SUSTAINABLE REAL ESTATE IN THE DEVELOPING WORLD

EDITED BY

Raymond Talinbe Abdulai
Kwasi Gyau Baffour Awuah

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Table of Contents

List of Tables

List of Figures

List of Plates

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Introduction

Sustainability and Real Estate in the Developing World examines how sustainability is considered in various facets and sectors of real estate in the developing world on country by country basis. The countries covered in the book include Ghana, China, Nigeria, Romania and Zambia. In the book, contributors consider various topics including:

- housing development in the context of environmental sustainability;
- gaming the political system – green urban branding and planning in the construction of high end, elite and 'modern' urban spaces;
- demand for sustainable features in commercial real estate;
- urban development, land use changes and environmental impacts in cities;
- urbanisation, environmental externalities and house prices and
- building information modelling (BIM) adaptability for sustainable residential property development

The book would appeal to academics and undergraduate and postgraduate students in higher education institutions where programmes in real estate, urban development and other built environment programmes are offered. Since sustainability is an important and key theme in the real estate industry, international donor community, policy makers, professionals bodies, and real estate related companies and practitioners/professionals like real estate and facilities managers, real estate valuers, real estate finance and investment analysts, real estate economists, housing markets specialists/analysts and real estate developers would find the book useful.

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Chapter 1

Sustainability in Real Estate: Context and Concepts

Raymond Talinbe Abdulai and Kwasi Gyau Baffour Awuah

1.1 Introduction

Global sustainability debate is routed in sustainable development (SD). The concept of SD traces back to the 1970s where its theoretical framework evolved after the publication '*The Limits to Growth*' by the Club of Rome in 1972 (Berardi, 2013). In the same year, the UN Conference on Human Environment held in Stockholm served as the first major international gathering to discuss sustainability on a global scale: the platform created considerable momentum and a series of recommendations, which later led to the establishment of the UN Environment Programme (UNEP) and the creation of numerous national environmental protection agencies (Berardi, 2013).

Berardi (2013) notes that Lester Brown in 1981 gave one of the first definitions of SD, which stressed the importance of considering future generations in *Building a Sustainable Society* albeit the UN World Commission on Environment and Development (WCED) gave the most famous conceptualisation via the publication of a report in 1987 called 'Our Common Future', often referred to as the Brundtland Report, in recognition of the former Norwegian Prime Minister Gro Harlem Brundtland's role as Chair of the WCED during that time. According to the Brundtland Report,

> Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future. Far from requiring the cessation of economic growth, it recognizes that the problems of poverty and underdevelopment cannot be solved unless we have a new era of growth in which developing countries play a large role and reap large benefits. (p. 34)

The concept of sustainability is also about meeting the needs of the present without compromising the ability of future generations to meet their own (Edie Newsroom, 2015). Thus, sustainability or SD ensures that in meeting the needs of

Sustainable Real Estate in the Developing World, 1–12

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the present in terms of water, food and shelter as well as engaging in activities that make lives enjoyable, the environment is not damaged.

From the perspective of organisations, environmental impact has been the main focus of those craving a sustainability agenda for a long time, but the scope of sustainability goes beyond that and requires considerations of social and economic issues (Edie Newsroom, 2015). Echoing this, the United Nations Educational, Scientific and Cultural Organisation (UNESCO, n.d) explicates sustainability as a paradigm for thinking about the future in which environmental, economic and societal considerations are balanced in pursuit of an enhanced quality of life. Thus, the concept of sustainability or SD is a balancing act between different competing needs against the awareness of environmental, social and economic issues.

Real estate (RE), which is also known as landed property/real property and defined as land and/or the developments or buildings on the land (Abdulai and Hammond, 2010), plays a critical role in the economies of nations. According to Savills (2016, cited in Wilkinson et al., 2018), in 2015, the total value of all developed global RE, viz. offices, retail, hotels, industrial, residential, agricultural land and other commercial uses was estimated at US$217 trillion, which represented a value of nearly three times the annual global income, 2.7 times the global gross domestic product (GDP) and 60% of all main global assets. Its immense contribution to the economic development of advanced countries is well-documented by economic historians like Goldsmith (1995) and Torstensson (1994). In terms of the developing world, land, for instance, accounts for 50–75% of national wealth in many countries (Bell, 2006). It is, therefore, not astounding that RE is considered as one of the biggest driving factors for the realisation of the above generational equity.

Given the importance of RE in the global economy, it is not surprising that buildings have come under close scrutiny in the battle to combat climate change impacts at a global scale (Wilkinson et al., 2018). The RE sector as a whole, for instance, uses more energy than any other sector and it is a growing contributor to greenhouse gas (GHG) emissions (WEF, 2016, cited in Wilkinson et al., 2018). The UNEP notes that, globally, buildings, especially, are responsible for 30% of CO_2 emissions, 30–40% of energy consumption, 40–50% of raw material consumption and 25% of wood consumption (UNEP, undated, cited in Paszkowski, 2014). Regarding CO_2 emissions, projections suggest that building-related emissions are set to increase by 56% in 2030 (WEF, 2016, cited in Wilkinson et al., 2018). Based on the projections for CO_2 emissions, the percentages in the other areas are likely to increase since according to the United Nations, global population currently estimated at 7.7 billion is set to reach 8 billion by 2030 with about 60% of the population living in cities and 10 billion by 2055 (Worldometers, 2019), thereby exerting further growth pressures in the RE sector. It is estimated by the World Economic Forum (WEF, 2016, cited in Wilkinson et al., 2018) that by 2030, the largest 750 cities will require 260 million new homes; 540 million m^2 of new office space and 60 million new jobs in industry. However, the highest population growth rates will continue to be in the developing world, accounting for 97% of the increase by 2030: the developing world will see 1.2 billion people added and

a 20.7% increase, while the population of the advanced world will increase a mere 3.3% adding 41 million people (Consultancy.uk, 2015).

As aptly noted by Wilkinson et al. (2018), these have important implications for climate change, given that at the UN Climate Change Conference in Paris in 2015 (COP21), it was agreed to limit global warming below 2°C and ideally 1.5°C; thus, substantial efforts will be required from the RE and construction sectors. As the World Bank (Undated, cited in WEF, 2016) suggests, to meet the 2°C threshold, a 36% reduction in total carbon emissions will be required by 2030. These implications will, however, be more pronounced in the developing world given its population growth rate in comparison with the advanced world. As the developing world continues to grow, its RE sector will be expanding and, therefore, the need for sustainability in RE cannot be overemphasised. Even cynics about climate change should care about sustainable RE since the market and governments care not just about climate change but also about air and water pollution and toxic substances that make us sick: there is knowledge about ecology and the importance of the environments sufficient to prompt real action, but it is the tendency of humans to maintain the status quo and ignore the long term (Wilkinson et al., 2018).

1.2 Contextualising Sustainable Real Estate

It cannot be gainsaid that there is the need for a more sustainable built environment than we currently have in order to reduce the impact of human activities on the earth's resources and on climate change. The response of the RE sector to increasing climate change pressures has been to focus more strongly on environmental, social and governance issues and essentially to try and protect and enhance the value of RE assets from risks associated with these issues (Wilkinson et al., 2018). Based on the critical role that RE plays in the economies of countries, it is important to expatiate on sustainable RE for a proper understanding of what it actually means.

Difficulties have always emerged in defining sustainable buildings/RE and a unit of measure has recently been offered by sustainability assessment systems that have contributed to increase the awareness among the actors of the building sector about criteria and objectives of sustainability, which have become a framework of reference to assess and measure sustainable buildings (Berardi, 2013). Based on these systems, a building is considered to be sustainable if it is built in an ecologically oriented way that reduces its impact on the environment although there are limitations in these systems (Berardi, 2011; Conte and Monno, 2012). The evaluation is limited to the physical boundaries of the building and it is mainly (or only) interpreted from the environmental perspective and, thus, these sustainability assessment methods have been criticised for reducing the sustainability of a building to the functioning of individual environmental criteria reflecting the idea of a building as a consumer of resources (Conte and Monno, 2012).

The requirements for sustainable buildings have been discussed in the context of climate change where the importance of GHG emission is stressed by limiting

the energy requirements of buildings (Lowe, 2007) and a sustainable building is often considered as a healthy built environment based on ecological principles and resource efficiency (Kibert, 2012). By breaking down this definition, sustainable buildings are regarded as buildings with high efficiency in the use of energy, water and materials and reduced impacts on the health and the environment through better siting, design, construction, operation, maintenance and removal throughout its life cycle (Cassidy, 2003). A green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life cycle from siting to design, construction, operation, maintenance, renovation and deconstruction (US EPA, 2008). According to UK Green Building Council (UKGBC, 2008), sustainable buildings are those that (1) are resource-efficient (physical resources, energy, water, etc.); (2) have zero or very low emissions (CO_2 and other GHGs) and (3) contribute positively to societal development and well-being; economic performance of their owners/beneficiaries and national economic development more generally. Perhaps building on this, Berardi (2013) defines a sustainable building as a healthy facility designed and built in a cradle-to-cradle resource-efficient manner, using ecological principles, social equity and life cycle quality value and which promotes a sense of sustainable community – in this regard, a sustainable building should increase (1) demand for safe building, flexibility, market and economic value; (2) neutralisation of environmental impacts by including its context and regeneration; (3) human well-being and occupants' satisfaction and (4) social equity, aesthetics improvements and preservation of cultural values.

Each of the last two definitions of sustainable buildings appears more holistic in comparison to the others and mirrors the perspective of this book regarding what sustainable RE means. They reflect the work of theorists like Elkington (1997) and Bieker et al. (2002) who provide generic frameworks for SD: such frameworks bespeak that a number of strategies can be followed as part of SD, each of which views sustainability via different lenses like seeking overall economic growth and efficiency, social justice, economic opportunity, income equality and environment protection.

A sustainable building can be a retrofit of an existing building or a new construction, and whatever it is, it has to be fully designed to serve its main functions, viz. to provide space, safety and security; guarantee good indoor climate; allow the use of goods and tools; control the relationship with its surroundings and take advantage of the site without damaging it (CIB, 2010, cited in Berardi, 2013). Thus, a building contributes to SD when it is designed and operated to match the appropriate fitness for use with minimum environmental impact as well as when it is able to encourage improvements in economic, social and cultural aspects of every stakeholder who is involved in the building process at every level (Berardi, 2013).

The terminologies sustainable buildings/RE and green buildings/RE are often used interchangeably suggesting that they mean the same thing. For example, according to the Green Building Strategy of the US Environmental Protection Agency (US EPA, 2008), a green building is also known as a sustainable or high-performance building and, thus, in the United States, the terminologies are used interchangeably. However, a few authors have attempted to distinguish between

them. Readapting information in UN Environmental Programme (UNEP, 2003), Berardi (2013) explicates that the difference between them consists of the economic and social dimensions of sustainability that only apply to sustainable buildings in addition to the environmental dimension whilst in green buildings, the concentration is on the environmental dimension: thus, sustainable buildings enlarge the boundaries and increase the requirements of green buildings because they aim at satisfying all dimensions of sustainability. In order not to engage in the debate as to who is right or wrong regarding whether the two terminologies are synonyms, the pre-occupation of this book is sustainable RE.

1.3 Aim of the Book and Knowledge Lacuna

It is clear from the preceding discourse that broader societal concern about the sustainability agenda is a dominant theme in, particularly, the RE sector today due to the important role RE plays in the economies of nations. Sustainability is, therefore, a key trend in the global RE, but activities in the RE sector contribute to climate change and the level of contribution is higher in the developing world. The overarching aim of this book is to examine sustainable RE in developing countries in order to establish how such nations consider sustainability in various facets and sectors of RE. This is important because concerns over the need to consider sustainability in RE in the developing world are relatively new. Much of the demand for sustainable RE comes from the advanced world, but there is a gradual growing demand from the developing world (Dodge Data and Analytics, 2016) and, therefore, it is critical to explore how these countries are embracing the concept. When sustainable RE is considered, be it in the advanced or developing world, the end results would differ from country to country. Thus, there is the need to examine sustainable RE in the developing world on country-by-country basis since whatever is done would mainly be driven by profitability and the availability of space. While the challenges of SD are global, strategies for addressing sustainability issues in the built environment are essentially local and differ from country to country. It is even more compelling because of SD goals (SDGs) that have to be achieved by 2030 and so there is also the need to assess how real RE contributes to the achievement of these SDGs.

Books on sustainable RE are limited and even more limited are books that focus on the developing world. There are three books, which come close to the aim of this book. The first book is '*Sustainable Development of Real Estate*: *Monograph*' edited by Kaklauskas et al. (2015). This book focusses on RE development and has eight substantive chapters where each chapter is not on a specific country but covers issues in the global context. The topics covered by the substantive chapters are business practitioners' word; appropriate attitude to work needs fostering; life cycle model of RE development; RE development; crises management in construction and RE; sustainable RE development and assessment; current trends and strategies of SD and decision support systems for RE development. Apart from the fact that the book concentrates on RE development, only two chapters specifically consider sustainability in RE development. Thus, the book is different

from our book in two ways: (1) our book covers various facets and sectors of RE (not only RE development) and in each chapter, sustainability issues are considered; and (2) in our book, each substantive chapter is country-specific where issues are treated more in depth.

The second book entitled '*Developing Property Sustainably*' is by Wilkinson et al. (2015). Like the above book, it concentrates on issues surrounding sustainable property/RE development in the global market space and contains 10 substantive chapters that explore stakeholders through the development process, site feasibility, project appraisal and the triple bottom line, financing the project – economic incentives promoting sustainable property development, planning and regulatory issues impacting sustainable property development, sustainable construction issues, procuring the project in a sustainable way, sustainable property reporting and rating tools, post occupancy evaluation and building operation issues and new build vs adaptation. International case studies are used in some chapters to demonstrate how sustainable property development is applied in practice. The book is different from our book. First, like the book supra, this book focusses on RE development in the global context whilst our book's scope is wider as it covers various facets and sectors of RE. Second, our book deals with country-specific issues in the developing world while the book considers issues in the global context, and where case studies are used as examples, they relate to the developed world using countries like Australia, United Kingdom and United States.

The third book is '*Routledge Handbook of Sustainable Real Estate*' edited by Wilkinson et al. (2018). The substantive RE themes covered in the book are governance and policy, valuation, investment and finance issues, management and redevelopment and adaptation. Albeit sustainability issues are covered in these themes, the book mainly focusses on the advanced world, which makes it different from our book.

Our book is, therefore, unique since currently, there is no textbook that considers sustainability in RE with a focus on the developing world where the issues covered are country-specific and treated more in depth. Also, our book covers contemporary and topical issues like the link between RE and SDGs and building information modelling (BIM) and sustainable RE that have not been considered in other books.

1.4 Organization of the Book

The book has 12 chapters and this chapter (Chapter 1) sets the tone by providing the relevant context. In Chapter 2, *Yesim Tanrıvermiş and Harun Tanrıvermiş* adopt mixed research methodologies to examine the relationships between urbanisation, RE investments and sustainability in Turkey. Primary data were collected via questionnaire from relevant 248 company executives whilst secondary data were collected from Turkish Statistical Institution (TURKSTAT) database, respectively, and analysed. Data on two case study green buildings were also collected through documents from building owners and project and construction managers. It has been established that many urban development, transformation and RE

projects are executed without considering sustainability principles. Thus, nationally, mixed-use RE and green building projects are limited albeit a majority of the companies surveyed (85%) designed and executed projects based on green structure approaches. Generally, the costs of green buildings are higher compared to traditional buildings. There is the need for strategic spatial plans based on reliable cadastre systems, targeting national and regional development in using existing resources efficiently and paying attention to the importance of environmental quality. And for the efficiency of RE markets, advanced RE market and financing systems and the integration of sustainability principles in decision-making process in planning, design, construction and operation phases of projects should be considered.

Chapter 3 (by *Timothy Tunde Oladokun and Robert Ereola Shiyanbola*) assesses demand for sustainable features in commercial RE like offices in Lagos State, Nigeria. Sustainable features are gradually becoming important considerations by commercial RE users and this is because of their considered impact in reducing operating costs and potential at reducing the negative impacts of buildings on human health and the natural environment. Primary data were collected using questionnaires distributed to 134 purposively selected estate surveying firms in the study area (with a response rate of 70.9%) and analysed with the aid of descriptive statistics of percentages, mean and relative willingness index. In the main, the chapter has established that power/energy saving features are in high demand as alternatives to the epileptic nature of power supply in the country. It recommends the need for government to encourage the adoption and incorporation of locally made sustainable features in commercial RE and subsidise them for use in the Lagos RE market. The chapter concludes that with the right environment created by policy makers, sustainable features in buildings have huge potentials to contribute to preventing environmental problems in an emerging commercial RE market like Nigeria.

Relying heavily on extant literature, *Vlad Poenaru*, in Chapter 4, provides an overview of RE sustainability in Romania. The review has shown that (1) albeit the country submitted to various conditions that were part of policies concerning the environment and GHGs when it became a member state of the European Union in 2007, progress with the implementation of such conditions is rather slow and behind schedule; (2) both the private and public sectors have not shown the required interest in using low or zero carbon dioxide materials in RE development and developers' primary aim is to maximise profits and, therefore, make minimum adjustments to comply with the current demand and expectations with respect to energy efficiency and green buildings; (3) illegal deforestation is high, which has a big impact on the environment, and regarding waste management, the country has key challenges and, thus, at risk of non-compliance with the 2020 municipal waste recycling targets and (4) air quality is poor and continues to be a problem due to pollution from the transport and energy sectors. The chapter concludes by recommending that Romania needs to increase its energy production from fossil fuels to renewables; formulate a better recycling policy; increase awareness regarding the environment and develop new programmes in education and subsidy policies to encourage a more sustainable future.

Chapter 5 (by *Ephraim K. Munshifwa*, *Chota M. Mwenya and Anthony Mushinge*) considers urban development, land use changes and environmental impacts in Zambia's major cities using Ndola as a case study. The chapter investigates the challenges of such issues resulting from pressure on urban land. The qualitative research methodology was employed, and primary data were collected mainly through semistructured questionnaires in face-to-face interviews with purposively selected officials from four institutions, namely, Zambia Environmental Management Agencies (ZEMA), Water Resources Management Agency (WARMA), Kafubu Water and Sewerage Company (KWSC) and Ndola City Council (NCC). It has been found that pressure for development land has resulted in change of use, allocation and construction in environmentally vulnerable areas (such as the Kafubu and Itawa River basins and their tributaries), which has further resulted in serious threats to the environment due to pollution of water sources from domestic and industrial waste. The chapter argues that tools for overcoming these challenges are already provided for in the legislation, but it is the implementation and coordination amongst agencies charged with planning, land allocation, water distribution and protection of the environment such as the ZEMA, WARMA, KWSC and NCC that is lacking due to inadequate land and water administrative systems. Thus, the chapter recommends that land and water administrative systems should be improved through, among other things, effective consultation between various agencies involved in environmental management, zero tolerance to illegal land allocation and effective implementation of statutes.

Chapter 6 entitled '*The Case of North Lake (Beihu) Ecological New Town in Jining, Shandong, China: Discourses of Class, Taste, Luxury Consumption and "Conduct"*' is by *Qianqian Qin and Andrew M Law.* Writers have discussed the role of entrepreneurial state in construction of eco-cities and have noted the role of these cities in the production of high-end RE and new forms of capital accumulation and land acquisition. Whilst the authors support these arguments, they argue that the emergence of eco-cities in China is also tied up with broader socioeconomic and cultural discourses along with discourses of governance. They explore such ideas through a qualitative research methodology using an eco-city known as the North Lake (Beihu) Ecological New Town (NLENT) located in the city of Jining, in Shandong province as a case study. The project uses documents, photographs and 20 semistructured interviews to understand the role that discourses of class, taste and consumption play in the fashioning of Chinese eco-cities. In exploring discourses of 'green conduct', the chapter also seeks to understand the role of eco-cities in the governmental fashioning of Chinese subjects and bodies. The chapter establishes that whilst new forms of green development have played an enormous role in urban expansion, new green RE zones such as the NLENT have a powerful role to play in new forms of Chinese identity and behaviour.

Chapter 7 (by *Raymond Abdulai and Kwasi Gyau Baffour Awuah*) is on RE and SDGs in Ghana. The SDGs constitute a global community agreement calling for action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. The chapter looks at the nexus between RE and SDGs by examining the extent to which Ghana's building industry incorporates, especially, environmental