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Exploring UNFCCC's Market-based Climate Interventions in Kenya's Large-scale Renewable Energy Market

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The past decades have seen a general embrace of market-based approaches and instruments in governing all manner of socio-economic concerns. The environment is not excluded. Since the 1980s, market-based environmental governance has become popular in tackling issues ranging from climate change and resource depletion to biodiversity loss. This paper explores the structural conditions that shape such market interventions in environmental governance. More specifically, it analyses the assemblage of different forms and mechanisms of market intervening actions in today's renewable energy markets by drawing on Michel Foucault's structural formulation on free-market governance. The paper shows that while Foucault's formulation on market intervening actions (consisting of "regulatory" and "organizing" actions) still has merit in contemporary market governance, its application has become less encompassing. The Foucauldian formulation has largely left out an important category of market interventions that is mainly financial in nature. In recent decades, such financial interventions have increasingly acted as catalysts for better market efficiency – especially in developing markets – acting in closer proximity to the market than regulatory and organizing actions. The paper elaborates this new category of intervening actions as "catalyzing" actions. For illustration, the paper applies the more complete formulation on market intervening actions in analyzing UNFCCC's climate governance and financing interventions in Kenya's large-scale renewable energy market. The analysis on data from expert interviews with actors in the energy, environment, and financial management sectors in Kenya, as well as on document and reports analysis.

Keywords: *UNFCCC, Market-based Interventions, Foucault, Climate governance, Financing, Renewable Energy Markets, Kenya*

Introduction

The past decades have seen a general embrace of market-based approaches and instruments in governing all manner of socio-economic concerns (Berndt et al. 2020). This turn to the market manifests in the widespread prioritization of private property and individual self-interest as the most effective means of ensuring efficient resource allocation (Peck et al. 2020). The environment is not excluded from this approach of governance. Since the 1980s, market-based environmental governance has become popular in tackling issues ranging from climate change and resource depletion to biodiversity loss. This development has led scholars in geography and related fields, to theorize and debate the *neoliberalization of nature* (Bakker 2010, Bigger et al. 2018). By neoliberal natures, they refer to the

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intersection of neoliberalism with the environment (Lave 2012), and more specifically, the commodification, marketization, and financialization of the environment as manifest in projects, programs, and policies (Christophers et al. 2018, Ouma et al. 2018, Asiyanbi 2018; Bridge et al. 2019, Bracking 2019, Bigger and Millington 2020). This increasing application of market logics in environmental projects and programs is largely welcome in the international development sphere and framed as the 'greening' of capitalism, i.e., the pursuit of economic growth in tandem with preserving the environment (Newell and Paterson 2010, Newell 2011). However, critical geographers, so far, see these market interventions in environmental governance as mostly ineffectual in driving the market to achieve its aims (Fletcher and Breitling 2012, Bracking 2014, 2015, Asiyanbi 2018, Bridge et al. 2019), and view their continued adoption and application to be for lack of other viable alternatives (Bracking 2019, Bigger and Millington 2020).

Notwithstanding the importance of this debate, this paper does not seek to rehash it. It rather focuses on the structural conditions that shape market interventions in environmental governance (Knox-Hayes 2016). More specifically, the paper explores the assemblage of different forms and mechanisms of market intervening actions in today's capitalist economies by drawing on Michel Foucault's structural analysis of free-market governance. The paper contends that although Foucault's formulation on market intervening actions (consisting of regulatory and organizing actions) still applies in contemporary market governance, its application has become less encompassing. It argues that the Foucauldian formulation has largely left out an important category of market interventions that is mainly financial in nature. In recent decades, such financial interventions have increasingly acted as a catalyst for better market efficiency and acted in closer proximity to the market than regulatory and organizing actions. The paper elaborates this new category of intervening actions as "catalyzing actions".

For illustration, the paper applies the more complete formulation on market intervening actions in analyzing UNFCCC's interventions in Kenya's large-scale renewable energy[1] market. Kenya's energy market has become more vibrant in recent years, involving more and diverse national and international investors, with a significant increase in generation capacity from about 1,600 MW in 2008 to 2819 MW in 2019 (IEA 2019, Klagge and Nweke-Eze 2020). This substantial improvement in the country's energy sector is a result of accelerated development of large-scale renewable energies in the country, partly driven by commitments, frameworks, and financing under the UNFCCC, in addition to state interventions in form of favorable laws, market incentives, and risk mitigation financing (GoK 2018, Klagge and Nweke-Eze 2020, Klagge 2021). The paper bases its analyses on data from expert interviews with actors in the energy, environment, and financial management sectors in Kenya[2], as well as from content analysis of various related documents[3].

[1]The paper defines renewable energies as large-scale that have more than 25MW total capacity.
[2]A total number of 41 in-person key informant interviews was carried out in Kenya between February-March and August-September 2019; and between February-March, 2020. 21 of the key informants work at national agencies and parastatals (National Treasury (NT), Ministry of Environment and Natural Resources (MoEN), Ministry of Energy (MoE), National Environment

The rest of the article is divided into four sections. The first section discusses and extends Foucault's analyses on market intervening actions to include catalyzing actions. The section that follows sets the scene by discussing UNFCCC's market-based governance mechanisms in climate mitigation, as well as the Kenyan large-scale renewable energy market. The penultimate section applies the more complete formulation on market intervening actions in analyzing UNFCCC's climate mitigation interventions in Kenya's large-scale renewable energy market. In the conclusion, the paper reflects on its findings and their implications for discourses on market intervention mechanisms (Fletcher and Breitling 2012, Milne and Adams 2012, Fletcher 2013, Asiyanbi 2018), as well as on the growing importance of finance, even in climate change (Knox-Hayes 2016, Christophers et al. 2018, Bracking and Leffel 2021).

Conceptualizing Market Intervening Actions Beyond Foucault

Foucault and Intervening Actions in Capitalist Economies

Capitalist economies take the view that markets are best suited to allocate the economy's scarce resources. These economies leave such important elements as price-setting and other activities freely to the inter-play between the market forces of demand and supply. Foucault in his "The Birth of Biopolitics" (2008), complementarily reveals that the establishment and sustenance of an efficiently working market economy require active government interventions. These interventions, according to him, will in fact "*make the market work"* (Foucault 2008, p. 146). To demonstrate how the understanding of free-market ideology has been misconstrued by its critics (for example, McNally 2006), Foucault states that the proponents of the free-market economy (including Hayek and Friedman) never intended for markets to be understood as natural constructs (Foucault 2008). He rather argues that the market was rather fundamentally intended as artificial constructs of the state, constantly molded and re-molded through diverse forms of intervening actions (Peters 2006, Foucault 2008, Fletcher 2013). He delineated these intervening actions as "regulatory actions" and "organizing actions" (Foucault 2008, p. 138).

According to Foucault, regulatory actions are interventions on the economic processes of the market (2008). This set of actions are aligned to indirectly avert the market's erroneous tendencies and to ensure price stabilization (Foucault 2008,

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Management Authority (NEMA)). 7 work in Development Finance Institutions ((DFIs), Trade and Development Bank (TDB), African Development Bank (AfDB), European Investment Bank (EIB), German Development Bank (KfW)). 11 of them work in the two main private and public renewable project development companies ((PDs) in Kenya (Kenya Electricity Generation Company (KenGen), Geothermal Development Company (GDC)); and 2 work as independent consultants (ICs) in energy and environmental sectors in the country.

[3]Analyzed documents include the National Climate Change Action Plan (Kenya): 2018-2022 (GoK 2018); the National Climate Change Framework Policy (GoK 2016a); the Climate Change Act (GoK 2016b); the National Policy on Climate Finance (GoK 2016c); and the Paris Agreement (UN 2015).

Fletcher 2013). Typical of such regulatory actions is the control of instruments such as maintaining credit balance when attempting to act on foreign prices; or controlling taxation, when attempting to act on savings and investments (Peters 2006, Foucault 2008, Fergusson 2010). Foucault further clarifies that such actions will not include instruments such as price controls, partial support of a market sector, or systematic job creation and public expenditure, which act directly on the market, creating a distortion (Foucault 2008, Fletcher 2013). Using the example of unemployment to illustrate regulatory actions Foucault writes (Foucault 2008, p. 139):

> "Whatever the rate of unemployment, in a situation of unemployment you absolutely must not intervene directly or in the first place on the unemployment…. What is to be saved, first of all and above all, is the stability of prices. Price stability will in fact allow, subsequently no doubt, both the maintenance of purchasing power and the existence of a higher level of employment…."

Here, he implies that given a market imperfection of unemployment, the conditions of the market to be acted on should be price stability, which has no direct effect on the mechanisms of the market (purchasing power and employment level), but which has an influential potential to bring the market back to balance (that is, to correct unemployment).

Turning to organizing actions, Foucault delineates them from regulatory actions by referring to them as acting on the conditions surrounding the market – on "*more fundamental, structural and general"* aspects of the market (Foucault 2008, p. 141). In this sense, organizing actions, essentially include a whole range of social and legal systems, technological enablement, and ecological parameters that are geared towards stimulating markets (Foucault 2008, Asiyanbi 2018). In contrast to regulatory actions, the intervening roles of organizing actions are more substantial and direct, and requiring heavier government interventionism (Foucault 2008, Fletcher 2013). Using the case of the German early 1950s agricultural market to illustrate organizing actions, Foucault writes:

> "So on what will it be necessary to act [on for the correction of the market's imperfection and maximization of its potentials]? Not on prices, and certainly not on a particular sector, ensuring support for a scarcely profitable sector, since these are bad interventions… [but on] population, technology, training and education, the legal system, the availability of land, the climate [which] are directly economic and do not affect market mechanisms directly" (Foucault 2008, pp. 140-141).

According to Foucault, these state interventions should however always remain within the confines of shaping the conditions of the market and never on the mechanism of the market itself – not on the game itself but on the "*rules of the game*" (Foucault 2008, p. 174). These actions are supposed to be neither planned nor targeted for specific outcomes in the market – he in fact calls them the "*opposite of a plan*" (Foucault 2008, p. 172). They should rather be directed towards creating enabling market environments, structures and incentives, necessary for

the efficient interaction of the market forces to allow for more efficient allocation of resources (Fletcher 2013, Asiyanbi 2018).

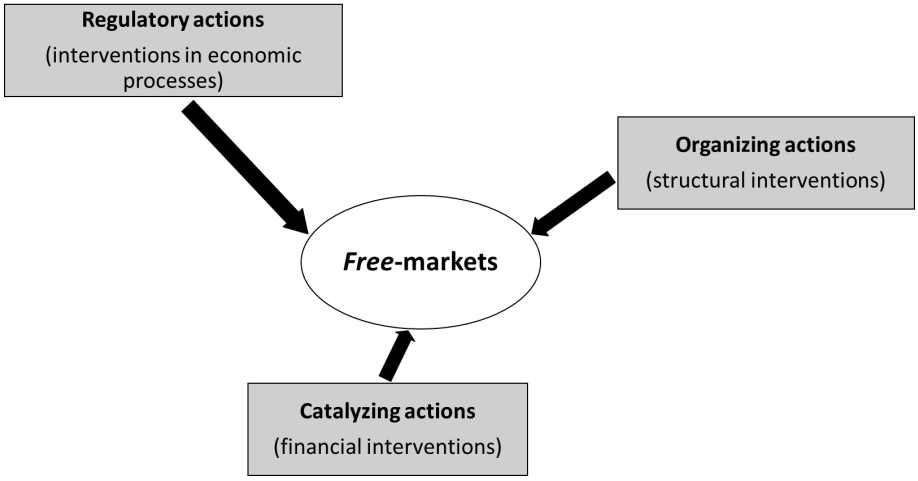
Extending Foucauldian Market Intervening Actions

During the postwar period about which Foucault was writing, markets were still dominated by real commodities and there were lesser ways in which finance was put to use. Finance had not yet come to prominence and dominance, as we know it today – shifting modes of production and aligning markets to sustainable development priorities, all of which are achieved through constant dismantling and assemblage of market logics and actors (Baker 2015, Newell and Phillips 2016, O'Brien et al. 2019). It has therefore become pertinent to stretch Foucault's delineation of market intervening actions ("regulatory" and "organizing" actions) to include what the paper calls "catalyzing actions". Catalyzing actions, here, refer to various financing interventions on the conditions of the market, available in forms of equity, loans, grants, guarantees, mezzanine, bonds, and other securities. They perform roles of market incentivization and risk mitigation, which are of particular importance in risky and capital-intensive markets, for market optimization. In this sense, catalyzing actions operate in closer proximity to the market than organizing and regulatory actions.

In recent decades, catalyzing actions have been crucial to the expansion of capitalism and industrialization, as well as in advancing government programs and causes in the broad areas of development and environment (OECD 2014, Schwerhoff and Sy 2017). In today's market economy, catalyzing actions have also taken up new forms and roles in influencing the market for desirable economic, social, political, and environmental outcomes. They have taken up the form of blended-finance, where financing of "worthy" capital projects are made cheaper through the blending of loans and grants – a practice which has become common in international development financing (Mawdsley 2018, Strand 2019, Rode et al. 2019, Christiansen 2021, Bracking and Leffel 2021). They are deployed in form of risk guarantees intended to strategically smoothen out uncertainties, which may hinder further investments in the market, by taking up costs of foreseen riskier aspects of market development and/or promising to take up unforeseen ones (Wüstenhagen and Menichetti 2012, Klagge 2021). They are also increasingly deployed in form of reparations or compensations, to make up for inevitable social and environmental losses to allow for certain other economic projects and agendas, which are perceived to be of "greater good" to carry on (Segovia 2006, Castán et al. 2016, Kenney-Lazar 2018). Furthermore, over the recent years, catalyzing actions and their logic have continued to permeate the market, through their increasing applications and dominance – a phenomenon that has been termed financialization (Pike and Pollard 2010, Christophers 2012, Bracking 2019).

Figure 1 summarizes the extended market intervening actions in capitalist economies. The figure also depicts the proximities of these interventions to the market, using the length of the connecting arrows. Catalyzing actions are depicted to be of the closest proximity to the market, followed by organizing actions, and then regulatory actions.

Figure 1. *Forms of Market Intervening Actions in Capitalist Economies*



UNFCCC and the Kenyan Large-scale Renewable Energy Market

UNFCCC's Market-based Governance Mechanisms in Climate Mitigation

In order to enforce its climate mitigation mandates contained in its Kyoto Protocol and Paris Agreement, the United Nations Framework Convention on Climate Change (UNFCCC) created market-based mechanisms and instruments, through which it increasingly continues to intervene in climate-related markets, seeking to enforce its agenda for reducing GHG emissions in the earth's atmosphere. One of such mechanisms can be grouped as Specialized Funds. Specialized funds were created through funds pulled from developed countries in the Global North for assisting developing countries of the Global South in financing their climate mitigation and adaptation projects and activities, all in compliance with emission reduction commitments (Watson and Schalatek 2019, Bertilsson and Thorn 2020). The largest of such funds is the Green Environmental Facility (GEF), created in 1991, which provides upfront funding, in co-financing arrangements with Development Financial Institutions (DFIs) and other public organizations, for climate mitigation or adaptation projects and programs in the Global South (GEF 2010, Graham 2017, GEF website 2020). Another more recent Specialized Fund under the UNFCCC is the Green Climate Funds (GCF), which was instituted in 2010 as a major effort to increase the funding base for the financing of climate mitigation and adaptation projects in developing countries (Bracking 2014, Bertilsson and Thorn 2020, GCF website 2021). GCF provides funds for enhancing climate projects, policies, programs, and activities according to its established themes (Bruun 2017, GCF website 2021). These Specialized Funds are accessed via competitive application processes, which are organized and administered at the national level of recipient countries by selected National Designated Authorities (NDAs) (Bracking 2014, NT and MoEN interviews 2019, GEF and GCF websites 2020). Despite the growing financial base of Specialized Funds, their efficacy and impacts in incrementally achieving their goals in the

Global South remain debatable (Kasdan et al. 2018, Puri 2018, Kuhl and Kurukulasuriya 2020, Bracking 2021).

A more market-orientated mechanism created by the UNFCCC is the Clean Development Mechanism (CDM), created under the Kyoto protocol in 2006, with the dual role of assisting developing countries in achieving sustainable development, while helping industrialized countries in fulfilling their climate mitigation commitments (UNFCCC 2019)[4]. The CDM functions through the commodification and marketization of carbon for gaining carbon credits (formally called certified emission reduction (CERs), trading at 1 CER = 1 metric tonne of CO_2 (UNFCCC 2019). This process of carbon commodification and marketization has attracted research that underpin the creation of markets and the growing roles of nature as an accumulation strategy (Smith 2006, Bumpus and Liverman 2008, Bridge et al. 2019), highlighting how carbon's commodification has created opportunities for finance capital, and its attendant financial actor constellation and financialization (Knox-Hayes 2016, Bigger 2016). Such research also highlights how such accumulations are enabled at the expense of the livelihood of landscape and communities in the space where carbon offset is created (Paterson 2010, Bumpus and Liverman 2011). CDM's inefficacy in achieving its goals especially in countries of the Global South is attributed to its slow, long, and complex bureaucratic processes, late and delayed CDM revenues, subjective additionality criterion, distorted credit prices (Spalding-Fetcher et al. 2012, Wood et al. 2016). As a result of CDM inefficiencies and its subsequent collapse, it was replaced in 2016 by a new international carbon market under the Paris Agreement of the UNFCCC, called the "Sustainable Development Mechanism". This new carbon market is primarily designed to raise further ambitions based on voluntary participation (UN, 2015). Unlike CDM, it will account for only one country's emission reduction targets in any given carbon-trading encounter, thereby avoiding the risk of double counting (Article 6(2), UN 2015).

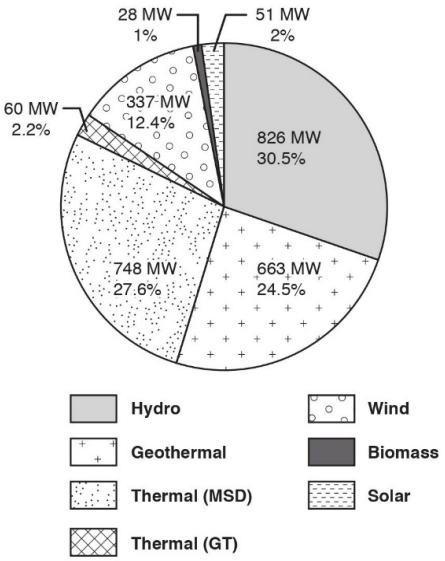
Overall, the UNFCCC, with its pragmatic governance approach and interventions in climate-related markets, typifies the growing number of institutions with such growing application of market logics of competitive bidding, commodification, marketization, and financialization in environmental governance (Bäckstrand and Kuyper 2017, Hickmann et al. 2021). With its international legitimacy and institutional resources, the UNFCCC sets agendas; and through negotiations, agreements, and commitments, it establishes baselines upon which to intervene in manipulating climate change indicators (rates of GHG emissions) so as to sustain the environment and life as a whole (Pattberg and Widerberg 2015). In this sense, the UNFCCC governance approach lends itself to a Foucauldian understanding of the development and expansion of market-based approaches to environmental governance (Peters 2006, Fletcher 2013 Asiyanbi 2018).

[4]For recent regional data on CDM market activities, see the CDM market insight briefing from Ecosystem Marketplace (Donofrio et al. 2021).

Kenya's Large-scale Renewable Energy Market

Large-scale renewable energies currently dominate Kenya's electricity grid, accounting for more than 70% of installed electricity production (see Figure 2). The capacity contributions of these renewable energies to the electricity grid have boosted the country's electricity access rate in recent years, with the number of connected households increasing from 32% in 2013 to 75% in 2018[5] (IEA, 2019; MoE interviews 2019).

Figure 2. *Pie Chart Showing the Installed Electricity Generation Mix in Kenya (2019)*



Source: Author's own, generated from IEA data (2019), and validated with interview data from the Kenyan Ministry of Energy (MoE 2019).

Kenya plans to build further on these efforts in line with its UNFCCC commitments (GoK 2016d, 2018). In its socio-economic development roadmaps, the country expresses its desire to increase its installed electricity capacity by an additional 2700MW, mainly from "clean and sustainable sources" (GoK 2007, 2016d, MoE interviews 2019, 2020). To this end, large-scale renewable energy development has come to the forefront of Kenya's climate mitigation efforts as well as its efforts to increase its electricity generation capacities (MoE interviews 2019, 2020). To fast track the achievement of these goals, the Kenyan state created Special Purpose Vehicles (SPVs) to drive and support the development of

[5]Most of this electricity access was achieved through the government's Last Mile Connectivity Program – an initiative that sort to extend the electricity grids to rural, previously marginalized areas of the country (MoE interviews 2019, 2020). Connection to the grid, through this program does not, however, guarantee actual use of electricity in all regions of the country. Factors such as unreliability of power supply (frequent blackouts) and affordability of power and appliances prevent some households, especially in rural areas, from using connected electricity (MoE interviews 2020, also see Lee et al. 2020).

renewable energy potentials in the country by taking up risks and providing market incentives in order to attract more financing from the public and private sector investors at international and national levels (MoE and NT interviews 2019). Two of such SPVs are the Geothermal Development Company (GDC), with the mandate of conducting explorations and other initial developments of geothermal fields in the country, and the Rural Electrification and Renewable Energy Corporation (REREC, formerly called Rural Electrification Agency (REA)), which is charged with expanding electricity access to rural areas using mainly renewable energy technologies (MoE interviews 2019, 2020). As a result of these state efforts, combined with technical and financial interventions from international Development Financial Institutions (DFI) and the UNFCCC – through its market-based mechanisms, several large-scale renewable energy projects utilizing the country's geothermal, wind, solar, hydro, and biomass resources are currently ongoing in the country, while others are already completed (see Table 1).

UNFCCC's Intervening Actions in Kenya's Large-scale Renewable Energy Market

Over the recent years, Kenya has increasingly adopted UNFCCC interventions in its climate mitigation efforts, especially in large-scale renewable energy markets, as part of a broader initiative to boost the country's energy sector development. (GoK 2018, MoEN, MoE, NT interviews 2019). The sub-sections that follow explain how these UNFCCC interventions (commitments, frameworks, and financing) can be interpreted in the light of the expanded market interventions formulation (regulatory, organizing, and catalyzing actions).

Table 1. *Projects and Intervening Actors in the Kenyan Large-scale Renewable Energy Market*

Renewable energy types	Projects	Project status and years	Capacity in MWs	Developers & investors	Intervening international development institutions and programs	UNFCCC's Intervening mechanisms
Geothermal	Olkaria I, II, III, IV, V, VI	Partly completed in 2015, other constructions ongoing	185	KenGen (70% GoK-owned)	EIB, JICA, IDA, AFD & KfW	GEF, GCF, CDM.
	Menengai I	Under construction since 2011	105	GDC, Ormat, Symbion & Sivicon	AfDB, AFD, EIB, USTDA; PPIAF, SREP	GEF, GCF.
	Baringo-Silali	Under construction since 2018	n.a	GDC	KfW, GRMF	GEF, GCF.
Wind	Lake Turkana Wind Power (LTWP)	Completed in 2018	310	LTWP Ltd	AfDB, EIB, EKF, FMO, EADB, TDB, PROPARCO, ICCF, EU-AITF	GEF
	Ngong wind	Completed in 2015	25.5	KenGen	--	GEF, CDM
	Kipeto wind	Under construction since 2018	100	KEL	OPIC	CDM
Solar	Garissa	Completed in 2018	54.6	REREC	Exim Bank of China	GEF, GCF
	Alten Kesses 1	Under construction since 2013	55	Alten	Standard Bank of South Africa, Stanbic and EAIF	GEF
Hydro	Tana	Completed in 2010	67.7	KenGen	--	GEF, CDM
	Kiambere	Completed in 2009	82.5	KenGen	World Bank	GEF, CDM.
Biomass	Mumias Sugar	Completed in 2008	35	Mumias Sugar Co. ltd	PROPARCO	GEF, CDM.

Explanation of abbreviations:
Developers/Investors: KenGen = Kenya Electricity Generation Company. LTWP= Lake Turkana Wind Power. KEL= Kipeto Energy Ltd. GDC =Geothermal Development Company. GoK = Government of Kenya.
Intervening international development institutions and programs: AFD = Agence Française de Développement (the French government-owned development bank). AfDB = African Development Bank. EADB = East African Development Bank. EAIF = Emerging Africa Infrastructure Fund. EIB = European Investment Bank. EKF = Danish Export Credit Agency. EU-AITF = EU-Africa Infrastructure Trust Fund. EXIM Bank of China = Export and Import Bank of China. FMO = Dutch Entrepreneurial development bank. GRMF = Geothermal Risk Mitigation Facility. ICCF = Interact Climate Change Facility. IDA = International Development Association. JICA = Japan International Cooperation Agency. KfW = Kreditanstalt für Wiederaufbau (the German government-owned development bank). OPIC= Overseas Private Investment Corporation (US government's development financial institution). PPIAF = Public Private Infrastructure Advisory Facility. PROPARCO = subsidiary of AFD focused on private sector development. SREP = Scaling-up Renewable Energy Program. TDB = Trade and Development Bank (mainly of member countries in East and Southern Africa). USTDA = U.S. Trade and Development Agency.
UNFCCC's intervening mechanisms: GEF = Green Environment Fund. GCF = Green Climate Fund. CDM = Clean Development Mechanism.
Source: Author's own, generated from Project official websites as at 10-May-2020, and complemented and validated with various interview information, 2019/2020.

UNFCCC Commitments as Regulatory Actions

The UNFCCC, through its commitments, indirectly structures the behavior of constituent parties by providing shared signification to stabilize greenhouse gas (GHG) emissions in the atmosphere through climate mitigation actions. Kenya, despite its negligible contribution to GHG emissions (less than 0.1% in 2018), shares many of these commitments because it sees them as being in line with its national interests for sustainable development (MoE, NT, MoEN interviews, 2019). These commitments, especially with regards to climate mitigation, are embedded in the country's medium and long-term development plans, officially called Medium Term Plans (MTPs) and Vision 2030, respectively (GoK 2007, 2016d, MoE, MoEN interviews 2019). The Kenyan Vision 2030 states that Kenya aspires to be "*a newly industrializing, middle-income country providing a high quality of life of its citizens by 2030 in a clean and secure environment*" (GoK 2007). In its Nationally Determined Contributions (NDC), ratified under the Paris Agreement, Kenya committed to achieving a GHG emission reduction contribution of 30% amounting to 42.9 MtCO2e of net emission reduction, relative to the baseline of 143MtCO2e, by 2030 (GoK 2018, MoEN interviews 2019). In its newly submitted NDC (2021), the country increased its GHG reduction contribution pledge[6] to 32% (that is, to 46 MtCO2e) (GoK 2021). For meeting these targets, the country prioritizes increasing the share of renewables energies in its electricity generation mix (GoK 2010, 2016a, 2018, MoE, MoEN interviews 2019). On the rationale for the country's prioritization of large-scale renewable energies in its climate mitigation efforts, an interviewed director of climate change at the MoEN states:

> "The capacity of these projects [large-scale renewable energy projects] to reduce emissions is huge, it happens in a snap. Once the project is online, you start counting emissions reduction, whether it is going towards the carbon markets or it is going towards achieving our NDC [Nationally Determined Contribution]. The emission reductions are real, and they are much easier to monitor, compared to other sectors."

To vitalize its renewable energy market for meeting these climate mitigation commitments, the Kenyan government implemented several investment-friendly policies and incentives at both national and sub-national levels. These include policies on Feed-in-Tariffs (FiTs), the waving or reduction of duties for imported renewable energy technologies, as well as tax holidays for large-scale renewable energy project developers (MoE, NT, PDs, DFIs interviews 2019). Furthermore, the state also provided "bankable" power purchase agreement (PPA) frameworks, electricity off-take assurances, and good regulatory institutions – all of which are directed towards encouraging adoption and development of renewable energy technologies on large scales (MoE, NT, PDs & DFIs interviews 2019). On Kenya's success in providing enabling environment for its renewable energy

[6]In meeting these targets, the country promised to take up 21% of the mitigation costs, while the remaining 79% is subject to international support in form of finance, technology development and transfer, and capacity building (GoK 2021).

market vitalization, the interview partner at the Trade and Development Bank (TDB) elaborates:

> "… The effort on the government side is huge in creating enabling environment for people to develop, adopt and access renewable energies. As a result, investors' attraction is just amazing. So many investors are looking into investing in the energy sector, especially the generation of electricity. Kenya is quite competitive, you find the EIB [European Investment Bank], the World Bank …the attraction is just massive. And you know, this competition amongst different financiers brings down the cost of borrowing for renewable energy projects."

UNFCCC Frameworks as Organizing Actions

Following its ratification of the UNFCCC's Paris Agreement in 2016, Kenya enacted its Climate Change Act (2016) – a legal apparatus that guides and coordinates national efforts towards addressing climate change in the country (GoK 2016b, MoEN interviews 2019). The Climate Change Act (2016) establishes the National Climate Change Council (NCCC), as the highest body responsible for oversight and coordination, and the Climate Change Directorate (CCD) as the secretariat of the NCCC responsible for the technical aspects (measurements, monitoring, reporting and capacity building support) of the implementation of its climate change agenda at national and sub-national levels. The Climate Change Act further made provision for the formulation of the National Climate Change Action Plan (NCCAP), which is a five-year plan that stipulates guidelines for integrating and mainstreaming UNFCCC climate actions in all sectors of the national economy including the County Integrated Development Plans (CIDPs) at sub-national levels (GoK 2016a & b, GoK 2018, MoEN interviews 2019). To further organize and coordinate UNFCCC interventions at multi-governmental levels in Kenya's large-scale renewable energy market, the Ministry of Environment and Natural resources (through its related parastatals, such as the National Environment Management Agency (NEMA)), and the National Treasury (Kenya's equivalence for Ministry of Finance) act as *linking institutions* between the UNFCCC and the government of Kenya. They do this by acting as National Designated Authorities (NDAs) in organizing climate mitigation actions in Kenya. To optimize their performance, staff members from these linking institutions periodically receive short-course training and orientations in the management and administration of UNFCCC mechanisms. On these training, an interviewed policy advisor working at the National Treasury explained:

> "We receive several capacity-building trainings from the UNFCCC. It is a continuous process. We had one in May and June, we will be going for another one next week, and other ones are planned in the future – so it is a continuous process. The training usually starts with introductory aspects to climate change, and then goes to its response and governing mechanisms. The Ministry of Environment and Natural Resources and the National Treasury often take part in these training, at the national level. Afterward we then train other ministries at national and county [sub-national] levels – that is why it [the training] is often called, Training of Trainers [ToT]."

Many of the interview partners believe that these skills, acquired through training received by UNFCCC staff members, will not only serve their intended purposes but will be transferred to the governance of subsequent market-based environmental mechanisms in the country. As the interview partner at the MoEN explained:

> "Yes, the Kyoto Protocol is ending in 2020, but it came with a lot of learning and experience for us. These lessons will be transferred into the Paris Agreement and other subsequent ones. We cannot throw the baby out with the bathwater. So yes, the window might close on the Kyoto Protocol but the lessons from it, especially with the carbon trading, will be carried on into new agreements."

UNFCCC Financing as Catalyzing Actions

Climate financing, under the UNFCCC, is an important catalyzing action in Kenya's large-scale renewable energy market (GoK 2016c, NT, MoE, MoEN interviews 2019). Kenya strategically uses financing from Specialized Funds (the Green Environmental Facility (GEF) and the Green Climate Fund (GCF)), as well as from the Clean Development Mechanism (CDM) to mitigate risks and crowd-in investors at different development stages of large-scale renewable energy projects in Kenya (GoK 2016c, NT, DFIs interviews 2019). Financing from the Specialized Funds are targeted and role-specific, flowing through various implementing and accredited agencies, including international development financial institutions such as the World Bank, and the European Investment Bank (EIB), as well as through international private banks, such as the Deutsche Bank (see Tables 2-3).

Table 2. *Approved and Funded GEF Projects and Programs Relating to Large-scale Renewable Energies in Kenya (1991-2019)*

Project/Program Title	Grant & Co-financing	Implementing Agencies	Other beneficiary countries	Periods
Sustainable Conversion of Waste to Clean Energy for Greenhouse Gas (GHG) Emissions Reduction	$1,999,998 $9,824,718	UNIDO	---	GEF-5
SolarChill Development, Testing and Technology Transfer Outreach	$2,712,150 $8,033,500	UNEP	Colombia, Eswatini	GEF-5
Lighting the "Bottom of the Pyramid"	$5,400,000 $6,750,000	The World Bank	Ghana	GEF-3
African Rift Geothermal Development Facility (ARGeo)	$4,750,000 $74,261,652	UNEP	Eritrea, Ethiopia, Rwanda, Tanzania, Uganda	GEF-3
Joint Geophysical Imaging (JGI) Methodology for Geothermal Reservoir Assessment	$979,059 $0	UNEP	---	GEF-3
Building Sustainable Commercial Dissemination Networks for Household PV Systems in Eastern Africa	$693,600 $0	UNEP	Eritrea, Ethiopia, Tanzania, Uganda	GEF-3
Solar and Wind Energy Resource Assessment	$6,512,000 $2,508,000	UNEP	Multiple countries	GEF-2
Photovoltaic Market Transformation Initiative	$30,000,000 $90,000,000	IFC	India, Morocco	GEF-1

Explanation of abbreviations: IFC = International Finance Corporation UNIDO = United Nations Industrial Development Organization. UNEP = United Nations Environment Programme.
Source: Author's own, compiled from GEF project database (2020); complemented and validated with interview information (2019).

Table 3. *Approved and Funded GCF Projects and Programs Relating to Large-scale Renewable Energies in Kenya (2010-2019)*

Project/Program Title	Total Project Investment (million USD)	Accredited Entity (AE)/ Delivery Partner	Lead Executing Entity (EE)	Other beneficiary countires
Global Energy Efficiency and Renewable Energy Fund (GEERF) NeXt	765	EIB	Ministry of Energy	Multiple countries
KawiSafi Ventures Fund	110	Acumen Fund Inc.	Acumen Capital Partners LLC.	Rwanda
The Universal Green Energy Access Program (UGEAP)	301.6	Deutsche Bank	Ministry of Energy	Kenya, Benin, Namibia, Nigeria, Tanzania
Climate Investor One (CIO)	821.5	FMO	Local financial partners	Multiple countries
Transforming Financial Systems for Climate (TFSC)	745	AFD	Local financial partners	Multiple countries

Explanation of abbreviations: EIB = European Investment Bank. AFD = Agence Française de Développement (the French government-owned development bank).
Source: Author's own, complied from GCF project database (2020); complemented and validated with interview information 2019.

At the pre-completion stages of renewable energy projects development, climate financing from the Specialized Funds is used to cover cost-intensive and risky activities of the projects' development, mainly relating to project feasibility studies, resource prospecting and exploration, training of staff, and the procurement of certain heavy equipment in cooperation with the project developers (see Tables 2-3). This financing help to mitigate investment risks that would otherwise be passed on to investors and project financiers (MoE, DFIs interviews 2019), making projects more appealing to investors, especially private sector developers and investors, who are then more confident to participate in the market (GDC, NT interviews 2019). In addition to its risk-mitigation roles, the financing from the Specialized Funds also served as debt-blending instruments, as they were issued as concessionary funds in combination with loans from Development Financial Institutions (DFIs), thereby lowering the final debt costs for borrowing project developers and investors (DFIs interviews 2019). The provision of these climate financing, as both debt-blending instruments and grants, facilitated the completion and commissioning of the many large-scale renewable energy projects in the country (PDs, NT, DFIs, and MoE interviews 2019). On the effectiveness of climate financing as blending instruments in Kenya's large-scale renewable energy market, an interviewed energy project-financing specialist at the Trade and Development Bank (TDB) explains:

> "Our treasury is always pushing us to get a 'renewable energy pipeline'. Although the projects are riskier, we find other strategic initiatives in the bank, like the blending instrument. What we are doing with 'blending' is that we get a pool of concessionary funds from the GCF [Green Climate Fund], for instance, that we can blend with our market debt – so that the final cost to the borrower becomes very low. …Like the transaction we did with ADB [Asian Development Bank], the CTF [Clean Technology Fund] brought in US$20 million into the transaction, at the pricing of just approximately 0.75% per annum. Other lenders – ADB, Finnfund, and our loans were priced high. But when we combined it with the cheap climate financing and worked out the weighted average cost, the debt financing became very attractive to the developer, the tariff was very competitive."

At post-completion projects stages, developers who had registered their projects with the UNFCCC's Clean Development Mechanism (CDM) in their pre-completion phases become eligible to earn carbon credits upon completion of the projects. In Kenya, large-scale renewable firms – Kenya Electricity Generating Company PLC (KenGen – a 70% government-owned company) and Mumias Sugar Company (a privately owned company), are among the beneficiaries of financing under this mechanism. So far, KenGen has registered three geothermal, one wind, and two hydro projects totaling about 1.4billion tCO_2 (KenGen interviews 2019; see Table 4).

Table 4. *Large-scale Renewable Energy Projects in Kenya Registered under CDM (2008-2019)*

Projects	Renewable Energy Type	Capacity (MW)	Date of registration	Start of Crediting Period	Estimated tCO_2 equiv/year	Estimated Cumulative CER's up to 2020 tCO2 equiv (USD)
Mumias Sugar	Biomass	35	03-Sep-08	01-Oct-08	129,591.00	24.418.20
Olkaria II*	Geothermal	35	4-Dec-10	4-Dec-10	149,632.00	1,047,424.00
Tana	Hydro	19.6	11-Oct-11	11-Oct-11	25,680.00	231,120.00
Kiambere	Hydro	20	24-Oct-12	1-Nov-12	41,204.00	288,428.00
Ngong	Wind	5.1	19-May-14	1-Jul-14	9,941.00	59,646.00
Olkaria I, AU 4&5	Geothermal	140	28-Dec-12	1-Jan-15	635,049.00	3,810,294.00
Olkaria IV	Geothermal	140	28-Dec-12	1-Jul-14	651,349.00	3,908,094.00
Total					**1,512,855.00**	**9,345,006.00**

Source: UNFCCC (2020, CDM Registry); validated with interviews information (2019).

Following the signing of the Emission Reductions Purchase Agreement (ERPA) with the World Bank for the sale of the Olkaria II U3 CER, KenGen has so far earned US$225,000 (KenGen interviews 2019, UNFCCC 2020). Likewise, Mumias has also earned US$270,000 from the trade of carbon to Japan Carbon Finance Limited (JCF) (NEMA interviews 2019, UNFCCC 2020). These carbon credits earned through the trading of carbon reduces the cost of investment and adds to the profits of the developers and investors (NT, MoEN, KenGen interviews 2019).

The benefits of CDM in Kenya also transcends its benefits for the project developers and investors. CDM has also enabled the delivery of projects and other initiatives for the beneficiation of project-host and surrounding communities. Under the World Bank's Community Development Carbon Fund (CDCF), 10% of

carbon credit revenues generated from Olkaria II geothermal projects CERs have been used to implement four projects for host and surrounding communities (Schade 2017, KenGen interviews 2019). They include classrooms, water pipelines, and water pans for domestic uses and for livestock (Schade 2017, KenGen interviews 2019). In the same vein, the construction of the Mumias Biomass electricity project has generated employment for host-community members as well as led to the expansion of electricity access to the rural community where the project is hosted (Schade 2017, NEMA interviews 2019).

In Kenya, however, accessing these UNFCCC financing at both the pre- and post-completion stages of the project is however not easy for the project developers and industry investors. It involves certain bureaucratic processes, which many of the applicants (project developers and investors) find complicated. As one of the interviewed staff members at the National Treasury (National Designated Authority for GCF accreditation) noted:

> "The GCF is a very bureaucratic institution with lots of developments here and there. It takes a lot of time before they issue accreditation".

Like the Specialized Funds, CDM uptake has also been somewhat limited in the Kenyan large-scale renewable energy market due to its many bureaucratic procedures and regulations. An interviewed KenGen's Chief Officer for Environment and CDM at that time of the company's CDM application describes the nature of complications in accessing carbon credits for the Olkaria geothermal energy project as follows:

> "During the first verification mission of the UNFCCC/CDM verifier to the Olkaria II expansion project, issues regarding the project boundary came up. The boundary issue revolved around the possibility of steam sharing between Olkaria I [a non-CDM registered project] and Olkaria II, Unit 3 [a CDM registered project]. To resolve this issue, we had to prove that the CDM project in Olkaria II did not compromise power generation in Olkaria I. To this effect, studies showing records of steam output from the wells supplying Olkaria I were provided, in addition to other studies. If it had been determined that the Olkaria II project negatively affected power generation and steam supply in Olkaria I, it would have meant that we will be forced to modify the project boundary in the registered CDM Project Design Documents (PDD) to include Olkaira I. The inclusion of Olkaria I in the project boundary would have increased monitoring and staffing requirements as well as caused further delay in issuance of the CERs [carbon credits]. The KenGen [the state-owned developer of the project] team worked closely with the World Bank Carbon Finance Unit to rectify this issue."

As the above paragraph also shows, challenges in accessing UNFCCC financing in Kenya's large-scale renewable market create "leveraging gaps", thereby creating room for further interventions by other actors (in the above case, the World Bank). Other than the intervening roles of the Development Financial Institutions (DFIs) in closing this climate finance leveraging gap, private for-profit firms have also emerged to play similar intervening roles, and by so doing have created room for the manifestation of financialization processes in UNFCCC's

catalyzing actions in Kenya's large-scale renewable energy market (MoE and NT interviews 2019). These emerging financialized firms serve as consultants for accessing specialized climate funds or as carbon trading intermediaries, offering services to the Kenyan government agencies (National Designated Authorities) as well as to public and private sector renewable energy project developers and investors who are seeking to leverage climate finance (MoEN, NT, ICs interviews 2019). Prominent of such financialized firms in the Kenyan climate financing landscape is the English *ClimateCare* – a for-profit firm with headquarters in Oxford, which provides carbon-offset services to public and private actors in climate mitigation sectors of the country (NT and ICs interviews 2019).

Conclusion

This article engaged with a relatively less applied lens in market-based environmental governance, a Foucauldian formulation, to explore the question of market organization in contemporary capitalist economies. It stretches Foucault's formulations by bringing finance into the mix, proposing a new category of "catalyzing actions", in addition to Foucault's "organizing actions" and "regulatory actions". It goes on to substantiate its argument by applying the extended formulation on market intervening actions in analyzing UNFCCC's interventions in Kenya's large-scale renewable energy market. By so doing, the paper demonstrates how market intervening actions can be understood in a fuller context when the growing use and importance of finance as interventions in capitalist economies are considered. In this sense, a more complete conceptualization of market interventions in a capitalist economy then includes regulatory actions, which act in economic processes of the market in form of commitments and policies; organizing actions, which acts on structural conditions of the market in form of frameworks; and catalyzing actions, which act as market catalysts in form of financing. In considering the different, and sometimes coordinated, roles of these market-intervening actions, the paper shows how catalyzing actions are relatively more targeted as well as perform in closer proximity to the market in comparison with regulatory and organizing actions. This extended view on market-intervening actions is especially important in the Global South context, where financing increasingly plays important catalyzing roles in development endeavors, including in climate change.

The findings of the paper have wider implications in coordinating and appraising market-intervening tools in today's environmental governance. The achievement of market goals requires effective intervening actions from governing players at multi-levels (global, international, national, and sub-national levels) (Kuyper et al. 2017). It is, therefore, pertinent to understand these intervening actions – their mechanisms, processes, and roles in their fuller senses, to allow for better coordination, alignment, and appraisal in capitalist economies, especially in the Global South context (Zelli 2011, Kuyper et al. 2017). The paper, through the analysis of UNFCCC interventions in Kenya's large-scale renewable energy market, shows the mechanisms, roles, and processes in which multifaceted

environmental interventions at global levels are implemented at national and sub-national levels, targeted towards reaching market goals (here, reducing GHG emission). In the Kenyan context, these global interventions are welcome at national levels insofar as they align with national interests. It is this perception, at the national level, that then brings about the dedicated implementation of interventions, with direct effects on climate mitigation, particularly in the renewable energy market sector of the country.

Furthermore, the findings of the study reveal how, in addition to their intended roles, these interventions play other roles that are unintended but with positive cascading effects in the market. For instance, the training and skills in project financing application, management, and evaluation, which are provided to the staff members of the UNFCCC Nationally Designated Agencies in the country, are applied beyond the achievement of their intended aims of translating interventions into implementations in the country. These valuable skills are also transferred to the management of other institutional responsibilities in environmental governance and beyond. Similarly, the uptake of the Clean Development Mechanism (CDM) was for the benefit of not only project developers and investors, but also for the project-hosting communities by enabling the development of certain community projects. Further, the participation of the UNFCCC in projects is perceived by investors and financiers as a signal that the projects are viable and sustainable (PDs interviews 2019, see also Mawdsley 2018). Such altruistic values placed on the project further help in crowding-in investments from both public and private sector investors (PDs & DFIs interviews 2019).

The growing importance of finance as part of the market logic in climate change governance is evident in the growing and diverse climate financing instruments, including grants from Specialized Funds and carbon trading. Steckel et al. (2016) show that, when properly channeled in line with national socio-economic development priorities, climate financing can become a key pillar in fighting climate change while also driving sustainable development, especially in the Global South (also see Metz and Kok 2008 and Naess et al. 2015). In our analysis of climate financing actions in the Kenyan large-scale renewable energy market, we reveal how financing is strategically leveraged in pre- and post-project completion stages as blended financing, as risk mitigation loans and grants, and as market-incentivizing concessional loans. The result, as the study shows, is improved market efficiency, evident in the increase in public and private sector investments as well as in the deployment of more large-scale renewable energy projects in the country.

Although financialization is not yet observed in the project financing of these large-scale project, because of the dominance of financing from development financial institutions and other public investors as risk-mitigating actors (Klagge and Nweke-Eze 2020), the findings of this study point to the manifestation of financialization rather in financial interventions on the conditions of the market for better efficiency. These financialization processes manifest as private for-profit firms increasingly emerge as intervening consultants, seeking to close the leveraging gaps created due to bureaucratic challenges in leveraging climate financing, for profit. This observed emerging financialization is expected to

continue to widen (Knox-Hayes 2010, Johnson 2015, Bracking 2015, 2016, 2019) insofar as more market-based mechanisms continue to apply in the governance of climate change in the country. Observing the emergence of such financialization patterns in climate finance in the future and researching their dynamics, especially in the Global South context, requires more research. This is worthwhile as the use of market-based instruments in climate mitigation and adaptation continues to deepen with the signing of the Paris Agreement.

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