Regulation by impasse: Pesticide registration, capital and the state in Costa Rica

María Soledad Castro Vargas[1], Marion Werner[2]

[1]Instituto de Ciencia y Tecnología Ambiental. Universitat Autònoma de Barcelona.

[2]Department of Geography, University at Buffalo, SUNY

Corresponding Author: María Soledad Castro Vargas

Instituto de Ciencia y Tecnología Ambiental. Universitat Autònoma de Barcelona.

Edifici ICTA-ICP, Carrer de les Columnes s/n, Campus de la UAB, 08193, 08193 Cerdanyola del Vallès, Barcelona, España

Tel: +34 622 593 535

Email: mariasoledad.castro@uab.cat

Highlights

- Prodigious pesticide use is pivotal to Costa Rica's plantations and smallholder production in tension with its image as a "green republic."
- We examine a two-decade effort to modernize the country's pesticide registry.
- The result of reforms is continued gridlock that de facto extends legacy pesticides with no risk data and hampers new registrations.
- A strategic-relational approach to the state is used to understand the multi-scalar and institutional dynamics that shape the registry dispute.
- The concept of "regulation by impasse" is developed to understand this outcome in the context of the country's frayed green development model.

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Costa Rica's prodigious use of pesticides, and the burgeoning plantation sector that these agrochemicals support, exacerbates the tensions between extraction and preservation at the heart of the country's development model. We explore these tensions through a study of the country's pesticide registry, the regulatory process to approve active ingredients and formulations for use. After nearly two decades of reform efforts, the registry is widely recognized to be non-functioning: most of the country's pesticides exist in administrative limbo and relatively few new compounds have been approved. Based on extensive interviews and in-depth policy analysis, we construct four phases of reform and use a strategic-relational approach to the state to analyze this process. We conceptualize the registry's gridlock as a form of governance that we term regulation by impasse, an arrangement reproduced through disputes within and between the cognizant ministries, juridical bodies and other regulating authorities, in relation to the shifting strategies and contexts of political economic and wider social forces. We argue that hegemony is tenuously maintained through the registry dispute itself, while revealing the deeply frayed condition of the Costa Rican development model.

Introduction

In June, 2020, the Director of the State Phytosanitary Service (SFE in Spanish), the agency responsible for the country's pesticide registry, convened a meeting of stakeholders from Costa Rica's *ecologista* movement.[1] The Director sought to explain reforms that his office was making to the registry, i.e., the regulatory process to approve active ingredients, formulations, and other chemical ingredients in pesticides for use. He repeated a narrative that reverberated in the press, sector reports, and in interviews conducted by Author 1 with representatives of the agrochemical sector (e.g., Sáenz Segura and Chaves Moreira, 2013; Vargas, 2017). The pesticide registry "was collapsed," he explained. New registrations suffered innumerable delays and efforts to regularize old registrations led to mountains of files that could not be efficiently evaluated. An office chair with a stack of papers about one meter high was presented to the attendees as evidence of the kind of bureaucratic obstacles faced by his office. He explained the reasons for Costa Rica's defunct pesticide registry in the following terms:

> Part of the peculiarity that characterizes Costa Rica as different in the region is our legislation -- environmental, health, labor and the rest -- which is also different. We could not be different if we simply did everything the same as the other [Central American] countries. This historical dispute [over the registry] has been many years in the making, and has generated much jurisprudence, rulings, criteria and other situations that have in some cases diverted us from what we should be doing, which is to work scientifically and technically, and in proper order, to attend to each case.

[1] This term is used by a broad range of organizations and actors in Costa Rica to designate a focus on social and ecological transformation, and to distinguish their politics from green or conservationist movements that marginalize broader social, systemic demands (Fallas 1992). The movement was born during the late 1980s, articulated in various social organizations. These groups have successfully mobilized a broad public around socio-environmental struggles (Montero 2013, Alvarez 2011).

The Director's explanation reflected both popular and academic narratives of Costa Rica as an exceptional country in the region given its relatively peaceful and democratic political history (Acuña, 2002; Jiménez, 2005), and, more recently, its record of environmental governance.[2] Not lost on the Director was the significance of his audience: several of those present had led struggles to restrict pesticide use and had filed demands for stricter registration protocols. The Director outlined a detailed plan to revamp the process for registering pesticides and promised to convene the group again for consultation. A representative from the Export Promotion office continued. She warned that the registry's collapse was forcing Costa Rican farmers to rely on older generation pesticides that could lead to loss of export markets in North America and Europe due to restrictions on these compounds, a claim frequently repeated by industry representatives (Croplife, 2021, interview).

As various scholars have noted, the Costa Rican state has constructed its hegemony across the conflicting priorities of conservation and natural resource exploitation (Fletcher et al., 2020; León Araya, 2021; Obando Campos, 2020; Ramírez Cover, 2020). Following three rounds of structural adjustment, the country's democratic legacy and technical capacity were mobilized to support a green development model based upon an extensive system of protected areas and ecotourism. Yet Costa Rica's reputation as the "Green Republic" (Evans, 1999) rested upon a paradox: it was both a global leader in conservation policy and simultaneously a center of practices, innovations and technologies for monoculture agro-exports (Ramírez, 2020). Spurred by foreign investment, state promotion policies, and domestic innovations in agronomic sciences,

[2] The invention of Costa Rican difference emerged after independence (1821-1870), based on the idea of constituting a people who were democratic, peaceful, homogeneous, and constructed as "white" and of European origin. The elimination of the army following a brief civil war (1948) and subsequent promotion of the country as civilized and educated extended the idea into the late twentieth century (see Acuña 2002, Jiménez 2005).

plantation agriculture has expanded in the past decade, deepening these tensions in the country's development model (Galt, 2020; León Araya, 2021). Central both to the plantation sector and smallholder agriculture is the prodigious use of pesticides (Galt, 2014). A highly contentious calculation, even among different state institutions, the Agriculture Ministry estimates use intensity at 11.50 kg a.i./ha, while the Environment and Energy Ministry (henceforth Environment Ministry) and the UNDP recently published significantly higher estimates, 32.56 kg a.i./ha and 34.45 kg a.i./ha, respectively SFE, 2020b; Vargas, 2019, 2022). A comparative study found Costa Rica to have the highest use intensity among middle-income countries (24.3 kg a.i./ha), and the third highest among all 119 study countries (Schreinemachers and Tipraqsa, 2012).

Mired in regulatory gridlock, the bulk of the country's pesticides exist in an administrative limbo, while approvals of new pesticide registrations for domestic use have been reduced to a mere trickle. A series of reforms enacted over nearly two decades -- negotiated and stalled at the crux of tensions among sectors of pesticide capital, the skilled activism of *ecologistas*, and disputes within and between the cognizant ministries and other regulating bodies -- has not yielded an administrative resolution. We take this long-standing regulatory dilemma as a window through which to examine struggles over the terrain of the state itself and how these ultimately shape environmental governance. We argue that the "collapse" of the country's registry is neither simply a product of serial failed reforms, nor a deliberate strategy by a subset of actors. Rather, we conceptualize this non-functioning of the registry – evident in four phases of reform that we construct below -- as a form of governance that we term regulation by impasse. Regulation by impasse is an arrangement arrived at and reproduced through the contested efforts of the state to suture hegemony across class and intra-class conflicts stemming from the inherent tensions within the country's development model. Particularly crucial to our analysis is

the institutional terrain of the state: far from homogeneous, regulation by impasse is reproduced in part through disputes within and between the cognizant ministries, juridical bodies and other regulating authorities. As we show, the boundaries of the state are porous and contested, not only in the most common sense of "revolving doors" between government and industry, but also in terms of perceptions and actions of *ecologistas* and technical staff in the ministries. We conclude that as a form of environmental governance, regulation by impasse manifests the deeply frayed condition of the Costa Rican development model.

The paper is based on eighteen months of fieldwork conducted between 2018 and 2021 by Author 1 as part of a larger study. We undertook an initial analysis of relevant policy documents, press articles, and legal filings to identify key actors. A total of seventeen key-informant interviews were conducted with representatives of the generic and research and development (R&D) agrochemical sectors, domestic pesticide company executives, industry agronomists, technical staff at the SFE and the Environment Ministry's Quality Management office (DIGECA in Spanish), a former Minister of Agriculture, and leaders of the *ecologista* movement. Repeat interviews were conducted with several key informants for further clarification. In addition, Author 1 attended a dialogue session convened by SFE with key stakeholders. Interview materials and observations were triangulated with three other principal sources of information. First, Author 1 conducted an extensive review of policies, decrees, laws, and petitions to the Constitutional Chamber; petitions were sorted and analyzed by key actor and thematically coded. Second, we analyzed all publicly available pesticide registrations by policy instrument. Third, Author 1 successfully obtained data on the status of backlogged registrations hitherto not disclosed publicly by filing a freedom of information request

with the Constitutional Chamber. Finally, both authors held a workshop with relevant stakeholders to share preliminary results.

In what follows, we develop our argument in four sections. First, we introduce Costa Rica's regulatory dispute and the strategic-relational approach to the state that we use to understand it. This approach interrogates the state as a set of contested social relations and highlights the conjunctural nature of environmental governance within structural constraints. We proceed to construct four phases of pesticide registry reform in the following section (Section 3). We demonstrate how regulatory gridlock is reproduced through disputes within and between different organs of the state, fractions of pesticide capital and the *ecologista* movement. In Section 4, we analyze the reform process through a multi-scalar, strategic-relational lens. We focus on the shifting dynamics of agrochemical capital domestically and internationally, in relation to social contests over the boundary and role of the state. Through this analysis, we develop our argument that the pesticide registry dispute is a form of regulation by impasse, wherein hegemony is tenuously maintained through the dispute itself. We conclude with reflections on the implications of our study for our understanding of the Costa Rican development model and environmental governance more broadly.

2. Environmental governance through institutional struggles within and beyond the state

Our study builds on Kees Jansen (2017), who focused on the global contest between the two sectors of pesticide capital as it played out in an earlier effort to reform Costa Rica's pesticide registry (i.e., Phase 1, below). Jansen analyzed the business conflict between R&D agri-business multinationals (ABMs) and the generic sector. At the time, the latter was comprised principally of domestic firms, with arms-length links to generic ABMs.

In the late 1990s, R&D ABMs moved to extend intellectual property rights to the *risk data* required to register patented pesticides and to expand the data requirements to register generic pesticides (see Table 1 for all definitions of italicized terms). These efforts were enshrined in UN Food and Agriculture Organization (FAO) guidelines issued in 1999 and Regional Trade Agreements, including the Dominican Republic, Central America Free Trade Agreement (CAFTA-DR). These changes made generic pesticide registrations more difficult because they increased the requirements to establish equivalence between an already registered compound and a generic product. *Registration by equivalence* is the principal mechanism for generic product registration since generic firms do not have the resources to prepare and submit a complete data package. These actions by the R&D ABMs hampered access to the *reference profiles* that generic firms needed to establish equivalence, making registration more difficult and delaying it further due to extended data protection timelines. In the Costa Rican case, R&D ABMs succeeded in instituting ten-year exclusivity on risk data via CAFTA-DR, thereby inhibiting generic registrations. The contentious struggle over adhesion to CAFTA-DR in Costa Rica thus saw the generic pesticide sector align with small and medium farmers in opposition to the agreement. This coalition mobilized an anti-imperialist framing that positioned generic agrochemical firms as champions of domestic agriculture. In this narrative, generic firms secured lower prices for Costa Rican farmers, whose markets were already threatened by the impending trade liberalization. In the wake of a national referendum that was narrowly lost by opponents of the trade agreement, the state sought to mediate between the R&D and generic sectors in order to find a consensus that would satisfy both parties (Ibid.).

There are two reasons for reexamining the Costa Rican pesticide registry in light of this earlier work. First, the structure of the global agrochemical industry has changed

radically over the course of the last decade, with important implications for the generic sector in Costa Rica. Industry restructuring driven in part by Chinese industrial policy, coupled with a dearth of new, patented chemistries, has led to a shift in the market share of generic products and the power of generic agrochemical firms globally (Oliveira et al., 2020; Shattuck, 2021). From 2011 to 2019, generic firms' market share grew from 30 to 40 percent, while the share of generic products increased from 50 to 75 percent (PMD, 2021). Generic ABMs, in turn, have grown considerably over the decade and expanded their territorial reach through exports, licensing, mergers and acquisitions. Moreover, the boundary between R&D and generic companies has blurred. R&D companies increasingly sell off-patent chemicals and employ value chain strategies to sustain their industry dominance (Werner et al., 2021). These institutional changes in the agrochemical sector beg the question of their effects on national pesticide regulations. As we discuss below, Costa Rica offers a key site to address this question because of the growth in its generic formulation sector and increased participation of generic ABMs in the country.

If competition between generic and R&D pesticide firms is attenuated by these changing commercial dynamics that blur their boundaries, the proposed solution for registration through a modality called incorporation should have yielded a stable detente. *Registration by incorporation* allows for pesticide registration based either on studies or a registration in a reference country or region, often the US or the EU. This modality, proposed as part of a series of decrees aimed at breaking the regulatory gridlock, would avoid the need for R&D ABMs to release proprietary data to Costa Rican authorities, while easing the burden of registration for generic firms by allowing them to register products without a reference profile in the country. The failure of this proposal, we argue, cannot be fully explained by the business conflict.

The second reason to revisit this case, then, is to better understand the dynamics of additional key players whose actions offer unique insights into environmental governance, the state and regulatory forms. Although *ecologista* groups were not initially involved in the pesticide registry debate, long-standing struggles over pesticide contamination and campaigns to ban particular substances (e.g., paraquat, glyphosate) have in turn led to their involvement in pesticide registry reform. The on-going debate and long series of decrees, injunctions, and legislative proposals have brought tensions between and within government ministries into sharp relief, uncovering the role played by mid-level technical staff. As we expand upon below, the roles played by civil society actors and technical staff raise important analytical questions regarding the boundaries of the state itself. Just as many *ecologistas* perceive the state as a mediator for or an agent of agribusiness capital, the pesticide industry views part of the state bureaucracy as a redoubt for radical environmental interests.

Table 1. Key terms for pesticide registration

Term	**Description**
Risk data	Data on chemical identity, efficacy, toxicological and ecotoxicological studies, etc.
Complete data package	Risk data required to file for registration; standards of what is considered to be a complete package vary by country and supra-national institution (e.g., OECD).
Reference profile	A complete data package of an active ingredient registered by R&D companies, evaluated and approved during the registry process.
Registration by equivalence	Principal mode to register generic pesticides. Generic firms seeking registration need only to show that the pesticide is chemically equivalent (e.g., measure of impurity, etc.) to a pesticide with an approved reference profile.
Referenced information	Publicly available scientific studies or an approved database to allow for registration by equivalence, without a reference profile; a novel concept introduced in Costa Rica.

Registration by incorporation	Registration of an active ingredient through recognition of either studies or a registration in an approved reference country.

Source: the authors.

To account for the variety of actors and their relationships to the state, this paper adopts a strategic-relational approach (Jessop, 2008). Building on the work of state theorists Antonio Gramsci and Nikos Poulantzas, the strategic-relational approach offers systematic insights into state power as a social relation that mediates between class and political forces, themselves not taken as coherent but rather conjuncturally determined. "[T]he state is neither a unified subject nor a neutral instrument," Jessop explains, "but rather *an asymmetrical institutional terrain* on which various political forces (including state managers) contest control over the state apparatus and its capacities" (2008: 31, emphasis added). State power is not presumed to be wielded by authorities representing particular class interests; instead, state power is a problematic that is investigated to understand the changing balance of forces that shape its exercise. From this perspective, environmental governance cannot be presumed to represent the interests of capital since, in the first instance, the interests of capital are fractured by competing firm-level, sector (i.e., chambers of commerce) and broader political (i.e., party) objectives (Burawoy, 2003; Gramsci, 1971). The strategies mobilized by different political economic forces to shape state action are developed in relation to state structures and the strategies of other social forces, or what Jessop called "strategic selectivity" (1990). Moreover, the coherence of state structures, as an "operational unity," is not a given but rather an outcome achieved (or not) though the tactics and strategies of state officials (Ibid.).

A significant strength of this approach for our analysis is its explicit treatment of spatio-temporal dimensions. Analyses of neoliberalism mobilizing strategic-relational or analogous critical realist framings of the state demonstrate how past strategies and

settlements shape current struggles and regulatory forms (Brenner et al., 2010). The forms that environmental regulations take reflect not only the constrained actions of political forces both within and outside of state institutions, but also how these forces are shaped and conditioned by the political economic settlements of previous rounds of accumulation. Changes in political economic, environmental and social relations at multiple scales combine with these past trajectories of political settlements to create novel regulatory arrangement. In particular, as geographers have long noted, political scales can constrain or enable opportunities for political strategies (see Marston, 2000). In the case of pesticide registration, as we noted, global norms and regional trade agreements were mobilized in the early reform period to enshrine the particular interests of R&D capital. More recent efforts to harmonize registry procedures draw upon norms established by the Organization for Economic Development and Cooperation (OECD) as part of Costa Rica's accession to that organization. As others have shown, and as we demonstrate below, these global norms do not simply drop onto the desks of government ministers for implementation (Peck and Theodore, 2015); rather, extra-national norms and regulations are mediated and shaped by domestic contests over the role of the state in environmental governance. Our analysis thus deepens understanding of the Costa Rican state, while signaling actually existing mechanisms that shape pesticide flows and environmental outcomes in the country.

3. Reproducing regulatory gridlock

We reconstruct the registry's regulatory gridlock in four phases (see Table 2). Phase 1 corresponds to the precedent-setting intervention by the Auditor General of the Republic (henceforth Auditor General) in 2004. The Auditor General argued that the country lacked a clear national policy on pesticides and demanded reforms that would both reduce the country's reliance on them and address their socio-environmental consequences (CGR,

2004). The Auditor General also contended that the SFE, under the authority of the Agriculture Ministry, dispensed with scientific evaluations consistent with international standards and instead prioritized commercial concerns through "the facilitation of pesticide registration" (Ibid:12). Based on these findings, the Auditor General mandated that pesticide registration become the joint mandate of the Agriculture, Environment and Health Ministries as the competent authorities for granting pesticide registrations. Finally, all existing registrations were suspended until new regulations could be approved.

Following the Auditor General's intervention, the first national regulation on pesticides to require a *complete data package* for risk analysis was issued in 2006 (DE-Nº 33495-MAG-S-MINAE-MEIC, 2007; Jansen, 2017a; see Table 1). Previously, registrations were not term-limited and formulations were approved without prior approval of their active ingredients. The new decree authorized registrations for ten-year terms that would now be issued under three different registration modalities: registration of technical grade active ingredient (henceforth active ingredient) with a complete data package (i.e., for patented compounds), active ingredient registration by equivalence (i.e., for generic compounds), and registration of formulated synthetic pesticides and co-adjuvants (i.e., for patented and generic substances).[3] Crucially, the regulation established the mandatory updating or *revalidation* of all existing registrations in the national registry under the new regulatory requirements, allowing three or four years for revalidation depending on whether the registration in question was dated before or after 1995. Law 8702 (2009) was passed as a three-year stopgap measure to facilitate the revalidation process by extending the deadline and easing some requirements (Jansen, 2017b). Although some 400 registrations were successfully revalidated under the law, the

[3] A fourth modality, registration for co-formulants, is both a minor category and marginal to the registry dispute. We exclude it from our analysis.

temporary pause on new registrations between the Auditor General's intervention and the issuance of DE-33495, combined with the lack of supporting information necessary for the revalidation of old registrations, created a backlog of unresolved registry files.

Table 2: The four phases of registry reform

	Principal Instruments	**Main Provisions**	**Outcomes**
Phase 1: 2004-2009	DE-33495; Law 8702	Three registry modalities established: registration by full data package, registration by equivalence, registration of formulations; sets 10-year terms on registrations; all previous registrations must be "revalidated"	400 old registrations revalidated; 16 registrations issued over next decade
Phase 2: 2016-2019	DE-40059; DE-39995; DE-41481	Introduction of registration by incorporation using sworn statement, loosened registration by equivalence using "referenced information" rather than standard reference profile; use of "referenced information" to update old registrations; dispense with revalidation process for old registrations	149 registrations processed but not granted; all three decrees suspended by Constitutional Chamber
Phase 3: 2020-2021	DE-42769; DE-42262; DE-43469	Registration by incorporation using OECD process and OECD countries as reference; introduction of registration by incorporation in the main regulatory instrument	1513 registrations plus 371 registrations temporarily revalidated in Phase 1 exist in administrative limbo.
Phase 4: 2021-?	Bill #22437 DE-43563	Sworn declaration sufficient for all registrations currently active or in process of renewal; simultaneous recognition of studies from several OECD countries in a single registry	Yet unknown

Source: the authors.

The second phase of the registry reform process began in 2016, ten years after the initial reform was passed and which, by all accounts, had failed. Only sixteen registrations had been issued over the decade and well over a thousand registrations had never been

brought into compliance.[4] A series of four executive decrees were issued as part of a coordinated effort to fully transform the registry and resolve the gridlock (Defensoría de Habitantes, 2018). The Minister of Agriculture, Felipe Arauz, led the reform effort promising to break this deadlock with direct support from the Costa Rican President's office. For negotiations, he relied heavily on the then-President of the National Chamber of Agriculture and Agribusiness (CNAA), Juan Rafael Lizano, who was a former Minister of Agriculture and highly respected within the business community. Lizano mediated between the R&D ABMs, organized into the Chamber of Agriculture and Livestock Inputs (CIA in Spanish), and the National Chamber of Generic Producers (CANAPROGE). Lizano was initially successful in getting both groups to agree not to take any legal actions against the new decrees (Arauz, March 2020, interview). Presiding over the public release of these decrees, the President of the College of Agronomists heralded them as bringing an end to "a very dark stain on our agricultural history" (Chacón, 2017).

The principal decree (DE-40059), signed by all three ministries (Agriculture, Health and Environment), sought to replace the failed 2006 reform as the main legal instrument for pesticide registration. Two main stipulations stand out. First, the decree expanded the modalities for registration by introducing the figure of registration by incorporation (see Table 1). This modality verified compliance in the reference country of registration instead of requiring an evaluation of chemical, toxicological and ecotoxicological studies by the competent national authority. In the Costa Rican case, registrants would submit a statement attesting to the existence of these assessments in the reference country. Second, the decree significantly loosened requirements for registration

[4] For comparison, 3958 registrations were on the books from 1969 to 2007 (Seminario Universidad, 6 July, 2020).

by equivalence for generic active ingredients without a reference profile. To comply with the stricter CAFTA-DR data protections, the new regulation permitted registrants to submit *referenced information,* or publicly available studies, to allow for registration by equivalence without a reference profile. The decree favored generics even further by replacing the FAO-standard of equivalence testing for a sworn statement attesting to the chemical's purity (DE-40059-MAG-MINAE-S, 2016; Defensoría de Habitantes, 2018; Dirección de Gestión de Calidad Ambiental, 2018).

The decree was the subject of a series of inter-institutional discussions that took place over a period of nearly two years. The mid-level technical staff at the three Ministries strongly opposed the decree, but their opposition was not heeded by the ministerial authorities (e.g. Constitutional Court File DE-39995, 2019; Constitutional Court File DE-40059, 2018). The confrontation between these two levels of government (i.e., technical staff and political directorate) led to the intervention of the government Ombudsperson's Office, which initiated a mediation process with representatives from both levels of the three ministries. The main points of disagreement were the centralization of the registry in the Agriculture Ministry and the lack of legal precedent, basis in international instruments and scientific rigor of the apparently novel concept of referenced information. The failure to achieve a compromise between the technical and executive levels of the three ministries led the Ombudsperson's Office to file an action of unconstitutionality against DE-40059 in the Constitutional Chamber (Defensoría de Habitantes, 2018), leading to its suspension. Although the Ombudsperson's actions stemmed from tensions within the cognizant Ministries, the results reverberated through civil society, reflected in a series of press releases and articles from the business sector, which had largely united in support of the decree (Lanzas, 2019; Molina, 2018), and the *ecologista* movement, which had opposed it (e.g, FECON 2017; Chacón 2018). The SFE

continued to process applications for registrations but was unable to grant them until the challenge was resolved, thereby increasing the administrative backlog. These included 11 active ingredients in process with a complete data package, 84 active ingredients in the process of registration by equivalence and 54 formulated products in the process of registration (SFE, 2021a). No registrations by incorporation were on the books under this decree.

Around the same time, the Agriculture Ministry issued two additional decrees on its own. These two decrees (DE-39995-MAG, 2017; DE-41481-MAG, 2018) sought to resolve the accumulated backlog of registration files prior to 2004. The Agriculture Ministry substituted the process of revalidation specified in the first reform phase with an "updating" process (i.e., "actualización") (see DE-41481, Art. 10, SFE 2021). This change was not merely semantic; rather, it sought to eliminate the administrative process of evaluating the well-over eighteen hundred substances in the registry mandated to be brought into compliance by the Auditor General during the first reform phase. Consistent with the (now suspended) primary decree (i.e., DE-40059), these two decrees also included the novel notion of referenced information as a way to loosen registration by equivalence for generics in the absence of a reference profile. They also extended the use of referenced information to the "updating process" for old registrations: because no technical information was required for the registration of active ingredients and formulated products prior to the mid-2000 reform, these registrations lacked risk data. These decrees would allow for referenced information to substitute for standard risk assessments, opening the possibility that submitted information would not come from reliable sources based on international protocols for the protection of human and environmental health. This is particularly relevant since the majority of these 1884 registrations without risk assessments are considered highly hazardous pesticides banned

in many countries (e.g. the EU) (Vargas, 2022). Blind to its critics, the Agriculture Ministry pledged to "simplify procedures"[5] by way of these decrees, including a mandate of five working days for the SFE to review the information and respond to the registrant. Furthermore, no agricultural effectiveness tests would be required and toxicological and ecotoxicological studies would only be mandated for substances found by the SFE to have impurities. The latter transferred the responsibility for demonstrating chemical purity from the registrant to the state (DIGECA, February 2020, interview). Importantly, the decrees granted the registrations validity until the updating process was resolved, once again opening the possibility for indefinite terms (SFE, 2021b, 2021c).

The *ecologista* movement opposed these two decrees. In 2018, the Costa Rican Federation for Environmental Conservation (henceforth the Environmental Federation) filed an Action of Unconstitutionality requesting the annulment of DE-39995 on behalf of the *ecologista* movement. The Environmental Federation argued that the requirements to update registrations were insufficient and overly flexible (FECON, 2018; FECON, July 2020, interview). The Environment Ministry's technical staff also opposed the decree, but it was not until a new Minister was appointed following the 2018 national elections that the Ministry officially registered its opposition. In February, 2019, the Environment Ministry formally requested that the Constitutional Chamber suspend DE-39995, stating that "the Ministry shares in all measure the allegations made by Environmental Federation, since the decree lacks a technical basis and promotes the commercialization of agrochemicals over the protection of public health and the environment" (MINAE, 2019). The *ecologista* movement, represented by the Organic Agriculture Movement (MAOCO), filed an Action of Unconstitutionality against DE-

[5] A broader strategy from the Costa Rican government which aimed to streamline administrative procedures.

41481 two months later. Thus, by the end of 2019, nearly all efforts to break the regulatory gridlock were held up in the Constitutional Chamber, the result of an unlikely correlation of forces from within and outside the formal state apparatus.

In the face of this stiff opposition and the suspension of the Phase 2 decrees, the SFE took a different tack the following year, inaugurating what we identify as the third phase of registry reform. Rather than the Minister taking the lead and sidelining what he perceived to be slow and uncooperative technocrats (Arauz, March 2020, interview), the SFE Director became the public face of the process. A technical bureaucrat, the Director sought to build relationships with critics while promising to resolve the registry debacle for the agricultural sector through a different strategy since "history has shown that all such decrees have been appealed" (SFE, 2020c). The office had the good fortune of a new regulatory horizon towards which it could orient these efforts.[6] In 2015, Costa Rica applied for entry into the Organization of Economic Cooperation and Development (OECD) and was invited to join in 2020, the first country in Central America, and only the fourth in Latin America, to become a member. The OECD has a long history of implementing harmonization initiatives for pesticide registration, and has recently done so successfully in Colombia (Valbuena et al., 2021). The next round of decrees saw far more cooperation amongst the Ministries, including their technical staff, citing the OECD framework and initially supported by both the generic and the R&D business sectors.

Shortly after, the three Ministries developed a series of three joint consensual regulations that laid down the conditions for the registration of active ingredients with a complete data package that had been approved in another OECD country (Poder

[6] The 2016 decree that introduced the figure of registration by incorporation (40059) did reference OECD countries as reference countries, but as the membership process advanced, the OECD harmonization standards figured more prominently in both the discourse surrounding the 2020 regulations and in the decrees themselves.

Ejecutivo 2020b; DIGECA, February 2020, interview; CANAPROGE, July 2020, interview; CIA, July 2020, interview). Although the new consensus also included registration by incorporation, unlike the Phase 2 decree (i.e., DE-40059), it included a series of requirements that enabled technical staff to evaluate studies. These evaluations were less involved than the process specified in Phase 1, but went well beyond the sworn declaration proposed in Phase 2. Despite the legalization of registration by incorporation, only three registrations were approved under this modality more than two years following its approval (SFE, 2022). Although finally achieving this long-held registration modality (i.e., registration by incorporation) that satisfied the interests of both business sectors, the ministerial consensus lost support from both the generic and R&D sectors, who expressed their opposition during the public consultation process (CIA, 2020; CNAA, 2020; CANAPROGE, 2020b). According to the then CNAA president, Francisco Muñoz, this OECD-linked solution resolved just 5% of the registry debacle since it did not address the thirteen years of backlog of registrations that existed in administrative limbo (Lanzas, 2021).

Opposition to the ministerial consensus from both the R&D and generics sectors demonstrated that renewal of old registrations remains the principal sticking point for industry (Defensoría de Habitantes, August 2021, interview; RCB, August 2021, interview). These revalidations are divided into two groups. The first group contains around 1513 legacy registrations granted before Phase 1 reforms began when registrations were not term limited (SFE, 2021c). A major goal of the initial reform spurred by the Auditor General, however, was precisely to reevaluate these registrations based on modern criteria and grant maximum 10-year periods of validity. The second group consists of the 371 registrations approved under temporary Law 8702 (during Phase 1), which expired between 2019 and 2020 (Ibid.). These two groups include 257 active

ingredients. Despite the expiration of these registrations, they are shrouded in administrative uncertainty, which has not been resolved through legal channels (see Figure 1 for a summary). In a bid to satisfy the business sector's concerns, the last decree of the ministerial consensus (DE-43469-MAG-MINAE-S, 2022), approved in April 2022 at the end of the government's term, granted additional five-year extensions to legacy registrations. In short, despite having forged an inter- and intra-ministerial consensus over the course of phase 3, which approved registration by incorporation and offered this extension, the ministerial consensus faced strong headwinds from the business sector. The much sought compromise was already being undermined by political economic forces that would soon consolidate political power.

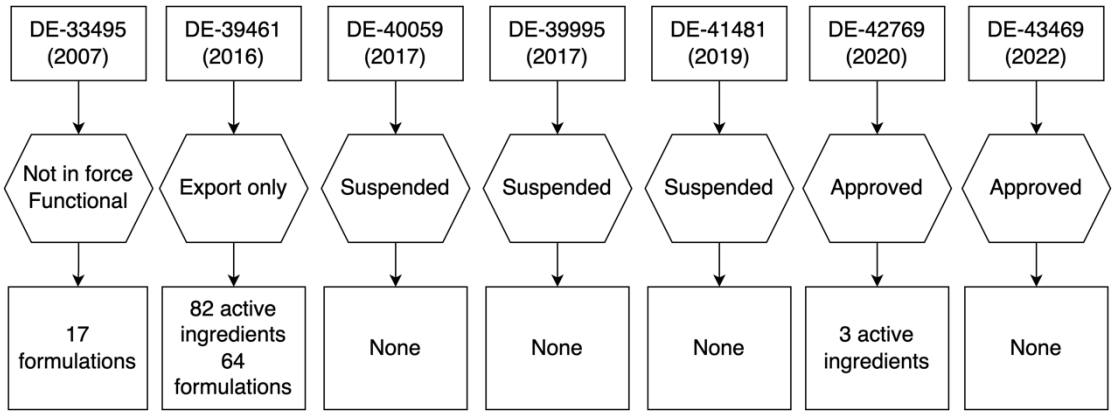

Figure 1. Legal status of main regulatory instruments, number of registrations approved. Source: adapted by the authors from data provided by SFE (2021a, 2021b, 2021c, 2022).

We identify a fourth phase of reform that begins before the end of the third, with the withdrawal of support from the business chambers and the turn to a legislative strategy. In early 2021, Laura Bonilla, then President of the Costa Rican Chamber of Exporters, introduced Bill # 22437 "Law for the Registration of Agrochemicals" in the parliament. The proposed law would allow sworn declarations for registration of both active ingredients and formulations and grant a ten-year validity to all registrations currently active and in the process of renewal. The effort was clearly aligned with the

interests of the business sector to secure legacy registrations without updated risk data, but in contrast to the previous two phases, it sought to bypass the Ministerial process by appealing to the legislature. In May 2022, a candidate from a newly formed right-wing party, Rodrigo Chaves, assumed the presidency of the country. During his electoral campaign, Chaves declared that one of his five priority executive actions would be pesticide registry reform to allow "registration by homologation," understood as an even more permissive version of the already approved registration by incorporation, since registrants would not be required to provide *any* risk data. The newly elected Chaves installed Laura Bonilla as the country's new Minister of Agriculture. On the twentieth day of Chaves' government, the ministries of Agriculture, Environment and Health signed a decree to modify DE-42769 (OECD driven reform of Phase 3), to allow registration of any single active ingredient by assembling studies from one or more OECD countries (DE-43563-MAG-S-MINAE, 2022). All indications are that in this fourth phase, the ministerial consensus achieved in Phase 3 will be undermined through executive power consolidated in the President's office and the political appointees to head the ministries. We analyze the dynamics within the state apparatus and between the state and various civil society actors that have propelled these reform phases while reproducing the registry gridlock below.

4. Regulation by impasse: struggles over the terrain of the state

Explaining the long-standing registry reform process requires a deeper understanding of the struggles over the terrain of the state "as the site, the generator, and the product of strategies" (Jessop 2008: 35) of political economic and broader social forces. In what follows we divide our discussion into two parts. First, taking a multi-scalar perspective, we consider how macro-level changes in the agrochemical industry shaped the current regulatory gridlock through shifting dynamics of competition and cooperation. Second,

we situate these dynamics in the on-going societal tensions over the boundary and role of the state. In both parts of our discussion, we consider strategies in their material and ideational sense (Sum and Jessop, 2013), including discourses of competitiveness and the subjects of state regulation. Although the registry dispute appears as a series of failed reforms, our analysis concludes otherwise. Taken together, the relational strategies developed by distinct social groups, including state managers, and the function of state institutions disputed in and through these strategies are best understood as a form of regulation by impasse. Hegemony is not achieved through a stabilized regulatory arrangement – in this case, a pesticide registry that functions to arbitrate the legal approval of pesticides in the country – but instead is tenuously obtained by the continuation of the registry dispute.

Business conflicts revisited

As noted earlier, the global pesticide industry has witnessed significant changes over the last decade, from mergers among the largest firms (Bayer-Monsanto, Syngenta-ChemChina) to value chain strategies that have opened up market entry and expansion possibilities for second- and third-tier generic firms from the global South. In Costa Rica, while tensions over issues of data protection and registration by equivalence so prevalent during the first reform phase have not abated entirely, the dynamics of competition and cooperation among the two business sectors have changed. The business sectors increasingly share the same strategy for registry reform and cooperate to advocate for this shared agenda. This change, we argue, is due primarily to two related factors: first, the transnationalization of the Costa Rican generics sector; and second, increasing commercial and strategic links between the two sectors as each repositions in relation to the other, in turn shaping their strategies to shape state regulation.

The business conflict over data protection continued during the recent reform efforts. Representatives of the generics sector continued to lament the practices of the R&D sector. In particular, once a molecule is off-patent, a reference profile should be created allowing for the registration by equivalence of generic active ingredients. Various sources told Author 1 that R&D firms were said to hamper this process by failing to provide the reference profiles against which equivalence could be measured. Additionally, generic firm representatives argued that R&D firms insisted upon impurity standards beyond FAO guidelines. As the CANAPROGE President explained, "[t]he principle of this is whether or not the concentration and levels of impurity are acceptable so that something can be chemically equal. Not to accept [some level of impurity] is commercial war, not a technical dispute" (CANAPROGE, July 2020, interview). In contrast, the CIA, representing R&D interests, downplayed the business sector tensions. To emphasize the point, the group's Executive Director noted that the CIA included generic formulator firms, and that data protection standards followed widely accepted international norms and were thus not subject to domestic business disputes (CIA, July 2020, interview). Despite these claims, the R&D sector spoke against the OECD-linked ministerial consensus in Phase 3 because of its stipulation that information presented from OECD countries for registration by incorporation be converted into a reference profile once data protection limits expired, opening up further registrations by equivalence (CIA, 2020).

Despite these on-going disputes, the underlying power imbalances between these two sectors have shifted significantly over the past decade. The generics sector has expanded and transnationalized with substantial foreign direct investment and growing regional exports. Official data reports a three-fold increase in the number of formulator firms from 15 in 2011 to 48 in 2017 (Alpízar, 2017; Dirección de Estudios Económicos,

2011). Of the three principal generic formulation and distribution firms, one, Bioquim, was purchased in 2019 by India-based United Phosphorous Limited (UPL), its first Central American acquisition. The company cited Bioquim's large number of pesticide registrations as the principal motivation for the purchase (Empresas & Management, 2021; Gutiérrez, 2019). Given the registry impasse, acquisition of Bioquim allowed UPL to quadruple its active ingredient registrations and nearly double its formulation registrations, giving it control over one-third of all active ingredient generic company registrations and half of all formulations (CANAPROGE, 2020a). Another element of the sector's transnationalization is its increasing participation in pesticide exports. Since 2000, imports of formulated pesticides have increased by 44 percent, while exports have grown by nearly five-fold (476%) (COMTRADE, 2021, authors' calculations). Indeed, in 2008, Costa Rica became a net exporter of formulated pesticides for the first time, and the gap between exports and imports continues to grow (Ibid.).

Costa Rica's new position as a regional pesticide exporter was bolstered during the second phase of registry reform. In 2016, as part of the packet of decrees discussed above, the Agriculture Ministry created an Export Processing regime that extended tax and tariff exemptions to generic manufacturers for the transformation of imported active ingredients into formulated pesticides for export (DE-39461-MAG, 2016). This decree was the only one not to be suspended and remains the only significant mechanism for approved registrations, all for export. By 2020, 164 formulations and 84 active ingredients were registered, all by just three companies, at least one with close personal ties to the government's executive branch.[7] Here, again, the participation of foreign capital is notable: Bioquim (now UPL) and ChemChina-owned Adama have 72 (51

[7] The General Manager of one of these firms is the brother of then President of Costa Rica Luis Guillermo Solís.

formulations and 21 active ingredients) and 48 (24 formulations and 24 active ingredients) registrations, respectively (SFE, 2020a).

These sectoral changes shaped the registry dispute in the changing coalition of interests around registry reform. The first reform phase, in the throes of the country's CAFTA-DR debate, pitched R&D ABMs as representatives of foreign capital's monopolistic interests against domestic generic firms and farmers pushing for accessible, low-cost inputs (Jansen, 2017b). During the subsequent phases of registry reform under study here, a more unified business sector emerged, sharing representation and strategy, while the R&D sector also distanced itself publicly from the registry dispute. The negotiations that led to Phase 2 took place under the auspices of the CNAA, the joint business chamber representing both R&D and generics. This effort yielded a package of reforms that finally established registration by incorporation, the modality that, in principal, satisfies both sectors by allowing for registrations while protecting R&D data. During this period, boutique, highly-specialized law firms that previously only supported R&D policy activities began to work with generic firms too. The increased coordination on legal strategy is evident in the decision by a number of R&D firms to withdraw administrative charges against SFE for the granting of registrations, which were seen to favor the generics sector, in order to avoid creating jurisprudence (to contextualize, see Tribunal Contencioso Administrativo 2014, 2016) that could have negatively affected the commercial interests of both sectors in the future (CANAPROGE, July 2020, interview; MINAE, February 2020, interview). The CNAA continued to coordinate the business sectors in negotiations with the state during subsequent phases of reform.

As this coalition slowly consolidated, generic firm representatives became its public face, while the debate polarized, construing *ecologistas* as obstructive elements within and outside the state. In the press and interviews, the agrochemical sector

repeatedly alleged that pesticide approvals were subject to "regulation by ideology," an allegation that the state failed to fulfill its formal role as a technical, objective evaluator of registrations. As a generics sector representative explained, "[there] is a lot of subjectivity among the authorities. Among some state and civil society sectors, the only good agrochemical is one that is not approved. You have a problem. And this is the prevalent logic" (CANAPROGE, July 2020, interview). The boundaries of the state were central to this discourse: anti-pesticide forces were said to be within the state bureaucracy and using its regulatory function to hamper, if not destroy, the sector. This added to a more general sentiment of the problems with state bureaucracy, or the "mid-level staff effect," a long-standing target of complaint by agribusiness generally against a state perceived to be unresponsive to its needs (e.g., Chaves Solera, 2018). While the R&D sector representatives remained highly critical of the failed registry reforms, they also distanced themselves from this conflict. Representatives were at pains to present their businesses as integrated services companies with pesticides decreasing in significance. Concrete evidence of this change in Costa Rica, and the wider region, is suggested by recent restructuring. Over the last five years, Corteva and Bayer, two of the top four R&D firms globally, have significantly cut agricultural field sales staff in the region, depending instead exclusively on licensed distributors (Croplife, March 2020, interview; CIA, July 2020, interview). In short, due to shifting transnational and domestic dynamics between the two sectors, the terms of the business conflict changed in the decade following the first reform. A more coordinated strategy emerged to break the regulatory gridlock and to produce new registration norms that would satisfy the commercial needs of both fractions of agrochemical capital.

Tensions within and through the State

Despite increased coordination among agrochemical interests, these efforts had failed due to stiff opposition not only from the *ecologista* movement, but also from officials in state agencies. It is precisely this kind of outcome that Jessop's strategic-relational approach helps to explain: the ability of particular class forces to pursue their interests "is not inscribed in the state system as such but in relation between state structures and the strategies different forces adopt towards it" (2008: 36). Here, we explain the failure of the Phase 2 reforms and the emergence of a delicate consensus between the technical and political levels of the state and between the state and *ecologista* actors in Phase 3 as the result of two strategic-relational factors: first, disputes between and within the responsible ministries, and second, tensions over the boundary of the state itself.

The institutional debate surrounding the Phase 2 executive decrees displayed conflicting positions among and between the different state institutions. Initial splits pitted the mid-level technical staff against their cognizant political directors. Similar to Jansen's findings in Honduras, technical staff valued their professionalism and independence from political influence (2007). Distinct, however, was the role played by this group due to extensive training not only in agronomy but also eco-toxicology and public health, as well as career service in government, rather than cycling frequently between state and industry jobs (as is common elsewhere in the region). Costa Rica has long served as a regional hub for the production of scientific expertise and technical knowledge in tropical agriculture, facilitated through its various education and research centers (Picado, 2012). Coming from this position, career technical staff objected to the Phase 2 reforms on two grounds. First, the agency staff insisted that they knew the appropriate criteria for the conduct of risk assessments. The proposal to implement registration by incorporation with only minimal submitted requirements would transform these skilled staff into "mere verifiers of a list of requirements," whose participation

would be circumscribed to "the simple completion of a checklist" (Defensoría de Habitantes, 2018: 22, 23). The move towards registration by incorporation with minimal verification (i.e., using a sworn statement), the minimum requirement recommended for countries without capacity to exercise regulatory control as per the FAO standard (Cabrera, 2019), would effectively delegate technical assessments to other states and sideline the role of this highly trained group. The second, and related objection, was the rigor of the requirements: the staff argued that the proposed norms were grossly insufficient to evaluate the health, safety and effectiveness of the pesticides under consideration. The technical departments of each ministry issued reports that expressed their opposition to DE-40059 and filed these in the Constitutional Chamber. It is widely believed that the subsequent transfer of the head of the Agrochemical Registration Unit to a different department in the Agriculture Ministry was a reprisal for his role in preparing and filing one of these reports. The Agriculture Ministry also failed to respond to the positions presented in the Environment Ministry technical report, and the report itself disappeared from the public consultation file DIGECA, 2018).

Debate over the Phase 2 reforms also manifested in inter-ministerial tensions that reached a surprisingly fractious pitch. Recall that the Agriculture Ministry issued two key decrees aimed at regularizing (i.e., "updating") old registrations to break the deadlock without either the Health or the Environment Ministry, despite the mandate for co-regulation of pesticide registration. The Agriculture Ministry replicated the arguments of the generics sector, discussed above, in its defense of these decrees. For example, in its petition to the Constitutional Chamber, the Agriculture Ministry accused the Environment Ministry of having a "dogmatic ideological bias that leads them to oppose the registration and use of pesticides in agriculture, since it is no secret, as we have already said, that for RADICAL ENVIRONMENTAL ACTIVISTS THE ONLY GOOD AGRICULTURAL

PESTICIDE IS THE ONE THAT IS BANNED" (MAG: 8, emphasis in original). Indeed, here we see that Agriculture Ministry officials conflated the Environment Ministry with "radical activists" and accused the body of "regulating by ideology" instead of using scientific criteria. The confrontation between the Environment Ministry and Agriculture Ministry exploded publicly once the former filed its petition against the Agriculture Ministry in the Constitutional Chamber. The Minister of Agriculture declared the Minister of Environment to be "the worst enemy of agriculture" in the national press (Naranjo, 2020).

The transposition of this polarizing discourse from civil society to the state offers one window into the contested boundaries of the state itself. Another perspective is offered by examining the circulation of key actors between civil society groups and official state positions. For example, two former directors of CANAPROGE, Román Macaya and Sigurd Vargas, subsequently occupied important positions within the Public Health System and the Agriculture Ministry, respectively. The latter offers a paradigmatic case for pesticide regulation. In 2019, the government designated Vargas to serve as the country's representative at the ninth meeting of the Conference of the Parties to the Rotterdam Convention (COP-9), which governs trade in highly hazardous pesticides. His nomination was fiercely questioned by sixteen environmental organizations, who saw it as a demonstration that "the revolving doors in MAG made it possible for representatives of the agrochemical industry to draft regulations and provisions directly related to their economic interests at the expense of people's health" (FECON, 2019). Vargas' nomination was subsequently rescinded.

The terrain of the state -- and whose interests are entrenched there -- is central to our consideration of the pivotal role played by the *ecologista* movement throughout this dispute. The intervention of environmental organizations in the process was decisive in

successfully blocking the second-phase regulatory reform through a combination of legal, technical and political strategies. While a detailed history of the country's remarkable *ecologista* movement is beyond the scope of this paper, we note that prior campaigns waged to restrict or ban pesticides in the 2000s led to greater attention on the part of movement leaders to the registry debate (Bloque Verde, March 2021, interview; RCB, March 2020, interview; FECON, July 2020, interview). The movement actors who successfully filed petitions in the Constitutional Chamber on behalf of the movement were highly skilled: all were agronomists and most trained themselves in the legal skills required to undertake such actions. The movement's success in shaping state regulations has granted its representatives "an uncomfortable seat" at the table in state-sponsored fora of citizen participation. As one representative explained, "there is a very big contradiction that we in the movement have not yet fully understood, which is the possibility of defending these spaces for participation and understanding their limitations" (FECON, July 2020, interview). The most poignant example of these tensions is the effort by Costa Rica's governing party (until 2022), the PAC, to incorporate social movement political leaders into the apparatus of the state itself. [8] Although not directly a member or movement leader, Felipe Arauz, the Minister of Agriculture in the first PAC administration who spearheaded the Phase 2 of registry reform, had a history of active campaigning against GMOs associated with the movement as dean of the Faculty of Agronomy at the University of Costa Rica, before going into the administration. The role he played as a committed scientist critical of industrial agriculture (e.g. Arauz, 2012) lent him political credibility consistent with the PAC's progressive project. This background

[8] The integration of social movement leaders into the state was especially prominent during the first PAC administration (2014-2018). Moves like these triggered an internal rupture within the *ecologista* movement. Activists saw these appointments as a strategy to weaken or even silence its critics. This tendency has been dubbed as a form of "neoliberal progressivism" among Costa Rican political scientists (see Molina Jiménez and Días Arias 2021).

would become a source of considerable tension with the *ecologista* movement when, in his leadership of the second phase of reform, Arauz took a decidedly pro-business sector position and frequently appeared surrounded by its representatives in public events.

In the third phase, the three cognizant ministries managed to reach a consensus to move the reform process forward. From a strategic-relational perspective, the *ecologista* forces represented in these agencies reached a tacit truce with their political counterparts. But the business chambers' opposition stirred up the waters again (FECON, July 2020, interview; Casa Presidencial 2021; Ávila 2021) and they found a sympathetic hearing in the parliament, with the proposition of a new law (Pomareda, 2021). The business chambers sought a resolution by by-passing the ministerial consensus so carefully crafted during the third phase of reform, marking a fourth phase. The 2022 elections offered a potent opportunity to codify a reform consistent with the business chambers' aligned, but diverse interests. But as our analysis has shown, state managers and *ecologistas* would surely remain potent forces shaping these on-going reform efforts.

5. Conclusion

A cursory assessment of the pesticide registry reform process in Costa Rica would highlight its failure to provide an adequate remedy for the various interests involved. Our analysis, however, suggests an alternative reading: in identifying the actors and dynamics that drove each reform phase and its outcome, we see neither a failure to regulate, nor an absence of regulation, but rather the precarious maintenance of hegemony via regulation by impasse. Regulation by impasse takes its form through the continued reworking of selective strategies -- by political economic and other social forces, along with state managers – in relation to one another. The contest to shape the state's asymmetrical institutional terrain manifests as highly technical and bureaucratically byzantine. The

strategies mobilized by the business sectors and *ecologistas* to shape state actions are developed in relation to state structures, themselves not fixed but conjuncturally achieved. We also emphasize the significance of extra-national norms and interests, attending to their transformation when combined with past trajectories of political settlements to create novel regulatory arrangement. Global norms like those of the OECD are mediated through domestic political contests over the legitimate actions and form of the state. In the shifting composition of transnational capital, we identify how the resulting change in dynamics of competition and cooperation reverberate through the regulatory dispute. Finally, the state's (in)operability rests in large part with state managers whose abilities to shape environmental governance are determined by the outcome of linked intra-institutional struggles and extra-state forces. The boundary of the state is thus continually negotiated, traversed, blurred and re-established.

From an environmental perspective, the results of regulation by impasse are not only institutionally sobering, but also ecologically and socially detrimental. The bulk of registrations in Costa Rica today – those on the books prior to the first reform phase, and those provisionally renewed during that period -- exist in a state of administrative ambiguity that remains unclear even for those responsible for managing the process. Although the ministerial consensus reached in Phase 3 offered a clear path forward, in failing to codify the administrative status quo for these 1800+ registrations that have never been brought into compliance with modern standards, the business sector opposed this solution. As a result, these legacy registrations remain officially categorized as "irresolutely valid" despite the mandate issued by the Auditor General nearly twenty years ago. Thus, widely used substances, decades old, approved with no risk evaluations and restricted or banned in other countries, are legally sanctioned to circulate in and

through the waters, soils, non-human organisms, and bodies of farmers, farmworkers and communities throughout the country.

Scholars have long indicated the exceptional character of Costa Rican neoliberal development, which has seen, on the one hand, the adoption of market-led regulation, while, on the other, relative preservation of social democratic norms and environmental protections (Fletcher et al., 2020; Ramírez Cover, 2020; Sandbrook et al., 2006). As Fletcher et al. note, however, "roll-out" forms of neoliberal regulation following structural adjustment integrated conservation and development more deeply, and thereby "intensified the long-standing strain between extraction and preservation" (2020: 15). Registration by impasse, we have argued, is a manifestation of this tension in the context of the country's strained green development model. As Jiménez (2005) and León (2021) have argued, Costa Rica is in a transition period characterized by the loss of state authority and the ideological erosion of its exceptionalism. The country continues to position itself as a global leader in environmental regulations while facing deepening contradictions between environmental protection and capital accumulation. Far from an ideal outcome, regulation by impasse, reflects the increasingly frayed hegemony that sustains Costa Rica's green development model, wherein environmental governance is tenuously achieved through a protracted regulatory dispute. Any future change in the regulatory modality of the registry away from the impasse cannot be foretold. The election of the country's first right-wing populist President, however, suggests the tenuousness of this arrangement and manifests the wider tensions within the country's development model.

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