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Unpacking local agency in China–Africa relations: Frictional encounters and development outcomes of solar power in Kenya

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ABSTRACT

China is a 'rising power' in Africa, and growing Chinese investments in the renewable energy sector in SSA (e.g. in wind and solar) are gaining traction. The ways in which China is shaping low-carbon energy transitions in SSA and the implications of it doing so merit attention. While existing research has tended to focus on fossil fuels and hydropower, it is crucial to undertake analysis of Chinese-backed wind and solar projects and of the micro-level engagements of Sino-African actors in order to further unpack the nature and complexity of Chinese involvement as it unfolds on the ground. In this article, we employ the concept of 'frictional encounters' in order to investigate empirically the development of the first utility-scale solar PV project in Kenya, which was delivered as a turnkey package along with a Chinese investor, technology supplier and construction contractor. Building on qualitative research methods, including semi-structured interviews and focus-group discussions, we explore the micro-level frictional encounters between Chinese and Kenyan actors involved in the project in the areas of community development and employment. The article offers two important insights: (I) that the project organization has important implications for the scope of the development outcomes; and (II) that these outcomes are not likely to accrue automatically without deliberate government intervention. In addition, the article offers a finer-grained perspective on Chinese projects in Africa focusing on the often overlooked significance of local African agency in Sino-African relations. Finally, the article provides a contribution to furthering understanding of the theoretical processes and features of the concept of frictional encounters.

1. Introduction

The lack of access to affordable, reliable and clean sources of energy in Sub-Saharan Africa (SSA) continues to affect economic growth, industrial development and social well-being. In this context, an interesting development can be witnessed in SSA involving a rapid transition to large-scale, grid-connected, renewable-energy projects. Among them, hydropower continues to dominate, but wind and solar power are increasingly gaining traction in terms of investments and installed capacities (IEA, 2016; Ockwell et al., 2018). The total installed capacity of solar photovoltaic (PV) and wind power increased from 108 to 6100 MW and from 739 to 5500 MW respectively between 2009 and 2018 (IRENA, 2019). An additional dimension to this is the entry of new actors, so-called 'rising powers', especially China and India, as opposed to their Western counterparts, which is challenging the traditional status quo (Power et al., 2016).

An emerging avenue of research is focused on analysing Chinese investments in large-scale renewable energy projects in SSA. Previous studies have investigated the underlying drivers behind Chinese investments in renewable energy (RE) in Africa (Shen and Power, 2017), the volume of investments at an aggregate level (e.g. IEA, 2016), the political economy of Chinese investments (Power et al., 2016; Newell and Phillips, 2016) and China's involvement in South Africa's wind and solar PV industries (Baker and Shen, 2017). Most previous research has focused on Chinese hydropower projects (Hensengerth, 2013), with only limited research on Chinese-developed solar PV and wind-power projects (exceptions include Tan et al., 2013; Chen, 2018).

Furthermore, there is growing evidence of the emergence of a Chinese model of investments with enclave characteristics and tied-financing agreements, turnkey contracts, labour and equipment imports, and projects being delivered as a bundled package, mostly with Chinese investors, engineering and construction companies, and technology suppliers (Cabré et al., 2018; Hansen, 2019; Lema et al., 2021). Limited attention has been paid to revealing these aspects in the context of Chinese-backed renewable-energy projects in SSA, and even less to

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the developmental impacts of such Chinese models.

The purpose of this article is to contribute to the emerging field of research on Chinese investments in the renewable-energy sector in Africa through a case study of the first large-scale (55 MW) solar PV project in Kenya constructed near the town of Garissa (*henceforth referred to as the Garissa project*). As previous research on this topic is limited, the article is exploratory and inductive in nature, seeking to provide a starting point for future theoretical refinement. In the article, we specifically examine the entanglements and intricacies of agency and political dynamics in the project's implementation and ask the following research question: *How do micro-politics and negotiations among Chinese (global) and Kenyan (local) actors unfold on the ground in the transition to large-scale solar power in Africa?*

The remainder of the article is structured as follows. Section 2 presents a summary of the literature on China–Africa relations, Section 3 explains the analytical perspective employed in the article, and Section 4 describes the research methods used. Section 5 presents the project background, and Section 6 elaborates on the empirical findings, which are discussed in Section 7. Finally, the conclusions are highlighted in Section 8.

2. Existing literature on China in Africa

China has emerged as a key player in Africa's energy sector and has been aggressively pursuing internationalization, partly owing to its saturated domestic markets, its 'going out' policy since the mid-1990s and the Belt and Road Initiative more recently. However, China's increasing presence in Africa has mainly attracted criticism. It has been indicted of exploiting Africa's natural resources (Adisu et al., 2010; Foster et al., 2008; Kolstad and Wiig, 2011) and of contributing to the weakening of Africa's manufacturing base. Scholars have also pointed out that Chinese investments and enterprises rely heavily on Chinese employees and workers, thereby contributing little to skills development or knowledge transfer in Africa (Alden and Davies, 2006). Some studies also suggest that Chinese projects are often constructed rapidly at the expense of environmental and social standards (Economy and Levi, 2014). All of these characteristics result in relatively limited developmental impacts on the local economy and host country.

While most of the burgeoning literature tends to focus heavily on negative assertions based on exploitative aspects of the engagement, some scholars have highlighted the positive outcomes of this. According to Odoom (2016), 'African leaders portray optimistic claims about China's engagement and focus on notions of mutual benefits, lack of conditionalities, and economic development opportunities'. In a similar vein, some scholars (Berthélemy, 2011; Davies et al., 2008; Jefferis, 2012; Nkurunziza, 2010; Thompson, 2005; Wang, 2009) view China–Africa relations as bringing positive developmental outcomes to both Africa and China. For instance, Wang (2009) notes that China offers substantial infrastructural funds to Africa, as opposed to traditional donors, which, by contrast, allocate relatively little. It has also been repeated frequently by scholars and media alike that China's support comes with 'little or no strings attached' and limited interference in domestic political matters and social affairs. Davies et al. (2008) claim that China's strategies in Africa regarding investment and aid support have brought positive benefits to African countries. Overall, China–Africa relations are portrayed predominantly in binary terms, either as highly negative or as overly positive, leaving limited scope to explore nuanced accounts of this engagement.

Some scholars (Mohan and Lampert, 2013; Brown, 2012; Mohan, 2015; Odoom, 2016) have also drawn attention to the idea that African actors are not entirely passive recipients, without agency or expression. According to Odoom (2016), very few studies focus on the responses, strategies and behavior of African actors and institutions in their engagement with Chinese actors, which has over-simplified the debate over whether Chinese interventions are good or bad (for exceptions, see Mohan and Lampert, 2013; Corkin, 2013; Axelsson, 2012; Gadzala, 2015). Mohan and Lampert (2013: 92) argue that 'African actors have negotiated, shaped, and even driven Chinese engagements in important ways'. In such encounters, there is always some scope for maneuver and to exercise influence (Carmody and Taylor, 2010). However, according to Mohan and Lampert (2013), such agency is rarely conceptualized or empirically analyzed. According to Gu (2009, 2011), it is also important to unpack actors' multiple interests. Schmitz (2014) has shown that, while the state-level partnership between China and Angola is viewed positively overall, individual interpersonal relationships at the micro-level remain fragile. At the micro-level, the issue is how negotiations are played out when a project is unfolding on the ground, which may be critical in shaping the direction and outcome of an intervention (Scoones et al., 2013).

Finally, there are few studies systematically analyzing the specific developmental outcomes of Chinese (non-hydropower) renewable energy projects in Africa and the contributing factors of importance. An exception is the article by Chen (2018), which analysed the economic benefits of two wind farms in Ethiopia (one Chinese-financed, the other French-financed) and found little or no differences in the development impacts generated. Other studies focusing on Western investors and contractors also suggest that local benefits tends to be constrained particularly in the infrastructure delivery phase (Gregersen, 2020).

This article takes the above as its point of departure in seeking to contribute to these ongoing debates and to fill the research gaps we have identified in empirical research focusing on the role of African agency in China–Africa relations and the consequent local developmental impacts.

3. Analytical perspective

Within the broader literature on China in Africa, we draw on the subtheme of Sino-African relations, which focuses specifically on the interests of actors and the possible conflicts and tensions that arise during their interactions (Lampert and Mohan, 2014). In particular, scholars have frequently engaged with the term 'encounters' (Bräutigam, 2003; Lee, 2009) to identify and analyze conflictual engagements between Chinese (global) and African (local) actors. This focus on the global and local allows scholars to 'move beyond fixed notions of identity and explore ways in which interactions occur' (Lampert and Mohan, 2014: 13). In the parallel literature on ethnography and global interconnections, Tsing (2005) has explored 'friction' as a conceptual lens to capture divergent and unequal global–local encounters between actors, ideas and practices that produce new power dynamics. Instead of signifying global–local encounters as a 'clash' of cultures, Tsing emphasizes uncovering the frictional processes, namely the 'zone of awkward engagement'. Frictions can therefore be regarded as a force that decreases movement: no matter which direction a process is going in, friction pulls it in a different direction (Björkdahl et al., 2016).

We employ and advance this concept and its underlying ideas to explore further the notion of 'frictional encounters', coined by Björkdahl et al. (2016) in the context of 'peacebuilding', but here adapted to the energy transition context as a heuristic analytical device that enables us to analyze the nature of China–Africa engagements on the ground in the Garissa project. Conceptually, frictional encounters are understood as the main areas of disagreement among actors directly engaged in a given development intervention, such as an infrastructure project. While it is thus an actor-oriented perspective directing attention to the practices of specific agents, it also involves the study of processes of negotiation and compromise.

The focus is thus on friction as a process triggered by conflictual encounters between Chinese and African actors, rather than solely on the outcomes of China–Africa engagement. The contested and conflictual encounters between actors and practices may yield responses ranging from compliance, adoption and adaptation to resistance and rejection (Björkdahl et al., 2016). These responses in turn lead to new outcomes which may not necessarily be framed as global dominance versus local subservience. Frictional encounters leave an arena in which

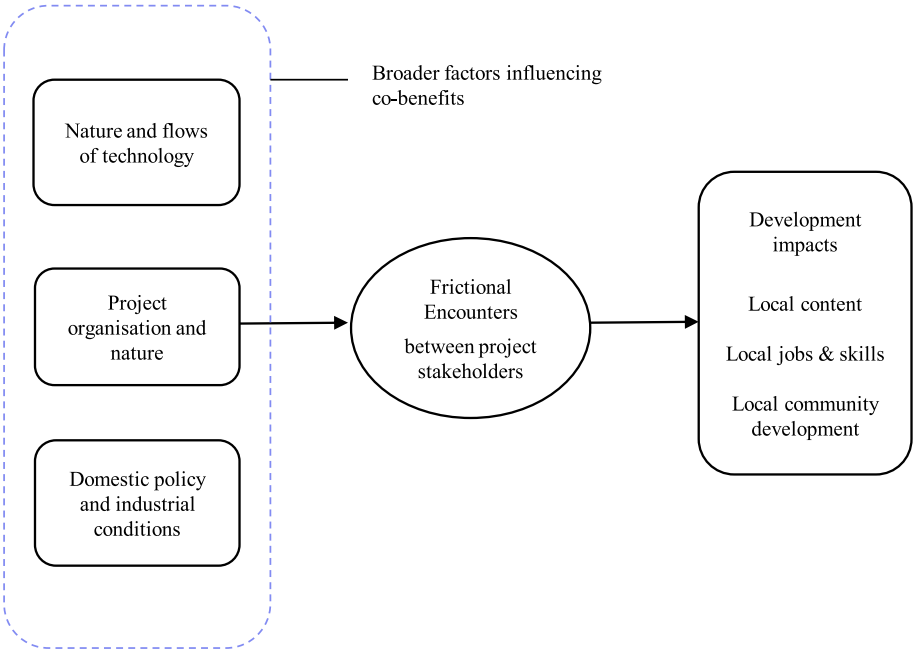

Figure 1. Factors influencing development outcomes at the project level. Source: modified from Lema et al. (2021).

multi-actors can exercise agency in unexpected, parallel and overlapping ways, thereby making encounters sites of both empowerment and domination (Lampert and Mohan, 2014). Interactions and exchanges are regarded as frictional when 'power and resistance to power often come into play' (Björkdahl et al., 2016: 292). A key feature of this conceptual understanding is the ability to engage with the agency of actors simultaneously (Lampert and Mohan, 2014).

Previous research on Sino-African encounters has stressed frictions, tensions and conviviality (Lee, 2009; Lampert and Mohan, 2014; Arsene, 2014; Giese and Thiel, 2014). Studying Ghanaian-Chinese employment relations, Giese and Thiel (2014) argue that frictions or tensions arise when expectations are not met on both sides. Such frictions have increasingly been attributed to the intersection of different class positions and embodied identities, leading to a lack of trust (Haugen and Carling, 2005). Lee (2009) frames these tensions as the result of an interplay of neoliberalism, the casualization of labor and the subordination of trade unions. On the other hand, a few studies have explored conviviality in Sino-African relations. In an important contribution, Lampert and Mohan (2014) state that encounters may be convivial where African actors can leverage significant benefits from the Chinese presence (Lampert and Mohan, 2014). Bräutigam (2003) has emphasized how this could kick-start local economic development in Africa. Nevertheless, most studies come to negative conclusions and highlight the skewed power structures and unequal international relations involved, with power being attributed especially to Chinese state actors. Scoones et al. (2015) urge scholars to move beyond the 'simplistic narratives of either "South-South" collaboration or "neo-imperial" expansion to look at the real politics of engagement'. In this article, by employing the lens of frictional encounters, we aim to explore how multiple actors come together and mediate agency and its outcomes.

In line with Scoones et al. (2015) and Lampert and Mohan (2014), we focus on the encounters that occur during negotiations and practices on the ground among the primary actors involved in a project. In addition, to guide our exploratory research, we build on a suggestion by Lema et al. (2021) that three main factors influence the development outcomes of renewable energy projects in Africa (see Figure 1): (i) the nature and flows of technology, including the inherent nature of the technology and the potential for localization (wind or solar technology) associated with both downstream and upstream activities (see also Lema et al., 2021; Brautigam, 2011); (ii) the nature and organization of the project, including the specific project arrangements and the actors involved, the contractual arrangements and planned capacity-building (Hanlin, 2019); and (iii) domestic policy and industrial conditions, including domestic policy conditions and the host country's industrial environment and capacities (Baker and Sovacool, 2017; Power et al., 2016). In this article, we focus specifically on the second factor associated with project organization and the 'internal' dynamics of projects, which is where frictional encounters are likely to occur, in turn influencing the project's development impacts. We also note that a turnkey project arrangement is likely to have implications for the way in which frictional encounters unfold with regard to the role and agency of the local community actors involved.

The Garissa project is the first Chinese-backed solar venture in East Africa, involving not only Chinese project developers (Jiangxi Province), finance (from Exim bank) and technology (Jinko solar), but also a Chinese EPC contractor (state-owned firm), China Jiangxi Corporation for International Economic and Technical Cooperation (CJIC). It is thus a highly Chinese-dominated project supplied in the form of a fully operational turnkey package, and with key decision-making therefore being led by Chinese project developers, limiting the scope for local content and engagement. The project owner is REREC (formerly REA),[2] a government organization responsible for rural electrification and renewable energy development in Kenya.

In this case, the project arrangement at the implementation level mainly involved the project owner (REA), the project EPC contractor (CJIC) and the local community (county and representative committee) that was directly affected by the project. The engagement and conflicts are mainly centered on these actors and their underlying motives and dynamics. These frictional encounters can influence development impacts in a variety of ways. For instance, active local community engagement could lead to a more inclusive project development and

[2] We continue to use the acronym REA (or Rural Electrification Authority) throughout the article, as the organization was formerly known by this title when the fieldwork and interviews were conducted.

better local impacts, while local mobilization could result in greater local content and local jobs or skill development. On the other hand, conflicts and frictions could also lead to significant project delays and the breakdown of trust between the project owners and the local community. It could also reflect unrealistic expectations being harbored by the community, local demands being made that serve individual interests, and lack of sensitivity on the part of project developers and owners in understanding community needs and concerns. We go into these aspects at greater depth in the empirical sections of the article.

4. Research methodology

4.1. Case selection

According to the IEA (2016), China's total investments in electricity generation (MW capacity) in SSA have increased significantly over the past decade, amounting to USD 13 billion in 2010 to 2015 alone. Projects in which a Chinese firm is the main contractor alone account for 30% of new capacity additions in SSA; of these projects, 56% are in renewable energy, with the vast majority of those being in hydro-power, but increasingly also in wind and solar energy (IEA, 2016:7). In addition, several researchers and practitioners have attempted to develop databases to include and analyze data on the volume of investments in the energy sector, transactional models and financial instruments (see Table 1).

Even these do not offer disaggregated data on energy sources, that is, on the balance between fossil fuels and renewables. AidData and CGIT only provide aggregated data on energy investments. BU's database does attempt to disaggregate the data, but its database is limited, and most of it reports investments in non-renewables. UCT's database has mainly captured investments in hydropower and fossil fuel in SSA, making it difficult to obtain precise estimates of the size of and trends in Chinese activities (Shen, 2020).

In addition to direct investments, several Chinese companies are engaged as technology suppliers as well as project developers or construction contractors in utility-scale solar PV projects in Africa (Hansen, 2019). This includes Yingli Solar, Suntech Power, BYD, Jinko Solar, Trina, Chint, Hanwha Solar, Renesola and PowerWay (Shen and Power, 2017; Baker and Sovacool, 2017). According to Baker and Shen (2017), the prominence of these companies is a reflection of China's role as the world's largest manufacturer of solar panels and the highly export-oriented nature of the industry. For instance, Chinese companies are supplying technology for nine out of ten large-scale solar PV projects being implemented in South Africa totaling 1170 MW. Furthermore, two of the ten projects involve Chinese equity investors and one a Chinese engineering, procurement and construction (EPC) contractor (Baker and Shen, 2017). There are limited examples of large-scale wind and solar projects where the project comes as a full Chinese package including developers, financiers, technology suppliers and construction contractors, as we see in case of Garissa, making the latter important for an academic enquiry. The Garissa project may be considered representative of other such Chinese-built solar PV projects in Africa, similar in size and scale, the Chinese actors involved and turnkey contracts with Chinese firms. Other, similar projects include a 20 MW solar PV in Ghana developed by the Beijing Xiaocheng Company and the 75 MW De Aar PV project in South Africa developed by Powerway. However, data on these projects are scarce, except for cursory media reports. Following Miles and Huberman (1994), our case-selection criteria include the significance of the case, its representativeness, its theoretical relevance and data accessibility.

Table 1
Macro databases on Chinese investments in the energy sector in Africa.

Macro Databases	Scope and database source	Time period	Total volume of investment
AidData	100 Chinese energy infrastructure projects based on MBDC methodology and later revised to TUFF method; based on secondary data.	As of 2019	US $ 25.5 billion
Johns Hopkins SAIS-CARI Energy Database	Total Chinese finance to Africa's energy sector (includes at least 17 hydropower projects); data based on tracking projects implemented, in-country visits.	2000–2016	US$ 30.12 billion
China Global Energy Finance Database, Boston University (BU)	Total Chinese finance to Africás energy sector based on data from two Chinese policy banks, CDB and CHEXIM.	2000–2018	US$ 41.6 billion
China Global Investment Tracker (CGIT)	Chinese energy investment in Africa; little information on methodology.	2005–2019	US$ 96.54 billion
Power Futures Lab, University of Cape Town (UCT)	Chinese-funded power-generation projects larger than 5 MW: a total of 78 projects (51% hydropower and 30% coal), based on primary and secondary research.	2009–2019	US$ 44 billion

Source: adapted from Shen (2020).

4.2. Data collection and analytical procedures

In our research for this article, we used a qualitative research approach based on case-study methods to capture accounts, roles and the levels of involvement of the main project stakeholders. The case-study design was borrowed from Yin (2014: 16), where it is defined as 'an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context'. The case study is a useful approach for exploratory research, and a qualitative approach allows deeper contextual grounding. Within this case study, we explored two types of encounters at the micro-level between the two sets of actors in the context of the Garissa project. We focused on the pre-construction and construction phases of the project, as Chinese involvement during project construction offered an opportunity to study the nature of micro-level interactions and encounters between the actors.

Data collection entailed fieldwork in Kenya, conducted in October 2017. For this, we used secondary data mainly to gather details on the project deal and timelines: Sources included newspapers, online media and the website of the Rural Electrification Authority (REA) in Kenya. Subsequently, we conducted interviews with various REA staff members in Nairobi. This was crucial, given that REA is the project owner. Other interviewees were identified through snowballing (Atkinson and Flint, 2001) focused on those directly related to and/or affected by the project.

This was followed by a two-day visit to the project site, located fifteen kilometers from Garissa town in Garissa county and four hundred kilometers from Nairobi in north-east Kenya. The county borders Somalia and is characterized by armed conflicts, a heavy military presence and restrictions on the movement of people. In total, including Nairobi and Garissa, nine semi-structured interviews were conducted with representatives of the renewable energy team of REA, the Chinese engineering, procurement and construction (EPC) contractor, CJIC, the Energy and Petroleum Regulatory Authority (EPRA), and one focus-group discussion with the local county and village representatives (see Annex I). The questions for these interviewees were designed to gather information about cooperation agreements, project-related background information, timelines, the processes of stakeholder and community engagement and local employment. It is important to note here that, except for the focus-group session, REA did not permit access to the local community due to sensitivities, and there was little scope to engage with the site workers directly, either African or Chinese, due to time-bound access restrictions and language constraints. Hence, the

representations are mainly those of staff from REA and CJIC. In addition, as REA is the project owner, direct communication between CJIC and the local community was limited, as REA acted as an intermediary.

However, semi-formal interviews were also conducted with government officials, the EPRA and private-sector firms to gauge the overall policies of the government in promoting grid-connected solar PV. For instance, participation at a conference held in Nairobi during the fieldwork, entitled Future Energy East Africa, provided an opportunity to discuss and engage with a number of energy-sector stakeholders in a less formal setting. Subsequently, the information collected was recorded in field notes, which were then summarized, organized and synthesized for purposes of data analysis.

The article triangulates its findings and analysis on the basis on multiple sources of data (i.e. including both primary and secondary data), different methods (key informant interviews, informal discussions and a focus-group discussion) and three different types of stakeholder groups for information (REA, CJIC employees and workers, and local county/community). The sequence of events is corroborated by different interview sources. At the analysis stage, the responses of different groups were compared to determine areas of both agreement and divergence, as well as to capture the project's different dimensions and some of its outcomes.

5. Project organization and set-up: The deal between Jiangxi Province and the Government of Kenya

The Garissa project was conceived by the government of Kenya's Ministry of Energy (MoE) and government of China's Jiangxi Province in 2012, as part of discussions on infrastructure development in Kenya.[3] The MoE and Jiangxi Province representatives agreed that China's Exim Bank would provide a concessional loan, and the Jiangxi state enterprise, CJIC, would support the project's construction.[4] The loan amounted to around 13.6 billion Kenyan shillings (or 135 million USD) (Energy, 2016). The project involved a bilateral government-to-government negotiation, and not an open tender for an EPC contractor. As a REA interviewee remarked, 'concessional financing is relatively cheap and is provided at favorable interest rates'.[5]

This investment is part of broader industrial cooperation between the two countries. China is Kenya's largest source of finance, its largest construction project contractor and its second largest trading partner (Xianhuanet, 2015). Kenya is among the top five recipients of Chinese loans in Africa, totaling 5.2 billion USD in 2010 to 2014 (Brautigam and Hwang, 2016). However, increasingly, there are concerns that such loans might lead to a debt crisis in Kenya (Onjala, 2018). Many observers argue that China's loans are only able to compete with western donors because they do not attach conditions regarding good governance and transparency (Sanghi and Johnson, 2016). Furthermore, the loans are often mediated by Chinese construction companies, who also develop feasibility reports and select project designs and technology suppliers. These may be explained in part by Chinese funding-support requirements, such as export-credit funding, which stipulate that investors are eligible for export credits only if the equipment used is manufactured in China (Shen and Power, 2017). This is reported to exclude Kenyan contractors and limit the potential beneficial impacts from these projects (Onjala, 2018).

In the Garissa project, one of the Exim Bank's loan conditions was a requirement to conduct an environmental and social impact assessment (ESIA) prior to project development. According to REA staff interviewed for this article, a 'feasibility study and ESIA was completed in 2013 by a private consultancy firm'.[6] For three years after that (2013–16), there were major delays due to prolonged negotiations over the power purchase agreement (PPA) and disagreements on tariffs between REA and the national utility, Kenya Power. Subsequently, REA signed a 25-year PPA with Kenya Power to sell electricity generated from the solar plant at $0.12/kWh (Xianhuanet, 2015), reflecting the feed-in-tariff rate.[7] However, subsequently, in 2019, these rates were renegotiated and reduced to $0.054/kWh (GBA, 2019).

In 2016, Jiangxi Province signed an agreement to assist MoE to build the project. A memorandum of understanding (MoU) for a 145 km transmission line for the project was also signed between MoE and Jianxi Province. In Annex II, we highlight how the key actors framed their interests and priorities as part of the bilateral cooperation, which seem to be broadly aligned.

The Garissa project occupies 85 ha and is located four kilometers from Raya village in Sankuri division, Balambala sub-county, Garissa County. The targeted towns for receiving grid electricity from the additional capacity include Mandera, Garissa, Turkana, Wajir, Lamu and Tana. According to the Head of the Renewable Energy Department at REA, this project is particularly meant to 'stabilize power in Garissa town and other surrounding areas such as Madogo and Bangaley' [as] 'the town relies on long transmission lines from Kindaruma dam (a distance of over 250 kms away), which are unreliable and have caused frequent power outages and inconvenience to the local businesses and social facilities'.[8,9] Previously, Garissa town had only diesel generators to rely on for its electricity supply.

CJIC started project construction in March 2017. CJIC is a state-owned Chinese engineering and construction company, which focuses solely on international projects. It has prior experience with solar projects in China, but this is its first solar project in Africa.[10] For this project, CJIC signed an MoU with Jinko Solar Holding Co. Ltd., a leading manufacturer of solar panels, for technical support and supplying equipment to the project. Jinko Solar planned a pre-assembled modular approach to facilitate installation, future operation and maintenance of the 210210 solar panels (Newswire, 2012). Due to a lack of internal capacity, REA subcontracted the tasks of technical supervision during the feasibility and construction stage to a consortium of engineers and advisors led by Maknes Consulting Engineers Ltd. in Kenya, who were responsible for monitoring the overall progress and overseeing the technical aspects of the project on behalf of REA.[11]

Against this project background, in the following section, we analyze the two micro-level encounters between the Chinese and Kenyan actors identified in this case. These encounters took place during the pre-construction and construction phases of the project.

[3] Personal interview # 1.
[4] Personal interview # 1.
[5] Personal interview # 1.
[6] Personal interview # 2.

[7] It is important to note here that the FiT rates are used for reference, but in essence Kenya's tariffs are not fixed but are negotiable for each project according to the actual cost of the project and the rate of return for the investor. In some instances, as in the case of Garissa, they are also kept confidential, hence it is difficult to ascertain the reasons behind the originally agreed tariff and any subsequent changes to it.
[8] Personal interview # 1, # 2, # 3.
[9] The Garissa project was set up with the aim of strengthening the local substation, thus ensuring more reliable power and supply to the national grid. While there are obvious expectations that the project will provide electricity to the local villages, they are not necessarily the most practical, as they would require massive investment in distribution infrastructure. To meet the needs of energy access, other targeted government programs are being expanded, specifically in the north-east of the country (including Garissa) through off-grid and mini-grid solar PV (i.e. decentralized energy). However, it is important to note the trade-offs in resource allocations for such large infrastructure projects in relation to small-scale off-grid and mini-grid programs, and to question the national government's priorities.
[10] Personal interview # 6.
[11] Personal interview # 5.

6. Micro-level encounters

6.1. Micro-level encounter 1: local community development

It was recognized by REA early on that the project must engage with the local county and community stakeholders, both in exchange for community land being provided for the project, and to obtain social consent in a remote rural location. In a group discussion with the county chief, his personal assistant, ward representative, sub-county chief, assistant chief and community elder, it was stressed that 'the community land was previously being used by pastoralists for grazing purposes, and also contained a few scattered huts'. The local communities of the area are dependent on agricultural farms and animals, and the diversion of land to the project would directly affect their livelihoods, albeit to a limited extent. Hence, the county and community representatives expected certain direct benefits to the community in the form of compensation, including 'more schools, dispensaries, and access roads to agricultural farms, better infrastructure of administrative block, and renovation of the police station'. During the discussion, they added that, as unemployment has long been a pressing issue in Garissa, they 'expect [from the project] more job creation and increased access to education and technical skills in the local area' and as an indirect consequence 'more industries to be set up and [the] economic focus in the Garissa region to improve.'

Prior to the project's inception, REA informed the local county and community leaders about the project and its main purposes. Thus information contributed to raising expectations among many in the local community that power would be supplied to the unelectrified villages in the locality. As a REA staff member recounted,[12] this anticipation immediately led to a positive narrative about the project's expected local benefits starting to spread in the local communities. However, in later meetings between REA, Chinese officials and local community representatives, REA made it clear that the electricity would be fed into the regional grid and thus would benefit the region at large, but not villages in the vicinity of the project's grid lines or below them. This reportedly led to disappointment and frustration among the local communities about the benefits accruing from the project.

These preliminary meetings were followed by the preparation of a feasibility study and identification of the potential project impacts through an ESIA assessment in 2013. Much later, during the finalization of land parcels for the five-kilometer transmission line connecting the project with the Raya sub-station in Garissa, the local community representatives brought up the issue of burial land with REA. 'The ancestors of the local community were buried under certain parcels of land where the transmission line route was planned,' they claimed. REA indicated that they 'had to avoid a land parcel on the site, where ancestors were buried – this was not informed during the initial stakeholder meetings but came up at a later stage'. REA agreed to divert the transmission line in order to solve the problem and avoid possible blockages. However, as a newspaper article stated, 'Land in Raya location […] is owned communally. In order for REA to compensate the community, a legal ownership status and documents have to be put in place. It was therefore agreed between the local community, leaders and REA that the project would continue even as [the] legal ownership documents and compensation mechanism are worked out' (Kamau, 2018). Thus, issues pertaining to compensation and legal ownership remained unresolved through the project's construction phase, which perhaps contributed to building frustration among the local communities and the sense of their being ignored and neglected.

During late 2016 and early 2017, the EPC contractor constructed several residential buildings to accommodate the Chinese employees on site until project completion. The CJIC project manager mentioned that it was a 'high-risk border area', a 'bush area', and that 'people are armed beyond this'.[13] The enclosed and gated residential section within the project boundary was made secure for the Chinese employees. There were demarcated spaces for leisure, a community hall and kitchen activities, while the furniture, kitchen utensils and a majority of the food materials were imported from China, fully exempt of any taxes for this project. A group of Chinese chefs prepared food regularly. The movement of Chinese employees outside the project boundary was limited. Based on our observations on site and informal discussions with a Chinese employee (who spoke broken English), this space provided social cohesion and a sense of belonging, helping prevent feelings of alienation in this foreign environment.

The construction of the boundary wall for the project began in early 2017. The main construction works started around March 2017, including the office buildings for the operational phase, such as those for supervisory control and data acquisition (SCADA) purposes. Throughout this initial period, Chinese employees were permanently based on site, very few of whom could speak English. REA staff were based in Nairobi and visited the site infrequently. According to our interviews, language barriers and cultural differences appear to have prevented the local county and community representatives from approaching or communicating with the Chinese contractors. Furthermore, as a REA staff member remarked, 'pastoralists are used to free movement'; 'fencing [i.e. the boundary wall] creates a certain distance and exclusion',[14] both literally and figuratively, since 'the local community members only saw Chinese employees working on site full-time, and no Kenyan government representatives'.[15] Among the local communities, there was a perception of fear associated with those who were referred to as foreigners, which seems to reflect widespread mistrust and a lack of communication on both sides. The local community looked on the Chinese personnel as foreign intruders, while the Chinese employees felt that they were living in an unfamiliar and risky environment, apparently contributing to a mutual feeling of 'existential vulnerability' (Giese and Thiel, 2014: 1101).

In May 2017, the accumulated frustrations over not being listened to led some of the Raya community members to intrude upon the building site, which, according to REA and CJIC staff members, involved 'an attempt to break a small part of the project boundary wall'.[16] As a result, the construction work came to a temporary halt. Subsequently, in mid-June 2017, REA deployed a social liaison manager for the project to ensure that a local Swahili-speaking REA representative would be accessible, visible and available on site frequently, in order to instill a sense that the 'community concerns were being heard'.[17] Accordingly, the social liaison manager undertook meetings with the local community and county representatives with the aim of managing their expectations. Parallel meetings were held with CJIC to inform them about the status of community development issues. As the REA social liaison manager explained, 'the community had grievances, and there was no one to address them, they had nowhere to go…they approached the Chinese employees, who…then told them to discuss [them] with REA' [and] 'there was nobody from REA on site, and they were frustrated'.[18]

The main reason for the protest was the increasing realization among the local communities that, contrary to their expectations, they would not be able to benefit directly from the project in terms of employment and local community development. Concerning the latter, both CJIC and REA intended to undertake 'socially responsible activities' from the inception of and throughout the project, which was explicitly reiterated on several occasions during communication with local community representatives. Specifically, the aim of such activities was to improve the

[12] Personal interview # 2.

[13] Personal interview # 6.

[14] Personal interview # 2.

[15] Personal interview # 2.

[16] Personal interview # 6, # 3.

[17] Personal interview # 3.

[18] Personal interview # 3.

social and physical infrastructure in the area. Both CJIC and REA had committed financial resources specifically to this. According to a CJIC representative, they had set aside 'a small proportion from their EPC budget in discussion with REA'[19] for this purpose. The local county and community members formed a representative committee to represent the community's interests collectively and identify priorities for REA's community support strategy. The committee comprised a combination of county representatives and community leaders. During the initial meetings between the committee and REA/CJIC in late 2016 and early 2017, the community representatives attending the meetings set out various needs in terms of local community development, which were discussed and agreed, although budgets for these measures were not clearly allocated. CJIC's overall communication with the local community representatives was limited, and REA thus acted as an intermediary, facilitating coordination between the two parties.

According to REA's liaison manager, the communities' needs as set out during the preliminary meetings were[20]: (1) construction of a cement road parallel to the Tana river to facilitate transportation of agricultural produce during the rainy season and improve access to the farms; (2) a primary school near Raya village; (3) a health center or health dispensary services in Raya village; (4) a piped water supply to the Raya community; (5) reliable electricity in Garissa town, with fewer power outages; (6) formal employment of locals with contracts after the project construction phase; and (7) renovation of County Chief's office. Reportedly, there were several iterations of agreements on these activities.[21] During the interview, a REA representative added, 'the local community has changed their versions, responses and position with regard to what their needs are, what…they seek, and what activities should be focused on'.[22]

Furthermore, in August 2017, as a result of the county government elections, the local leadership changed (i.e. the Member of County Assembly and the Chief of Sub-county), and with it the representation within the committee negotiating project-related benefits. New rounds of negotiation were undertaken, and the community's development activities were modified again. It appears that this negotiation process mainly represented the views of the local county representatives, which meant that these discussions became enmeshed in local county government politics and related leadership agendas and voter politics. As one REA interviewee expressed it, 'the local county representatives, the representative Member of Parliament, the governor, [the] county chief changed during the county elections in 2017. They came with their own interests and influenced the project activities, especially with regard to community development activities. There is…elite capture…they would like to change them…. We have to keep on engaging and negotiating with them constantly as the support activities were pre-determined and budget was limited'.[23] As the community's needs and demands increased, the pressure to achieve clarity on the budget dawned on REA/CJIC. At the same time, REA's social liaison manager believed that 'the project is politicized at the local county level, and it is not very clear whose interests are being put forward'.[24] Multiple local representations and interests were being advanced, using this project as a window of opportunity to mobilize resources aimed at meeting various objectives. As such, the project turned into an arena for various local actors to pursue their own interests and agendas (Mosse, 2003; Long, 2003).

Given the tight deadlines for construction imposed by CJIC and the pressure on REA to present this as a model case to the Kenyan private sector and to the region at large, both organizations had a strong incentive to prevent delays in the project's construction. In combination with the increasing pressure from the local community's representatives, REA was also inclined to meet many of their demands. Accordingly, in late 2018 REA documented the fact that all of these demands had been fulfilled (REA, 2018), including formal employment of locals with contracts after the project construction phase, an issue we turn to in the following section.

6.2. Micro-level encounter 2: local employment

The priority for local employment was discussed and verbally agreed by CJIC and REA during the project's inception, although the project was not subject to local content requirements, as has been the case elsewhere, such as in South Africa (Baker and Sovacool, 2017). CJIC had subcontracted civil works and the recruitment of manpower to another Chinese sub-contractor. It is well known that most local employment opportunities only arise in the first year of a solar project's lifetime, that is, during the construction phase (Cameron and Van Der Zwaan, 2015). In its communications with local community representatives, REA repeatedly assured them that the project would provide substantial opportunities for local employment. Consequently, expectations were raised significantly among the local communities, nurtured by the limited employment opportunities available to them outside pastoralism and the agricultural sector. A number of media reports quoting the Chairman of REA stated that 'at least 1000 local jobs' would be created (Bungane, 2016a; Agency, 2018; Otuk, 2016) and that it was 'setting up a mini-city in the middle of a desert with over 1000 workers, meaning we are opening up that place' (Bungane, 2016b). In addition, a few individuals even reported that 'the project was expected to generate 2000 jobs' (SolarMag, 2016). This reflects statements containing explicitly high numbers issued publicly by REA and Ministry of Energy officials pertaining to the project's local employment benefits. All of this clearly culminated in exaggeration and hype that led to high and perhaps unrealistic expectations of the project locally.

In reality, during 2017, the early construction phase, only fifty (50) to seventy (70) Kenyan-Somali workers from Garissa were employed daily, depending on the volume of work available. They were employed as carpenters, masons, drivers, manual lifters and security guards, and were paid lower salaries and wages than Chinese employees engaged in semi-skilled tasks. The workers were employed in the construction of the perimeter wall and office buildings, as well as in transporting and organizing equipment on site and other such manual tasks. These clearly did not entail much skills development. The guidance and supervision of these tasks was provided by Chinese employees on a regular basis, but there was limited verbal communication between the Chinese supervisors and the Kenyan workers. Their communication primarily involved hand gestures and head movements, as we ourselves observed during our field visit to the project.

In addition, during the early construction period between twenty (20) and twenty-five (25) Chinese employees were engaged, including two permanent employees of CJIC responsible for project management, one translator, and a number of semi- and highly skilled laborers from CECC engaged with steel works, who prepared the steel structures for the office buildings and performed other related tasks, such as welding, operating machinery and handling electrical work. While some of CECC's Chinese employees had relocated to Africa for the first time for the Garissa project, most of them had reportedly been recruited within Africa from those who had previously worked on other infrastructure projects, especially in North Africa and West Africa.[25] As the Chinese translator noted, 'the Chinese employees/technicians (levelers) have worked in Africa for over ten years, and they're familiar with the countries'.[26] Certainly, this adds nuance to the widespread narrative that most Chinese projects employ migrant labor directly from China (Brautigam and Hwang, 2017).

[19] Personal interview # 1.
[20] Personal interview # 3.
[21] Personal interview # 3.
[22] Personal interview # 2.
[23] Personal interview # 3.
[24] Personal interview # 3.
[25] Personal interview # 7.
[26] Personal interview # 7.

The Kenyan workers were hired on a 'casual' basis during the early construction phase, which was also one of the most labor-intensive periods. This 'casualization' meant that the workers did not have any formal contracts, wage guarantees or medical benefits. The project manager informed us that 'it is nearly impossible to get semi-skilled and skilled laborers in Garissa, manual laborers only; semi-skilled [come] from other towns and cities in Kenya'.[27] He added, 'these people are so lazy, their work is slow, no efficiency'. It was therefore not feasible to offer contracts, as 'with most local laborers, one day they will come, and next day they will disappear'.[28] The main criterion guiding employment for CJIC was efficiency (time and cost), which translated into the need for less lazy people. Therefore, CJIC relied more on machinery to expedite the construction process. In the early construction phase, this meant operating JCB digging machines and tool machines to install solar mounting structures.[29] Reflecting on the experiences and challenges of working in Garissa, the project manager stated that the 'challenge is from local people'…a 'lot of problems'; 'they always strike outside the boundary gate' [and] 'the leaders refuse to work, but most workers want to work and earn income'.[30]

On the other hand, the project had certainly not met the expectations of the local community of a high number of local jobs. This had started to be evident in the early construction phase. The low employment levels, along with the communication barriers (as highlighted in the previous section), resulted in a community protest in mid-2017, during the construction of the boundary wall and office buildings. REA's liaison manager stated that 'the communities questioned why only a hundred laborers, and why not three hundred or more',[31] had been employed. The expectations of the local community were deliberately misguided, which led to the disappointment and frustration among them due to the limited number and the low-quality nature of locally available jobs. As a result, additional demands were made by the county representatives that 'they expect formal employment for local people in the operational phase of the project'.

A discussion with the project manager suggested that 'nearly fifty (50) Chinese skilled workers and technicians and over two hundred (200) local Kenyan workers (some semi-skilled) were to be engaged during the peak construction phase of the project in 2018', but also that 'most work will be done by machines…if manual, will take long time… we have only one year for project construction'.[32] However, some semi-skilled Kenyan employees were indeed involved during the peak project construction phase, including for steel work and electrical work for solar panels. This was complemented by additional manual workers engaged with the tasks of lifting, transporting and placing the panels on the modular base structures, among others. Additional Chinese employees were hired as and when needed.

Employment during the operational phase is being managed by REA, as CJIC's role was limited to the construction phase only. One REA representative explained that 'they (CJIC) will train our people to do the maintenance and operations of the project…we plan to get more staff for the management, but we also plan to outsource core technical tasks to a consortium of specialist engineers'.[33] After the completion of the project construction in 2019, five Kenyan and four Chinese employees were reportedly hired to handle the operations and maintenance of the project on a formal (contractual) basis (Hanlin, 2019). The project was officially launched by the Kenyan President in December 2019.

Earlier findings in the Sino-African literature claim that Chinese infrastructure projects 'rarely hire African workers or rely primarily on workers flown in from China' (Hook, 2013; Rotberg, 2015). In this case, Kenyans were employed (nearly 85% during project construction), albeit a majority of them as unskilled workers, and only a few to undertake semi-skilled tasks. Moreover, the total number of jobs was much lower in reality than the local community was promised. Hence, while the local community's expectations were certainly not met during the construction phase, the conditions of formal employment were only partially met during the operational phase.

In Annex III, we summarize the main empirical findings presented above regarding the two types of micro-level frictional encounter in the Garissa project, analyzed with regard to the key events, conflicts and local agency.

7. Discussion

In this section, we first discuss the main empirical findings and subsequently engage in a discussion of the concept of frictional encounters in order to draw out the theoretical implications of our exploratory research.

7.1. Discussion of empirical findings

Our empirical findings give rise to a number of reflections related to development impacts and local agency in the Sino-African context. Unlike previous claims in the literature, we find that the Chinese company CJIC mostly employed Kenyan workers (85%) during the construction phase, contradicting the widely held assumption that Chinese projects rely mainly on workers brought in from China (Hook, 2013; Rotberg 2015). While a majority of these Kenyan workers were low-skilled, some semi-skilled workers were also sourced from major towns in Kenya, providing possibilities for new knowledge to be acquired by local workers. Furthermore, several Chinese workers employed in the project had previously worked in North Africa and West Africa on other infrastructure projects, muddying previous assertions of the reliance of such projects on 'imported' labor from China. We also found there was early and pro-active local engagement with the project, with a representative committee being formed to voice local expectations, concerns and positive affirmations. These findings contribute to confirming some of the prevailing myths, such as the preference of Chinese investors for directly negotiated contracts (as opposed to competitive bidding) (Chen, 2018), while debunking others, such as the employment of Chinese labor and the lack of environmental and social impact assessments, as identified in the literature (Brautigam and Hwang, 2017).

The empirical findings also show the different ways in which the heterogeneity of African agency is represented through this project. Firstly, the local communities actively conveyed their expectations and concerns with regard to the project, as well as their needs pertaining to local development initiatives. Secondly, they engaged in mobilization efforts, resisted the project's construction and expressed dissatisfaction over the limited number of local jobs generated compared to what was promised. Thirdly, representatives of the local county and community leaders also actively negotiated and emphasized community development activities and demanded formal employment for Kenyan staff in the project's operations. Lastly, local county representatives found it opportune to reassert their power in relation to national government actors. It is also worth mentioning that the misalignment between expectations and reality cannot be ascribed to the Chinese project contractors and the local community actors in Garissa alone. Many local expectations can be attributed to the Kenyan government and politicians, who tended to exaggerate the benefits of the project so as to minimize resistance at the inception stage and gain legitimacy with the community (especially before elections), but did not follow through once the project had taken off.

7.2. Theoretical implications

In this article, our use of the conceptual lens of 'frictional encounters'

[27] Personal interview # 6.
[28] Personal interview # 6.
[29] Personal interview # 7.
[30] Personal interview # 3.
[31] Personal interview # 3.
[32] Personal interview # 6.
[33] Personal interview # 5.

has shown to be relevant and useful in examining the various conflicts and tensions that emerged during implementation of this project, along with the various responses of cooperation, negotiation and compromise by the actors involved. Based on our exploratory research, we are able to refine the concept of frictional encounters further through a method known as analytical generalization, in which the empirical findings inform the development of theory (Eisenhardt and Graebner, 2007).

We posit that frictional encounters unfold as a process involving three main sequential steps over time, each with its own distinctive features and the involvement of three main actors: project owners, project contractors and local community actors. We believe that our conceptualization, set out in Table 2, is applicable to both Chinese and non-Chinese renewable-energy projects constructed in Africa to analyze how frictional encounters emerge and develop. In Table 2, we summarize the trigger points which lead to the emergence of frictions, the mechanisms and ways in which the frictions escalate, and the means whereby they are de-escalated. Importantly, there may be either a linear or a cyclical flow between these three phases of frictional encounters. The frictional encounters may go through a linear pattern of emergence, escalation or de-escalation, or alternatively, they may also escalate further after the de-escalation stage.

At the first step of 'emergence', a number of issues may give rise to the onset of a conflict. The trigger points could arise when: (i) concerns go unheard; (ii) expectations are unfulfilled; and (iii) there are disagreements; (iv) communication barriers; or (v) issues of trust. As shown in this article, the trigger may be the local community's realization that the expected development benefits of the project – for example, in the form of local employment – will be below expectations (however justified such expectations may be). If such concerns are not taken on board, they may lead to frustration and a sense of being ignored. This perception may spread initially among a small group of individuals but subsequently receive greater traction in the local community.

At the second stage of 'escalation', an understanding in the local community that their voices are continuously being ignored or unheard can be aggravated by a critical lack of trust. At this point, a more formalized local coalition may start to form with the aim of achieving greater decision-making power in negotiations. Accordingly, the local opposition may progress from an individual to a more collective and organized level in which the local community's actors operate in a coordinated manner. This could also lead to a tipping point, whereby the local agency may move from mainly verbal expressions to take on a more physical form, for example, by obstructing construction activities via protests and physically damaging the project's infrastructure. Communication challenges can also play a key role in exacerbating the conflict.

In the final stage of 'de-escalation', the project's owners start engaging in discussions and negotiations with local community actors in order to arrive at a middle ground. At this stage, the delays in project construction caused by the local community actors is a key element in incentivizing the project owners to de-escalate the conflict. As shown in this article, the project owner may play an active role in assisting the parties to resolve the most important conflicts of interest by arranging meetings, being present locally and facilitating communication. Different sets of resolutions are identified and agreed by all parties representing the best possible compromise as a result of a pragmatic process of negotiation.

It is evident that not all renewable-energy projects in Africa will proceed through this process of frictional encounters and reach a stage of de-escalation. Indeed, there are several examples of projects that have been stalled for prolonged periods at various points in the process (Sena, 2019; Cormack, 2019). However, it is our understanding that most projects will experience some frictional encounters, which enables us to devote specific attention to analyzing the role of local agency in the process. To this end, our article serves as a starting point for further theoretical refinement and modification.

8. Conclusions

We began this article by stressing that, despite the increasing importance of China in the renewable-energy sector in Africa, limited research has been conducted on specific Chinese projects with the aim of in-depth examination of the nature and implications of this involvement. At the same time, the broader literature on China–Africa relations is dominated by a highly polarized debate focusing on arguments for either the beneficial or the detrimental role of China in Africa.

In this article, we adopted a case-based approach focusing on analyzing a specific project in order to provide further nuances to this debate, which reveals how the prevailing binary and polarized perspective does not paint an accurate picture of the existence of reciprocal power and agency. We employed the conceptual lens of 'frictional encounters' as a heuristic analytical device to examine two types of micro-level encounter in the course of the construction of this project: local community engagement and local employment. This conceptual framing allowed us to uncover the underlying processes of local agency and micro-politics. Through the use of the concept of

Table 2
Conceptual generalization of the process of frictional encounters.

	Emergence of frictions: trigger points	Escalation of frictions	De-escalation/negotiation
Features of the frictional encounters	• Unfulfilled expectations • Disagreements • Unrealistic aspirations • Unmet individualistic interests • Unresolved issues	• Sustained lack of attention and communication • Ignorance and avoidance of issues • Overlooking sensitivities • Breakdown of trust	• Robust grievance mechanism • Issues acknowledged, addressed • Effective and continuous communication • New agreements made
Local agents: roles and engagement	• Verbal expression of concerns, dissent • Unfulfilled expectations • Beginning of opposition at the individual scale	• Formal complaints • Mobilization efforts at the community level • Demands and protests • Attempts at obstructing and stalling the project as a form of assertion; use of physical force • Seeking legal support	• Strategic negotiation with project owners • Newer demands set out as a compromise to unfulfilled expectations • Specific clarifications sought on the unresolved issues • Reliance on effective verbal communication
Government role and engagement	• Exaggerated promises and benefits • Stakeholder consultations and meetings early on, and relative absence henceforth	• Assume that the project contractors take full responsibility • Ineffective communication • Overlooking grievances	• Active role in brokering and mediating • Proactive and transparent consultation • Sustained engagement throughout • Securing social capital
Project contractors responses and engagement	• Limited communication • Ignorance and avoidance	• Adaptation and compromise • Displaying willingness to communicate and engage further while being partly dismissed	• Engage with building trust • Partial compliance • Arriving at a middle ground

Source: Developed by the authors.

frictional encounters, this article adapts and offers a newer conceptual framing in the context of Sino-African relations using a specific case in point while meeting the call for empirical insights in this field of research. Conceptually, we suggest understanding frictional encounters as a conflictual process with distinctive features of local agency at various stages, from the initial emergence and escalation of the conflict to its subsequent de-escalation.

The Garissa project illustrates the political nature of the unfolding of large-scale infrastructure projects locally. Indeed, the project functioned as a basis for mobilizing local community actors to exercise their agency through specific demands, which resulted in conflicts, but also negotiations and compromises. By analyzing such processes, the article provides key insights into the hitherto missing African agency in the literature on Sino-African relations, as pointed out by, for example, Brown (2012) and Odoom (2016). While local bargaining power is often constrained, it is certainly not non-existent, and while many of the local community's demands were not fully met, they were not completely ignored either, in a display of the reciprocal exercise of agency. The project eventually came to function as a platform for mobilizing local actors to exercise their agency and enhance their bargaining power to negotiate better terms, which gave rise to a range of conflicts and contestations. The findings presented suggest that the development benefits of projects are not likely to accrue automatically but will require active local efforts targeted at ensuring that demands are met by project developers and contractors.

The growing prominence of new 'rising powers' in Africa is a pertinent topic, and China's unique role in the transition to renewable energy requires closer analyses. We argue that Chinese involvement in the ongoing transition toward large-scale solar PV across the continent should be understood in light of the increasing outward flows of technology, knowledge, investments and ideologies from China at a global scale. China's increasing influence in the renewable-energy sector in Africa should thus be seen in light not only of its growing political, economic and technological importance more generally, but also of how these flows need to adapt and be adjusted at the local level. Chinese renewable-energy projects in Africa typically involve fully delivered turnkey projects with Chinese investments, technology and contractors, making them interesting as an independent topic of research in its own right.

The overall developmental outcomes may seem favorable when viewed from the perspective of a completed project (with minimal delays) contributing to a sustainable energy mix, local infrastructural improvements, some local employment and the reinforcement of local political leadership. The involvement of an independent entity as owners' consultants (i.e. Maknes Engineering Firm) also serves strategically to ensure the local transfer of capabilities. While there were important developmental outcomes from this project, there was scope for more. The findings presented therefore raise a question about the role of government in, for example, ensuring more local content, capacity-building and skills transfers for the local employees involved in the projects. Furthermore, a targeted approach could be devised by national governments to involve domestic institutions as well as local actors (e.g. construction contractors) so as to maximize the development benefits of such projects further.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Annex I. Interviews conducted

Interview No.	Role	Organizational affiliation	Interview type
Interview 1	Head, Renewable Energy Department	Rural Electrification Authority (REA)	Personal
Interview 2	Renewable Energy Manager	REA	Personal
Interview 3	Social Liaison Officer	REA	Personal
Interview 4	Senior Officer	REA	Email
Interview 5	Engineer	REA	Personal
Interview 6	Project Manager	China Jiangxi Corporation for International Economic and Technical Cooperation (CJIC)	Personal
Interview 7	Chinese-English Interpreter	CJIC	Personal
Interview 8	Chinese laborer on site	Civil Works Sub-contractor	Personal
Interview 9	Renewable Energy Manager	Electricity Regulatory Commission (ERA)	Personal
Group Discussion	County chief, PA, ward representative, chief sub-county, assistant chief, community elder		Personal

Annex II. Overview of the main political actors involved and their agendas

Key actors	Interview excerpts on interests, motives and expectations from the project	Key points
Jiangxi Province Vice Governor	• 'Strengthen cooperation of the government with Jiangxi enterprises, of which CJIC is the leading one' • 'It is a significant part of "Ten Cooperation Plans" put forward on China-Africa Cooperation Summit in Johannesburg 2015' • Support 'the development of renewable energy in Kenya'	• Business cooperation • Strategic relations • Technical expertise and superiority • Infrastructure development
Jiangxi Enterprises CJIC	• 'The project will display the sophistication of Chinese PV technology and its productivity' • 'CJIC will strive to build it into a top-notch power plant, and enhance the cooperation with Ministry and REA'	
Energy Minister and Cabinet Secretary, Kenya	• 'This project is a break from over-reliance on hydroelectric and geothermal power' • 'The power plant would bring economic and environmental benefits, as well as opportunities for employment' • 'Its construction will raise the technical level of local employees and flourish the local market with construction materials	• Local economic development • Employment and Jobs • Strategic cooperation • Energy security • Reduced dependence on fossil fuels and imports
REA	• 'We are going to see savings in foreign exchange on importation of fuel for power generation' • 'The project is committed to serve 200,000 customers'	

Source: Based on the secondary data collected for the article.

Annex III. Mapping of project timeline, events, conflicts and respective mechanisms of local agency

Timelines and Project Events	Events of conflicts, disagreements, resistance and unfulfilled expectations	Respective mechanisms of agency
Mid-2016. The project was initiated. Community expectations raised. Finalization of land for project and transmission line.	Disappointment among communities, as the project would not feed the villages, contrary to their initial expectations.	REA clarified the project's scope, assured that benefits will trickle down. The locals supported the Garissa project.
	The community resisted the planned transmission route, as it considered one of the land parcels sacred.	REA attended to the community sensitivities associated with the land and revised the transmission route.
Late 2016. REA held meetings with the local community. A representative committee was formed. Interest for more jobs, skills, more industries.	The representative committee presented different community needs. Extended negotiations with REA, clear agreement was not reached.	REA re-negotiated. The local members presented different versions for the use of project funds.
Early 2017. Construction works began, with CJIC on site. The project engaged local low-skilled workers for initial construction activities.	After the project boundary wall was erected, the locals felt alienation and exclusion. Also there were only Chinese on site, no Kenyan representatives.	There was communication gap and mistrust. The locals mobilized to express dissent.
Mid-2017. Construction work began on site on the office buildings and in clearing the project site.	Local members intruded the building site. This was a culmination of events, and as the project led to few jobs.	REA representatives visited the site, held several meetings to reduce mistrust and resolve issues.
Late 2017. Construction work continued but slowed down. Discussions with locals continued.	Local county elections were held, changed leadership. The new leaders demanded new development activities.	REA undertook new discussions, and tried to remain within budget.
Early to mid-2018. Project construction continued, solar panels were installed, and major electrical works carried out.	Issues remained pertaining to land and compensation. Limited job creation through peak construction phase remained.	REA ensured that the O&M phase will include local employment with contracts.
Late 2018. Project construction is completed.		REA documented that the community needs had been fulfilled.

Source: Developed by the authors based on primary data.

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