoc descriptors, subject matter classifications, and directory codes. Information on policy *subjects* is commonly found in the first and last articles and throughout the text when specific provisions target particular sectors or actors. To measure *instruments*, we rely on the classification by Steinebach (2022) which allows us to identify specific

environmental policy instruments. Then, we group these instruments into broader categories as outlined in Table 1.

For *dilution*, we use four dimensions of vague language (quantity, time, degree, category) (Li 2017; 2019). To assess *derogations*, we identify both strict and permissive derogations in the language. For *delegation*, we search for combinations of delegation verbs (e.g., require, oblige) with modal verbs (e.g., shall, may), indicating the transfer of authority from the EU legislator or Commission to EU institutions, Member States, or other implementing agencies. Finally, we compare the six indicators across the four legislative cases, aggregated into the dimensions of versatility and precision to classify against the ideal types.

Swiss Army Knife: REACH Regulation

The **Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)** is a 2006 EU Regulation that demonstrates a broad and multifaceted approach to chemical regulation.[2] It contains a wide range of policy objects, targets various policy subjects, and incorporates a diverse set of policy instruments. The comprehensive nature and presence of cross-cutting issues mean REACH is recognized as one of the most significant environmental laws in the EU (Pesendorfer 2006; Willumsen 2018; Lindgren and Persson 2008). One of the most important advancements of the regulation is the integration of all substances in one regulatory framework rather than focusing on a single chemical substance (Pesendorfer 2006). Prior to REACH, substances were categorized as "old" or "new", with most substances being "old" and therefore not subject to EU chemicals legislation (Thierse 2019). Under REACH, old substances are also subject to evaluation and substitution with safer alternatives, broadening the scope of regulatory coverage. Lindgren and Persson (2008) argue that the goal of the law is to promote "human health and the environment as well as innovation" (38). Although primarily classified as an environmental law, REACH regulates almost all chemical substances and intersects other domains such as safety at work and internal market principles. Its wide scope is also reflected in the range of EuroVoc terms associated with it: *marketing standard, chemical product, environmental protection, public health, product safety, environmental risk prevention, administrative formalities, market approval, scientific report, European Chemicals Agency.*

REACH addresses a diverse group of subjects, regulating chemicals throughout their life cycle and across supply chains. These subjects include EU Member States as the main implementers and also targets manufactures and importers of *any* chemical substance or material as well as downstream users, and indirectly, consumers. In terms of policy instruments, the regulation includes a broad toolkit of regulatory instruments (*obligatory standards, prohibitions and bans, technological*

[2] Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

prescriptions), market-based instruments *(liability schemes),* planning and investment instruments *(planning instruments),* and information and voluntary instruments *(data collection or monitoring programs, information-based instruments).* The obligatory standard is reflected in the name of law, with a requirement to register and evaluate chemical substances manufactured or imported in quantities exceeding one ton per year (Art. 6, Art. 10, Annexes VII-X), the key general obligation (Thierse 2019). To manage these processes, REACH established the *European Chemicals Agency* (ECHA) (Title X), a data collection and monitoring program. Other monitoring tools include chemical safety assessments (Art. 14) and downstream user reporting (Art. 37). Planning instruments are also used, such as the Substance Evaluation Plan (Article 44(2)) which determines annually which substances require further evaluation. The regulation also restricts the use of certain substances which are listed under Annex XVII, prescribes certain technological standards (such as use of good laboratory practices (Art. 13(4)), and incorporates a type of liability scheme by asserting the principle that producers are responsible for any environmental damage caused by their chemicals (Art. 101(2)). REACH also uses information-based instruments, requiring that chemical risk information is made publicly available (Recital 117, Art. 119), and mandating the creation of a database with a labeling and classification inventory (Art. 114). REACH is therefore versatile, targeting various policy objects, addressing various subjects, and using a diverse toolkit of policy instruments.

In terms of legal precision, EU regulations are binding in their entirety, while directives allow Member States discretion in the choice of implementation methods (Hurka and Steinebach 2021). Regulations therefore commonly exhibit greater legal precision. Although REACH was ultimately adopted with compromises (Willumsen 2018; Buck 2006), it consolidated forty single legislations (Lindgren and Persson 2008), enhancing legal clarity and consistency across the EU. Therefore, REACH can be regarded as a rather legally precise law.

In terms of dilution, REACH uses specific and measurable terms related to quantities and timing. Article 6 mandates that any manufacturer or importer must register chemical substances exceeding one tonne per year to the Agency. Article 10 specifies the exact information a manufacturer or importer should submit, including a technical dossier,[3] and a chemical safety report with a specified format. Whereas a diluted version would merely require that the registrant submit "appropriate" information, these instructions are highly precise. Temporally, REACH specifies precise, enforceable timelines, such as in Article 96(5): "*This estimate, which shall include a draft establishment plan, shall be forwarded by the Management Board to the Commission by 31 March at the latest".*

REACH contains several derogations and exemptions, especially specifying which sectors or products are exempted from being registered in the Agency. Article 9(1) stipulates that "*Articles 5, 6, 7, 17, 18 and 21 shall not apply for a period of five years to a substance manufactured in the*

[3] Including the identity of manufacturer, identity of substance, information on the manufacturer, classification of the substance, guidance on safe use of the substance, study summaries, and robust study summaries.

Community or imported for the purposes of product and process orientated research", followed by a clear procedure what the exempted manufacturer or importer must inform the Agency. The derogation is marked by the use of a strict modal verb ('shall') and a negation ('shall not apply'), serving as a derogation verb. This example shows that a law with several derogations can be precise when these exemptions contain clear criteria and procedures.

REACH contains some delegation, but responsibilities are clearly assigned. One example are the competent authorities (Title XIII), for which REACH states that "*Member States shall appoint the competent authority or competent authorities responsible for performing the tasks allotted to competent authorities under this Regulation and for cooperating with the Commission and the Agency in the implementation of this Regulation. Member States shall place adequate resources at the disposal of the competent authorities [...].*" (Article 121). Though the provision leaves the concrete configuration of the competent authorities to the Member States, it defines their responsibilities, such as informing the public and establishing national helpdesks. In short, the relevant authorities are charged with implementing REACH at the national level.

REACH uses clear legal language, outlines clear conditions for the derogations, and does not use a lot of delegation. With high precision and a broad scope, the REACH regulation is most similar to the Swiss army knife design.

Scalpel: F-gas Regulation

Unlike the broad REACH Regulation, the **Regulation on Fluorinated Greenhouse Gases (F-gas Regulation)** adopts a more focused and sector-specific approach by targeting fluorinated greenhouse gases used in particular products such as heat pumps or air conditioning systems.[4] It was adopted on 7th February 2024, replacing the 2014 F-gas Regulation, to enable stronger climate action (European Commission 2024). Unlike REACH, the F-gas Regulation is confined to the environmental domain and its limited scope is reflected by the associated EuroVoc terms: *fluorine, pollution control measures, export (EU), import (EU), EU emission allowance, market approval, greenhouse gas, EU environmental policy, exchange of information, reduction of gas emissions.* Whereas REACH is tagged with general terms like "chemical product" or "product safety", the F-gas Regulation employs more targeted terminology such as "fluorine".

EU Member States and economic operators are subject to the F-gas Regulation. Yet, its applicability is limited to subjects operating *within* the market of fluorinated greenhouse gases like heating pumps or air conditioning (see Article 2 on its scope). Whereas REACH speaks to a broader set of stakeholders across different chemical sectors, the F-gas regulation targets specific sectors. The

[4] Regulation (EU) 2024/573 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014 (Text with EEA relevance).

F-gas Regulation also employs a more limited set of policy instruments compared to REACH, mostly focused on *regulatory instruments* (mainly obligatory standards and prohibitions), while also including *planning* and *information instruments*. In terms of obligatory standards, the regulation mandates leak checks based on CO_2-equivalent thresholds for fluorinated gases (Art. 5). For prohibitions, it bans the intentional release of F-gases unless technically necessary (Art. 4(1)), prohibiting the sale of products listed in Annex IV (Art. 11), and restricts the sale of hydrofluorocarbons (HFCs) unless a quota has been allocated (Art. 16). Specifically, the quantity of HFCs should be gradually reduced until 2050 (Umweltbundesamt 2024). In terms of technological prescriptions, producers must use UNFCCC[5]-approved abatement for trifluoromethane (Art. 4(6)). The regulation also introduces data collection and monitoring instruments through the establishment of the F-gas Portal to track quotas and products (Art. 20) and transfer quota allocations (Art. 21). The regulation improves the monitoring system through digitalization (European Commission 2024). Though this monitoring instrument represents a different type of instrument, it is mainly used to monitor compliance with the prohibitions laid down in the regulatory instruments. The regulation also uses information-based instruments, such as mandatory labelling and declarations of conformity (Art. 12).

Similar to REACH, the F-gas Regulation uses precise legal language. For example, in Article 5(1), a clear criterion is outlined for when leak checks are necessary (equipment containing 5 tonnes of CO2 equivalent or more of fluorinated greenhouse gases), and Article 5(2) lists all the relevant operators and manufactures, referencing the Annex I for further information. It specifies clear timelines such as in Article 17(1) on the placing on the market of hydrofluorocarbons: *"By 31 October 2024 and at least every 3 years thereafter, the Commission shall determine reference values for producers and importers in accordance with Annex VII for the placing on the market of hydrofluorocarbons."*. Similarly, Article 20 specifies timelines on recording information: *"Any requests by producers and importers to correct the information they recorded in the F-gas Portal concerning transfers of quota referred to in Article 21(1) [...] shall be communicated [...] to the Commission [...] at the latest by 31 March of the year following that of the recording of the transfer of quota"*.

Concerning derogations, the F-gas Regulation uses similar formulations as REACH. For example, concerning leak checks it states: "*By way of derogation from the second subparagraph, where hermetically sealed equipment is installed in residential buildings, it shall not be checked for leaks where that equipment contains less than 3 kilograms of fluorinated greenhouse gases provided that it is labelled as hermetically sealed"* (Article 5(1)). The derogation is signified by the term "by way of derogation", followed by a strict modal verb ('shall') and a negated version of a derogation verb ('not be checked').

[5] United Nations Framework Convention on Climate Change.

The F-gas Regulation contains some elements of delegation but outlines clear responsibilities. For instance, the configuration of the F-gas Portal is delegated to the European Commission: *"The Commission shall set up and ensure the operation of an electronic system for the management of the quota system, licensing requirements of imports and exports, and reporting obligations on fluorinated greenhouse gases (the 'F-gas Portal')."* (Article 20(1)). But Article 20(2) further specifies that the F-gas Portal should be connected with the EU Single Window Environment for Customs, illustrating how delegation is paired with clear operational requirements. Another example concerns the responsibility for leak checks, where Member States must provide the necessary training and certification: *"Within 1 year following the entry into force of the implementing act referred to in paragraph 8, Member States shall establish or adapt certification programmes, including evaluation processes, and ensure that training on practical skills and theoretical knowledge is available for natural persons carrying out the activities referred to in paragraph 1. Member States shall also ensure that training programmes for obtaining training attestations in accordance with paragraph 1, second subparagraph, are available."* (Art. 10(3)). The article employs binding terms ('shall establish') but implementation details are left to the national authorities.

The F-gas Regulation therefore exemplifies what we describe as a scalpel design; narrowly tailored to target a specific set of objects and subjects with a limited set of instruments, using precise language.

Shotgun: Environmental Impact Assessment Directive

An example of a less versatile environmental law with low precision is the **Environmental Impact Assessment Directive** (EIA), which requires the assessment of the environmental effects of certain public and private development projects prior to their approval.[6] EuroVoc classifies the EIA solely as an environmental law and is associated with a low number of terms: *industrial project, environmental protection, impact study, environmental impact, building industry, private sector, public sector*. These terms reflect the EIA's narrow focus on environmental assessment procedures in the construction and development sectors. Similarly, the group of policy subjects is limited, applying to Member States and to developers engaged in projects in the building sector (Art. 1). Like the F-gas Regulation, the EIA Directive targets a closely defined subset of stakeholders.

The EIA pursues its goal of assessment in the evaluation process of development projects through a key instrument category, namely *planning instruments*. The core planning instrument is that all projects listed in Annex I must undergo EIA before development consent is granted (Art. 2(1); Art. 3; Art. 4(1)). The EIA also mandates the collection of detailed environmental information by developers, including effects on air, water, and fauna (Art. 5; Annex IV). The EIA includes that

[6] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.

authorities must inform and consult the public as part of the assessment process and publicize its findings (Art. 6(2); Art. 11), which can be understood as an *information-based instrument*. The EIA is therefore focused narrowly in terms of objects targeted, a limited group of policy subjects, and using impact assessment as its key instrument.

In terms of precision, the EIA exhibits considerable dilution. For example, Article 1(1) states that *"this Directive shall apply to the assessment of the environmental effects of those public and private projects which are likely to have significant effects on the environment."* (see also Article 2(1)). The phrase "likely to have significant effects" introduces ambiguity, leaving room for interpretation by Member States or authorities regarding what constitutes a "significant" effect. This vagueness creates discretion and legal uncertainty around the scope of projects subject to the EIA (Arabadjieva 2017; Ryall 2018). National authorities may interpret "significance" more narrowly or broadly, leading to the inclusion of fewer or more projects, respectively. Such variability can ultimately influence the likelihood of judicial review, where national courts themselves may apply differing levels of scrutiny (Arabadjieva 2017). Further dilution appears in Article 6(2), stating that *"the public shall be informed, whether by public notices or by other appropriate means such as electronic media where available, of the following matters early in the environmental decision-making procedures referred to in Article 2(2) and, at the latest, as soon as information can reasonably be provided"*. This provision does not contain specific timelines but instead uses vague temporal markers, such as 'early', 'at the latest', and 'as soon as'. Indeterminate legal language in terms of degree and time can lead to inconsistent implementation across Member States, while allowing for flexibility.

Derogations are formulated differently in the EIA than in REACH and the F-gas Regulation. For instance, the EIA includes the following exemption: *"Without prejudice to Article 7, Member States may, in exceptional cases, exempt a specific project in whole or in part from the provisions laid down in this Directive."* (Art. 2(4)). This derogation uses a permissive modal verb ('may') instead of a strict modal verb and includes no specific and measurable scope conditions under which the exemption holds. Hence, it reflects a discretionary, case-by-case approach rather than a rule-based one.

In terms of delegation, the EIA relies on national implementation with unclear responsibilities and procedures. For instance, Article 2(1) states that *"Member States shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment [...] are made subject to a requirement for development consent [...]"* and Article 2(4) that *"Member States shall (a) consider whether another form of assessment would be appropriate [...]"*. Further delegation is evident in Article 11(1), which prescribes that *"Member States shall ensure that, in accordance with the relevant national legal system, members of the public concerned [...] have access to a review procedure before a court of law or another independent and impartial body [...]"*. This provision delegates enforcement mechanisms to national legal systems and uses vague legal

language. The directive does not define the standard of review, leaving it to be determined by domestic law (Ryall 2018).

The directive's use of vague legal terms, loosely defined derogations, and extensive delegation, coupled with its limited versatility mean we classify the EIA as proximate to the shotgun ideal type. The EIA is narrowly targeted to a specific problem—environmental risks of projects—but its implementation is hard to control. It is unclear which projects will ultimately be subject to assessment across Member States, potentially leading to inconsistencies in application.

Sledgehammer: Renewable Energy Directive

The **Renewable Energy Directive** (RED) exemplifies a versatile legislative framework that addresses both environmental and energy-related concerns.[7] Whereas the EIA focuses on the environmental impact of specific development projects, the RED aims to integrate renewable energy sources across a broad range of sectors, such as the heating, cooling, and transport sector. This is reflected in its association with several EuroVoc terms: *energy consumption, air quality, renewable resources, EU programme, environmental cooperation, greenhouse gas, reduction of gas emissions, energy saving, renewable energy.* It applies to multiple objects and subjects, including: EU Member States, the heating and cooling sector, the transport sector, consumers, and investors.

The RED also uses a diverse set of policy instruments: *regulatory instruments* (obligatory standards, prohibitions), *market-based instruments* (subsidies, tax reductions), *planning instruments,* and *information and voluntary instruments* (data collection or monitoring programs, information-based instruments, and voluntary measures). Notably, it sets binding targets, including a Union-wide target of at least 32% renewable energy by 2030 (Art. 3) and a requirement for fuel suppliers to ensure a minimum renewable share of 14% by 2030 in the final energy consumption in the transport sector (Art. 25, 26). Some biofuels are excluded from the directive and cannot receive financial support (Art. 26, 29). Support schemes for electricity from renewable sources are also established under Art. 4, highlighting the use of subsidies as an instrument. Planning instruments are integrated through National Energy and Climate Plans in which Member States must outline contributions to the Union target (Art. 3(2)). The directive also establishes a renewable development platform for enabling renewable energy transfers and investments between Member States (Art. 8). Member States can also exchange data on renewable energy (Art. 28), which can be seen as a data collection and monitoring program. In addition, information on support measures and renewable energy use must be made available to customers (Art. 18, 19). The directive encourages citizen engagement in the energy transition by enabling the formation of renewable energy communities (Art. 22), described as

[7] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.

an innovative policy tool (Fina and Auer 2020). The RED is therefore highly versatile, supporting both environmental and energy policy goals across multiple sectors with innovative policy tools.

Similar to the EIA, the RED uses imprecise legal language that allows for interpretation by Member States. For instance, though Article 3(1) sets a Union-wide target of at least 32% renewable energy by 2030, it adds that this target may be adapted " [...] *where there are further substantial costs reductions in the production of renewable energy* [...]", without defining what constitutes a "substantial cost reduction", leaving room for interpretation. Similarly, Article 15(4) states that "*Member States shall introduce appropriate measures in their building regulations and codes in order to increase the share of all kinds of energy from renewable sources in the building sector.".* The term "appropriate measures" is not clarified, leaving Member States significant discretion. The directive includes the possibility for cross-Member State agreements in Article 5(3): "[...] *shall cover at least the principles of allocation of renewable electricity [...]".* Though the RED mentions one principle explicitly, the use of "at least" suggests the inclusion of others without detailing them. Article 13(1) refers to timelines in general terms such as: *"A distribution rule as referred to in point (b) of the first subparagraph shall be notified to the Commission not later than three months after the end of the first year in which it takes effect".* This allows for flexible interpretation of compliance timing. Hence, the directive includes vague terms in terms of degree, quantity, and time.

The RED also includes several derogations. For instance, Article 4(4) states that *"Member States may exempt small-scale installations and demonstration projects from this paragraph, without prejudice to the applicable Union law on the internal market for electricity.".* As in the EIA, this derogation uses again a permissive modal verb ('may'), making the exemption non-binding and leaving the decision to Member States. The derogation also includes a delegation to Member States, reflecting a broader trend of the Directive of delegating key responsibilities to Member States (and to the Commission as well). Delegation is further evident in Art. 3(2), which requires Member States to set national contributions toward the Union-wide target, and in Article 4(1), which allows them to apply support schemes "in order to reach or exceed" that target. The lack of binding national targets grants Member States considerable discretion, as the directive merely requires minimum national contributions based on the 2020 baseline to reach together the Union-wide target (Iliopoulos 2018). These provisions illustrate how the RED enables flexibility at the cost of legal clarity and enforceability.

The RED connects environmental and energy policy goals across multiple sectors using several and innovative policy tools with a high degree of uncertainty. Like a sledgehammer, the directive can be regarded as a broad, forceful push toward renewable energy but it remains unclear whether and how the targets will be achieved by the Member States.

Comparative Assessment

Table 4 provides an overview of the legislative examples analyzed in this article and illustrates how they correspond to the ideal types of democratic legislation. REACH exemplifies a *Swiss army knife*—a cross-sectoral, comprehensive law that employs a diverse set of policy instruments, covering all four categories identified in the measurement concept (*high versatility*). At the same time, it is highly precise, characterized by clear legal language and well-defined conditions for derogations (*high precision*). The F-gas Regulation functions like a *scalpel*, using precise legal terminology and clearly articulated derogation conditions (*high precision*) but is narrowly tailored to address a specific object—fluoride gas—by engaging a limited set of subjects (*low versatility*). The EIA fits the *shotgun* ideal type; targeting a specific problem with a limited toolkit centered around impact assessments (*low versatility*) and employing vague legal terms, loosely defined derogations, and extensive delegation (*low precision*). The RED adopts a much broader scope; like a *sledgehammer*, it represents a wide-reaching push toward renewable energy integration across multiple sectors, supporting both environmental and energy policy goals using a variety of instruments (*high versatility*). Yet, due to its reliance on broad delegation, it remains unclear how Member States will meet the Union-wide targets (*low precision*).

These examples demonstrate that environmental laws can be meaningfully classified into four ideal types based on six indicators, which can be aggregated into two dimensions. Our framework highlights that laws—both within and beyond the environmental domain—may function differently along these dimensions; for instance, two laws might use a similarly diverse set of policy instruments, yet differ in the way instruments, derogations, and thresholds are formulated. These differences have important implications for the study of legislative design and for understanding why some laws prove more durable over time whereas others may be more prone to revision and reinterpretation.

Table 4: *Empirical Application*

Law	**REACH**	**F-gas Regulation**	**RED**	**EIA**
Ideal Type	*Swiss Army Knife*	*Scalpel*	*Sledgehammer*	*Shotgun*
Objects	**High:** Environment, safety at work and elsewhere, internal market principles; all chemical products and compounds	**Low:** Environment; fluorinated greenhouse gases as a specific chemical compound	**High:** Environment, renewable energy	**Low:** Environment
Subjects	**High:** Member States, manufactures, importers, downstream users of *multiple* industrial sectors	**Low:** Member States, manufactures and importers *within* the market of fluorinated gases	**High:** Member States, *multiple* sectors such as heating and cooling sector, transport sector	**Low:** Member States, public and private projects *within* the construction sector
Instruments	**High:** Diverse set of policy instruments. From obligatory standards over liability schemes to planning instruments (all 4 categories)	**Medium:** Limited set of policy instruments. Key instrument: obligatory standards (3 out of 4 categories)	**High:** Diverse set of policy instruments. From obligatory standards over subsidies to planning instruments (all 4 categories)	**Low:** Limited set of policy instruments Key instrument: impact assessment as a planning instrument (2 out of 4 categories)
Versatility	**HIGH**	**LOW**	**HIGH**	**LOW**
Dilution	**Low:** Clear legal language and timelines	**Low:** Clear legal language and timelines	**High:** Vague legal language and no clear timelines	**High:** Vague legal language and no clear timelines
Derogation	**Low:** Strict derogations	**Low:** Strict derogations	**High:** Permissive derogations	**High:** Permissive derogations
Delegation	**Low:** Reduced granting of power	**Low:** Reduced granting of power	**High:** Increased granting of power	**High:** Increased granting of power
Precision	**HIGH**	**HIGH**	**LOW**	**LOW**

Conclusion: A Unified Framework of Legislative Design

In this article, we introduce a novel conceptual approach to capture the substance of democratic legislation, transcending boundaries of policy subsystems, institutional settings, and time. Our approach is based on the idea that any legislative design can be described as a combination of a law's versatility and its precision. Whereas a law's versatility can vary in terms of the diversity of objects, subjects, and instruments; its precision is affected by the vagueness of its language, the way it formulates derogations, and the extent to which it delegates rule-making authority. Together, these dimensions yield four different ideal types of democratic laws: the Swiss army knife (high versatility, high precision), the scalpel (low, high), the shotgun (low, low) and the sledgehammer (high, low). To illustrate the usefulness of this approach, we show how legislative design varies within a single policy domain and institutional setting, applying our framework to four environmental laws adopted by the EU. Our qualitative application shows that legislative design is not determined by functional pressure or necessity dictated by the broader policy domain, but is a political choice.

A unified framework of legislative design is long overdue. For too long, distinct subfields have approached the subject without a common conceptual language, limiting the scope for advancing theory and empirical interdisciplinary collaboration. We hope that by prioritizing universality—with few, if any, laws falling outside its scope—our framework will benefit scholars of public policy, street-level bureaucracy, law, sociology, economics, and even philosophy. The practical nature of our approach, applicable to any written law that emerges from the legislative process, offers important benefits for comparativists both within and beyond the discipline of political science; being concrete enough to allow for systematic measurement, yet abstract enough to allow for interdisciplinary exchange.

Building on this qualitative plausibility probe, future research will need to find creative ways to measure legislative designs across laws, political systems, and time periods. Leveraging recent developments in computational social science, natural language processing (NLP), and large language models (LLMs) offers one avenue to meet this challenge. Though initial attempts at measuring and analyzing the *individual* components of legislative designs with methods of computational text analysis have been undertaken (e.g., Anastasopoulos and Bertelli 2020; Vannoni, Ash, and Morelli 2021), what is needed is a comprehensive attempt to study those individual components *jointly across space and time*. Such examinations enables the determination of, *inter alia*: (1) whether legislative designs are more specific to policy domains or to political systems, and how they evolve over time; (2) which contextual factors facilitate or impede the adoption of different legislative designs, and; (3) what makes certain legislative designs more stable and effective than others. To answer these important questions requires ways to measure and compare legislative design at scale; the conceptual framework we provide here therefore serves as a "navigation system" in this endeavor.

Our framework allows for the holistic study of legislative design to enable comparison across policy domains, political systems, and over time. Such enquiry develops a deeper understanding of the factors that drive the design, creation, and survival of democratic laws. Given that many democracies are facing increasing systemic pressures, achieving this goal also carries substantial normative importance. The research agenda is practically relevant for street-level bureaucrats responsible for policy implementation, but also has implications for fundamental questions of democratic accountability and transparency. For example, precise legislative designs might enable clearer accountability mechanisms by explicitly defining responsibilities, reducing ambiguity, and limiting discretionary interpretations. Conversely, highly versatile and less precise designs may diffuse accountability, thereby complicating oversight processes and reducing transparency. Yet, though precise laws may enhance accountability, overly rigid designs might limit the flexibility necessary to accommodate diverse interests that vary over time. Laws with high versatility and lower precision may better capture pluralistic values but risk ambiguity in implementation. We consider the question

of how policy-makers solve this balancing act central to future enquiries, and our conceptual approach should be understood as a first step in this research agenda.

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