

The Extractive Sector: Real Estate Urbanism in Greater Cairo and its Toll on the Environment

Ahmed Zaazaa

Publisher: CEDEJ - Égypte/Soudan Place of publication: Le Caire Year of publication: 2022 Published on OpenEdition Books: 24 November 2022 Series: Dossiers du Cedej Electronic EAN: 9782900956090



http://books.openedition.org

Printed version

Date of publication: 28 December 2022

Electronic reference

ZAAZAA, Ahmed. *The Extractive Sector: Real Estate Urbanism in Greater Cairo and its Toll on the Environment* In: *Middle Eastern Cities in a Time of Climate Crisis* [online]. Le Caire: CEDEJ - Égypte/ Soudan, 2022 (generated 24 novembre 2022). Available on the Internet: http://books.openedition.org/cedej/8564>. ISBN: 9782900956090.

THE EXTRACTIVE SECTOR: REAL ESTATE URBANISM IN GREATER CAIRO AND ITS TOLL ON THE ENVIRONMENT

GLOBAL TREND Climate change compounds existing vulnerabilities that are produced by a continual interaction of political, economic and social processes (Hassanain and Martina 2021). The forces of capital constantly reconfigure city spaces to maximize the value of assets and resources. The conversion of city spaces into separate archipelagos for investment – rather than parts of a social and natural ecosystem – forces the city's users to accept the production of an urbanization surplus, which expands the city massively and increases the burden on the environment. Within this dynamic, the entire city stage is subjected to radical changes that inevitably prioritize economic benefits over environmental duties (Zaazaa 2022).

Climate change is often perceived as a self-contained 'environmental' matter, whereas it is an intersectional issue. Climate change impacts urban life, manifested in the rise in sea levels and the intensification

^{*} Ahmed Zaazaa is a researcher who focuses on spatial and environmental justice in housing and planning. Zaazaa has co-founded two entities focusing on knowledge production and participatory research and design: '10 Tooba: Applied Research on the Built Environment' and 'Madd Platform'. Zaazaa also teaches urban design at several universities in Cairo.

of extreme weather events that affect human livelihoods and the built environment. However, urbanization and construction are key contributors to this, as they are among the largest extractive sectors for natural resources during construction, operation and even demolition processes. 'Estimates suggest that cities are responsible for 75 per cent of global CO₂ emissions, with construction being among the largest contributors' (UNEP n.d.). The nexus between the real estate sector and environmental quality is directly proportioned. Real estate contributes to 40 per cent of carbon emissions globally (Savills 2020), and global building stock is expected to double by 2050, with more people across the globe forecast to be living in cities (OECD 2011). The construction industry sector consumes 5 per cent of global energy and is responsible for 10 per cent of global emissions (GABC 2020). Cement production is the largest single industrial emitter of CO₂ and is responsible for 8 per cent of global CO₂ emissions (Ellis et al. 2019). These should be concerning statistics for anyone driving the sustainability agenda in the industry. Moreover, the real estate sector is expanding immensely, not taking its impacts into account but only concerned about market health.

The immense, ongoing and upcoming urban expansions that gain legitimacy through adopting new green technologies and building materials as well as green certifications as a way out or a golden solution encourage real estate investors to be heroes of climate stories and make money from it. Such sedatives remain impactless when fast-paced development and the urban frenzy to build spectacular spaces that are mainly directed at investments and profits take over city spaces, particularly when urbanization expands to create unnecessary real estate surplus to benefit the market instead of meeting social needs.

Real estate developers are now widely labelling their products as green and environmentally responsible projects, suggesting unrealistic indications that everyone will benefit from these projects, while they in truth only absorb what suits them and expel those who cannot afford them. This is a crucial and fundamental issue in understanding the reproduction of the ongoing environmental crisis and in framing the underlying political structures that create and sustain inequality in this new paradigm of real estate development. This article highlights the environmental impacts of the real estate urbanization that Cairo is witnessing today by tracing the development of the policies of the real estate economy in Egypt and understanding the sector's current magnitude. I argue that most real estate production is a surplus that benefits only investors rather than fulfilling social needs. Relying on such a fragile economy can be very risky for the economy, society and the environment and requires reviewing and containment immediately.

LOCAL ENDORSEMENT: REAL ESTATE POLICIES IN EGYPT AND THE AGGRAVATION OF ENVIRONMENTAL DEGRADATION

Prevailing development paradigms drive urban development strategies and interests that favour economic priorities at the expense of environmental policies and safeguards (Zetter and Hassan 2002, 169).

During the past decades, the Egyptian government has been aggressively promoting the real estate sector through processes of deregulation and privatization (Denis 2018). Lately, however, large-scale interventions have been planned, aimed at reshaping the state's economy, the physical urban fabric and socio-economic demographics. These critical conversions of the built environment and the production of a large stock of real estate surplus to absorb local and international capital encourage more commodification of the city's components of housing, public spaces and, lately, infrastructure. Consequences are reflected in uneven development, urban dilapidation and decay and a massive degradation of the environment.

These types of projects are not novel, though they are defiantly the most intense in terms of scale, magnitude and pace. They are the outcome of the evolution of a planned economy that has always prioritized real estate over other crucial social and environmental aspects. In the 1950s, extensive tracts of land were reclaimed from the rich, and agricultural land was redistributed to agricultural workers. A cornerstone of the agrarian reform project was the state claiming ownership of all desert land. 'Although people welcomed Nasser's rule – especially the poorer segments of society – the majority remained excluded, as capital was transferred from the old bourgeoisie to a new bourgeoisie of technocrats' (Magdy 2014).

In parallel, Cairo has become more centralized and acted as a magnet, attracting numerous migrants from other parts of the country. In 1956, the first Greater Cairo Region (GCR) master plan was announced, which supported industrialization as a means of urban expansion with the provision of housing and infrastructure. This was done through expanding Cairo to the east in order to limit western urban expansion and protect cultivated land from encroachments (Municipality of Cairo 1957). Conversely, informal urbanization grew, stimulated by the continuation of internal migration, which outsized the government's ability to cope with its political commitments of providing housing and urban services. 'Practically all of

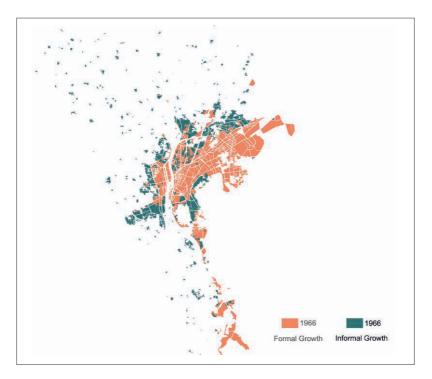


Figure 1. The informal growth of Cairo on western agriculture land, late 1960s. Source: Map by Ahmed Zaazaa, 2022. Map source: CoronaCast Satellite, 1966 to 1972. https://corona.cast.uark.edu/ (accessed 23 September 2022).

Cairo's expansion has been on rich agricultural land. Only the eastern districts, most notably Medinet Nasr, Nozha (and earlier Abassia and Heliopolis), have been created on what was desert land' (Sims 2003, 2). This degradation and loss of agricultural land affected the environment; moreover, overcrowded buildings lacked infrastructure such as sewage systems and potable water (Figure 1).

Although the poor planning and its consequences might have been unintentional and uncontrolled, official attempts at overcoming the negative impacts in an inclusive way were discouraging. 'Any discussion or negative assessment of the environmental consequences of development projects ... were regarded as anti-state and thus faced hostile reaction from government ... The prevailing ideology was that investment in environmental protection, pollution control and effective urban planning instruments would constrain economic growth rates' (Zetter and Hassan 2002, 173, 175). Official information about environmental impacts was restricted, and there were no channels for awareness and public pressure (Gomaa 1997). The real estate sector in Egypt was subject to more state control and intensified regulations in the 1960s, while other countries underwent a paradigm shift to include civil society in environmental advocacy (Ibrahim 1996).

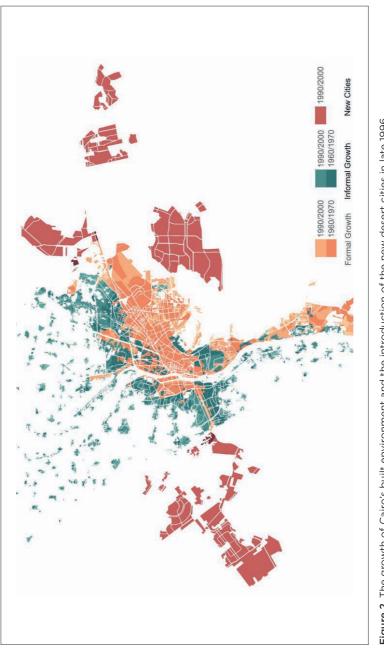
The urban planning policies in the 1970s and '80s opened the door for today's urbanization boom. In 1970, the second GCR master plan (reaffirmed in 1982) enabled the massive opening of desert land to urbanization, especially towards the east, to start building the new desert cities (Cornu 1985). During this same period, informal settlements expanded rapidly, extending to include the desert's edge and continuing to consume agricultural land. The 'Open Door' economic policy, which encouraged and enabled the private sector to take over economic sectors - including real estate - continued to assert the primacy of economic development over other pressing needs. The primary aim was to create a flexible atmosphere for the private sector to take charge of development and remove the burden from the public sector. This included enforcing environmental measures on the private sector's investments. With the 'Open Door' policy, the problems were magnified, as needs for affordable housing were still ignored. Highly productive agricultural land was lost: during the 1981-1988 period alone, 340 square kilometres were converted into urban use (El Araby

2002). The government displayed minimal concern and control because the prevailing interest was in preparing for a new era of real estate development. As mentioned by a New Urban Communities Authority (NUCA) official, 'We have to complete our plans. We cannot look to see if people come or not. They will come' (Sims 2015, 126).

In the early 1990s, Egypt signed a programme of reform and economic liberation with the International Monetary Fund (IMF) and the World Bank (WB), which required even more reduction in public spending and encouraged more privatizations. These agreements led the government to use land as a profitable resource that could attract and expand the private sector's involvement in urban development. 'The real estate boom of the 1990s and the early twenty-first century changed everything ... In less than fifteen years, the urbanized area of Cairo has almost tripled in size ... land on the desert fringes, which is the property of the state, began to be sold without restraint or any overall plan to private developers. This transfer continues to this day, involving increasingly gigantic private projects' (Denis 2018). Such expansion has led to a tremendous increase in car mobility. The number of motor vehicles registered in the GCR increased from 0.5 million in 1980 to 2.4 million in 1992, at 13.5 per cent annually (GCUDS 1992), while emissions accounted for 60 per cent of all air pollution in the GCR (UNCSD 1997) (Figure 2).

Simultaneously, in 1992 – with the promise from Paris Club to reduce Egyptian debt by 12 per cent, to be allocated to environmental projects (Prosterman and Hanstad 1992) – the government signed the National Environment Action Plan as the first policy instrument to mobilize efforts and investments of both the government and international donors in dealing with environmental challenges. Two years later, the Environmental Protection Law was passed. These steps were crucial to take account of the pressing environmental needs, such as air and water pollution and waste management, enhance capacity and strengthen the institutional base. However, neither the action plan nor the law were concerned with the rapid urban expansion.

During the same period, the government facilitated the sale of more land to 'contractors' (later named real estate developers) for more urban expansion through bank loans guaranteed by the land. This evolved to allow the sale of units to the public from a plan, without construction



having been initiated, to use the money for building costs. 'Huge tracts of land began to be sold at giveaway or below-market prices to an emerging new breed in Egypt, the corporate real-estate developer' (Sims 2015, 128). The contractors made profits while taking minimal risks, since buyers bore most of the projects' completion costs. These projects thrived on the market and resulted in more urban expansion. For example, housing compounds, recreation and service developments in the new city Sixth of October alone increased by 76 per cent from 1994 to 2000 (El Araby 2002). In 1998, the construction materials sector flourished and opened the door for the private sector and even international corporations to invest. Factories such as Germany's Heidelberg Cement, France's Vicat, Switzerland's LafargeHolcim, Greece's Titan Cement and Mexico's CEMEX invested heavily in Egypt's construction market (Werr 2021).

The reliance on the real estate economy increased income gaps rather than providing solutions for the most important problem: poverty. In 1995, the GCR population reached 13.4 million. Poverty, in terms of baseline measures, increased from 20.3 to 22.5 per cent from 1991 to 1996 (Sabry 2009) and reached 25.2 per cent by 2010 (UNICEF 2015). It is manifested in the ongoing shortage of affordable housing, leading to the continuation of construction on agricultural land.

In 2008, the 'gated community' typology was the largest trend in the real estate market. With the expansion of 'residential compounds' and 'gated communities', real estate appraisal jumped to a new level. Some gated communities were planned on plots as large as some European cities. 'Madinaty' (a gated neighbourhood east of Cairo), for example, was planned on thirty-five square kilometres, nearly the surface area of Cambridge in the United Kingdom. Even the public sector became interested in becoming a player on this profitable market, and public housing has given way to the extensive development of luxury apartments on the urban periphery. The urban elite have chosen the periphery to escape the deteriorating environmental conditions in the city, such as air and noise pollution and traffic congestion. The market even acted as a gateway for fast profits for middle-income groups. Small investors benefited from receiving small plots from the government; by land hoarding, they doubled their investments in only a few months.

TRADING THE SURPLUS

While the urbanization impacts on the environment emerged during the 1960s, evolved in the 1970s and 1980s and were consolidated in the 1990s and 2000s, the magnitude of urbanization after 2015 was inconceivable. The government reintroduced itself to the market as the landlord, the developer, the market manager and the promoter of the national project. Adopting these new roles went along with the entry of different state agencies into partnerships with real estate developers.

The resulting, even more complex urban structure that now exists bears the imprint of different approaches to real estate urbanization. The development of Cairo is going in two directions, which are separated geographically but share a vision to consolidate the real estate market. The first trajectory is the New Administrative Capital (NAC) and its spill over, which are to act as an alternative future for Cairo and have opened a new, giant market in the desert. It was announced in 2015 and intends to cover an area of 700 square kilometres of the eastern desert of Cairo, equal to the size of Singapore. The planned development is to include the new government and ministries' headquarters, central business districts and residential neighbourhoods, mostly directed at upper-middle incomes and above. It would also include the highest tower in Africa, an international airport set to be larger than London's Heathrow, a thirty-kilometre-long public park (larger than New York's Central Park), an amusement park four times the size of Disneyland to serve its residents and visitors and 10,000 kilometres of roads.¹

The second trajectory is embodied in the Cairo 2050 plan, which focuses on gentrifying the city centre to justify another type of investment opportunity. The plan appeared in 2008 and is already being implemented to create a new image for the inner city and turn several traditional neighbourhoods into recreational/commercial and business centres. Accordingly, it is adding more land stock directed at real estate, neglecting indicators that show the area's saturation.

In a study comparing the population that NUCA aimed at for the new cities in Egypt with their actual population, the disparity

^{1.} Advertising material collected from various magazines promoting the NAC.

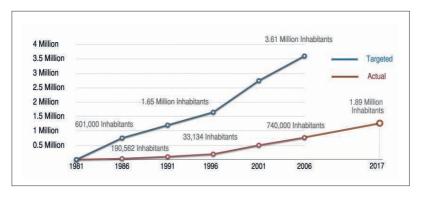


Figure 3. Targeted versus actual population in the new cities. Source: Shawkat, Y. 2013. "Social Justice and the Built Environment". *The Shadow Ministry of Housing*.

between the two figures indicates that new cities did not succeed in attracting inhabitants (Shawkat 2013).² NUCA aimed at 3.61 million inhabitants but was able to attract less than a quarter of these in 2006. Even eleven years later, in 2017, the population increased to only 1.89 million (Figure 3).

While buildings are being constructed continuously, most remain empty and serve only investment objectives rather than having the social use of housing. '[In 2015,] vacancy rates for all units counted in Sixth of October and New Cairo reached 61 percent and 63 percent respectively. In Sheikh Zayed vacancy rates were 69 percent, in al-Badr New Town 71 percent, and in al-Shuruq 79 percent' (Sims 2015, 150). Moreover, the general number of vacant residential units in Egypt reached 11.7 million in 2017 (Central Agency for Public Mobilisation and Statistics [CAPMAS] 2017).

David Sims points to the population increase in the decade between 2006 and 2017: the CAPMAS census showed an increase of five million inhabitants in the GCR's population, with formal neighbourhoods accounting for 12 per cent of the population increase. While the new cities, which hardly include 6 per cent of the population, were able to accommodate only 12 per cent of the increase, the informal

Comparing NUCA's data on its targeted population and actual population data from CAPMAS.

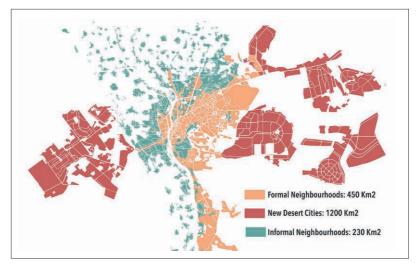


Figure 4. Evolution of the three main urban typologies shaping Cairo. Source: Map by Ahmed Zaazaa, 2021. Map source: CAPMAS Data, analysed by David Sims, 2019.

settlements – already containing 69 per cent of the total population of the GCR – absorbed the rest of the population increase (Sims 2019). Such statistics show the incapability of the new cities' real estate to contribute meaningfully to solving the GCR's problems. They also revealed the niche group that this typology aims to attract (Figure 4).

This surplus is also observable from the satellite images revealing all uninhabited villas that are left unfinished until today. These projects launched their units more than six years ago, but, regardless of their empty stock, some are launching their new phases soon (Figure 5).

These statistics and observations show the saturation of the residential stock, to the extent that there is already a colossal surplus. However, these alarming statistics never stopped the rollercoaster, and there was even room for more, as they coincided with the launching of the NAC and a handful of other mega residential projects (Nour City/Capital Gardens, New October and New Sphinx in Cairo; New Alamein and New Mansoura in and around the Nile Delta). The government's injection of large public investments in the infrastructure sectors encouraged the growth of the real estate sector. NUCA offered 15,000 land plots in only three of its numerous projects in east Cairo



Figure 5. Upper left image: Palm Hills - October Gardens, 2022 (sales started 2017); upper right image: Alegria - Sheikh Zayed, 2022 (sales started 2016); lower left image: Madinaty - New Cairo, 2022 (sales started 2016); lower right image: Qattameya Dunes - New Cairo, 2022 (sales started 2017). Source: Google Earth satellite maps, 2022.

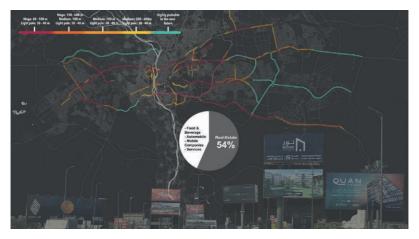


Figure 6. Mapping mega billboards in the GCR, numbering over 3,500. Most are used for real estate advertisements, dominating public spaces and main roads and arteries. Red lines indicate that these billboards can be only 40 metres away from each other. Source: Map by Ahmed Zaazaa, 2021. Map source: Field mapping.

(NUCA 2016). In 2016, new cities received public investments equivalent to all other Egyptian villages and cities combined (which house 98 per cent of the population; 10 Tooba 2016). In 2018, the construction and real estate sectors accounted for 16.4 per cent of GDP, making them equivalent to the relative weight of the entire industrial sector in Egypt (Ramadan 2019). These figures increased in 2022 to reach 18.5 per cent (11.4 per cent for real estate activities and 7.1 per cent for construction) (Shawkat 2022). While 80 to 85 per cent of housing demand is directed at affordable housing (Abdel Hamid 2018), high-end housing advertising dominates the 3,500 mega bill-boards in the GCR (Figure 6).

The real estate rumble is not limited to residential activities. According to a report by JLL (2021), total commercial space available for lease reached around 2.3 million square metres in 2020, in Cairo only. That adds around one million square metres of commercial space, an increase of 77 per cent compared to 2016.

All these projects in Cairo (implemented or planned) are stretching the urban region to an alarming scale (Figure 7).

QUANTIFYING THE ENVIRONMENTAL PRICE

The massive urbanization and real estate development projects need construction material to fuel their growth, which comes with more direct costs for the environment. According to the Climate Watch Platform, in 2015, Egypt ranked number 30 worldwide among the biggest emitters of greenhouse gases (GHG) in the building sector (Climate Watch n.d.). Construction accounts for at least 23 per cent of GHG emissions, industrial process and product use (IPPU) contributes 12.5 per cent, while construction material production is responsible for 75 per cent of IPPU emissions (EEAA 2018). Construction and demolition waste in general contribute about 50 per cent of total global annual solid waste (Daoud and Bayyati 2020).

There is no doubt that the government's reliance on cement as a main building material in its urbanization programme enlarges the carbon footprint. The production capacity was ranked eleventh in the world between 2010 and 2020 (Enterprise 2020). In 2014, cement production contributed to 6.85 per cent of all CO₂ emissions in Egypt (Knoema n.d.), jumping to 8 per cent in 2018 (EEAA 2018). Regardless, cement

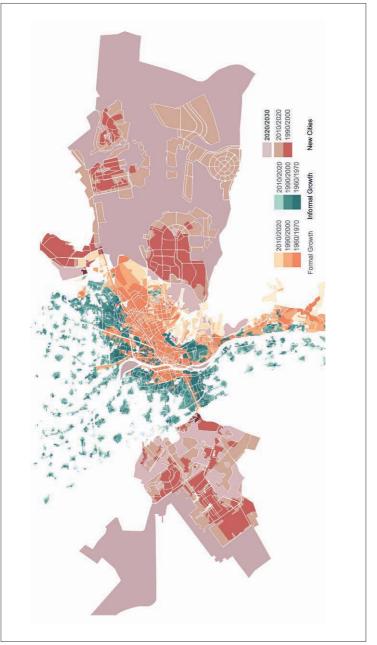


Figure 7. Actual expansion between 2010 and 2020 and the planned expansion of Cairo by 2030. Source: Map by Ahmed Zaazaa, 2022. Map source: Google satellite image, 2020, and official expansion plans.

production capacity in Egypt expanded and exceeded demand significantly. In 2017, it reached 74.3 million tons/year, while demand in the same year was 53.9 million tons (CID n.d.). In 2018, the government built one of the biggest cement factories, with a production capacity of 13 million tons/year. The new factory is so massive that the Chinese vice president of Simona, the company responsible for mechanical work in the factory, told Reuters: 'It is the biggest plant to be built all at one time ... We haven't had anything like it in China' (Werr 2018). In 2021, cement production capacity doubled to reached 84.5 million tons, while demand was only 47.8 million tons (CID n.d.).

Egypt's urbanization plans require other energy-intensive construction materials, such as steel, of which Egypt is the largest consumer in the Middle East and North Africa region (OECD 2020). Steel production contributes 1 per cent of Egypt's CO_2 emissions. In addition, numerous other construction materials – paint, insulation, ceramics, bricks and stone – all come at great expense to the environment, not only in terms of GHG emissions but also in terms of their very high consumption of water and energy.

Egypt is the ninth-most water-stressed country in the world (Maplecroft 2011). Egyptian president Abdel Fattah el-Sisi recently revealed that the country has reached the stage of water poverty, with less than 500 cubic metres of water per capita available annually (Alaa 2021). However, this did not change the provision of luxurious amenities in the new real estate development projects, such as large golf courses and artificial lakes, which quickly became primary parts of marketing plans for high-end housing in Egypt. Out of twenty golf courses in Egypt, Cairo contains thirteen (El-Kholei 2020). Twelve courses are located in different gated communities. The average golf course needs about one million cubic metres of water per year, which is equivalent to the water consumption of a town of 12,000 inhabitants (Wahba 2021). All this puts unnecessary stress on a country that already suffers from water scarcity.

The published master plans and visualizations of the NAC have also raised concerns about the energy needed for the proposed architectural model. Glass skyscrapers are the main feature, which will create a great demand for energy needed for thermal comfort in the buildings as more heating, ventilation and air conditioning systems



Figure 8. New roads and bridges in the GCR between 2020 and 2022. Source: Map by Ahmed Zaazaa, 2022. Map source: Google Satellite and field mapping.

are required to overcome the greenhouse effect resulting from the glass facades. An estimation showed that NAC alone will consume 1.5 million cubic metres of water a day (Michaelson 2018). A similar approach is followed in most of the Cairo 2050 plan: building glass high rises in the city centre of Cairo.

Additionally, the planning approach encourages reliance on motor vehicles in the desert cities. The new desert cities required modifications in the city centre so it could accommodate new road networks, directed particularly to the NAC. East Cairo witnessed enormous urban interventions, where hundreds of highways and bridges penetrated the city centre. Between 2020 and 2022, more than 107 bridges were constructed in Cairo alone, dozens of inner roads were drastically widened, and new roads were built, cutting through residential neighbourhoods. The architect Norman Foster commented: '[One] has to question why Egypt is building huge roadwork when elsewhere in the world the lessons have been already learned ... building motorways for something already extinct like a dinosaur' (Moustafa 2022) (Figure 8).

The incremental expansion of the GCR encouraged more dependency on motor vehicles because distances became significantly larger. In return, sixty-five new petrol stations owned by the government were added to the GCR between 2018 and 2022. In some cases, these stations substituted basic urban services, such as plant nurseries, central markets and central bus stations (Figure 9).



Figure 9. New petrol stations added between 2018 and 2022. Source: Map by Ahmed Zaazaa, 2022. Map source: Google Maps and field mappings.

The new infrastructure built to serve the real estate development in the east of Cairo has destroyed immense green areas due to road widening and bridge construction, which directly affects the urban heat island effect (HIE) in these areas. Cairo's green spaces were already rare, as the individual share of green public spaces was 1.5 square metres in 2003, compared to 16 square metres on average in European cities (Al-Zafarani 2003). However, in 2020, around 390,000 square metres were lost, specifically east of the city, due to urban interventions (Monte Carlo Doualiya 2021). This is equivalent to fifty-four football fields. In addition to the loss of trees and green areas that used to reduce the HIE, as they created shaded areas and increased humidity (Kumar 2013), replacing green areas with asphalt increases the urban HIE by increasing the air temperature during the day and radiating absorbed heat at night, creating a continuous heat effect (Fathallah and Ragheb 2022). The photo in Figure 10 is just one example of the many cases that eastern Cairo witnessed (Figure 10).

The new roads and bridges also required the demolition of a huge number of residential buildings and the relocation of their residents. The social impacts of these demolitions are immeasurable and symbolize the core of climate injustice.



Figure 10. Example of road widening and losing green spaces. Source: Photos posted on social media by neighbourhood residents.

SETTING OUR PRIORITIES

Egypt has been present at several international environmental events. It has signed the Kyoto Protocol and Paris Agreement. It was involved in the Climate Summit, the Millennium Development Goals and the Sustainable Development Goals. It is also a member of the United Nations Framework Convention on Climate Change (UNFCCC) and the International Environmental Agreement. Yet, to which extent these agreements and memberships have helped Egypt combat climate change remains questionable.

International organizations are witnessing and even supporting and praising the market-based solutions approach to climate change, with fewer concerns about climate justice. In the 1990s, when the real estate market was established and proved how extractive it can be, Western donors praised Egypt as a neoliberal success story (Osman 2011). In 2008, UN-Habitat supported the Cairo 2050 plan, which preserves the business-friendly spirit and plans for new, gigantic high-end residential and commercial projects and the relocation of thousands of residents. Also, at the peak of the unprecedented real estate expansion in 2021, UN-Habitat awarded NUCA the Scroll of Honour Award in the field of sustainable urbanization (*Ahram Online* 2021). Egypt also received praise during the Third Global Ministerial Conference on Road Safety in Sweden (Mansour 2021), while in the same year the death rate from road accidents in Cairo was exceptionally high (Saad 2022). These are simply examples we can provide to question how likely it is that international donors will support real change that might contradict the economic factors that contribute to climate change and injustice. There are no signs of attempts to reduce growth over production and consumption.

Focusing on our priorities is crucial. Egypt is already making appreciated efforts in reducing industrial emissions. The energy sector is expanding with solar and wind farms, improving energy efficiency in the industrial sector and has started awareness campaigns to reduce water consumption. Egypt also began to develop crops adapted to higher temperatures and enforce irrigation systems that help save water. And in the construction sector, Egypt is endorsing green cement and encourages green building certifications. However, compared to the magnitude of unstoppable urban expansion, these efforts can be negligible.

It is very risky to depend on a fragile economic resource such as real estate, which can easily collapse as a reaction to numerous events, even simple rumours. With any downfall in this market, the environmental agenda falls to the bottom of the priority list, as at the top of the list will be overcoming the economic crisis. And the history of prioritizing this sector and it becoming an economic pillar shows that it was never successful in solving the most important needs. On the contrary, poverty rates in Egypt have reached unprecedented figures, hitting 32.5 per cent in 2017. Even when it declined to reach 29.7 per cent, it is still far worse than during the previous decade. On the contrary, poverty spiked in 2020, alongside the real estate boom (Ahram Online 2022).³ Moreover, the government encouraging investments in this market and marketing it as the safest haven for Egyptians' savings drastically reduces opportunities to diversify local investments among more sustainable and stable markets, such as agriculture, energy, industry and tourism (Adly 2016).

For any meaningful policy shift, a change of perspective is necessary, not only in Egypt but globally. The development of cities' political economies, the climate and the environment are deeply interconnected by a web of complex relations and interdependencies, held in a

According to CAPMAS's report for fiscal year 2019–2020, nearly 30 per cent of the Egyptian population lived below the poverty line (around thirty million Egyptians).

precarious state of balance. Changing one component forcibly reconfigures the entire system. Evaluating the success of a development strategy must entail an assessment of the losses that its interventions have caused. Structural indicators to assess overall gains and losses are crucially needed to understand the bigger picture of the development ecosystem instead of perceiving the construction industry, real estate development and the environment as separate issues and hence applying separate success criteria. The management department of the Ministry of Environment produces environmental impact assessment reports for urban development, which cover various aspects on different levels. But an independent review of government plans to ensure their environmental soundness is needed to overcome any political constraints. Scientific, independent assessments are crucial, conducted only by representatives of civil society and academia from the Middle East and North Africa region. They can evaluate and connect interrelated impacts and weigh benefits against losses through both holistic and intersectional frameworks. Governments should be obliged to provide this platform with access to transparent information about urban development projects to enable cross-disciplinary assessments, including environmental, social and economic impact assessments. This can be a step in enabling development with realistic and impactful strategies to reduce losses.

REFERENCES

- 10 Tooba. 2016. 'The Built Environment Budget 2015/16: An Analysis of Spatial Justice in Egypt'. http://www.10tooba.org/en/?p=172.
- Abdel Hamid, May. 2018. Presentation at seminar 'Will Egypt Face a Real Estate Bubble?' Egyptian Center for Economic Studies, September 18. https://www. eccs.org.eg/cms/NewsUploads/Pdf/2018_12_15-15_19_333d067c7d.pdf.
- Adly, Amr. 2016. 'Real Estate Economy and the Development Problem in Egypt'. Carnegie Middle East Center. https://carnegie-mec.org/2016 /07/17/ar-pub-64080.
- Ahram Online. 2021. 'Egypt's New Urban Community Wins 2021 UN-Habitat Scroll of Honour Award'. September 18. https://english.ahram.org.eg/ News/423309.aspx.
- *AhramOnline*.2022. 'Egypt'spovertyratedroppedto29.7%in2019/20:CAPMAS'. October 17. https://english.ahram.org.eg/News/477989.aspx.

- Alaa, Ahmed. 2021. 'Alsiysi: misr tadakhul khati alfaqr almayiyi... wa 95% min al'aradi almisriat sahrawiat jafatan' [Al-Sisi: Egypt is entering the water poverty line... and 95% of Egyptian land is dry desert]. Shourouk News, October 12. https://www.shorouknews.com/news/view.aspx?cdate= 12102021&id=e5f536c2-ccf4-4675-a4ff-34542e8a7351.
- Al-Zafarani, A. 2003. Al-manatiq al-khadra' fi al-qahira al-kubra, al-mushkila wa-'imkaniyat al-hal [Green Areas in Greater Cairo, the Problem and Possibilities for a Solution]. Faculty of Urban Planning, Cairo University.
- CAPMAS (Central Agency for Public Mobilisation and Statistics). 2017. 'Egypt Census: Residents, Housing and Facilities'. Census report, 2017. https://www.capmas.gov.eg/Pages/Publications.aspx?page_id=7195&Year =23345.
- CID (Cement Industry Division). n.d. 'Cement Production in Egypt'. Accessed September 26,2022. https://cementdivision.com/cement-industry-in-egypt /facts-and-figures/.
- Climate Watch. n.d. 'Historical Emitters: Buildings'. Accessed September 26, 2022. https://www.climatewatchdata.org/data-explorer/.
- Cornu, Jean E. 1985. 'Planning for Cairo's Future Environment'. In The Expanding Metropolis: Coping with the Urban Growth of Cairo, edited by Ahmet Evin, 188–91. Singapore: Concept Media/The Aga Khan Award for Architecture.
- Daoud, Ahmed O., Ayman A. Othman, and Ali Bayyati. 2020. 'An Investigation into Solid Waste Problem in the Egyptian Construction Industry: A Mini-Review'. *Waste Management & Research: The Journal of Sustainable Circular Economy* 38, no. 4: 371–82.
- Denis, Eric. 2018. 'Cairo's New Towns: From One Revolution to Another'. In *Cairo Desert Cities*, edited by Marc Angélil and Charlotte Malterre-Barthes, 34–47. Berlin: Ruby Press.
- EEAA (Egyptian Environmental Affairs Agency). 2018. Egypt's First Biennial Update Report to the United Nations Framework Convention on Climate Change. Cairo: Ministry of Environment. https://unfccc.int/sites/default/ files/resource/BUR%20Egypt%20EN.pdf.
- El Araby, M. 2002. 'Urban Growth and Environmental Degradation'. *Cities* 19, no. 6: 389–400.
- El-Kholei, A. 2020. 'Does Urban Planning in Egypt Address Environmental Issues and Social Justice?' *Alternative Policy Solutions*, June 16. https://aps.

aucegypt.edu/en/articles/455/does-urban-planning-in-egypt-addressenvironmental-issues-and-social-justice.

- Ellis, Leah D., Andres F. Badel, Miki L. Chiang, Richard J.-Y. Park, and Yet-Ming Chaing. 2019. 'Toward Electrochemical Synthesis of Cement—An Electrolyzer-Based Process for Decarbonating CaCO₃ While Producing Useful Gas Streams'. *Proceedings of the National Academy of Sciences of the* United States of America 117, no. 23: 12584–591.
- Enterprise. 2021. 'Just how bad is construction material pollution in Egypt?' May 25. https://enterprise.press/stories/2021/05/25/just-how-bad-is-con-struction-material-pollution-in-egypt-41742/.
- Fathallah, Riham N., and Riham A. Ragheb. 2022. 'Evaluation of Thermal Comfort and Urban Heat Island through Cool Paving Materials Using ENVI-Met'. Ain Shams Engineering Journal 13, no. 3: 101609.
- GABC (Global Alliance for Building and Construction). 2020. 2020 Global Status Report for Buildings and Construction: Towards a Zero-Emissions, Efficient and Resiliient Buildings and Construction Sector. Nairobi: UN Environment Programme. https://globalabc.org/sites/default/files/inline-files/2020%20 Buildings%20GSR_FULL%20REPORT.pdf.
- Gomaa, Salwa S. 1997. *Environmental Policy Making in Egypt*. Gainesville: University Press of Florida.
- Greater Cairo Urban Development Study (GCUDS). 1992. Development Report 1990. Cairo: Institute of National Planning. Cited in El Araby, M. 2002.
 'Urban Growth and Environmental Degradation'. Cities 19, no. 6: 389–400.
- Hassanain, Ola, and Egbert A. Martina. 2021. 'Architectures of the (Un)inhabitable'. Disembodied Territories Project. https://disembodiedterritories. com/Architectures-of-the-Un-inhabitable.
- Ibrahim, Saad Eddin. 1996. An Assessment of Grass Roots Participation in the Development of Egypt. Cairo: American University in Cairo Press.
- JLL (Jones Lang Lasalle). 2021. The Cairo Real Estate Market: A Year in Review 2020. https://www.jll-mena.com/en/trends-and-insights/research/the-cairo-real-estate-market-a-year-in-review-2020.
- Knoema. n.d. 'Egypt: CO₂ Emissions from Cement Production'. Accessed September 26, 2022. https://knoema.com/atlas/Egypt/topics/Environment/ CO2-Emissions-from-Fossil-fuel/CO2-emissions-from-cement-production.

Kumar, Karnati K. 2013. Sustainable Urban Development – Minimizing Urban Heat Island Effect and Imperviousness Factor in Bangalore. The Energy and Resources Institute. https://www.teriin.org/projects/apn_capable/pdf/bang _present/Kiran_Kumar.pdf.

- Magdy, Rana. 2014. 'Cairo: A History of People's Right to the City'. *Open Democracy*, July 19, 2014. https://www.opendemocracy.net/en/north-africa-west-asia/cairo-history-of-peoples-right-to-city/.
- Mansour, Moustafa. 2021. 'Mamarrat al mout: Shaware' mujaddada wa mutawwara, tastad al mushah' [Passages of death: Renewed and widened roads, hunting pedestrians]. *Arij*, October 20. https://arij.net/investigations/Cairo -Streets/.
- Maplecroft. 2011. 'Water Stress Index 2011'. *PreventionWeb*. https://www.preventionweb.net/files/20129_wsimapglobal.pdf.
- Michaelson, Ruth. 2018. "Cairo has started to become ugly": why Egypt is building a new capital city'. *The Guardian*, May 8. https://www.theguardian.com/cities/2018/may/08/cairo-why-egypt-build-new-capital-city-desert.
- Monte Carlo Doualiya. 2021. 'Misr al-jadidat: Al-Jisr aladhi yakhtariq mintaqa turathiya wayuhadid kanisat al-barun 'amban' [Heliopolis: The bridge that crosses a heritage area and threatens the Baron Amban Church]. *Monte Carlo Doualiya*, February 2. https://www.mc-doualiya.com/الـــرق. الأوسط/-20210204مصر -الجديدة-الجسر -الذي-يخترق-منطقة-تراثية-ويهدد-كنيسة-البارون-أميان
- Moustafa, Doha. 2022. 'Norman Foster in Egypt: "Motorways Are Becoming Extinct Like Dinosaurs!" *LinesHub*, April 5. https://lines-hub.com/norman-foster-motorways-are-becoming-extinct-like-dinosaurs/
- Municipality of Cairo. 1957. *Master Plan of Cairo*. The Planning Commission of the Ministry of Municipal and Rural Affairs Société Orientale de Publicité.
- NUCA (New Urban Communities Authority). 2016. Report. http://www.new cities.gov.eg/Allocation/default.aspx.
- OECD (Organization for Economic Co-operation and Development). 2011. *Environmental Outlook to 2050: The Consequences of Inaction*. https://www. oecd.org/g20/topics/energy-environment-green-growth/oecdenvironmen taloutlookto2050theconsequencesofinaction.htm.
- OECD (Organization for Economic Co-operation and Development). 2020. Steel Market Developments: Q2 2020. https://www.oecd.org/sti/ind/ steel-market-developments-Q2-2020.pdf.
- Osman, Tarek. 2011. Egypt on the Brink: From the Rise of Nasser to the Fall of Mubarak. New Haven, CT: Yale University Press.

- Prosterman, Roy L., and Timothy Hanstad. 1992. Egyptian Development and U.S. Aid: A 25-Year Perspective. Seattle: Rural Development Institute. https://pdf.usaid.gov/pdf_docs/PCAAA798.pdf.
- Ramadan, Mohamed. 2019. 'Al-Fuqqa'a al-aqareyya fe Masr: Hall Nahnu Muqbeloun 'ala Infigariha? (Real Estate Bubble in Egypt: Are We Approaching to Its Burst?)'. *Ida'at*, May 16. https://www.ida2at.com/real-estate-bubbleegypt-are-we-going-explode/.
- Saad, Islam. 2022. 'Hawadeth al Turuq: Kayfa Yumkin al Hadd min Hathehe al Dthahira' [Road Accidents: How to Mitigate this Phenomena]. BBC Arabic, August 12, 2022. https://www.bbc.com/arabic/middleeast-62441937.
- Sabry, Sarah. 2009. 'Poverty Lines in Greater Cairo: Underestimating and Misrepresenting Poverty'. Working Paper 21, International Institute for Environment and Development. https://www.iied.org/10572iied.
- Savills. 2020. 'Real Estate's Road to Net Zero Carbon'. https://www.savills.com /impacts/natural-forces/real-estates-road-to-net-zero.html.
- Shawkat, Yahia. 2013. 'Social Justice and the Built Environment: A Map of Egypt'. *The Shadow Ministry of Housing*. https://www.academia.edu/4975995 / العدالة_الإجتماعية_والعمران_خريطة_مصر.
- Shawkat, Yahia. 2022. 'Who Owns Cairo?' *The Built Environment Urban Observatory*, September 12. https://marsadomran.info/en/2022/09/2535/.
- Sims, David. 2003. Global Report on Human Settlements 2003, The Challenge of Slums: The Case of Cairo, Egypt. London: Earthscan.
- Sims, David. 2015. *Egypt's Desert Dreams: Development or Disaster?* Cairo: American University in Cairo Press.
- Sims, David. 2019. 'The Distorting Luxury of Infinite Spaces: Egypt's New Capital, New Cities, and New Industrial Areas'. Public lecture organized by Alternative Policy Solutions Center in the American University in Cairo, March 31. https://aps.aucegypt.edu/en/events/55/the-distorting-luxury -of-infinite-space.
- UNCSD (United Nations Commission on Sustainable Development). 1997. *Egypt: Country Profile*. New York: United Nations.
- UNEP (United Nations Environment Programme). n.d. 'Cities and Climate Change'. Accessed September 15, 2022. https://cutt.ly/pPe10fg.
- UNICEF (United Nations Children's Fund). 2015. 'Children in Egypt: A Statistical Digest'. Cairo: UNICEF Egypt. https://www.unicef.org/egypt/ reports/children-egypt-2015.

- Wahba, Rabie. 2021. 'Bayn thunayiyat al-haq-ala-istithmar mala'ib al-golf w-al-tanmiat al-munhazat' [Between the duality of rights and investment: Golf courses and biased investment]. In *Mintaqa fi khatar! Al-'adala bayn al-ab'ad al-bi'iya w-al-iqtisadiya* [A region in danger! Justice between environmental and economic aspects], edited by Greenpeace, 26–28). https:// www.greenpeace.org/static/planet4-mena-stateless/2021/12/9d002e40--.idf.
- Werr, Patrick. 2021. 'Exclusive–Egypt's Competition Authority Approves Cement Quotas, Document Says'. *Reuters*, July 6, 2021. https://www.reuters. com/article/idUSKCN2EC0ZZ.
- Zaazaa, Ahmed. 2022. 'How Green is the New Real Estate Development Paradigm in Egypt?' *Alternative Policy Solutions*, March 8. https://aps.aucegypt.edu/en/ articles/768/how-green-is-the-new-real-estate-development-paradigm-inegypt.
- Zetter, Roger, and Al-Moataz Hassan. 2002. 'Urban Economy or Environmental Policy? The Case of Egypt'. *Journal of Environmental Policy and Planning* 4, no. 2: 169–84.