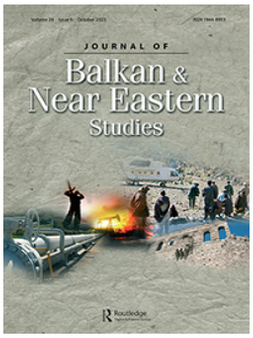

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A Greening Dragon in the Desert? China's Role in the Geopolitical Ecology of Decarbonisation in the Eastern Mediterranean

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ABSTRACT

The new geopolitics of energy in the Eastern Mediterranean is not determined by hydrocarbons anymore. A significant expansion of renewables is underway. Driven by a surge in 'Green Finance' and decarbonization policies, this development changes conventional relationships of dependency. This takes place in an environment, where Asian and Western energy security strategies rapidly evolve in the wake of Russia's invasion of Ukraine. North Africa and the Eastern Mediterranean play a central role in this repositioning. China, far from merely being a dinosaur, is the largest producer of renewable energy. It also invests in infrastructure abroad, including Egypt. The largest Arab nation not only seeks to become a global energy hub, but also a decarbonization champion, as reflected in the hosting of COP27 in Sharm El Sheikh. This article will look at these developments, including its internal and external contradictions to understand the motivation behind China's commitment to Egyptian solar expansion. It will demonstrate that, while part of a global political economy of decarbonization, China's main motivation for investing in renewables in the Eastern Mediterranean remains geostrategic, tied to its Belt and Road Initiative (BRI). This, in turn, informs how we think of the Geo-Political Ecology of Decarbonization in the region.

1 Introduction: the great transformation in the Eastern Mediterranean: from Malthus to Confucius?

We are about to enter the third decade of the 21st century in a period of protracted environmental crisis. Above all, this is a planetary crisis where global climate change impacts all aspects of human life and its metabolism with nature. Temperature increases, ocean acidification, weather extremes and dramatic losses in biodiversity, to name but a few, are threatening the biophysical bases of all of nature's social reproduction—on a global scale—but also and in particular in the Eastern Mediterranean, Middle East and North Africa. Droughts, floods, and other weather extremes are frequent events, while constantly rising sea levels threaten coastal cities like Alexandria. This 'climate emergency' is compounded by and embedded in a multiplicity of crises in the human political

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world order. Yet, oddly, most contemporary analyses of the geopolitics of the Eastern Mediterranean maintain a conventional understanding of (middle) power rivalry, mainly over presumed hydro-carbon resources under the seabed.[1] Links between a global ecology and its transformation only exist to the extent that new narratives of 'climate conflict' or 'climate refugees' increasingly securitize what is, in essence, the weather.[2] Syria and Darfur are prominent cases where this debate takes place.[3] Alternatively, the 'old' and similarly Malthusian understanding of the region as a 'hotbed' for conflict over hydro-carbon riches is re-invoked.[4]

This paper offers a different way to link geopolitics, political ecology (or: geo-political ecology) and the political economy of resources. Rather than focusing on long-held assumptions of inter-state competition over hydro-carbon resources as the main driving force for the region's geopolitics, it demonstrates how the political economy of energy is undergoing a fundamental transformation. Notably, this happened before the recent shockwaves sent across global energy markets due to Russia's invasion of Ukraine. With one of the major producers now conducting a war and under Western sanctions, these events have led to a short-term shortage of hydrocarbon energy resources. Nevertheless, these developments have catalysed plans for renewable production across the world—as well as the Eastern Mediterranean. Private investors and governments, including the US, are suggesting interlinked EuroAfrica and EuroAsia electricity interconnectors, capable of transferring renewable energy.[5] This potential 'sea change' in the region's energy geopolitics is rooted in its high potential as a source of renewables, but also the availability of cheap land and labour. Just this time it's not hydrocarbons, but unlimited sun and wind. And while this transformation should put to rest all notions of the region's 'resource curse', these new 'clean' sources are not without developmental contradictions.

Critiques of a simplistic understanding of 'greening' capitalism, without addressing its core social and ecological contradictions, namely that of an unfettered growth regime and extractive tendencies are commonplace.[6] This paper proposes to go beyond a conventional resource curse arguments, a mere critique of the contradictions of green developments and the potential for decarbonization conflicts.[7] Mobilizing the concept of 'Geo-Political Ecology', it looks at 'green' transformations and the sourcing of new forms of energy within geopolitically competitive environments. Without falling into the trap of a new 'green' resource curse, it aims to understand energy as socially, rather than merely physically constituted. The process of sourcing, transforming, marketing and ultimately using energy, is seen as historically constituted by a variety of local and global actors, which cannot be reduced to mere structural necessities as stipulated by Neo-Malthusianism. It utilizes, but also goes beyond, existing political ecology approaches,[8] in that it analyses the local and global, as well as the political economy and geopolitical dimensions of nature-society relations.[9] In the regional context, this also implies a sensitivity towards issues of Environmental Orientalism.[10]

Using the example of Egypt, and focusing mainly on the role of Chinese investment, this paper will explore the continuities, but mostly the changes in the geopolitical and global political economic dimensions of this transition. We question both Chinese and Egyptian motives behind these solar investments. While meeting growing demand and reducing carbon emissions are somewhat obvious targets, it is not clear whether these are the sole objectives. To this end, we will first discuss the changed global financial and geopolitical architecture within which the Egyptian solar transition takes place. This will

lead, second, to a discussion on the specific role of China, its strategies, motives, and vision for the global 'greening' of the world economy and specifically its own Belt and Road Initiative (BRI).[11] This will demonstrate, third, that while centralized large-scale electricity production remains interesting to private investors, mostly due to their economies of scale, Egypt's, but also other Middle Eastern countries' solar industry has increasingly become the target of Chinese state investment for geo-strategic reasons. Fourth, looking at Egypt will reveal that Chinese investments are geared into Egypt's own political economy of militarized crony capitalism and its focus on infrastructure and property development. The paper will then turn to the Benban solar plant, the largest photovoltaic plant in the region. Within such a regime of accumulation, it comes at little surprise that local conflicts and environmental concerns find little attention in the construction and running of the plant. We demonstrate how China, too, maintains a neo-colonial mindset towards the 'empty' desert as a source for its wealth creation, effectively adapting the European template. Finally, this will reveal that neither geo-political competition, nor a new form of 'green' accumulation is determining this process of state-capitalist decarbonization.[12] While these dimensions are relevant for understanding some parts of the motivation in this process, this article argues that it is best understood as a geo-political ecology of decarbonization, whereby the social sources of this transformation in Egypt and China are embedded within the 'strange geographies of the "new" state capitalism".[13] This also helps us reveal that China, whether driven by profit or strategy, along with other new agents in the 'decarbonization game', are currently unable to overcome the social and ecological contradictions that prevent a 'just' transition towards a meaningful zero-carbon future.

2 The global crisis and the financialization of decarbonization: another end of (geo) politics?

Before developing a more detailed analysis of China and its role in the Egyptian energy transition, the following will locate the global and regional context within which the decarbonization of the world electricity production takes place. A financialized, yet still hydrocarbon based and, in many ways, robotized and self-automated capitalism has shifted, but by no means ended a protracted crisis of capitalism, which deepened levels of financialization, global inequality and environmental exploitation alike. Geopolitically, the postwar liberal order is increasingly replaced by a much less predictable complex multipolarity, with hotbeds of conflict reaching from Taiwan to Ukraine, to the Gulf and, of course, the Eastern Mediterranean. This is accompanied by a deepening crisis of political legitimacy in the Western liberal heartland with various forms of authoritarianisms and populisms on the rise. Simultaneously, the pandemic was the latest, but by no means the only example of a global economic crisis dissolving in yet more capital supply. The resulting capital glut, engineered by central banks, has only recently led to inflation, but has mostly served to expand the economy. Especially with the Covid-19 pandemic, capitalist growth has become more state-led, involving, unsurprisingly, New Deal style public investment in large-scale infrastructure projects. Combined with private finance developing a keen interest in this new 'asset class',[14] this new combined public and private interest in infrastructure turns the previous neoliberal austerity on its head. Crucially, all actors increasingly see renewable energy projects and reducing emission

levels as more than just 'greenwashing' their portfolios, but as a means of securing investments into the future. In short, decarbonization projects have significantly gained in attraction as a win-win investment strategy, securing sustainable and financialized growth into the future.

This applies particularly to the Middle East, North Africa, and the Eastern Mediterranean. From the Gulf to the shores of the Atlantic, renewable investments are not only becoming an investment, but also a development strategy. One prime example of such an integrated approach is Morocco. Since 2009, its 'Plan Solar' has, with EU and World Bank backing, strategically built credentials as a developer and potential exporter of solar energy, mostly using parabolic plants. This development is also significant because of the strong international political backing it enjoys, being funded, amongst others, by the World Bank, the German Development Bank (KfW) and the European Bank for Reconstruction and Development (EBRD). This strong European component relates to an earlier, but ultimately failed EU renewable strategy. In 2007, the EU partnered with the world's largest re-insurance company, Munich Re, to construct a network of wind, but mostly solar plants across north Africa, the Eastern Mediterranean and the Middle East with the aim of exporting energy to the EU.[15]

This is interesting for a variety of reasons: One, the initiative for a massive investment in an export-oriented North African solar market came from within the heart of the financial industry, whose risk calculations indicated the necessity, feasibility, and profitability of such plans at a time when 'decarbonizing your investment portfolio' was not a thing. Second, it is interesting because of its developmental and, by extension, security promise of bringing jobs and development to a region that was otherwise thought of as impoverished and that was as seen as the origin of many of the problems related to migration policy. These and other security problems were mostly thought of as rooted in young male unemployment, which would then be addressed by jobs in the Solar industry. Third and related, the idea ran on the environmental orientalist assumption that the plants would be built on a 'Terra Nullis', an empty land, void of use and waiting to be ruled and developed by (usually white) experts.[16] So, while energy is not directly extracted in the form of hydrocarbons, it is nevertheless produced in the Global South and financed and consumed in the Global North. It also includes the mining of minerals with all its associated environmental, social, and conflict-related problems.[17] Thus, rather than changing the mode of development alongside the sources of energy, these projects either maintain or aggravate global north/south power hierarchies (and their local expression) engage in 'neo-colonial practices'[18] and are, more generally, an integral part of the global 'imperial mode of living'.[19]

Beyond its roots in the financial industry's colonial thinking, what is arguably most striking about Desertec (Munich Re's project) is its abrupt failure. For the decisive problem was not the lack of available funding. As previously mentioned, the global, central bank engineered capital glut meant that investors were grateful for a sustainable opportunity to recycle capital with secured returns. This interest has now multiplied with a run for certified sustainable investment opportunities. The interest in expanding renewable projects is not so much driven by either energy demand, or even the political will to decarbonize (just look at the continued increase of emissions), but by the financial interest in it. It is surprising that a project offering a high return on investment, not least due to its economies of scale, would fail. Indeed, the lack of funding was not the problem.

To identify the problem, we need to return to geopolitics. Ironically, (given the high energy dependency on Russia), the European decision to withdraw from the large-scale project (smaller parts survived) was down to a fear of becoming energy dependent on an instable and, to them, unpredictable, region.[20]

Being relatively unaffected by the Arab Spring, Morocco was the lone survivor of these plans. Egypt, by contrast, was quickly taken off the map post-2011, despite having an even larger solar potential. Ten years on, the military's industrial and developmental vision is very much open for business again. Yet this time the main agent—and potentially their motivation—has changed. Previously it was Western financial interests with an eye to de-risking, or future-proving investments (like the Munich Re) in alliance with Western development, or state banks, such as the WB, EBRD, KfW now taking on a central role in decarbonization.[21] The local rural development dimension, most clearly articulated in Morocco's Solar Plan, invited aid agencies such as German Corporation for International Cooperation (GiZ) and the Department for International Development of the UK (DfiD). Private and public investors are just as keen to participate in solar and other renewable projects to 'green' finance, but since February 2022 especially to meet the dire needs of a crisis-hit European energy market. In Egypt and elsewhere, this is met by state capitalism (s), which is motivated by both profit and geo-strategy. It develops, invests, and, as the following will demonstrate, aggressively monopolizes Egypt's and the wider region's solar sector.

3 The red dragon in a green coat?

One of the key actors in this transformation is, to no one's surprise, China. At the UNGA meeting in November 2020, China's president Xi Jinping announced the goal of carbon neutrality by the year 2060. Previously, China had agreed to green transition on the BRI at the EU-China Climate Summit in October 2020. In accordance with these international engagements, China registered the highest amount of wind energy production in 2020, with a record spike in December 2020 domestically—a development that stunned environmental observers. Low carbon is one of the goals of the fourteenth five-year plan announced in March 2021. After that, there was the Belt and Road Forum in April and the UN Biodiversity Conference in May. Though China is also the largest emitter of carbon, it has, more recently adopted a more progressive role in its climate policies—though arguably more abroad than at home. This includes the increasing 'greening' of its key infrastructure and global transport network, the Belt and Road Initiative (BRI), which is now slowly becoming integral to China's emerging role as a 'climate leader'.[22]

Given the complexity of the task at hand, China is much less of a top-down developer than frequently assumed. We argue that China's BRI is not, and not meant to be, a coherent top-down strategy, but rather a dynamic interaction among many actors.[23] In fact, China shows ambitions to cooperate with local stakeholders, but also with the Western multilateral development banks that first pioneered the region's 'Solar Turn'. China's 'greening of the BRI' strategy reflects this from Central Asia to the Caucasus, to the Middle East.[24] Even though China is now the leading green technology producer and financer, and is now committed to carbon neutrality by 2060, the green BRI is not a single-track policy. It is partly due to the policy pragmatism of the Reform-era leaders, the party-state's response to major socioeconomic crises, a pluralist and contested policy

space. Greening the BRI, or in other words, China's goal to be a leading green producer and financer at the global scale, reflects its domestic ambitions. However, these ambitions can be realized much faster abroad, given the leverage Chinese investment holds, especially in the Global South where China does not directly deal with domestic opposition. In order to understand who on the BRI gets to be green, on what terms and why, we need to look at the domestic roots of China's foreign policy (FP) and the BRI. China's green BRI investments in the eastern Mediterranean offer an explanatory case study.

3.1 China's domestic green transformation

Policy programs that respond to the socio-economic needs of the day mark the Chinese leadership for generations. Under the leadership of Xi Jinping, the current government focuses on industrial upgrading and internationalization. The emergence of the BRI is a case in point for how China's domestic concerns shape its foreign policy. China has steadily contributed to global environmental degradation and climate change since its opening up triggered tremendous economic growth. Contrary to the previous trend, though still the largest emitter after the US, China lately appears to be championing the production and use of environment-friendly technologies. Currently, the Chinese state engages in bilateral deals within the framework of the BRI to increase the financial value of such technologies.

The change in China's attitude took place in a two-stage process. In the 2000s, environmental protests became an issue for the government despite that they were mostly 'not in my backyard' type protests. China survived this phase by forcing the local governments to include environmental protection in their performance criteria, and by enlisting, if not coopting, the local environmental Non-Governmental Organizations (NGOs) in the development of the market for environment-friendly technologies. As a part of the cooptation process, the state transferred environmental protection projects to NGOs and the private sector. This transformation has created a niche industry for privately-owned consultancy firms that develop and implement environment-friendly technologies. This domestic sector now constitutes the private businesses investing in green technologies in the higher-income countries in Western Europe and the Asia-Pacific region. It is a prime example of how China's domestic developments shape its BRI engagements.

China's struggle with environmental protection has recently reached a third stage. The chances of meeting the 2060 deadline for carbon neutrality, already too late to avoid catastrophic climate change, looks doubtful to onlookers. Besides, Premier Li Keqiang reiterates the centrality of coal in China's energy production[25] every time president Xi Jinping makes a pledge for transition to renewable technologies. The energy policy realm is conflictual in China, and this appears to be a pragmatic strategy to please all stakeholders involved. While the central government has plans to develop clean coal technologies and dominate the e-car market in the next five years, the local governments lobby, or go behind the central government, to keep the coal-operated energy plants both because coal mining creates employment and coal plants produce cheap energy for SOEs and SMEs, especially in the post-pandemic recovery period.

Despite the delicate power balances domestically, or perhaps because of them, China is now reinventing, and branding, itself as a constructive actor in environmental issues,

global warming in particular. China has taken steps to align its domestic and BRI investment goals with the needs of green economy. Economically speaking, China has not volunteered its support for the fight against climate change solely for environmentally friendly values. While its support for the Paris Agreement wins the country legitimacy in the international community, China concurrently has become the primary producer of the most profitable fields in green technologies. The green technologies include wind power, electric cars, waste recycling, and decontamination of rivers and seas. China's share in these sectors is more than the sum of both the United States and the European Union.[26]

Green investment has also created its own financial markets. There's an increasing willingness by investors to invest in green bonds and green finance is generally on the rise.[27] China is now engaged in this global green finance field, claiming that green financial markets will encourage private investors to invest in environmentally friendly technologies.[28] In other words, we can suspect that green investment serves the purpose of creating new investment fields. For example, the Bank of China announced that they are considering incorporating 'lean coal' among the technologies that green bonds can fund,[29] which defies the purpose of environment-friendly capital accumulation.

3.2 Brown and green belt and road initiative

The BRI consists mostly of transportation and energy investments. China's overseas finance in the power generation sector is still dominated by hydropower and coal; and 78% of it goes to the BRI countries, i.e., lower-income countries. After its commitment to carbon neutrality, China prepares to sell carbon emission prevention technologies to the same countries. For example, being a 'green power' is already in the conditionality list for the Middle East partners of the BRI.[30] The Chinese bank ICBC's Singapore headquarters launched its first 'green bond' of $ 2 billion in April 2019, the revenue of which will be used in the BRI countries.[31]

In 2020, China's two development banks with global operations, the China Development Bank (CDB) and the Export-Import Bank of China (CHEXIM), provided approximately $5 billion of overseas energy sector finance.[32] There has been a drop from $8 billion in 2019, but, despite the contraction in energy financing, CDB and CHEXIM still provided approximately the same level of energy finance as the World Bank in 2020. The regional distribution of energy financing reflects China's BRI priorities: Africa, South Asia and Southeast Asia receive approximately equal amounts as before the pandemic, while investments in Europe, Central Asia and Latin America dropped.

China's investment in renewable energies has increased since its commitment to the climate agenda but the numbers include hydropower investments as well.[33] China's hydropower investments both domestically and in the BRI target regions constitute an often-overlooked hindrance for its green strategy because many databases include hydropower in the category of renewable energies. However, from a political ecology perspective, hydropower technologies are often detrimental to the nature and the livelihood of the surrounding communities.

China is often criticized for investing in hydropower infrastructure, i.e., building dams, for financial support for the construction industry by the local entrepreneurial governments, and also as a geostrategic power contestation with the countries affected by

the dam-building as in the case of Southeast Asia. The overwhelming weight of the construction industry in the BRI scheme is often criticized. The infrastructure projects of the BRI, such as dams, highways and other megaprojects (e.g., stadiums) have been criticized since the carbon emission levels of these BRI projects are drastically high.[34]

Since 2012, 26% of Chinese greenfield, or bottom-up investments, relate to renewable energy. Meanwhile, 45% of mergers and acquisitions were renewable energy and 30% of mixed investments were in the renewable sector. China's renewable energy investments mainly target high-income countries. Among the countries in which China invests in green technologies, investments in Australia are mostly in grid infrastructure and renewables, Southern Europe in grid infrastructure and Western Europe mostly in renewables. There are the exceptions of Pakistan and Latin America, but they are part of large central government projects and not private investments, and therefore sustainability is not China's main concern for them.

The green projects are also funded by the green bonds issued by the Chinese banks. Therefore, the higher-income countries are now in full-circuit with China by receiving both the technologies and the investment. This is why it is not a dependency relationship as showcased in the EU-China Climate Summit. In contrast, the lower-income BRI countries' infrastructure projects are funded through regular debt and equity finance channels, and used for brown projects like coal power, oil and gas exploration, and mining. Yet loans for these projects are still subject to green financial regulations—known as green credit guidelines—set out by China's Banking and Regulatory Commission (CBRC) and individual policy and commercial banks. The implementation of green credit guidelines is spotty at best, and ignored at worst. Chinese lending institutions have little communication and engagement with non-government stakeholders in host countries, limiting their ability to enforce guidelines or ensure adequate third party social and environmental impact assessments.[35] Moreover, the green conditionality imposed on the Middle East and East Mediterranean partners forces the target countries to purchase China's green bonds without a confirmed prospect of green investment. In fact, many countries in the MENA and East Mediterranean region witness stalled negotiations in green investments.

The recipients of China's renewable investments are typically categorized as BRI/non-BRI in the existing literature; however, the real gap is between developed and developing countries. China's already-limited green investments are all concentrated in higher and middle-income countries, whereas the lower income countries continue to get the coal investment. Therefore, renewables are also projects of state building and geopolitical power projection. The domestic dynamics are variables in China's variegated renewable strategy. While we see a commitment to renewable energies at the central level (e.g., clean coal technologies), the domestic supply market prefers to invest in the consumption side (e.g., e-cars). For example, following the announcement of the 'Tech City' project, Chinese auto manufacturing companies signed agreements with the Moroccan government to build various plants.[36]

4 Zero carbon growth or military cronyism under the nubian sun?

So, in many ways, Egypt doesn't fit the conventional BRI bill. A low-income country as a destination for green investments, rivalled only by Chinese investments in solar parks in

the Arab Gulf monarchies. Despite, or precisely because of being a 'misfit' in the conventional BRI literature, Egypt constitutes a prime example for how this new geopolitical economy and ecology of renewables operates in new ways. Not only as a domestic policy, but also as part of a global transformation. It is located at one of world's major trade routes, the Suez Canal. Recent geopolitical events have shown that an iron, rail based, silk road via central Asia remains vulnerable to geopolitical conflicts. China and, in fact, all other major trading powers, are increasingly concerned with securing maritime trade routes, not dissimilar to British Blue Water policy—just this time it's a multilateral and sometimes competitive effort. In fact, the People's Liberation Army's (PLA) sole military base abroad is at the Horn of Africa in Djibouti, which, perhaps unsurprisingly, also hosts bases for Germany, Spain, Italy, France, the United States, the United Kingdom, while Turkey maintains a large military presence in Somalia. Hence, securing the Red Sea remains a vital element for all major powers, but especially for China's export-based economy.

This is not to reduce Egypt to a transit country, or to discount Egyptian agency and 'national' interest in renewable energy projects though. At face value, Egypt's massive expansion of renewable and conventional electricity generation capacity simply addresses the energy needs of a growing population and an economy increasingly focused on urban growth and regeneration.[37] It is also motivated by energy security, following the trauma of the protracted energy crisis in the post-revolutionary years, which saw widespread power outages.[38] Last, renewables are profitable investment and Egypt has huge potential with abundant sun, land and labour.[39]

Egypt features a high potential for solar, wind and hydro alike, though current electricity production still depends up to 90% on fossil fuel. Current policies aim at a 20% share from renewables by 2022 and 42% by 2035.[40] Though made up of a mix of different sources, this renewable drive is mainly focused on increasing photovoltaic solar (PV) capacity.[41] Technologically more challenging, yet also more efficient Concentrated Solar Power (CSP) plants are, for the time being, the exception rather than the rule with only one operational plant in Kuraymat. More common in the Arab Gulf countries (including Chinese investments) and Morocco, CSP requires higher upfront investment, but also a more qualified workforce compared to PV.[42] Despite CSP's higher potential and greater efficiency, PV plants are, thus, less complex to build and run. They also imply a less skilled, lower paid and potentially less politicized workforce, as well as a dependency on the world's largest PV producer, China. So, while renewables are profitable and can help reducing Egypt's carbon emissions, the expansion of this sector is highly (geo) politicized, and in fact has been almost since independence in 1952.

In a similar path-dependent way, the current military dictatorship under Al-Sisi remains an authoritarian developmental state par excellence. The expansion of the Suez Canal has demonstrated its determination to maintain and expand its role as a global infrastructure hub. The abundant natural gas discoveries off its northern coast have also increased its appetite to become an energy hub. This helped entrenching a geopolitical rentierism which made the regime indispensable to most global powers including Russia, the EU and, since Camp David, also including the US and Israel. Though only very superficially (for now), this strategy has now been 'greened', making Egypt a 'transformative energy hub among three continents'.[43] But the historical continuities don't end there. Large infrastructure projects have long been tools of projecting

power, both at home and abroad. This long-standing tradition of engineering Egyptian power from Nasser's Aswan Dam to Mubarak's Toshka Lakes has traditionally focused on hydropower and irrigation projects. However, especially since Egypt went through IMF's structural adjustment program, these projects were increasingly globalized and financialized. Especially the Toshka project is a good example how Foreign Direct Investment (FDI) and labour market reforms ever have fundamentally altered rural relations in Egypt.[44] Beyond agriculture, the specific political economy of authoritarian financialized development of the Sisi regime has focused on property, urbanization and infrastructure. This is most clearly epitomized in the construction of 'New Cairo', a new capital east of the existing one – with Chinese and Gulf financial backing. However, far from just meeting housing and energy needs, the perhaps most significant driver of Egypt's renewable revolution is the internal political economy of the Al-Sisi military-industrial regime. What has been labelled the 'Military-Urban' nexus elsewhere[45] is very pronounced in Egypt: Military-led, foreign-funded, large scale developments, geared towards rent-extraction by the armed forces themselves. An operation by 'Military Inc'. to fund their 'state within the state'.[46]

This regime of accumulation makes energy a strategic commodity, a source to maintain power, a source for profit and only in the last instance a public service provision. In sum, the Egyptian motivation remains one that is embedded in an infrastructure-dependent developmental path and a political-economic and geo-political strategy of elite reproduction. And it is these underlying structures that tend to operate on notions of an 'empty' desert void of social life in relation to the enormous land and resource use of these projects. Simultaneously, new low skilled employment opportunities are seen as useful channels for Egypt's unemployed (male) youth. In sum, for Egypt and China alike, the expansion of Egypt's solar sector goes far beyond a simple return on investment or reducing carbon emissions.

5 China's hunger for the sun in the Eastern Mediterranean

So, China's intentions with these investments, too, are multi-facetted and historically grounded. Its relationship with the Mediterranean has several historical and sometimes contradictory factors at play. To maintain energy transfer security, China maintains good relations with the countries that host its ports, such as Italy, Greece, and Israel. The Chinese government commented on several issues in the MENA region, such as the Uyghur issue for Turkey, the war in Syria, civil strife in Lebanon, and the aftershocks of the Arab Spring in North Africa in the last decades.[47] Most recently, China's foreign ministry requests to be formally involved in protracted issues such as the Israeli-Palestinian conflict,[48] in an attempt to counter US influence in the region.[49] The growing global tension over the Xinjiang region leads China to seek supporters in the international community, which it hopes to find in the region. China has targeted countries with predominantly Muslim populations in the East Mediterranean for a dependency relationship in order to constrain their governments' reaction to the Xinjiang issue. Both Saudi Arabia and Iran signed trade deals with China that guarantee fifty years of oil supplies.[50]

Concurrently, the Cooperation Council of Gulf States announced that they supported the policies of the Chinese state on the Xinjiang issue.[51] China's primary engagement

with the East Mediterranean region is for transportation, and energy is a recent focus. The BRI includes the Middle East through major infrastructure investment policies such as the Suez Canal remaining central to the Maritime Road part of the BRI. Israel and Iran are also included in the BRI: Iran through the Tehran railway connecting to the China-Pakistan route, and Israel through the Red-Med project that aims to connect the Red Sea with the Mediterranean. Both railway projects are central to the land-bound Belt part of the BRI. The BRI is primarily based on the construction industry as exemplified in Kuwait's Silk City.[52] China's infrastructure investment in the construction industry is a welcomed development against the economic slowdown the Arab countries have been facing following the political instability in the aftermath of the Arab Spring or dropping oil prices.[53]

These countries also secured large Chinese investments in renewable energies at a point when the Chinese state was still supporting the private enterprises in the renewables sector in their overseas investments. Later, the Green BRI in the Mediterranean was endorsed as a state project. Mostly private-owned enterprises account for a growing share of Chinese FDI in the European energy sector, while even the green investments in the East Mediterranean are by State Owned Enterprises (SOEs). China's relationship with Western Europe is technology- and market-seeking, whereas in the Mediterranean, it is either geostrategic, as in the case of the Gulf countries, or to alleviate the domestic pressure on local SOEs as in the case of Turkey and Lebanon. Southern European countries recently joined the ranks of the recipients of China's renewable investment; Spain and Italy with solar energy, Greece and Portugal with wind energy. The expansion of China's green investments in these countries does not necessarily indicate a major policy shift for China. Instead, it results from shifts in market conditions, such as changes in the regulatory environment and different patterns of privatization.

5.1 China's involvement in Egypt

Similar to Egypt itself, Chinese technological and financial presence in the local solar industry is not just motivated by a 'greening' of the BRI, or by bringing development to Egypt. It is also to develop closer ties to this geo-strategically located Northern African country which owns and runs China's major maritime trade route to the West. Already in June 2014, China's president Xi Jinping attended the opening ceremony of the Sixth Ministerial Conference of China Arab Cooperation Forum and coined the '1 + 2 + 3 cooperation' policy. According to this policy, the two sides would take energy cooperation as the main axis (1), take infrastructure construction, trade, and investment facilitation as the two wings (2), and take three high-tech fields of nuclear energy, aerospace satellites and new energy as new breakthroughs (3).[54]

In 2015, the Egyptian government put forward the economic development strategy of 'revitalizing the Suez Canal corridor'.[55] China and Egypt signed the memorandum of understanding (MoU) on the joint promotion of the Silk Road Economic Belt and the construction of the maritime Silk Road in the twenty-first Century, and bilateral joint articles in various fields, supporting the Egyptian 'Suez canal corridor' project by jointly building the China-Egypt TEDA Suez Economic and Trade Cooperation Zone. The MoU claims to promote China-Egypt production capacity cooperation, further improve the

level of China-Egypt bilateral trade, drive the upgrading of local industries, and form a new hub for sea connectivity.

Chinese SOEs entered Egypt's oil and gas resources investment market at the beginning of the 21st century, with Sinopec becoming Egypt's fifth largest oil production company in 2013.[56] The China Power Construction Corporation currently undertakes the Suez refining and petrochemical plant project, the Hamm Ravi coal mine project and the Ataka pumped storage power station project.[57] In March 2015, the China Harbor Construction Group (SOE) won the contract for operation of two ports in Egypt and will participate in the construction of the Ain Sokhna and Damietta ports in Egypt as the main contractor and operator.[58] In other words, Egypt's property-infrastructure-urban and energy driven regime of accumulation is intimately linked to China's interest and strategies of reproduction in the region.

In fact, most Chinese investments in renewable energies in the East Mediterranean is in solar technologies since the geography of the region offers certain advantages. Initially, Gulf Council Countries (GCC) and Egypt were initially competitors for this investment. Shanghai Electric, a Chinese SOE, purchased the majority of shares of ACWA, the electric monopoly of Saudi Arabia, and proceeded to build eco-cities in other GCC countries in 2018.[59] In the meantime, Chinese private enterprises began to invest in Egypt, such as the relatively small-scale plants built by the Hangzhou-based Chint Solar and TBEA Xinjiang New Energy in 2018,[60] and the market dominance of the Wuxi-based Suntech in household solar technologies.[61]

The reason why there is an increase in Chinese investments in Egypt since the second half of the 2010s is the Sisi leadership's search for alternative sources of foreign investment to compensate for the withdrawal of Gulf capital after 2013. The GCC ceased to support post-Arab Spring Egypt after a military coup overthrew former president Morsi, whom they backed. The Sisi government first reached out to the IMF for cheap credit and military aid which lasted until 2015.[62] The Egyptian economy witnessed a sharp decline in the FDI levels and the Sisi regime promulgated new investment laws to attract FDI. China and Egypt signed a comprehensive strategic partnership agreement in 2014, and to this day, Egypt is the only North African country officially designated as a BRI country.[63] China is Egypt's top trading partner as of 2020, and the national army is heavily involved in bilateral relations. Besides joint military trainings,[64] the Egyptian army is involved in major Chinese joint-ventures as an investor, including the New Administrative Capital and the second stage of the Banban Solar Park.[65] In 2015, the China National Nuclear Corporation (CNNC) signed a memorandum of understanding on nuclear energy cooperation with Egypt and became one of the formal partners of Egypt's nuclear power production.[66]

Among other Chinese investments in Egypt are the coal plant that was to be planned during the 2018 China Africa Cooperation Forum.[67] This coal plant was meant to solve the financial issues the two Chinese SOEs, Shanghai Electric and Dongfang Electric, were facing.[68] In the same period,China State Construction Engineering (CSCED) signed a contract to construct Egypt's New Administrative Capital (NAC), or New Cairo financed by a consortium of Chinese state banks.[69] Hence, China is perceived as a staunch supporter of the Sisi regime.[70] In 2020, China merged its solar investments in GCC and Egypt under the ACWA.[71] The ACWA and Chint Group jointly built three large-

scale solar projects in Egypt 2018. 75% of the financing of the project comes from the European Bank for Reconstruction and Development and 25% from the Industrial and Commercial Bank of China.[72]

5.2 The Benban financial architecture

There are three stages in the FDI inflow to Egypt's solar market. In the initial stage, besides the overall easing of FDI procedures, the Sisi government passed Renewable Energy Law that further enabled state-foreign capital coalitions.[73] Armed with the enabling legal framework, both the European and Chinese renewable energy companies primarily targeted Egypt's solar industry[74] as the local climate is suitable for the development of solar energy resources. Private companies from Germany, France, Spain, Norway, China, and the US were competing for the Egyptian local and household market.[75]

In the second stage, the Egyptian government, seeing the potential for FDI, created a special zone for solar investments in the north of Aswan called Benban photovoltaic industrial park. The Benban solar zone aims to attract foreign investment and technical expertise and to become the largest solar park in the world with more than 40 plots of varying sizes.[76] Initially, the actors that were already involved in Egypt's solar industry claimed parts in this ambitious project. For example, the US-based solar companies undertook the transportation system within the park.[77] The park was initially funded by a variety of investors. The World Bank-affiliated International Finance Corporation (IFC) provided $653 million for the Benban park.[78]

Since the agreement with the Enara Group working with the Ministry of Military Production in 2021,[79] China-related financial and technology institutions took over the majority of the park's operations. The Asian Investment and Infrastructure Bank (AIIB), the development bank of China's BRI projects, now supports the Benban solar park since 2020.[80] Concurrently, the Chinese SOEs replaced both the Chinese and European private companies as the primary actors in solar investments. The Chinese private companies, such as Chint Solar (aka Astronergy in the greater European area), now act as subsidiaries to the SOEs, such as the Gezhouba Group.[81]

The dominance of the Egyptian solar market by Chinese SOEs is a part of a broader trend in China's domestic renewable market. Unlike the traditional energy sectors dominated by large, local SOEs, private entrepreneurs initially helped expanding the renewable energy market in the 2000s in China.[82] Exporting the solar industry to the BRI countries was seen as a lucrative tool for industrial upgrading.[83] While China's overseas solar outreach flourished rapidly, the relatively small-scale companies without 'deep-pocket' financial security had to withdraw from some of their overseas investments when local conditions unexpectedly raised production costs.[84] Consequently, the Chinese central state decided to incentivize the large SOEs to enter into the renewables market and take over the green BRI investments.[85] Therefore, the Chinese SOE and AIIB control of the Benban solar park coincides with domestic transitions in both Egypt and China.

5.3 The developmental contradictions of decarbonization: Egypt's rising sun revised

Having explored the local and domestic dimensions of Chinese interest in solar investments, the Egyptian context is similarly important: the Egyptian government maintains the politically opportune narrative of providing rural development, employment and, above all, security, and stability to the Egyptian people with these projects.[86] Yet, naturally, developments of this scale also carry local developmental contradictions and are met with resistance from different societal actors and from several angles.

One, the solar technologies operate on the environmental orientalist assumption of an 'empty desert' and actually degrade local biodiversity. Relatedly, in Egypt, local environmental NGOs and green start-ups have been side-lined in the decision-making process when the state weighs in on the solar transition after 2020.[87] The start-ups work in collaboration with environmental NGOs to minimize the collateral damage solar technologies cause, but the Chinese large SOEs do not have contingency plans for environmental degradation caused by the construction of the solar park.

Chinese SOEs commit to creating employment during the construction of the Banban Park. In 2015, China and Egypt announced that they were going to build a National Joint Laboratory of renewable energy. The lab, opened in 2019, was led by the China Power 48 Research Institute (the only scientific research and production enterprise at the central level in China that has entered the top-ten global photovoltaic equipment producer list), Tianjin University (to be involved in the construction stage) and China Guodian Corporation (SOE). The solar transition in Egypt remains state-led and does not include the societal actors and local officials who point out the incompatibility of the technologies with poverty alleviation in the policy process.[88] The China-funded national solar panel project does not help poverty alleviation efforts in the long-run because they are not easy to use for locals. Besides, Chinese solar investments are criticized for being unaffordable for SMEs. In sum, China's investments in the Middle East are not necessarily for the destination countries' domestic market purposes[89] but a part of a geostrategic project to dominate the technology markets. The Sino-Egyptian solar ambition remains one that is led by a state capitalist, centralized vision of development. Decarbonization happens to be the imperative of the moment, but comparisons with the Aswan Dam are not far off in terms of a top-down and geo-strategically motivated large-scale energy project, this time carried out by two state capitalist powers, who have established a long-held joint developmental vision.

6 Conclusion: China's greening abroad: investment opportunity, decarbonization or geostrategy?

The Egyptian 'solar turn', comprising no less than the largest photovoltaic plant in the world, cannot simply be explained with China's generic interest in green investments, for which there is still untapped domestic potential. For Egypt, finding investors into solar parks could be done more easily by relying on private capital, again, including its own domestic startup scene, which, in turn, relies on the global taste for large-scale renewable energy projects. Then, what explains this peculiar and well-advanced Sino-Egyptian Solar cooperation?

This article has demonstrated that China has a distinct strategy to 'green', not just the world, but the BRI in particular. This, in turn, we have argued, is at its heart a geo-strategic decision. While capital accumulation, as well as decarbonization may be desirable side-effects, the Sino-Egyptian solar cooperation is much better explained by Beijing's desire to secure the BRI through investment projects, while Egypt also looks to diversify its heavy dependence on the US in the light of new regional and global threats. This is further illustrated by the top-down nature of the developments, which reflect both the Chinese and Egyptian state-led developmental approaches. Abstracting from this case, these peculiar constellations pose both risks and opportunities to the broader process of decarbonizing the capitalist world economy. More than anything, however, this demonstrates that a new age of post-carbon energy geopolitics is already in full swing in the East Mediterranean region. This should lay to rest all simplified narratives of a 'resource curse' determining the region's fate. It demonstrates the need to understand the complex and multilayered social process of energy transition. As this study has shown, China has and will play a major part in this process within and beyond Egypt.

Egypt's own version of 'greening' a desert that wasn't empty after all goes to show that domestic and national strategies of accumulation and the way in which they transform nature can never be understood in isolation. China's heavy involvement in the project, but also its general location alongside a major geostrategic trade route largely determine the way in which nature is appropriated by a geo-political economy and ecology alike. It remains to be seen whether the longer-term process of decarbonization can unleash any of its emancipatory political and ecological potential under the rapidly transforming global conditions of possibility, or whether it entrenches patterns of exploiting non-human and human nature alike.

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