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An Empirical Study of Regulatory Capture in Kenya's Maize Seed Sector

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Abstract: In sub-Saharan Africa, public sector breeding programs depend on local seed companies to deliver new maize varieties to farmers. Such varieties are needed to adapt cropping systems to climate change. While dozens of small and medium seed companies have emerged in the last two decades, the maize seed market in Kenya remains dominated by the parastatal seed company Kenya Seed Company, with multinational seed companies making major inroads. We assess whether parastatal and multinational seed companies have captured Kenya's seed laws to the detriment of local small and medium seed companies ('regulatory capture'), negatively effecting competition and the capacity of local companies to introduce new varieties in the hybrid maize seed market. We conducted in-depth interviews based on legal clauses with maize seed companies active in Kenya, as well as interviews with regulators and stakeholders. Results show that local companies do not feel disadvantaged compared to their multinational counterparts or the parastatal. However, all of them are wary of the entry of new actors. Moreover, through excessive procedures, the Kenyan government keeps a sovereign grasp over the seed sector. Despite frustrations with some of these excessive procedures, seed companies felt comfortable in the protective environment of the Kenyan seed market and were generally happy with the technical aspects of Kenya's seed laws, which are based on international norms. We suggest some improvements to make Kenyan seed laws more conducive to varietal turnover, in line with seed companies' suggestions and taking into account the political sensitivities of the Kenyan government.

Keywords: seed laws, seed quality control, regulatory capture, Kenya, maize

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1 Introduction

Seed laws may be a major impediment or stimulant for seed sector development and the spread of new varieties. They may wrap seed sector investments in red tape[1] or provide opportunities for clientelism and patronage.[2] At the same time, they may secure innovative investments in new varieties and convince farmers of the quality of the seeds delivered by the formal seed sector.[3]

We assess whether Kenya's seed laws – regulations on variety release, seed quality control and enforcement – constrain the development of local, small and medium enterprise (SME) seed companies and their potential to bring new varieties to smallholder farmers. The hypothesis we develop and test – in a qualitative way and with regard to the Kenyan maize seed sector – is that seed laws constrain SMEs via processes of 'regulatory capture'[4] by larger seed companies. We focus on Kenya because the country is an African forerunner in terms of seed sector development and regulation.[5] Meanwhile, Kenya is characterised by high corporate concentration in its maize seed sector and a dominant parastatal seed company (Kenya Seed Company or KSC).[6]

Literature suggests that regulatory capture can lead to reductions in competition by strangling smaller companies or newcomers.[7] Meanwhile, a competitive, dynamic, growth-oriented seed sector can support fast innovation and varietal turnover,[8]

1 David Gisselquist, Carl E. Pray, Latha Nagarajan and David J. Spielman, *An Obstacle to Africa's Green Revolution: Too Few New Varieties* (Rochester: Social Science Research Network, 2013).

2 Lodewijk Van Dycke, *Accumulation by Dispossession and African Seeds: Colonial Institutions Trump Seed Business Law*, Journal of Peasant Studies (2021), 1–32.

3 Robert Tripp, *New Seed and Old Laws* (Rugby: Practical Action Publishing, 1997); Niels P. Louwaars, Walter de Boef and Janet Edeme, *Integrated Seed Sector Development in Africa: A Basis for Seed Policy and Law*, 27 Journal of Crop Improvement, no. 2 (2013), 186–214.

4 Jean-Jacques Laffont and Jean Tirole, *The Politics of Government Decision-Making: A Theory of Regulatory Capture*, 106 Quarterly Journal of Economics, no. 4 (1991), 1089–1127.

5 Nagarajan, Latha, Anwar Naseem and Carl E. Pray, *Contribution of Policy Change on Maize Varietal Development and Yields in Kenya*, 9 Journal of Agribusiness in Developing and Emerging Economies, no. 1 (2019), 4–21, at 4; Pieter Rutsaert and Jason Donovan, *Sticking with the Old Seed: Input Value Chains and the Challenges to Deliver Genetic Gains to Smallholder Maize Farmers*, 49 Outlook on Agriculture, no. 1 (2020a), 39–49, at 40.

6 Michael Waithaka, John Mburu, Mainza Mugoya and Krisztina Tihanyi, *Kenya Brief 2018* (Nairobi: The African Seed Access Index, 2019), p. 5; Nagarajan, Naseem, and Pray, *supra* note 5, at 22.

7 Ernesto Dal Bó, *Regulatory Capture: A Review*, 22 Oxford Review of Economic Policy, no. 2 (2006), 203–225.

8 Nagarajan, Naseem, & Pray, *supra* note 5, at 5; Gary N. Atlin, Jill E. Cairns and Biswanath Das. *Rapid Breeding and Varietal Replacement Are Critical to Adaptation of Cropping Systems in the Developing World to Climate Change*, 12 Global Food Security (2017), 31–37, at 35.

i.e. the replacement of outdated varieties by new germplasm.[9] As competition is deemed a key driver in varietal turnover and varietal turnover is crucial for climate change adaptation within agriculture,[10] an absence of competition in seed sectors is detrimental to the adaptation of agriculture to climate change. In the Kenyan maize seed sector, which for the abovementioned reasons is a critical case,[11] there is an absence of competition due to concentration and the market dominance of KSC. We examined whether this situation is partly caused, or aggravated, by regulatory capture.

We queried the different types of seed companies active in Kenya's maize seed sector (SMEs, KSC and multinationals) to understand their positions vis-à-vis Kenya's recent wave of seed sector legal reforms.[12] We wanted to know what seed companies' legal experts thought about a range of carefully selected legal clauses and expected that KSC and multinationals would look far more favourable upon Kenya's seed laws than SMEs. The extent to which opinions differed, then, was our qualitative measure for the degree of capture. Our methods allowed us to identify the clauses or aspects of Kenyan seed laws that are most conducive to capture.

We found that capture is not the main issue with Kenya's seed laws. We also could not establish that regulatory capture is taking place, at least not regarding the substance of Kenya's seed laws. On the contrary, we found that SME maize seed companies wholly embrace most aspects of the current substantive, material rules embodied in Kenya's seed laws, just like multinationals and KSC. However, we *did* find regulatory problems akin to capture regarding the *procedural aspects* of Kenyan seed laws. These problems are caused by the way seed laws are structured—domestically and internationally. The Kenyan government tries to maintain its domestic regulatory sovereignty amid a flourish of international substantive seed standards by establishing command-and-control through strict seed procedures. These procedures are deplored to a greater extent by SMEs and multinationals than by KSC, whose interviewees had an easier time finding justifications for an overbearing government. Taking into account the difficult political context, we conclude by arguing how Kenyan seed law procedures can realistically be tweaked to foster the development of local SME seed companies, varietal turnover and climate change adaptation.

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9 John Brennan and Derek Byerlee, *The Rate of Crop Varietal Replacement on Farms: Measures and Empirical Results for Wheat*, 4 Plant Varieties and Seeds, no. 3 (1991), 99–106.

10 Salvatore Ceccarelli, Stefania Grando, Mohammad Maatougui et al., *Plant Breeding and Climate Changes*, 148 Journal of Agricultural Science, no. 6 (2010), 627–637.

11 Yin, Robert K., *Case Study Research and Applications: Design and Methods* (Los Angeles: Sage, 2018).

12 See, e.g., Seeds and Plant Varieties (Variety Evaluation and Release) Regulations 2016 and Seeds and Plant Varieties (Seeds) Regulations 2016.

2 Context

In this Section, we discuss the links between climate change adaptation, varietal turnover, local seed companies and seed laws. We start by explaining why we focus on maize in Kenya.

2.1 The Kenyan Maize Seed Sector

We focus on maize because it is a crop that has attracted significant investment from agrobiotechnology firms since it is essential to the livelihood of smallholder farmers.[13] Around the world, hybrid[14] and genetically modified (GM)[15] maize varieties abound. Meanwhile, in the global South[16] and in Kenya,[17] maize is grown by smallholders and it is a dietary staple, which is why maize can shed useful light on the nexus between plant breeding, varietal turnover and climate change adaptation.[18]

We focus on Kenya's maize seed sector because it represents an important conundrum by remaining stubbornly undynamic while still having displayed remarkable shifts towards formalisation, privatisation and commercialisation over the past decades.[19] In terms of formalisation or 'legalisation', Kenya has had seed laws since the early 1970s (see Section 2.3), which is longer than almost any other African country.[20] In 2016, Kenya introduced the latest round of market-oriented

13 Melinda Smale, Derek Byerlee and Thom Jayne, "Maize Revolutions in Sub-Saharan Africa," in Keijiro Otsuka and Donald F. Larson (eds.), *An African Green Revolution: Finding Ways to Boost Productivity on Small Farms* (Dordrecht: Springer, 2013).

14 James F. Crow, *90 Years Ago: The Beginning of Hybrid Maize*, 148 Genetics, no. 3 (1998), 923–928.

15 Vivienne M. Anthony and Marco Ferroni, *Agricultural Biotechnology and Smallholder Farmers in Developing Countries*, 23 Current Opinion in Biotechnology, Food biotechnology and Plant biotechnology, no. 2 (2012), 278–285.

16 Jordan Blekking, Kurt B. Waldman and Tom Evans, *Hybrid-Maize Seed Certification and Smallholder Adoption in Zambia*, 64 Journal of Environmental Planning and Management, no. 2 (2021), 359–377; Anthony and Ferroni, *supra* note 15.

17 Mary K. Mathenge, Melinda Smale and John Olwande, *The Impacts of Hybrid Maize Seed on the Welfare of Farming Households in Kenya*, 44 Food policy (2014), 262–271.

18 Boddupalli M. Prasanna, Jill E. Cairns, P.H. Zaidi et al., *Beat the Stress: Breeding for Climate Resilience in Maize for the Tropical Rainfed Environments*, 134 Theoretical and Applied Genetics, no. 6 (2021), 1729–1752.

19 Pieter Rutsaert and Jason Donovan, Exploring the Marketing Environment for Maize Seed in Kenya: How Competition and Consumer Preferences Shape Seed Sector Development, 34 Journal of Crop Improvement, no. 4 (2020b), 1–19.

20 Katrin Kuhlman and Yuan Zhou, *Seed Policy Harmonization in the EAC and COMESA: The Case of Kenya* (Basel: Syngenta Foundation, 2015), p. 6; Van Dycke, *supra* note 2, at 14–15.

reforms to its seed laws.[21] In terms of professionalisation and privatisation, around 20 seed companies currently operate in the Kenyan maize seed sector and 80 percent of Kenyan maize seeds come from formal sources.[22]

The cross-country dashboard of the African Seed Access Index (TASAI) shows how Kenya ranks among a small group of leading countries in sub-Saharan Africa (with Zambia, Zimbabwe and South Africa) in terms of maize seed sector development.[23] Based on data from 2020, TASAI suggests that, in Kenya, farmers cultivated 2.2 million hectares of maize, the most of all the countries included in TASAI's sample[24] bar Nigeria and South Africa. Kenya also had the highest tonnage of certified maize seed sold (45,822 tonnes) in 2020, beating South Africa. After Zambia, Kenya was the country with the highest number of maize varieties sold (67) in 2020.

Surprisingly, the Kenyan maize seed sector, although much more 'developed' than many of its African peers, remains remarkably *undynamic*. The TASAI dashboard suggests that the average age of maize varieties sold in Kenya in 2020 was 19 years. This is double the age of maize varieties in Zambia (10 years) or Zimbabwe (8.5 years). This suggests that varietal turnover for maize is low in Kenya. Simultaneously, the Kenyan maize seed sector is the most concentrated of the sample, together with the Zimbabwean and South African maize seed sectors. Most particularly, the same public company has dominated Kenyan maize seed trade for decades: KSC represented 64 percent of the Kenyan formal maize seed market in 2020. In comparison: Zambia does not have notable public companies and in Zimbabwe; public companies represented only 3 percent of total formal maize seed sales.

2.2 The Role of Seed SMEs in Climate Change Adaptation for Maize in Kenya

In summary, Kenyan adoption rates of hybrid varieties are high, but the area-weighted average age of varieties has been estimated around 13–19 years.[25] Varieties are old. Meanwhile, a high varietal turnover of successive generations of young, climate-ready varieties is essential to reduce the impact of climate change on African

21 See, e.g., Seeds and Plant Varieties (Variety Evaluation and Release) Regulations 2016 and Seeds and Plant Varieties (Seeds) Regulations 2016.

22 As opposed to 'informal' or farmers' sources; Waithaka et al., *supra* note 6, p. 4.

23 TASAI – *Seeds Dashboard*, available at: <https://www.tasai.org/en/dashboard/data-summary/>, accessed August 30, 2022.

24 Burkina Faso, DRC, Ethiopia, Ghana, Kenya, Madagaskar, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe.

25 Nagarajan, Naseem, and Pray, *supra* note 5, at 6–7.

cropping systems.[26] Public sector breeding programs, managed by breeding institutes like CIMMYT (International Maize and Wheat Improvement Center), have developed varieties that are resilient against both the biotic and the abiotic stress triggered by climate change.[27]

In the case of hybrid maize, CIMMYT and other CGIAR public sector breeding programs endeavour to transfer varieties to farmers via public-private partnerships (PPPs) with local seed companies.[28] PPPs are based on the expectation that maize SMEs possess the incentives, strategies and resources for seed multiplication, distribution and marketing.[29] As KSC is set in its ways[30] and multinationals by definition lack local ownership and have their own breeding programmes, the capacities of maize SMEs are crucial to the way CIMMYT and similar organisations operate. Currently, breeding institutes like CIMMYT struggle to introduce their newest finds into the market.[31] On one hand, some farmers may be reluctant to take up new varieties, depending on their socioeconomic characteristics, including gender.[32] On the other hand, successful PPPs with maize SMEs remain the exception.[33] This article focuses on the latter issue, i.e., the breeder–seed company nexus. We zoom in on one aspect of it: the law.

More precisely, the quantitative data about concentration presented in Section 2.1 point towards the following socio-legal research hypothesis. Kenya is characterised by the combination of an undynamic (low varietal turnover) and strongly concentrated maize seed sector with a dominant parastatal. Kenya, moreover, has long-established, yet recently renewed, legal institutions. This calls for a hypothesis that the parastatal and multinational seed companies may use Kenyan seed laws to

26 Atlin, Cairns, and Das, *supra* note 8.

27 Prasanna et al., *supra* note 18.

28 Jason Donovan, Pieter Rutsaert, David J. Spielman, Kelvin M. Shikuku and Matty Demont, *Seed Value Chain Development in the Global South: Key Issues and New Directions for Public Breeding Programs*, 50 Outlook on Agriculture, no. 4 (2021), 366–377.

29 David J., Spielman, Frank Hartwich and Klaus Grebmer, *Public–Private Partnerships and Developing-Country Agriculture: Evidence from the International Agricultural Research System*, 30 Public Administration and Development, no. 4 (2010), 261–277.

30 Rutsaert and Donovan, *supra* note 19, at 1.

31 Rutsaert and Donovan, *supra* note 5, at 40; Biswanath Das, François Van Deventer, Andries Wessels, Given Mudenda, John Key and Dusan Ristanovic, "Role and Challenges of the Private Seed Sector in Developing and Disseminating Climate-Smart Crop Varieties in Eastern and Southern Africa," in Todd S. Rosenstock, Andreea Nowak and Evan Girvetz (eds.), *The Climate-Smart Agriculture Papers* (Cham: Springer, 2019).

32 Rachel Voss, Jason Donovan, Pieter Rutsaert and Jill E. Cairns, *Gender Inclusivity through Maize Breeding in Africa: A Review of the Issues and Options for Future Engagement*, 50 Outlook on Agriculture, no. 4 (2021), 392–405.

33 Donovan et al., *supra* note, at 28.

cement their strong positions ('regulatory capture') and hinder the release of new maize varieties and seed distribution by upcoming competitors. Testing this hypothesis in a qualitative way is the goal of this article.

2.3 Seed Laws in the Abstract

Seed laws set standards for seed quality. The stated aim of seed laws is redressing market failures that are said to flow from seeds being 'experience goods'.[34] The underlying economic theory goes as follows. Because farmers cannot know for certain beforehand whether the seeds they buy are of good quality, they need to be protected. Moreover, given farmers' limited ability to identify quality seeds in the formal market, 'genuine' seed companies would have limited competitive advantage over fraudsters, unless some form of seed quality control is introduced. Due to their higher operating costs, the 'sincere' seed companies would eventually be beat out of the market, which would consequently fail to take off, and result in seed insecurity.[35] Accordingly, seed laws are viewed as supporting the public interest because they underpin the markets on which seed companies operate. These theoretical arguments may hold—particularly in emerging seed markets with immature seed companies and correspondingly distrustful farmers.

Normally, seed laws regulate the subsequent phases of plant breeding, seed production and seed distribution (see Figure 1). Firstly, and relating to plant breeding, there is the registration of varieties in the variety catalogue.[36] Seed laws can enumerate a number of species and decree that, for those species, only registered varieties can be marketed. Often, registration is conditional upon the variety being 'DUS' or (Distinct, Uniform, Stable). Distinct means 'clearly distinguishable from any other variety' (Article 7 UPOV 1991). Uniform means 'sufficiently uniform in its relevant characteristics' (Article 8 UPOV 1991). Stable means '[the] relevant characteristics remain unchanged after repeated propagation' (Article 9 UPOV 1991). Variety registration shares the DUS conditions with plant breeders' rights (PBRs), a type of intellectual property (IP) protection for plant varieties, as developed in the UPOV Conventions.[37] Registration also requires that the variety has agronomic value,

34 Fenwick Kelly, *Seed Planning and Policy for Agricultural Production: The Roles of Government and Private Enterprise in Supply and Distribution* (London: Belhaven Press, 1989); Tripp, *supra* note 3, pp. 45–47.

35 Kelly, *supra* note 34; Tripp, *supra* note 3, at 45–47; FAO, *Voluntary Guide for National Seed Policy Formulation* (Rome: Food and Agriculture Organisation of the United Nations, 2015), pp. 47–48.

36 FAO, *supra* note 35, pp. 47–50; Bombin-Bombin, Luis, *Seed Legislation* (Rome: Food and Agriculture Organisation of the United Nations, 1980), pp. 9–12.

37 Union internationale pour la Protection des Obtentions Végétales.

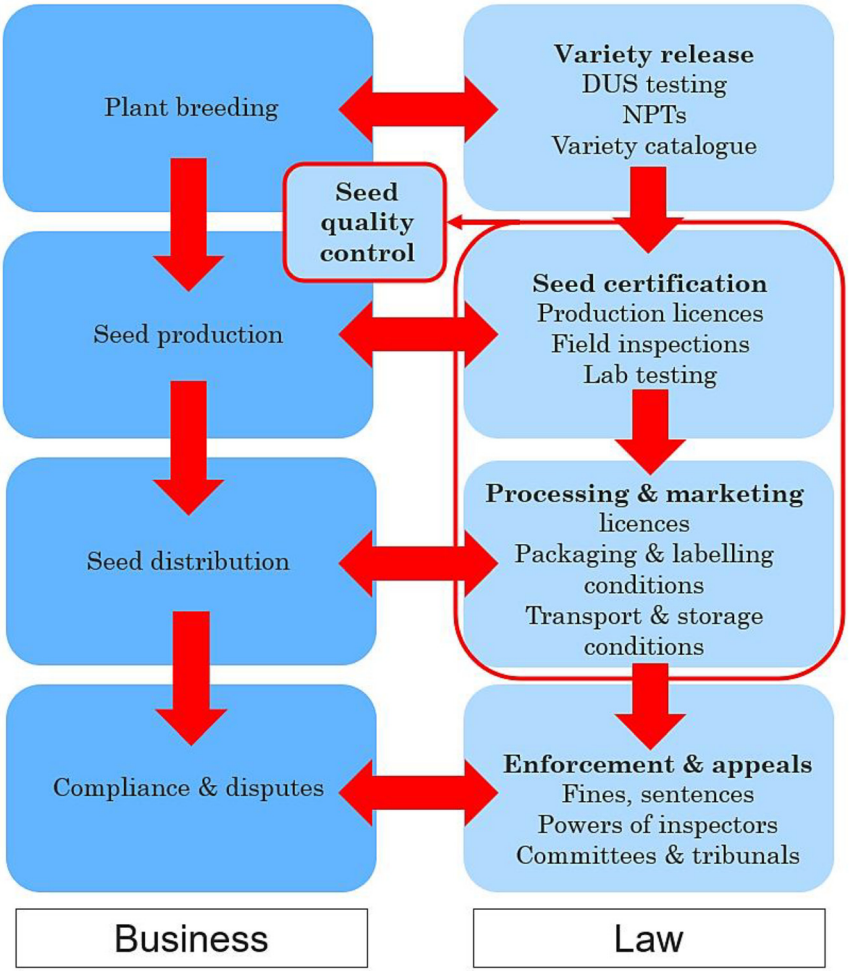

Figure 1: Seed business structure and seed laws.

called 'value for cultivation and use' ('VCU'), such as being drought-resistant. VCU is typically determined via multilocational, comparative performance trails,[38] often conducted nationally (i.e., National Performance Trials or NPTs).

Secondly, and relating to seed production, once a variety has been registered, the quality of the seeds of that variety is controlled in the field and the lab. Seed-producing entities often need a production licence and seed batches are checked or

38 Niels P. Louwaars, *Variety Controls*, 4 Journal of New Seeds, no. 1–2 (2002), 131–142, at 134–138.

even certified, which implies rigorous monitoring that results in a quality stamp. Thirdly, and relating to seed distribution, seed processing, packaging, transport, storage and commercialisation take place under strict hygienic and labelling conditions. Often, marketing licences are required, too.[39] Taken together, rules on seed certification and on processing and marketing make up the seed quality control part of seed laws.

On top of that, seed laws come with their own procedural rules such as decision-making committees, appeal structures and enforcement mechanisms (fines and sentences). Civil servants are granted powers of inspection, can take measures and can eventually impose penalties. These procedural rules determine whether decision-making, with regard to seed laws, is inclusive of different stakeholders (ex-ante) and whether companies and farmers can effectively challenge government decisions (ex-post).[40] In summary, seed laws typically comprise three functional chunks or legal frameworks: variety registration, seed quality control (seed certification, processing and marketing) and enforcement (see Figure 1).

2.4 International and Kenyan Seed Laws

There is no seed law treaty that has a global reach. Accordingly, there is no obligatory template for seed laws. Countries have ample liberty in how strict they make their regulations.[41] The stricter standards are, the higher the bar and the harder it becomes for informal actors – and, arguably, for starting SMEs – to comply with them. Accordingly, strict regulation favours established and larger seed companies.[42]

Still, many international – East African, African, intercontinental and global – norms have a bearing on Kenyan seed laws (see Figure 2). For one, there is the 1995 World Trade Organisation Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). TRIPs introduced IP on plant-related inventions to the global South.[43] Kenya has been a TRIPs member since 1995 and, to comply with its obligations under Article 27.3.b, a UPOV member since 1999. The UPOV system contains DUS standards, which typically influence variety registration under seed laws.[44]

39 FAO, *supra* note 35, pp. 47–50; Bombin-Bombin, *supra* note 36, p. 9–12.

40 FAO, *supra* note 35, pp. 48–50.

41 *Ibid*., pp. 48.

42 Tamara Wattnem, Seed Laws, Certification and Standardization: Outlawing Informal Seed Systems in the Global South, 43 Journal of Peasant Studies, no. 4 (2016), 850–867.

43 Olivier De Schutter, *The Right of Everyone to Enjoy the Benefits of Scientific Progress and the Right to Food: From Conflict to Complementarity*, 33 Human Rights Quarterly, no. 2 (2011), 304–350, at 315–321.

44 Tripp, *supra* note 3, pp. 40–41.

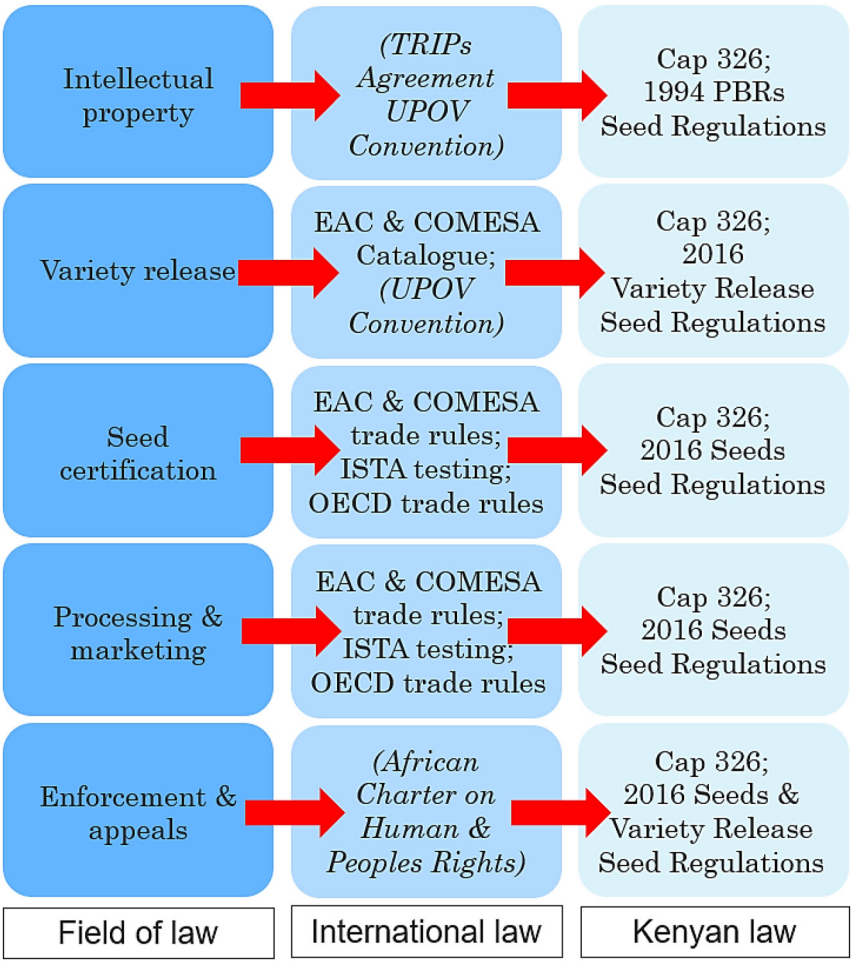

Figure 2: International and Kenyan norms relating to seed laws (International norms that are in italics and between bracket belong to a different field of law than the corresponding domestic norms and only influence the latter indirectly).

For another, regarding seed laws themselves, Kenya is a member of both the EAC (East African Community) and COMESA (Common Market for Eastern and Southern Africa). COMESA adopted the Seed Trade Harmonization Regulations in 2014. These contain rules harmonising variety release and seed certification, but COMESA member states retain ample freedom to manoeuvre. The EAC created the East Africa

Seed Committee (EASCOM) in 2004.[45] The EAC, moreover, has 42 draft technical seed standards alongside seed laws lined up. However, the bloc has been a relative latecomer in terms of the actual adoption of these standards.[46] The seed harmonisation efforts of COMESA and EAC are interrelated as both organisations agreed with SADC (the Southern African Development Community)[47] to further harmonise their respective harmonised seed laws within the Tripartite Free Trade Area they are currently constructing.[48]

In addition to these developments, there is Kenya's adoption of the technical seed standards of the Organisation for Economic Cooperation and Development[49] (OECD) and the International Seed Testing Association[50] (ISTA). These detailed norms and standards for lab and field testing, import and export and other issues play a crucial role in the certification and labelling of seeds traded internationally and, through this, in the technical interpretation of seed laws.

Meanwhile, Kenya has also adopted domestic legislation to give effect to international treaties and norms. The main domestic norm is the Seeds and Plant Varieties Act 1972 (1972 Seed Act), last revised in 2012 (Chapter 326). It is implemented by, among others, two regulations dating back to 2016, one about variety release[51] and another about seed quality control.[52] The main rules about enforcement (sentences, Seeds and Plants Tribunal etc.) are found in the Act, but many procedural rules in a broader sense (committee compositions etc.) can be found in the two regulations.

Kenya's seed regulator is the Kenya Plant Health Inspectorate Service (KEPHIS), which is dependent on the Ministry of Agriculture (nicknamed 'Kilimo House'). A range of public and private actors are submitted to the seed laws and KEPHIS's scrutiny (see Figure 3). On one hand, there are public breeding institutes, which are specialised in variety development, both domestic and international. On the other hand, there are seed companies, who may develop varieties but will certainly produce, process or market seeds that are public, private and multinational.

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45 Claid Mujaju, *Identifying Leading Seed Companies in Eastern and Southern Africa* (Harare: Access to Seeds Foundation, 2018), p. 7.

46 Katrin Kuhlmann, *Harmonizing Regional Seed Regulations in Sub-Saharan Africa: A Comparative Assessment* (Basel: Syngenta Foundation, 2015), p. 33.

47 2008 SADC Harmonized Seed Regulatory System.

48 Albert Makochekanwa, *Welfare Implications of COMESA-EAC-SADC Tripartite Free Trade Area*, 26 African Development Review, no. 1 (2014), 186–202.

49 OECD Schemes for the Varietal Certification or the Control of Seed Moving in International Trade, adopted by OECD Council Decision C(2000)146/FINAL, Paris, 28 September 2000.

50 *International Rules for Seed Testing*, available at: <www.seedtest.org/en/international-rules-for-seed-testing-_content—1–1083.html>, accessed March 15, 2022.

51 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations 2016.

52 Seeds and Plant Varieties (Seeds) Regulations 2016.

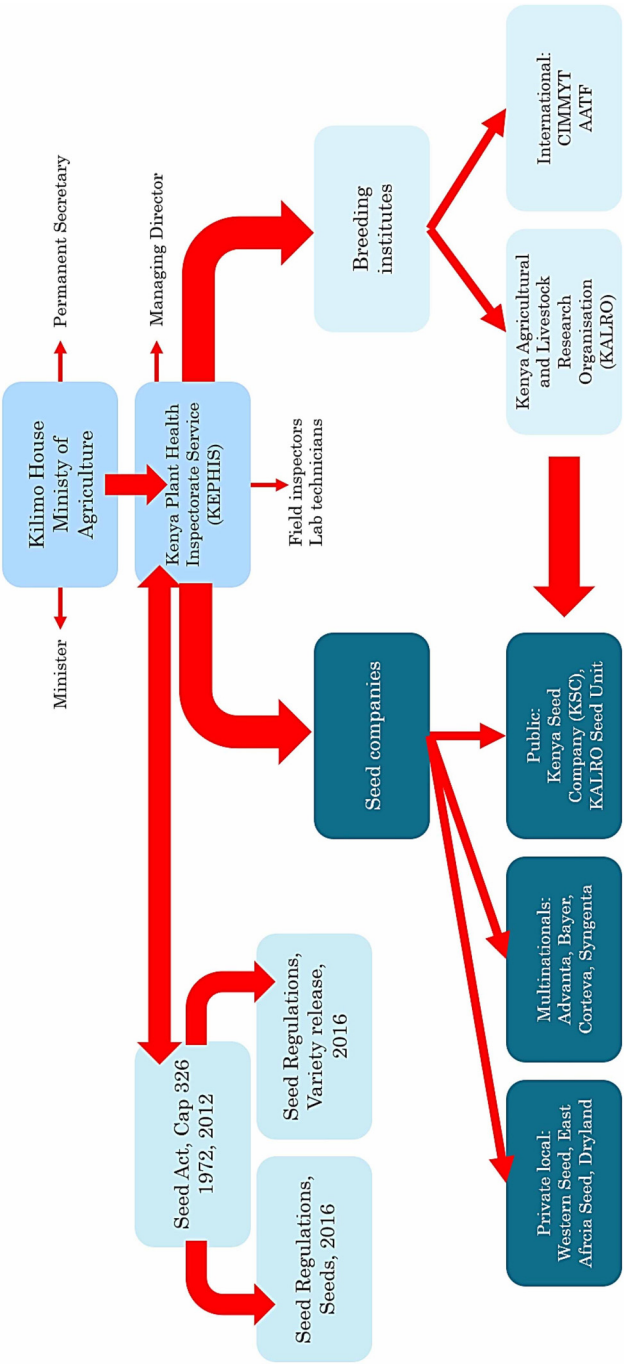

Figure 3: The legal administration of Kenya's maize seed sector.

Between 2012 and 2016, Kenya's seed laws were updated to fit today's seed sector. In 2015, Kuhlmann and Zhou talked to seed companies and reported on four aspects of Kenya's seed laws that needed improvement to facilitate private seed sector development:[53] private seed inspections and testing, accelerating variety release and seed certification, combatting seed fraud and linking national to regional (i.e., East African) seed laws. Apart from the variety registration procedure, the demands of seed businesses have reportedly been met.[54] Nevertheless, Nagarajan, Naseem and Pray[55] question if all of those regulatory changes have had the desired effect on the turnover and up-take of new varieties.

3 Regulatory Capture

Our hypothesis builds on regulatory capture theory. In this Section, we discuss the literature on regulatory capture and explain which interpretation of the concept we have deployed. The goal of the article is applying regulatory capture theory to the Kenyan maize seed sector rather than contributing to regulatory capture theory itself. The article is policy-oriented and focused on gaining insights into seed laws, not so much into regulatory capture.

Dal Bó defines 'regulation' in a broad sense as "all forms of state intervention in the economy" and in a more narrow sense as the control of natural monopolies.[56] Seed laws, sometimes called 'seed regulation',[57] are certainly an example of regulation in the broad sense. Seed laws do not directly target concentration in the seed sector, in which no natural monopolies can be established. Instead, seed laws entail regulatory standards and procedures for commerce in seed markets.

Regulation is mainly studied by two scholarly communities within economics departments: public interest scholars[58] and regulatory capture scholars,[59] the latter being part of the broader school of public choice theory. Public interest scholars are convinced that unregulated industries are sometimes prone to 'market failures' that can be remedied by regulatory intervention. Seed laws are deemed necessary due to

53 Kuhlmann and Zhou, *supra* note 20, pp. 24–27.
54 Waithaka et al., *supra* note 6, pp. 7–8.
55 Nagarajan, Naseem, and Pray, *supra* note 5.
56 Dal Bó, *supra* note 7, at 203.
57 Robert Tripp and Niels P. Louwaars, *Seed Regulation: Choices on the Road to Reform*, 22 Food policy, no. 5 (1997), 433–446.
58 Thomas K. McCraw, *Regulation in America*, 49 Business History Review, no. 2 (1975), 159–183.
59 George J. Stigler, *The Theory of Economic Regulation*, 2 Bell Journal of Economics and Management Science, no. 1 (1971), 3–21.

information asymmetries and market failures that become visible when seed sector development is read through the prism of public interest theory (Section 2.3).

Regulatory capture scholars, for their part, observe that not all regulated industries were originally suffering from market failures such as natural monopolies, which suggests that some special interests lobbied the government to intervene on their behalf. Regulatory capture scholars maintain that regulation may often result in 'government failure'.[60] Naturally, regulatory capture can also arise when market failures do exist but when the regulatory response misfires or overshoots and creates government failure alongside or instead of market failure. Dal Bó defines regulatory capture as 'the process through which special interests affect state intervention in any of its forms, which can include areas as diverse as the setting of taxes, the choice of foreign or monetary policy, or the legislation affecting R&D'.[61] Seed laws certainly come under the latter category, since they are about the interactions between quality control, investment and innovation in the seed sector.

Bernstein explains how regulatory capture develops according to a circular model.[62] First, a new agency – for instance, KEPHIS – is founded to respond to civic or bureaucratic concerns about a socio-technical issue – for instance, seed quality. Then, highly organised and specifically interested groups – for instance, KSC – take control. Eventually, even the staff of the agency will be recruited from the interest groups to be regulated – e.g., via a 'revolving door' between the historically related KSC and KEPHIS. The public at large – here, Kenyan farmers – will only receive symbolic concessions at this stage – for instance, reassurances about the 'spectacular performance' of KSC's age-old varieties.[63] During this circular process, it is rarely the *entire* industry that captures the regulator but often just the big players.[64] Indeed, we do not consider the situation in which the Kenyan maize seed sector as a whole – small, well-organised – tries to play down the exigencies for seed quality to the detriment of the farming community – large, diffuse – as a whole.[65] Rather, our concern with regulatory capture relates to KSC and relevant multinationals capturing Kenyan seed laws to the detriment of smaller seed companies, competition and varietal turnover.

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60 Andrea Saltelli, Dorothy J. Dankel, Monica Di Fiori, Nina Holland and Martin Pigeon, *Science, the Endless Frontier of Regulatory Capture*, 135 Futures (2022), 102,860 et seq., at 1; Dal Bó, *supra* note 7, at 204.

61 Dal Bó, *supra* note 7, at 203.

62 Marver H. Bernstein, *Regulating Business by Independent Commission* (Princeton: Princeton University Press, 2015).

63 Saltelli et al., *supra* note 61, at 2.

64 Elise S. Brezis and Joël Cariolle, *The Revolving Door, State Connections, and Inequality of Influence in the Financial Sector*, 15 Journal of Institutional Economics, no. 4 (2019), 595–614.

65 Stigler, *supra* note 60; Dal Bó, *supra* note 7, at 205.

Regulatory capture can be either financial (also called 'materialist') or cognitive ('non-materialist'). Materialist capture varies from corporate executives bribing civil servants, to technical experts travelling through 'revolving doors' between firms and the bureaucracy, to threats from key firms towards the regulator that they will reduce output.[66] We did not focus on materialist capture because we were and remain convinced that this is not the major form of capture in the Kenyan maize seed sector. We did not come across any reports of bribery or threats, although there may, to some extent, exist a revolving door between KEPHIS and KSC.

Non-materialist regulatory capture is typically based on information asymmetries between the regulator and the regulated companies, especially regarding prices.[67] The regulator does not know the cost and price structures of the main actors in the regulated industry. The regulator may end up being too lenient for corporations by allowing them to charge prices that are above competitive market prices, which would harm customers (often consumers but in our case farmers). Alternatively, the regulator may be too strict for corporations by setting prices too low and harming the ability of the least profitable of the competitors to invest and innovate – for instance, in the development, release and production of new varieties – and, ultimately, to remain in business.

The main information asymmetries between Kenya's maize seed companies and KEPHIS relate to seed quality and agrobiotechnology. The information asymmetry of relevance does not regard the prices seed companies set for farmers, but the capacity of the median seed company to comply with harsh seed standards. Commercial maize farmers, even if they are small-scale, are considered to be entrepreneurs. Higher quality maize seeds would result in higher yields, which would increase farmer incomes while reducing consumer food prices, thus increasing both producer and consumer surpluses. In that sense, whether seed *prices* are appropriate depends on seed *quality*, and it is the latter that has to be regulated. Quality has to be as high as possible without stifling competition, dynamism and varietal turnover, which means that the least capable of the viable seed companies should be the norm. That is the delicate call KEPHIS has to make, under circumstances of incomplete information.

Authors have suggested that the classical forms of regulatory capture as described above are currently complemented by firms that use scientific discourse to capture the evidence, methods and logic by which regulations are set.[68]

66 Dal Bó, *supra* note 7, at 211–215; Frédéric Boehm, *Regulatory Capture Revisited – Lessons from Economics of Corruption* (Passau: Internet Centre for Corruption Research, 2007), pp. 12–22.

67 Dal Bó, *supra* note 7; Boehm, *supra* note 67, at 10–12.

68 Peter Drahos, *Responsive Science*, 16 Annual Review of Law and Social Science (2020), 327–342; Anne Saab, *Climate-Ready Seeds and Patent Rights: A Question of Climate (in) Justice?*, 15 Global Jurist, no. 2 (2015), 219–235; Saltelli et al., *supra* note 61; Jennifer Lacy-Nichols and Owain Williams, *'Part of*

Corporate lobbyists paint civil society organisations who propose alternative or less corporate-minded ways of regulating (new) technologies as un- or even anti-scientific. In that way, science has been called the 'endless frontier of regulatory capture'.[69] One relevant example is the food industry's lobbying campaign to convince public health regulators that food and drink processing corporations are essential – for instance via marketing 'healthy' smoothies – to solving the crises of obesity and diabetes which these corporations themselves have created.[70] In agriculture proper, the idea of regulatory capture through science is illustrated by the phrase 'climate-ready seeds' to designate climate-adapted proprietary seeds: 'Promoters of climate-ready seeds invoke climate justice to justify the need to develop these seeds and to justify the application of patent rights as necessary incentives for investments in their development'.[71] These developments deepen the notion of 'cultural' or 'cognitive capture' in a sense that regulators increasingly come to view the world the way regulated companies do,[72] 'not because they have been captured through incentives [cf. materialist capture], but because they have been convinced'.[73]

This form of encompassing cognitive capture plays less of a role in our study design because the main lobbyist that may be capturing KEPHIS and the Kenyan seed laws would be domestic parastatal KSC. KSC does not necessarily have much more scientific expertise than KEPHIS, which makes this path less viable for KSC than leveraging its public nature or the intimate historical connections it maintains with KEPHIS. Nevertheless, the mere presence of seed laws can be seen as an element of cultural capture of Kilimo House by multinationals and Western development agencies, as observers doubt the benefits associated with formally regulating the seed sectors of African countries in the first place.[74]

One step down the road of cognitive regulatory capture, a recent distinctive stream of literature focuses on 'regulatory capitalism',[75] a 'new global order where

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the Solution:' Food Corporation Strategies for Regulatory Capture and Legitimacy, 10 International Journal of Health Policy and Management (2021), 845–856.

69 Saltelli et al., *supra* note 61.

70 Lacy-Nichols and Williams, *supra* note 69.

71 Saab, *supra* note 69, at 233.

72 Saltelli et al., *supra* note 61, at 3.

73 Dal Bó, *supra* note 7.

74 Chidi Oguamanam, *Breeding Apples for Oranges: Africa's Misplaced Priority Over Plant Breeders' Rights: Africa and Plant Breeders' Rights*, 18 Journal of World Intellectual Property, no. 5 (2015), 165–195.

75 David Levi-Faur, *The Global Diffusion of Regulatory Capitalism*, 598 ANNALS of the American Academy of Political and Social Science, no. 1 (2005), 12–32; John Braithwaite, *Regulatory Capitalism: How It Works, Ideas for Making It Work Better* (Cheltenham: Edward Elgar Publishing, 2008).

the importance of rules as a source of power has increased in scope'.[76] Regulatory capitalism is used as an alternative moniker to interpret what has actually happened on the front of economic policy-making during the period, from 1980 onwards, that is typically called 'neoliberal'.[77] Regulatory capitalism shows that today's political economy does not favour *de*regulation but rather *re*regulation of the economy along market lines to protect the market from political incursions. Regulatory capitalism shows how markets and market actors have increasingly come to regulate life, even across national borders.[78] Regulatory capture – where corporations set the rules alongside the state – is thus no longer an occasional anomaly but has been naturalised as part of a far broader phenomenon that has become characteristic of global capitalism after 1980.

In this article, we are more interested in regulatory capture in the classical sense than in regulatory capitalism, although we acknowledge that the seed quality standards developed by ISTA and OECD and adopted by Kenya are prime examples of regulatory capitalism. Nevertheless, we discuss the relations between regulation and corporate power in the seed sector, not in the economy as a whole. We moreover want to test these relations empirically, via qualitative interview data, so a micro-focus on theories of capture suits us better than a macro-theory like regulatory capitalism.

Quite often, economically liberal authors have used regulatory capture as an argument for why industries should not be regulated at all.[79] They would rather see a truly deregulated world economy instead of the privatised but heavily regulated global capitalism we see today.[80] Others[81] have considered how regulatory agencies can turn the tide and build broad coalitions with consumer organisations, environmental groups and public interest lawyers to support their regulatory mission.[82] In that way, regulation can become 'responsive' to the public interest and serve the needs of global communities instead of special corporate interests.[83] Still, others have suggested that capture may sometimes be a by-product of circumstances that allow firms and regulators to cooperate in search of the optimal regulatory

76 Saltelli et al., *supra* note 61, at 3.

77 John Braithwaite, *Neoliberalism or Regulatory Capitalism* (Canberra: Regulatory Institutions Network of the Australian National University, 2005).

78 Braithwaite, *supra* note 76; Levi-Faur, *supra* note 76.

79 Stigler, *supra* note 60.

80 Braithwaite, *supra* note 76, pp. 1–16.

81 Paul Sabatier, *Social Movements and Regulatory Agencies: Toward a More Adequate—and Less Pessimistic—Theory of 'Clientele Capture'*, 6 Policy Sciences, no. 3 (1975), 301–342.

82 Saltelli et al., *supra* note 61, at 2–3.

83 Ian Ayres and John Braithwaite, *Responsive Regulation: Transcending the Deregulation Debate* (Oxford: Oxford University Press, 1992).

outcomes.[84] Regulators often need private expertise to regulate effectively, which sometimes comes through very intimate relationships with the regulated sector.[85]

We would consider regulatory capture in the Kenyan maize seed sector to be a predominantly negative phenomenon because we think it would further contribute towards the witnessed concentration and limited competition, dynamism, innovation and scant varietal turnover in the sector. Throughout the 2012–2016 seed laws review process, concentration in the Kenyan maize seed sector remained high. The sector has a very high Herfindahl-Hirschman Index of 4450.[86] The four largest seed companies held 96 percent of the maize seed sector in 2017. The number one company is KSC, a parastatal that was founded in 1956 and that has kept its dominant position in the Kenyan maize seed market. Although public institutions, predominantly KSC, have seen their market share reduced from 74 percent in 2015 to 64 percent in 2017,[87] KSC still remains the largest player.[88]

A lack of competition, as witnessed in the Kenyan maize seed sector, is linked to reductions in varietal innovation.[89] When a few actors dominate the sector, they can easily form a cartel to block newcomers. Among themselves, these actors have limited incentives to bring varietal innovations to the market. Market leader KSC is known for producing seeds from particularly old varieties.[90] Concentration may thus reduce varietal turnover. Vested interests like KSC may try to capture the regulations, too. Capture can then become a vicious cycle because, once captured, sector regulations can be used to foreclose future opportunities for smaller companies: 'In many industry sectors, regulation drives small firms that cannot meet regulatory demands into bankruptcy […] For this reason, large corporations often use their political clout to lobby for regulations they know they will easily satisfy but that small competitors will not be able to manage'.[91] Seed laws, when captured, may thus structurally reduce competition and with it the pressure to innovate. We set out to assess whether this is actually happening in Kenya's highly concentrated but not very innovative maize seed sector, where old varieties dominate the market.

84 Ian Ayres and John Braithwaite, *Tripartism: Regulatory Capture and Empowerment*, 16 Law & Social Inquiry, no. 3 (1991), 435–496.

85 David Thaw, *Enlightened Regulatory Capture*, 89 Washington Law Review, no. 2 (2014), 329–378.

86 Waithaka et al., *supra* note 6, p. 5.

87 *Ibid.*

88 Nagarajan, Naseem, and Pray, *supra* note 5, at 22.

89 *Ibid.* at 5.

90 Rutsaert and Donovan, *supra* note 19, at 1.

91 Braithwaite, *supra* note 78, p. 25.

4 Methodology

We first justify the qualitative nature of our research (Section 4.1), followed by a discussion of our data gathering techniques (Section 4.2) and of how we went about analysing the law (Section 4.3).

4.1 Qualitative Research

The data we gathered were qualitative in nature and had a goal to test the hypothesis of regulatory capture regarding the case of Kenya's maize seed sector. Qualitative research in the form of case studies can yield insight not only into *whether* regulatory capture is taking place but also into *why* and *how*. Our interviews (see Section 4.2) allow us to tell which specific aspects of Kenya's seed laws are (not) captured and used by large companies to exclude SMEs, rather than just whether the process is taking place in general. That is the main advantage of our interviews and case study approach.

We considered deploying a quantitative methodology, for instance, by following the time series of maize varieties released by SMEs, on one hand, and by large companies, on the other hand, and by assessing whether their trends diverge (further) after the regulatory reforms of 2016. This approach would directly relate the number of varietal releases to Kenya's legal reform, thus cutting regulatory capture out of the equation. If we would have found statistically significant divergence after the legal reform between the number of varieties released by SMEs and by large seed companies (after controlling for covariates), we would have been able to infer regulatory capture as a potential explanation for the phenomenon witnessed.

However, there are several problems with such a quantitative approach. First, the number of maize varieties released in Kenya is too low and too variable from year to year[92] to derive meaningful conclusions from it. Our sample would have been too small. The overall number of maize varieties released by SMEs and large companies alike has actually *decreased* quite a bit since the 2016 legal reforms.[93] Moreover, we are ultimately interested in varietal *turnover*, not just variety release. Turnover comprises releasing new varieties *and* effectively selling their seeds widely on the formal seed market. There are no reliable official statistics on seed sales, and certainly not in a time series format that goes back sufficiently far to make temporal comparisons possible. In other words, apart from painting only a crude snapshot of

92 Recently, the following number of maize varieties were released in Kenya: 2015 – 37; 2016 – 24; 2017 – 37; 2018 – 12; 2019 – 14; 2020 – 12; 2021 – 9.

93 This is probably due to the funding of the underlying breeding projects.

the relationship between legal reform and varietal turnover, quantitative methods would have been unfeasible within our resources as essential data are lacking. That is why we chose a more insightful qualitative method and conducted structured expert interviews embedded in a case study.

4.2 Structured Expert Interviews

Consultancy reports explain how seed companies had been deeply involved in the regulatory reform processes of Kenyan seed laws from 2012 to 2016.[94] We therefore surmised that companies would have at least basic legal expertise, which would allow for in-depth conversations about the law. Consequently, our data gathering took the form of structured expert interviews.[95] During face-to-face discussions, we asked legal experts of the different seed companies detailed questions about their appreciation of seed laws. Interviews were structured around topical legal clauses (see Annex 1) that had been carefully selected (see Section 4.3). During the interviews, respondents were asked to judge whether the selected clauses benefitted their company, and especially to provide insight into *why* various clauses were (un)helpful for their companies in view of marketing new varieties and distributing their seeds.

The structured nature of our interviews allowed for maximum comparability between companies, within the framework of qualitative data gathering. After all, all interviewees occupied similar structural positions: owner, CEO or legal expert of a Kenyan seed company selling maize seeds. Our structure allowed us to compare the interview answers of large and SME companies meaningfully, which was essential to drawing valid conclusions that are representative of the case under examination.

4.3 Legal Analysis and Interview Design

We scrutinised the 1972 Seed Act and its implementing regulations. By focussing on just seed laws – to the exclusion of other fields of law like intellectual property, biosafety or biodiversity law – we managed to cover the selected field of law comprehensively. We also think that seed laws are the most relevant field of law in practice, from the point of view of seed companies.[96] We asked questions about domestic norms and excluded regional (e.g., COMESA) and international (e.g., UPOV)

94 AgriExperience, *Draft Seed and Plant Varieties Regulations Amendments Review Roundtable* (Nairobi: AgriExperience, 2014); AgriExperience and KMT, *Case Study: Revising the Seed Regulations in Kenya* (Nairobi: AgriExperience and KMT, 2017).

95 Alexander Bogner, Beate Littig and Wolfgang Menz, *Interviewing Experts* (Cham: Springer, 2009).

96 Tripp, *supra* note 3, pp. 40–41.

norms because domestic law is the main frame of reference for Kenyan seed companies and the Kenyan administration.

For the questionnaire, we selected those clauses on variety release, seed quality control and enforcement that have potential for curtailing innovation or competition. They either provided room for political meddling or inherently favoured larger companies. We then rejected clauses with a purely administrative or pragmatic effect. We prioritised clauses that companies allegedly discussed during the 2012–2016 reform process.[97] This yielded 25 clauses (see Annex 1). They were grouped into three sections: variety release – seed quality control – enforcement. Questions were presented in two versions, one regarding 'law in books', the other regarding 'law in action'.[98] Respondents first had to assess legal clauses as they were designed during the 2012–2016 review process (law in books). Only then, respondents were asked to consider their knowledge of current socio-legal practice (law in action). The underlying idea is that clauses may have been captured through legal practice, after their adoption. Respondents were confronted with questions of the form 'the following legal clause is helpful for your company'. After contemplating a quoted legal provision, they could explain to us why they would be inclined to agree fully, agree, be neutral, disagree or disagree fully. The same two enumerators were present during all interviews. A protocol was built to provide identical additional information to all respondents who did not fully understand a particular question or legal clause.

To conclude the expert interview, respondents were asked 13 open questions (see Annex 2) about the law as presented during the earlier part of the interview. The open questions formulated our central hypothesis in an increasingly explicit manner, thus allowing us to assess both indirect evidence[99] as well as direct evidence[100] regarding our hypothesis. Both the strictly legal and the open questions always followed the same order to improve comparability across respondents. The detail and multiplicity of the clauses ruled out that interviewees could give socially desirable answers. Moreover, multiple interview questions touched upon each of the three legal frameworks under scrutiny (variety release, seed quality control and enforcement). These multiple datapoints allowed us to comprehensively appreciate a respondent's view of each legal framework and to assess the consistency of the respondent's answers.

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97 AgriExperience, *supra* note 116; AgriExperience and KMT, *supra* note 116.

98 This distinction originally comes from Roscoe Pound, *Law in Books and Law in Action*, 44 American Law Review, no. 1 (1910), 12–36.

99 Open question 5 was, for instance, "Did you find the legal questions relevant? If yes, why?"

100 Open question 13 was, for instance, "Do you think the regulatory framework contributes to the competitive qualities of the Kenyan maize seed sector? Why (not)?"

5 Empirical Application

We collected data on the varieties that were developed, released and used over the past couple of years as well as, where available, the volume of maize seeds sold. We accessed these data through various sources, including TASAI reports, the Kenyan National Crop Variety List and KEPHIS annual reports.[101] Via these sources, we identified all 'entities' that are submitted to the Kenyan seed laws with regard to maize, either by virtue of registering varieties or of producing/marketing seeds. These entities include both seed companies and breeding institutes (see Table 1). According to TASAI, 17 entities were active in Kenya regarding the production, processing or marketing of maize seeds in 2019.[102] In the National Crop Variety List, we found 18 additional entities connected – as breeders or seed producers – to varieties currently registered in Kenya. This brought the total to 35 entities (see Table 1).

Table 1: Maize seed entities subjected to Kenyan seed laws.

Multinationals[a]	1. Advanta, 2. BASF, 3. Bayer, 4. Corteva, 5. Monsanto, 6. Pioneer Hi-Bred, 7. Syngenta
International breeding institutes	8. African Agricultural Technology Foundation, 9. CIMMYT
Kenyan public institutions, public breeding institutes and public seed companies	10. Agricultural Development Corporation (ADC), 11. Kenya Agricultural and Livestock Research Organisation (KALRO), 12. Kenya Agricultural and Livestock Research Organisation (KALRO) Seed Unit, 13. Kenya Seed Company (KSC), 14. Maseno University, 15. Simlaw Seed
Private seed companies, headquarters in Kenya	16. Dryland Seed, 17. East African Seed Company, 18. Elgon Kenya, 19. ETG Agri Inputs, 20. Faida Seeds, 21. Freshco Seeds, 22. Lagrotech Seed Company, 23. Leldet, 24. QualiBasic Seed, 25. Olerai Seeds, 26. Peal Agro Services, 27. Topserve East Africa, 28. Wakala Africa Seeds, 29. Western Seed Company
Private seed companies, headquarters elsewhere in Africa	30. FICA Seeds, 31. MRI Seed, 32. NASECO, 33. Pannar Seed, 34. Progene Seeds, 35. Seed Co

[a]We define as multinationals, firms with their headquarters (operational centre of decision-making) outside of Kenya or Africa.

101 Which can be accessed via the *KEPHIS website*, available at: <https://www.kephis.org>, accessed December 8, 2022.

102 Edward Mabaya, John Mburu, Michael Waithaka, Krisztina Tihanyi and Mainza Mugoya, *Kenya Country Report* (Nairobi: The African Seed Access Index, 2021), p. 12.

Some of these entities are defunct or have merged, others have not yet extended their actual business activities to Kenya. However, all of them *may* have been affected by Kenya's seed laws and are, in that sense, relevant. Seed laws may have accelerated their demise or blocked their market entry. Naturally, our main interest is with public and private seed companies – which can actually bring varieties to farmers – rather than with breeding institutes, but the lines are sometimes blurry (KALRO is a breeding institute, KALRO Seed Unit is a seed company) and breeding institutes are subjected to seed laws, too.

These 35 entities constituted our population. We set out to contact as many entities from each category as possible. We managed to contact 17 and interview 13, 11 of which were seed companies (among the interviewed entities, CIMMYT and KALRO were not). Interviewed seed companies comprised market leader and parastatal seed company KSC, four multinational seed companies and six private local seed companies.

For many of the 18 entities (out of 35) that we could *not* contact, we found out via open sources or circumstantial evidence that they were either subsidiaries of interviewed entities, predominantly active for crops other than maize, out of business, not remotely ready to enter the Kenyan market, or not intending to sell seeds in Kenya or to independently register varieties in Kenya (for breeding institutes). We can only derive conclusions from our research with regard to our case (regulatory capture of seed laws *within* the Kenyan maize seed sector). However, we are confident that we interviewed the vast majority of the entities that are relevant to our case.

To understand the context of the case, we spoke to regulators and stakeholders like (1) KEPHIS, (2) KALRO,[103] (3) the Seed Trade Association of Kenya (STAK), (4) a former high ranking STAK official and (5) a former high ranking breeder of KALRO/KSC. During such interviews, interviewees were not asked the highly structured questions that seed companies were asked. In contradistinction to the 13 interviews with entities subjected to the seed laws, the other five interviews with regulators and stakeholders were unstructured and differed from one another. These interviews provided background information.

Three of our 18 interviews were conducted online via video-conference. All others were conducted in-person on the professional premises of the interviewee, where we were often allowed to look around and gained insights into the day-to-day operations of these seed companies. Interviews were not recorded, and respondents of private seed companies were guaranteed personal anonymity to encourage a

103 We did two KALRO interviews, one regarding its role as a breeding institute subjected to the seed laws and another regarding the broader political economy of the seed laws, innovation and varietal turnover.

frank conversation. Many companies did not want to be mentioned with their company name either, for commercial reasons. We, therefore, mostly mention the category (multinational, SME, etc. see Table 1) the company belongs to when attributing statements.

Interviews were analysed via coding in qualitative data analysis software. They were structured on the basis of the legal interview questions and the open questions (top-down coding). Per pre-coded question, themes were identified bottom-up and then aggregated for the frameworks of variety release, seed quality control, and enforcement. Eventually, overarching themes emerged.

6 Results

We report interview results for each of the three legal frameworks (variety release, seed quality control and enforcement). We summarise whether the interviewed entities found each of the three frameworks relevant and helpful for their seed business activities and whether there were noticeable differences between entities' answers on the basis of their status, size and their (domestic) ownership.

6.1 Variety Release

Release in Kenya is a tightly controlled, time-consuming process in which new varieties go through two seasons of NPTs, led by KEPHIS. They then go through two committees, one technical (National Performance Trials Committee or NPTC) and one political (National Variety Release Committee or NVRC). Successful varieties are gazetted by the Minister. The general concern of all interviewees, without distinction based on the size or local nature of their company, was that release processes are mismanaged and potentially 'abused'. Mismanagement relates to unnecessary delays. Abuse relates to petty corruption rather than to hard discrimination between companies.

Companies of different types deplored that there is no transparency about when the committees meet. One interlocutor of an SME company stated: "[Committees] should meet at least two times a year with an option of meeting three times a year. KEPHIS should organise this, but they are very sloppy. These things are not enforced. They don't meet two times a year anymore. Perhaps one time every year". A KSC interviewee stated: 'One committee should meet at least two times a year and the other at least one time a year? What is this about? This is a partial repeat and a partial inefficiency? What is this about?' Committee meetings are, in other words, insufficiently coordinated.

In practice, both committees meet automatically once per year. Whoever needs either committee to meet more often – for instance, to release a variety before the short rains – must pay a 'fee' that can amount up to 500,000 KES (4400 USD) and that covers the per diems of the committee members, who may convene for several days outside of Nairobi. In the words of an SME employee: 'It is interesting that the law says 'it will be meeting twice' whereas in practice, I know for a fact that it meets only once. If you want to make it convene, then you need to pay 500,000 KES for allowance of the members. The cost becomes yours'. KEPHIS disputed these claims and explained that only NVRC meetings must sometimes be 'facilitated' and that these are organised in Nairobi and last no more than one morning, which reduces their cost. The NPTs themselves cost 600 USD per variety (or inbred line) per season. Because varieties must be tested for two seasons and modern maize hybrids are often three-way crosses, NPTs can cost 3600 USD in total. According to KEPHIS, the price of NPTs cannot be lowered because it is equivalent to the expenses of KEPHIS.

The total price in terms of regulatory approval for just one variety can thus amount to 8000 USD, too high for all types of companies. For SME seed companies, which typically release varieties developed by CIMMYT or other public sector breeding programmes, the hampering factor is the absolute value of a (dreaded) expense of 8000 USD. For many multinational seed companies, which typically have their own breeding programmes, the Kenyan market is secondary and they will only introduce new varieties if they can do so in a straightforward way. Multinationals are less willing than smaller local companies to go through a lot of administrative hassle for a couple of thousand dollars of extra profits. In other words, multinationals are not deterred by the 8000 USD costs as such, but by their cost-benefit analysis of releasing varieties that are often developed for other ecosystems in a comparatively small market. Interviewees suggested that this maximum price is often the actual price paid by companies. Even when the eventual price is lower, uncertainty about costs can stifle companies' desire to enter into variety release processes in the first place.

Companies stated that the real release decision is made at the NPTC, not the NVRC, '[…] my experience is that if something is passed by the NPTC then it will be passed by the NVRC 100 percent of the time and I say so on the basis of five, ten, twenty years of experience'. The NVRC exists, in essence, to provide the Minister or the Permanent Secretary (PS) with a short meeting to take the final, purely formal decision. This reasoning does not hold in practice because the Minister or the PS delegates this responsibility to the lower-ranked Director of Crops.

The NPTC's composition is thus crucial but problematic, according to several interviewees. No farmers are represented, and companies are deplored, which results in a technocratic preoccupation with yields instead of a well-rounded variety assessment. According to an SME interviewee: 'Well, take the popular 614 variety of

maize.[104] Why do I need varieties that outyield 614 at a 100 pct? I mean, I have those varieties but other varieties that are as versatile as 614 will not make it through the [NPTC] although farmers may well like them. And the NVRC would actually be able to give them the green light'. Meanwhile, the NPTC does count two representatives of the quasi-dormant Plant Breeders' Association of Kenya (PBAK), whose functions have mostly been taken over by STAK, and the NPTC's supposedly rotating co-opted members have been the very same academics since 2012.

Whereas the above core rules on NPTs and committees are stringently applied, rules relating to relief from this strict procedure, from the related delays and potential petty corruption, are often ignored. The interviewed companies uniformly regretted this. An SME interviewee said, 'All these layers are just more and more incentives to become increasingly corrupt'. Meanwhile, KSC officials stated, 'What is the purpose of having two different committees? What is the point? Why would you have two committees for the process of releasing varieties?' The law gives KEPHIS the option to allow for private NPTs. In practice, this is watered down to 'client-managed' NPTs, which means that the seed company pays for the entire testing procedure but must still wait for and submit to KEPHIS' data collection. Predictably, SMEs did not like this, 'Well, client-managed controls mean that you organise everything and pay everything and then KEPHIS comes to check. […] They did make a lot of noise on the privatisation of quality control but in the end it is not really happening'. Whether appeal pathways up to the Seeds and Plants Tribunal – which would allow some judiciary control over how KEPHIS conducts the variety release procedure – are ever used was unknown to most interlocutors. Frustration with client managed NPTs and other aborted forms of self-regulation causes the occasional company to reject the entire principle of compulsory variety release, and especially the preliminary NPTs, 'What we need is OECD and ISTA and that's it. Then you can globally achieve what you want. The rest is not necessary. We don't need it. Variety release is not required'. The privatisation of NPTs and seed certification (see Section 6.2) was among the private sector's biggest trophies out of the 2012–2016 reform but, especially for NPTs, implementation is lagging.

Another aspect that came to the fore in a diverse set of interviews is access to and control over information. KEPHIS is the primary custodian of varietal testing data and therefore manages to dominate variety release procedures, 'In practice, it is KEPHIS who conducts these NPTs. So the committee, too, is obviously headed by KEPHIS. They have the testing data'. KEPHIS conducts multilocational trials, possesses the data that will be presented to the NPTC and sits on the NPTC and the NVRC. The extent to which the companies can take the floor during committee meetings and challenge KEPHIS' point of view seems limited and, even when companies are

104 H614D is one of the most popular and versatile varieties of KSC. It was released in 1986.

allowed to challenge KEPHIS, the regulator controls all essential data, which are not made public.

Among the defenders of the variety release system – even its more rigid aspects – is KSC, the respondents of which were critical but nevertheless took a more conciliatory approach towards current variety release procedures than most other respondents. KSC respondents stressed that careful variety release for a staple crop like maize is key to guaranteeing food security, 'I also agree with that [clause] because food security is so important. That is why there is this [compulsory variety release]. Varieties should be compared with what is already on the market because of food security'. They came across as genuinely convinced when stressing that the regulation effectively serves the protection of vulnerable farmers. Working for a public company, KSC respondents suggested that privatisation of NPTs and self-regulation should not be seen primarily as in the interest of *companies* but rather as a service to the *system.* This is because outsourcing could alleviate KEPHIS of some of its capacity problems (personnel and budget) and thus facilitate the overall sustainability of the system: 'There are more than 140 seed companies and it is growing globally. No authority can do everything in-house. The government realises this and wants to do things in a distributed way. That does not mean that you get off the hook of KEPHIS and the quality control'.

6.2 Seed Quality Control

If seed quality control – a prerequisite for commercialisation – is unnecessarily cumbersome, it might reduce companies' appetite to innovate. It may also reinforce the position of larger companies with deeper pockets and the capability to negotiate tough procedures. That is why we expected seed quality control, especially under the guise of compulsory seed certification, as adopted in Kenya, to be unpopular with smaller local companies.

Interestingly, the form of quality control practiced by the Kenyan government is not causing significant splits between Kenya's maize seed companies. Interview responses of local companies were in line with the answers of multinationals and KSC. All companies were broadly positive about seed certification. The interview with KSC was nevertheless different because KSC respondents explicitly voiced the position that stringent controls are in the public interest because they protect farmers and food security, 'Without these rules, how can we advocate for our business? It is good to know that all these steps have been taken by seeds. Certified seeds have the label of KEPHIS and farmers know that label well'. Other companies did not adopt this public interest position quite as explicitly.

Most rules that *all* companies agreed to relate to certification. These agreeable rules are often substantive in nature. A first popular rule is Kenya's adherence to OECD and ISTA standards. We had hypothesised that multinationals would appreciate these rules and local companies would be ambivalent because they create high barriers to entry and advantage larger outfits. This hypothesis was refuted. Local seed companies, too, appreciated these rules. One of the smallest, newest companies stated that: '[…] using the ISTA and OECD standard also allows for easy marketing and export'. In other words, all well-organised and professional companies have some ambitions to trade seeds cross-borders.

A second substantive rule all interviewees liked involves the conditions for obtaining a 'seed merchant'[105] licence. These conditions apply to entities that want to produce, process, or market seeds on a large scale. To get a licence, seed merchants need to have competent personnel, an established distribution system and either land or a factory to produce, respectively process, seeds. These norms create barriers to entry into the seed market. We hypothesised that small companies would not like these rules because it had made entry or the extension of activities difficult for them. It turned out that functioning companies, however small, liked these standards. Smaller companies were perhaps even most fond of these norms, 'Yeah, yeah. That's fine! You're not a seed company if you don't have all of this. It is very important to get rid of all the 'riffraff''. Underlying their attitudes is the situation in which most of the 143 registered 'seed merchants' for all crops are not actually operational.[106] Many registered seed merchants are merely 'briefcase companies' (a term interviewees used), which at most import and export some vegetable seeds. If anything, interviewed seed companies wanted the threshold for seed sector participation to be raised and the rules to be enforced more stringently, to make sure briefcase companies' dormant status and 'incompetence' would be reflected in the law so that they were effectively blocked from the market.

The third rule that everybody liked was a procedural one, the one universally that has significant carve-outs. It is the rule that says that companies can engage in private seed quality control. As mentioned, there are issues with this rule. First, the final certificate for each seed batch must still be delivered by KEPHIS. Multinationals in particular have rigorous internal seed quality control procedures (self-regulation) and therefore decry the additional administrative hurdle of getting KEPHIS' final fiat. Secondly, KEPHIS insists on undertaking itself the quality control of basic seeds – something companies especially resent because it relates to their up-stream, non-commercial seed stocks that will never get to the market and never directly affect

105 This is the technical name of registered seed companies under the 1972 Seed Act.

106 Waithaka et al., *supra* note 6, p. 4.

food security in the first place, 'Why on earth would the regulator be more proficient in monitoring the quality of your basic seeds than the company of the breeder? I mean, the breeder should be controlling this quality. He [sic] developed this variety, it is his own variety then he should be able to control the quality'.

With regard to dissatisfaction, a crucial aspect companies dislike about seed certification is, once again, delays in the delivery of certificates. Companies uniformly deplore that seed batches are certified too late in the season. Delays are due to the compulsory nature of seed certification for seeds of registered varieties, the erratic schedule of the Seeds Regulation Committee (see below), the late delivery of final seed certificates, the compulsory revalidation of certification after one year, the difficulties of appeal, etc. An SME company, for instance, stated, '[Decisions] will be overtaken by events. You are working with seeds. These are life things. If seeds are turned down due to an issue of detasseling, for instance, you will see that appealing that takes time, which is not available'. Because delays are so ingrained in the system, they may be hard to address.

A final topic is the Seeds Regulation Committee. The Committee is responsible for advising the Minister, ruling on appeals against decisions of KEPHIS inspectors and KEPHIS as a whole and approving crop-specific technical regulations. All companies were adamant that this Committee rarely meets. In the words of one interlocutor, 'This committee has never sat. It has never done anything. It should not be existing. It is a waste of time'. If it does, it fails to meet in time to address grievances before the planting season is over. KEPHIS, in turn, insisted that the Committee does meet. It is important to acknowledge that the 1972 Seed Act has granted the power to adopt crop-specific regulations and to administer seed laws during the planting season to the Committee, not to KEPHIS. If KEPHIS oversteps its legal competence – or fails to establish transparency – this constitutes a breach of the law. KEPHIS should urgently address this issue.

6.3 Enforcement

Regarding enforcement, companies are of two minds. On one hand, all established seed companies have a stake in strict enforcement, and they appreciate the difficulties that KEPHIS is confronted with when on patrol. This does not differ much between local companies, multinationals and KSC. One example is seed companies' universal objection that the maximum fine for violations of seed laws – including for the large-scale production of counterfeit seeds – is far too low to have a deterring effect, even though it has recently been increased from 20,000 KES (175 USD) to

1,000,000 KES (8800 USD).[107] According to one SME, 'The sentence should be thus that when you read it, you know that producing counterfeit seeds is a no-go zone'. Some companies stated that even the six-month prison sentence[108] fails to deter, 'Also the six months in prison are not adequate because if you show good conduct, it can be brought down to a third, i.e., you can be free again after two months!' Another reason is that interviewees surmised that offenders would make sure that the prison will be served by a low-ranking, poorly paid employee who is immaterial to the company to begin with.

On the other hand, companies did sometimes question the fairness of the applicable procedural rules, especially in relation to the powers of KEPHIS. There is, for instance, a rule on piercing the corporate veil. It states that corporate offences against the seed laws, of which a director is aware, can also be treated as offences by said director. Many interviewees thought this rule was unfair. A local company director said, 'I disagree here. We are human beings. We can make mistakes. Individuals or directors shouldn't be punished because of decisions made by a corporation or a committee. Only in places where the business structure is thus that the individual owns the company and the owner decides, this may make sense'. Another example is the freedom of individual KEPHIS inspectors to seize and detain seeds and processing facilities without formal complaint, which was seen as open to abuse. An SME representative maintained, 'I mean, they can say we seize things unless you pay 20,000 KES. The balance is completely lost. Inspectors should not have this kind of authority. They have more authority than the police. Perhaps the board of KEPHIS should be able to make such decision but not just an inspector'.

All companies typically liked pathways for appeal. Unfortunately, these rules were systematically the rules where interviewees raised the 'but this is not applied in practice' caveat. Several interviewees stressed that their relationship with KEPHIS remains of overwhelming importance because appellate bodies against KEPHIS, especially regarding seed quality control, lack funding, rarely meet and comprise KEPHIS representatives. We did, however, find some evidence via our stakeholder interviews that even the most remote appellate bodies, like the Seeds Regulation Committee and the Seeds and Plants Tribunal, exist and can be convened, when necessary, 'There are options for grievances – there is a forum. We agree. We were actually about to use it'.

107 We reported above that 8000 USD can form a significant hurdle to variety release. Here we report that 8800 USD is not a sufficient deterrent to counterfeiting. The difference is that the former case entails an *additional* cost for genuine seed companies in a long train of risky investments whereas the latter case relates to illegitimate seed traders taking far less investment risk by free-riding on the efforts of genuine seed companies.

108 Currently increased to two years for some grave crimes.

Nevertheless, the composition of the Seeds and Plants Tribunal, which rules in last instance about all Seed Act-related disputes, fails to be impartial in a way that defies the imagination. This is obvious from the applicable legal provisions (see Question 25, Annex 1) and was confirmed by interviewees. For any case lodged with the Tribunal, the Minister has discretion to appoint Tribunal members, but the law rules out the possibility of challenging the Tribunal's judgements on grounds of its composition. The Minister also has discretion to determine the remuneration of the ad hoc members. A diverse array of seed company interviewees pointed out that this makes Tribunal members even more dependent on the Minister and, therefore, the judgements of the Tribunal even less trustworthy. In the words of a small local seed company, 'Hmm, but then this article gives an awful lot of power to the Minister. And our current Minister is horrendous. I don't like the fact that the Minister can determine things like remunerations of the panel members'.

7 Discussion and Theoretical Contributions

By comparing company views on current seed laws via sophisticated questions, we have tried to uncover if local seed companies feel disproportionally disadvantaged by Kenya's present seed laws. Such a self-reported disadvantage would be a strong indicator that Kenya's seed laws are captured by parastatal and multinational seed companies. Our method for assessing regulatory capture qualitatively is our main contribution to regulatory capture theory. Apart from that, the added value of our findings is not in theory-building but in shining a light on seed laws in Kenya and sub-Saharan Africa, which are very important for seed sector development and climate change adaptation.

On the basis of the limited divergence between the opinions of local seed companies, multinationals and public seed companies like KSC regarding crucial legal clauses – as reported above – it can be concluded that most companies hold the same views of Kenyan seed laws. Accordingly, by this metric, Kenyan seed laws have not been 'manipulated' to serve the purposes of the larger companies alone, and by this standard, no regulatory capture of Kenyan seed laws is currently taking place. The most crucial substantive rules are supported equally by KSC, multinationals and local private seed companies.

Rules that were singled out beforehand as potential SME-blockers and that would certainly be poorly appreciated by SMEs in case of effective capture included: strict conditions for registration as a seed merchant, exacting OECD and ISTA standards, the transfer of quality control from government to in-house compliance departments and the personal liability of Kenyan corporate directors. These rules were appreciated and discussed by local companies in terms that were nigh identical

to the ones used by multinationals. KSC stood out in the discourse it used to defend the seed laws by referring to the public good, food security and the interests of the state, 'Seed is crucial for this country. In the future, perhaps, it is also possible to have private quality control for basic seeds, like it is the case in other countries but, for now, it is safer like this'. More precisely, KSC often referred to the need for supporting KEPHIS in facilitating the seed laws, given KEPHIS's limited budget and personnel, 'Also, how does the government get the revenue to run the [seed quality control] business if they don't go to check and collect fees every year'. However, KSC did not substantially diverge from the other companies in its actual verdict of the substantive seed laws.

Local seed companies did not object to the substantive seed rules and standards (OECD, ISTA, UPOV, etc.) they are subjected to. In fact, they appreciate them just like multinationals do. Instead, SME companies were particularly critical of market entrants and saw standards as welcome barriers to 'briefcase companies': 'These rules make sense. Yes! Otherwise just about anyone can be a seed company. You need the registration or the licence or you have plenty of briefcase companies all over the place'. Rather than reporting unfair competition between seed companies of different categories, established companies seemed united and saw seed laws as a protection against external threats and potential new competitors. Therefore, one could claim that regulatory capture was not present *between* established companies while current seed laws in Kenya may create some barriers for new actors to enter the market.

In Section 5, we identified 35 entities that may be active in the Kenyan maize seed sector. In total – for maize and other crops and regardless of any proof of recent activities – there were even 143 registered entities, legally called 'seed merchants', under Article 12 of the 1972 Kenyan Seed Act.[109] As could be expected, many of these entities are merely 'briefcase companies'. Active seed companies distrust their quasi-dormant counterparts, 'These briefcase companies are still there. Fifty percent of the licenced companies are briefcase operations. They come from 'Kariobangi' light industries.[110] If you're adhering to these rules, then you're actually being punished because companies that do not adhere also get registered'. In other words, briefcase companies are disliked by the interviewed seed companies partly because their substandard ('counterfeit', 'fake') seeds hamper the trust of farmers in seed companies. This is partly because briefcase companies may occasionally import seeds and undermine the market share of the existing companies and partly because briefcase companies may eventually become active and freeride on the efforts of today's seed companies to establish trust and a seed market. The established seed companies would certainly like to weed out the list of 35 – let alone 143 – entities so that the list of

109 Waithaka et al., *supra* note 6, p. 4.

110 Kariobangi is a neighbourhood in Nairobi known for its shops selling counterfeit goods.

licenced seed merchants corresponds with the list of active entities. As briefcase companies seem to be just that – freeriding, rule-busting letter boxes – no problematic desire to capture the seed laws seems to underlie this endeavour. The interviewed companies want the law to correspond to reality.

What all interviewed companies – irrespective of their size or the location of their headquarters but with the notable exception of KSC – want above all is an increased adherence to the 'South African' or the 'Zambian' models of variety release and seed quality control. Whereas these countries' seed laws differ on important points,[111] the essence of the two systems as interpreted by Kenyan interlocutors is that NPTs, variety release and seed certification are either voluntary, less strict or done by companies themselves, with limited government oversight. Companies associated these systems with mature seed sectors in which government trusts the sector and enforcement happens post-hoc via litigation instead of up-front through permits. They think the Kenyan maize seed sector is ready for such an approach, 'I would like to see Kenya prosper because it is my life, my blood, my soul. What we need for this is the rules of OECD and ISTA. In Zambia, they use these rules and they export up to 140,000 tonnes of hybrid maize seeds. South Africa is also doing very well. Kenya is not competent enough – politically, economically, administratively or I don't know what – to do the same. And all of that is because of this legal framework'. KSC, though, said explicitly that it is too soon.

The 'South African' or 'Zambian' model might indeed be difficult to implement in Kenya when the role of the Kenyan state in the incarnations of Kilimo House, KEPHIS, KALRO and KSC is taken into account. Our observations indicate that the Kenyan state attempts to maintain a degree of independence or 'ownership' vis-à-vis the regulation of the Kenyan maize seed sector. In a context of liberalisation and privatisation of the maize seed sector, the Kenyan state as a whole and its different arms against each other, struggle to maintain 'sovereignty' and control over seed laws and the seed sector. This has negative consequences for the probability that Kenya's seed laws will be redesigned according to the desires of most maize seed companies apart from KSC because it rules out a light-touch approach like in Zambia or South Africa.

In 1998, international processes of marketisation and 'good governance'[112] caused KEPHIS (the regulator) to be spun off from KALRO (the public breeder).

111 Katrin Kuhlmann, Yuan Zhou and Shannon Keating, *Seed Policy Harmonization in COMESA and SADC: The Case of Zambia* (Basel: Syngenta Foundation, 2019); Edward Mabaya, Marnus Gouse, Mainza Mugoya, Emma Quilligan and Wynand Van der Walt, *South Africa Brief 2017* (Johannesburg: The African Seed Access Index, 2017).

112 World Bank, *World Development Report 2002: Building Institutions for Markets* (Washington, D.C.: World Bank, 2001); Jeffrey Herbst, *The Structural Adjustment of Politics in Africa*, 18 World Development, no. 7 (1990), 949–958.

KALRO increasingly competed with private companies and could thus no longer function as a regulator. The remaining Kenyan regulator, KEPHIS, and its political patron, Kilimo House, have been disowned of setting the standards by which seed companies have to behave in Kenya, as the legal theatre has been saturated with external norms. Through the adoption of TRIPs, UPOV, EAC, COMESA, OECD, and ISTA norms (see Section 2.4), the Kenyan state has been gradually estranged from the substantive, material levers of legal seed policy-making.

The public seed sector – Kilimo House, KEPHIS, KALRO and KSC – has, however, not been incapacitated by the ubiquity and pre-eminence of international norms since 1995. We found that the public sector has resisted through means of procedural law. In either of Sections 6.1–6.3, the elements private seed companies did not like often related to procedural law rather than substantive law. Examples mentioned include slow-working and untransparent varietal release committees, the incomplete privatisation of variety release and seed certification and the trouble of burdensome appeals procedures.

Regarding these domestic procedural rules – alongside the 'overbearing' stance of the Kenyan Government (e.g., *compulsory* NPTs, *compulsory* certification) – there was general exasperation among the interviewed seed companies, with one exception. KSC recognised that committees are numerous and that delays sometimes occur, but they steadfastly stressed aspects of public interest, food security and farmer protection. For instance, while other companies saw private seed quality control as pro-business, KSC framed it in terms of government capacity: one cannot expect that KEPHIS will monitor all seed batches, so companies might as well chip in. Compulsory NPTs and certification were interpreted by KSC through the lens of Kenyan sovereignty and the government's responsibility to protect vulnerable farmers and food security. More than other respondents, KSC interviewees seemed to have genuinely internalised the position that seed delivery is a public service and that KSC is a company on a humanitarian mission. Still, KSC is a parastatal and, therefore, by design more closely related to KEPHIS, KALRO and Kilimo House than many of its competitors. In those circumstances, lengthy, untransparent procedures are to be avoided, even though the resulting substantive rules and outcomes on the whole do not unduly favour KSC.

In addition to our method for detecting regulatory capture, our findings regarding procedural resistance may be our most important contribution to the literature on regulatory capture. In circumstances where legal frameworks are moulded – rather than simply captured – by a global business elite[113] to the point of encompassing cognitive capture and 'regulatory capitalism' (see Section 3), mid-sized

113 John Braithwaite and Peter Drahos, *Global Business Regulation* (Cambridge: Cambridge University Press, 2000).

developing countries like Kenya may use procedural law to regain the initiative. Indeed, when substantive rules – which turn out to benefit locally-owned SME seed companies equally – have been set in international forums like the OECD and ISTA, the actors of the Kenyan state can no longer influence how these rules are formulated, but only whether and how they are enforced on Kenyan territory. Creating cumbersome procedures can be an effective avenue to regain some control and reinterpret and reappropriate some rules, especially when the Kenyan state has skin in the game as the eventual owner of a parastatal seed company like KSC. In other words, procedural regulatory capture may be a domestic counterweight to substantive regulatory capitalism on the global level.

8 Conclusion and Policy Implications

Kenyan substantive seed laws with regard to maize do not seem to be captured by big business because local companies consent to substantive rules as much as anyone. There are, however, serious problems with Kenyan procedural seed laws. Committees and appeal structures are characterised by a tight public sector grip. This implies and explains the compulsory and predominantly public nature of variety registration and seed certification. This heavy-handed, government-dominated approach makes a South African- or Zambian-styled system politically unfeasible in the immediate future, although it would be heavily preferred by private seed companies.

Public control over procedural seed laws is one factor that contributes towards strangling innovation and varietal turnover in the Kenyan maize seed sector, as was proven by our interview results. Therefore, we pragmatically propose the following realistic adaptations to Kenya's seed laws, based partly on companies' input and partly on what is feasible in the short run to make Kenyan seed laws more conducive to innovation and varietal turnover. These proposals fall short of introducing Zambian- or South African-styled seed laws, but they go significantly beyond the status quo. These targeted changes can make Kenyan seed laws more transparent and help to reduce the inefficiencies that exist regarding the procedural aspects of Kenyan seeds laws.

Above all, it is crucial that the costs of KEPHIS' variety release processes – including the NPTs – and seed quality control measures are no longer charged back to seed companies. Paying for these processes from the public purse may be expensive but makes sense in a country where agriculture represents about half of GDP[114] and where investments in new varieties will remain crucial for rural

114 World Bank, Policy Options to Advance the Big 4: Unleashing Kenya's Private Sector to Drive Inclusive Growth and Accelerate Poverty Reduction (Washington, D.C.: World Bank, 2018), p. 35.

development and adapting agriculture to climate change. Public financing will ascertain effective service delivery and may speed up varietal turnover as companies are no longer deterred by fees. If committee fees cannot be dispensed with altogether due to political unfeasibility, an alternative is to subsidise the expense for smaller, local seed companies or to make the first couple of varieties registered in each year free for every company.

Regarding variety release, NPTs need to become more transparent and testing data need to be made more widely available to the public. This should allow companies to challenge KEPHIS' decisions directly in the variety release committees. It may also allow farmers to make better varietal choices. Variety release committees should meet at least two times every year and. Additionally, they should meet when a certain number of seed companies requests a meeting or when a certain number of varieties are lined up. The two variety release committees (NPTC and NVRC) should merge and the Director of Crops should get the authority to release varieties personally. Further referrals to the Minister should be dispensed with, thus removing the necessity of the NVRC altogether. A well-balanced collection of farmers' representatives should sit on the merged committee to ascertain a multifaceted assessment of varieties.

Other ways of deterring frivolous applications for variety registration may become necessary if NPTs become free of cost. One option is to better police the conditions for registration as a seed merchant, which may reduce the number of briefcase companies and spurious applications. This advances the agendas of the Government (a manageable workload of variety applications) and of seed companies (less competitive threats from briefcase companies) alike.

Regarding seed certification, the Seeds Regulation Committee should be allowed to meet online and with a quorum of 50 percent of its members. The flipside is that the committee should be on stand-by during planting periods. It should meet at the request of any registered seed merchant. Alternatively, the Seeds Regulation Committee's judicial functions should be dispensed with and replaced by a pragmatic, direct appeal to authorities outside of KEPHIS: the Director of Crops or the PS. The certification of non-commercialised seed generations (i.e., basic seeds) should also be dispensed with. Breeders are better at monitoring the quality of the seeds in their valves than government.

Regarding enforcement, penalties should be changed in that maximum fines are increased to 150–200 percent of the value of the seeds counterfeited, as suggested by many companies. The revocation of seed merchant licences should be written into the law. Violations should further be categorised to make sure that, for example, reckless provision of technical information is not treated the same as large-scale seed counterfeiting. For recidivists of heinous violations, a life-long ban from seed activities should be on the cards. Procedural guarantees for seed companies need to

be clarified and strengthened. Individual inspectors should not have the right to seize seed processing facilities. Which criminal charges may befall individuals and corporations respectively has to be stipulated and a balance between corporate and individual liability and deterrence needs to be struck, both under tort law and under criminal law. Finally, the Seeds and Plants Tribunal needs to become a truly independent court.

With these procedural improvements in place, Kenya's seed laws would be one step closer to stimulating innovation and varietal turnover. Improved seed laws would cater better to the needs of local companies with the ambition to compete domestically and regionally. The proposed changes, suggested by a broad range of seed companies during their interviews, would help seed companies to better serve farmers and to adapt cropping systems to climate change.

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Annex 1: Structured Legal Questions for Maize Seed Companies

This structured interview consists of 25 question in an a. and b. format.

A Variety Release

a – *As designed in 2016*, the following legal clauses (see below) are helpful for your company in view of putting new, high-quality varieties on the market. Please explain the answers you chose.

Fully Agree – Agree – Disagree – Fully Disagree
b – *As applied in 2022*, the following legal clauses (see below) are helpful for your company in view of putting new, high-quality varieties on the market. Please explain the answers you chose.

Fully Agree – Agree – Neutral – Disagree – Fully Disagree

Clauses

1. 'If it appears to the Minister that […] there is […] sufficient reason for exempting [a] variety from [performance trials], he may direct that [the requirement of performance trials] shall cease to apply to seed of that plant variety'.[115]
2. '[The] National Performance Trials Committee […] shall consist of:
   a. the Managing Director [of KEPHIS];
   b. one representative from the State Department responsible for Agriculture;
   c. the Chairperson of the Seed Trade Association of Kenya […];
   d. the Chairperson of the Plant Breeders Association of Kenya;
   e. the Secretary of the Plant Breeders Association of Kenya;
   f. not more than six crop specialists from the public and private sector co-opted into the committee as and when necessary'.[116]
3. 'The National Performance Trials Committee shall meet at least twice a year'.[117]
4. 'The varieties of all crops listed in the First Schedule shall be eligible for entry into National Performance Trials. […] The crop varieties listed in the Second Schedule [including maize] shall undergo performance trials'.[118]
5. 'The Service [KEPHIS] may […] authorize competent private or public persons or institutions to undertake specific National Performance Trials'.[119]
6. 'There is established a National Variety Release Committee comprising of –
   a. The Head of the Directorate in charge of crops, State Department Agriculture;
   b. The Managing Director of KEPHIS;
   c. The Head of the Division in charge of Agricultural Advisory Services, State Department Agriculture;
   d. A representative of the Governors' Council;
   e. The chairperson of STAK;
   f. The CEO of KENAFF;
   g. The chairperson of PBAK;
   h. A representative of an academic institution'.[120]
7. 'The National Variety Release Committee shall […] meet at least once in every year'.[121]
8. 'A person aggrieved by the decision of the Service [KEPHIS] or the National Performance Trials Committee […] can appeal to the National Variety Release

115 Article 9 Seeds and Plant Varieties Act 1972, as revised in 2012.
116 Article 3 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.
117 Article 5 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.
118 Article 6 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.
119 Article 7 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.
120 Article 14 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.
121 Article 16 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.

Committee for moderation. A person aggrieved by any decision of the National Variety Release Committee may appeal to the Seeds and Plants Tribunal'.[122]

B Seed Certification

a – *As designed in 2016*, the following legal clauses (see below) are helpful for your company in view of producing large quantities of high-quality seeds. Please explain the answers you chose.

Fully Agree – Agree – Disagree – Fully Disagree

b – *As applied in 2022*, the following legal clauses (see below) are helpful for your company in view of producing large quantities of high-quality seeds. Please explain the answers you chose.

Fully Agree – Agree – Neutral – Disagree – Fully Disagree

Clauses

1. '[There is] compulsory certification for those varieties that have been tested in National Performance Trials, officially released and listed in the National Variety list'.[123]
2. 'There shall be a Committee to be known as the Seeds Regulation Committee, which shall consist of –
   a. the Head of the Directorate of Crops, State Department of Agriculture,
   b. the Director General, KALRO,
   c. the Managing Director, KEPHIS,
   d. the Director General, Agriculture & Food Security,
   e. a representative of the Governors' Council,
   f. two representatives of STAK,
   g. the CEO of KENAFF,
   h. the chairperson of PBAK

The Committee may co-opt two other members for maximum two year terms'.[124]

3. 'The Committee shall meet at least once in a year, or as need may arise'.[125]
4. 'The Service [KEPHIS] shall approve the [obligatory] registration of [seed merchants] if

122 Article 26 Seeds and Plant Varieties (Variety Evaluation and Release) Regulations, 2016.
123 Article 2 Seeds and Plant Varieties (Seeds) Regulations, 2016.
124 Article 5 Seeds and Plant Varieties (Seeds) Regulations, 2016.
125 Article 5 Seeds and Plant Varieties (Seeds) Regulations, 2016.

a. their business involves the processing, production or marketing of seeds;
b. they have adequately trained and competent personnel;
c. they have an established distribution system;
d. they have the capacity to produce and process seeds'.[126]

5. 'The procedures and standards applicable in these Regulations shall be in accordance with internationally recognized standards and procedures [OECD, ISTA] prescribed by the Service [KEPHIS]'.[127]
6. 'The Service [KEPHIS] may authorize some or all aspects of seed certification to authorized persons, provided that authorization shall not cover certification of basic seed'.[128]
7. 'A person shall not label or seal seed lots before the official seed tester or seed analyst in charge has released test results, save for the early movement of seed'.[129]
8. 'The validity of certification for cereals […] shall be 12 months from the date of testing'.[130]
9. 'Licences for [seed sellers] shall be valid for [only] one calendar year'.[131]
10. 'A person aggrieved by a decision of an inspector or analyst may appeal to the Managing Director [of the Service/KEPHIS].
    A person aggrieved by the Service [KEPHIS] may appeal to the Seeds Regulations Committee.
    A person aggrieved by a decision of the Seed Regulation Committee may appeal to the Seeds and Plant Tribunal'.[132]

C Enforcement

a – *As designed in 2016*, the following legal clauses (see below) are helpful for your company to operate in a fair, competitive maize seed sector. Please explain the answers you chose.

Fully Agree – Agree – Disagree – Fully Disagree
b – *As applied in 2022*, the following legal clauses (see below) are helpful for your company. Please explain the answers you chose.

126 Article 6 Seeds and Plant Varieties (Seeds) Regulations, 2016.
127 Article 8 Seeds and Plant Varieties (Seeds) Regulations, 2016.
128 Article 10 Seeds and Plant Varieties (Seeds) Regulations, 2016.
129 Article 17 Seeds and Plant Varieties (Seeds) Regulations, 2016.
130 Article 18 Seeds and Plant Varieties (Seeds) Regulations, 2016.
131 Article 20 Seeds and Plant Varieties (Seeds) Regulations, 2016.
132 Article 25 Seeds and Plant Varieties (Seeds) Regulations, 2016.

Fully Agree – Agree – Neutral – Disagree – Fully Disagree

Clauses

1. 'A contravention of seeds regulations shall not affect the validity of a contract for the sale of seeds or the right to enforce such a contract'.[133]
2. 'If information submitted by a person making an application [to register a variety] is false […], and the person giving such information knows that it is false, or gives such information recklessly, he shall be guilty of an offence'.[134]
3. 'In case of unanticipated seed shortages as advised by the Service [KEPHIS], the Cabinet Secretary may make an order to regulate export of seeds for a specified period not exceeding 12 months for food security reasons'.[135]
4. 'Where an offence […] committed by a body corporate is proved to have been committed with the consent […] of any director […], he as well as the body corporate shall be guilty of that offence'.[136]
5. 'A person guilty of an offence […] shall be liable to a fine not exceeding twenty thousand shillings or to imprisonment of a period not exceeding six months or to both such fine and imprisonment'.[137]
6. 'An inspector who reasonably believes that the provisions of the Act or these Regulations have been breached, may seize and detain any seeds and seed processing facilities in respect of which the breach has been committed'.[138]
7. 'There shall be a Seeds and Plants Tribunal'[139] […]
   'The Minister shall draw up and from time to time revise a panel […] and the members of the Tribunal […] shall be selected from those panels'.[140]
   'The Minister may pay to members of the Tribunal such remuneration and such allowances as the Minister may […] determine'.[141]
   'The Minister may select a member […] to deal with a particular case'[142]
   'A decision of the Tribunal shall not be questioned on the ground that a member was not validly appointed or selected'.[143]

133 Article 4 Seeds and Plant Varieties Act 1972, as revised in 2012.
134 Article 10 Seeds and Plant Varieties Act 1972, as revised in 2012.
135 Article 23 Seeds and Plant Varieties (Seeds) Regulations, 2016.
136 Article 32 Seeds and Plant Varieties Act 1972, as revised in 2012.
137 Article 33 Seeds and Plant Varieties Act 1972, as revised in 2012.
138 Article 21 Seeds and Plant Varieties (Seeds) Regulations, 2016.
139 Article 28 Seeds and Plant Varieties Act 1972, as revised in 2012.
140 Article 3, Sixth Schedule, Seeds and Plant Varieties Act 1972, as revised in 2012.
141 Article 4, Sixth Schedule, Seeds and Plant Varieties Act 1972, as revised in 2012.
142 Article 4, Sixth Schedule, Seeds and Plant Varieties Act 1972, as revised in 2012.
143 Article 4, Sixth Schedule, Seeds and Plant Varieties Act 1972, as revised in 2012.

Annex 2: Open Questions

1. The interview questions contained three parts – variety registration, seed certification and enforcement – which of these three legal regimes is most supportive for your company? Why is that the case?
2. Which one is most cumbersome? Why is that the case?
3. Which clause contained in the interview is typically the most useful for your company? Why is that the case?
4. Which one is the most annoying? Why is that the case?
5. Did you find the legal clauses from the interview questions relevant? If yes, why?
6. Were there parts of the interview you found generally irrelevant? Which ones?
7. Were you aware of most legal clauses cited in the interview? Which ones?
8. Were there clauses or themes omitted from the interview? Which ones?
9. Would you say the legal frameworks of the seed sector in Kenya – seed certification, variety release – are supportive to your company? Why (not)?
10. Do you think the legal frameworks of the seed sector in Kenya are helpful for most other maize seed companies? Why (not)? For which type of companies?
11. If you could change one thing about those legal frameworks, what would it be? Why do you choose this one element?
12. Do you think the Kenyan maize seed sector is a fair and competitive environment? Why (not)?
13. Do you think the regulatory framework contributes to the competitive qualities of the Kenyan maize seed sector? Why (not)?

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