Socio-Economics of Sustainable Built Environment: A Conundrum and Paradox for Developing Countries

Hassan Ali Kumo¹,a, S.G. Dalibi ²,6,b, Usman Inuwa Labaran³,c, M.A. Alkali⁴,d, Abdullahi M. Umar⁵,e, Kabiru Adamu⁶ and I.I. Danja⁷,i

¹Department of Quantity Surveying, Kaduna State University (KASU) Kaduna, Nigeria
²Institute of Project Management, Business School, Hohai University, Nanjing, China
³School of Architecture and Construction, Nanjing Tech University, Nanjing, China
⁴School of Architecture, Southeast University, Nanjing, China
⁵School of Civil Engineering, Nanjing Tech University, Nanjing, China
⁶Department of Quantity Surveying, Abubakar Tafawa Balewa University (A.T.B.U.) Bauchi, Nigeria.

Corresponding Author: ahalikumo@gmail.com; bsalgidos@yahoo.com; c20206126026@njtech.edu.cn; dalkalimoukhtar@gmail.com; e20196112624@njtech.edu.cn; f20196112628@njtech.edu.cn; idanjaish@yahoo.com

Abstract. Sustainable development encompasses all the efforts to balance both the present and future generations' needs without compromise by making important and wiser decisions. However, achieving such a feat may be less complicated for some developed countries, but it is a dilemma and more complicated for developing countries like Nigeria, whose population is increasing annually. Every population growth comes with its prospects, needs, and challenges. These include the need for investments, economic diversification, and upgrading various industries to compete globally, poverty eradication, creating more employment opportunities, increasing income and wealth to the population and the government. These are often more prioritized than avoiding adverse effects on the environment when infrastructural projects become the medium for such. Hence, this paper was structured to identify, review and discuss the conundrum that leads to paradoxical issues about socio-economics of a sustainable built environment from developing countries with Nigeria as a focal point. A desk research methodology was adopted in the study, and the results show the relationship between socio-economic pressures and targets of developing countries with the SDGs targets for sustainable development within the built environment.

1. Introduction

It is evident from the last three-four decades onward, the world is becoming more sensitive and alarmed about the environment and climate change due to the usage and wastage of resources to cope with the population growth and its needs. The construction industry within the built environment (BE) is an area with significant imperative that requires resource-efficiency measures in all human activity areas to ensure environmental sustainability [1]. The need for such drastic measure led to the quest for sustainable/green approaches and actions in every field of human endeavor; by the year 2015, the 2030
sustainable development goals (SDGs) were adopted by the United Nations (UN) General Assembly as the main agenda to transform the world as a continuation of the millennium-development-goals (MDGs). The agenda is an action plan to ensure prosperity for the people and the planet. It outlines 17 SDGs and 169 targets within its framework [1], [2].

Sustainable practices and approaches are viewed as the only means to ensure and balance the present and future generations' abilities to meet their own needs [3]. Each industry views sustainability from its limited perception because of divergence of activities, resource consumption, pollution, and other challenges. The construction industry belongs to BE, is also not an exception due to the impact of human activities on the resources during and after construction, especially infrastructure provision. Housing infrastructure, which provides shelter, comfort, and security from all kinds of weather, is an important sector within the built environment[4], [5]. However, housing requires other infrastructural systems or projects to function for the people's social and economic wellbeing [6], [7]. Infrastructural Development Projects (IDPs) may be in small scales like residential building bungalows or mega projects such as skyscrapers, bridges, tunnels, airports, seaports, dams, roads and railway projects, etc. IDPs have a significant impact on the environment as they affect areas beyond their site locations. Ensuring sustainability within the BE for SD is a gigantic task that requires the “buy-in” from all the stakeholders or players involved to balance the social, economic, and environmental issues for overall sustainability, shown in figure 1 below.

**Figure 1.** Social, Economic, and Environmental Sustainability (SE= socio-economic; SEv=Socio-environmental; EE=Economic environmental; OS=Overall Sustainability). Source: Authors, 2021.

Social sustainability encompasses all issues related to the human standard of living, education, health/wellbeing, social equality, status, diversity, and lifestyles; Economic sustainability pertains to consumption, production, employment, and wages; Environmental sustainability is about the harmony of human activities with the natural habitat, preservation, and biodiversity. The socio-economic aspects of sustainability incorporate all the social elements of human beings geared towards economic development for good, stable, and improved living conditions through efficient production and consumption measures that retain the BE biodiversity. SD that ensures a positive impact on socio-economic development may be less complicated for some developed countries, but it is also a big challenge for developing countries like Nigeria.

Nigeria, a developing country in West Africa, is the continent’s largest economy (with more than $500 billion GDP). Despite many changes in recent years, some challenges, such as the infrastructural deficits, persist and need attention to realize its economic, social, and development potential [8]. IDPs activities within the BE affect the environment, but they must be sustained within a balanced eco-system and biodiversity that will address Nigerians' socio-economic challenges while also aiming to achieve the 17 outlined SDGs. Hence, this paper identified, reviewed, and discussed the conundrum that leads to paradoxical issues about socio-economics of a sustainable built environment from developing countries with Nigeria as a focal point. This study is limited to the problems of socio-economics of the
sustainable BE arising from Infrastructural Development Projects (IDPs) issues and impacts on the sustainable development goals within the BE of Nigeria.

2. Literature Review

2.1 Socio-economic issues within Nigeria’s Sustainable Development Efforts.

Nigeria is the 7th most populous country globally and the largest oil producer in Africa [9], [10]. Despite such strong fundamentals and other indicators, Nigeria still faces challenges in translating its existing unique strengths into social and economic benefits for its citizens. While the political environment and leadership transition is improving with the stabilization of democracy since 1999, the instability of oil prices has affected government revenues by over 70%. Therefore, economic diversification is a top priority for the government, requiring significant investment in IDPs and increasing capital expenditures to more than 30% of the 2016-2019 annual budget, compared to 11-22% in the previous year[11][12]. The purpose is to address the infrastructure gap and ensure that SD becomes a continuous process to improve socio-economic development dimensions [13]. Social and economic impact or performance is the “effect of an action, activity, market trend, business operation, program, policy or project on the economic and social welfare of a society, which may be positive or negative.” The area of particular concern here is IDPs in Nigeria [14], [15].

Sustainable developments in Nigeria must harness the potential of demographic, political, social, and available natural resources as economic plans and policies to achieve sustainable growth and development. Every population growth comes with its prospects, needs, and challenges, especially in terms of existing and future infrastructure. According to the Global Infrastructure Outlook report cited by [16], Nigeria's average annual public investment in infrastructure in sectors such as transportation (railroads, roads, airports, and seaports), energy, telecommunications, and water was equivalent to about 3.6%-4.6% of GDP from 2007 onwards, before exceeding 4.6% of GDP. Investment in transportation infrastructure has a positive impact on GDP per capita for all forms of transportation except inland waterways, although it is accompanied by environmental pollutants such as carbon dioxide emissions [17], thus creating a hindrance [18]. Balogun [12] argues that it is better late than never for any infrastructure development in Nigeria. Therefore, in today’s mega projects' physical and economic scale, the success or failure of just one infrastructure project may have a long-term impact on the country due to the economic, environmental, and political support these projects initially receive[19]. Odundo[20] argues that the Nigerian government has yet to consider environmental management as a priority, which affects IDPs' ability to ensure sustainable development and funding.

2.2 Socio-economic of IDPs and the Achievement of Sustainable Development Goals in Nigeria

Mega IDPs in Nigeria, like most developing countries, are beyond local and indigenous capacity due to their size, length, novelty, technicality, and complexity [21], resulting in foreign participation [21], [22] with the expectation of developing local capacity's skills, as [23] noted. To consult and implement such Megaprojects, developing countries like Nigeria, according to Ofori [13], must import some construction skills, activities, and technical knowledge. These factors result in an influx of migrant jobs, reducing indigenes' job opportunities. Cultural disparities, as well as labor, statutory rules, and legislation, all affect project management [13], [24], [25]. These projects have resulted in a productive infrastructure that attracts development and consumption centers and provides greater access to urban centers such as markets, sports facilities, education, and health centers [26]; improved social facilities, utilities, and livability and comfort of residential and commercial areas, recreational and other facilities [27][28]; and improved social facilities, services, and livability and comfort of residential and commercial areas, recreational and other facilities. The majority of IDPs in Nigeria are labor-intensive, employing millions of people directly and indirectly [29], resulting in irregular or regular salaries for daily/weekly/monthly tasks, depending on the situation. Other issues such as increased transportation costs, noise, air quality, and visual pollution made IDPs impact the community's social facilities, comfort, lifestyle, safety, and protection [28]. IDPs, such as new industrial areas and or zones or airports and
aviation infrastructure, restrict other investments in the immediate region, such as high-rise residential housing developments [30]; this is analogous to hydropower, dams, and municipal water schemes, which often result in substantial relocation of villages, towns, neighborhoods, and other facilities, among other things [31].

The energy and other advantages of such schemes, on the other hand, improve industrial and manufacturing operations with significant socio-economic impacts, such as increasing food production through agricultural irrigation, urban water supply, tourism, flood protection, and revenue [32][33]. The reduction of travel time, economic productivity, job creation, and economic growth; social equity, increased use of public transit, urban renewal, noise protection, and safety improvement were some of the socio-economic benefits of rail projects[34]. IDPs in transportation sectors such as airport/aviation, roads, and rail projects influence regular movements between municipalities, city centers, and suburbs, contributing to the social vibrancy and economic competition [35]–[37]. They also promote exchange, minimize distance congestion, increase people and goods mobility, improve overall living standards, ease social integration, stability and development, and changing consumer demands and preferences[38]. IDPs ensure a large number of job openings, income growth, increased revenue generation, and a variety of transportation options” [39], [40]. Based on the literature studied, Table 1 and 2 outlines the socio-economic performances (SEPs) of IDPs in Nigeria and how they contribute to the 17nr. SDGs.

**Table 1.** Socio-Economic Performances and Impacts of IDPs on the SD in Nigeria.

| S/N | Socio-Economic Performances (SEP) and Impacts of IDPs in Nigeria. | Routes & Rail Projects | Airport & Sea Port Projects | Dams, Hydro, Power & Water projects | Residential & Commercial Buildings | Manufacturing and Industrial Zones | Health, Ed and ICT F. |
|-----|-----------------------------------------------------------------|-----------------------|-----------------------------|-------------------------------------|----------------------------------|----------------------------------|------------------|
| 1   | Employment of people, directly and indirectly, due to IDPs       | ✓                     | ✓                           | ✓                                   | ✓                                | ✓                                | ✓                |
| 2   | IDPs Engages other sectors of the economy                       | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 3   | Reduces friction of distance; Multitude movement of people      | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 4   | On-time deliveries of Goods and Services to the population      | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 5   | Improve the standard of living; Ease of social cohesion and integration | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 6   | Increase in the ease and use of public transportation           | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 7   | Adequate Power Generation, urban water supply, tourism, flood control, and food production projects (Dams) | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 8   | Smooth resettlement of communities due to IDPs                  | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 9   | IDPs Affects Project community safety and comfort, such as air quality, noise, and disruption of traffic. | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 10  | IDPs limit certain kinds of developments in the surrounding areas (e.g., Airports, Sea Ports, and Dams) | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 11  | Greater access to markets, education, and health centers        | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 12  | Wealth creation and more revenue generation                     | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 13  | The influx of Foreign workers limiting indigenous expert jobs   | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 14  | Disturb, Discrimination, and Maltreatment of Indigenous workers by foreign Companies | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |
| 15  | IDPs by Foreign companies take cognizance and respect the Labour Laws and Contractual agreements | ✓                     |                             | ✓                                   | ✓                                | ✓                                | ✓                |

Source: Authors, 2021 based on literature and modification of studies [41][42]

IDPs within the BE must be carried out to ensure the most negligible negative impact on the environment, positive effects on the habitats’ good health and wellbeing, and ensure balanced and better biodiversity. The 17 outlined SDGs plan of action (with 169 targets) for people, planet, and prosperity were formulated for effective implementation within the BE and the natural habitat. However, achieving these SDGs hinges on each country’s implementation and policy frameworks to achieve the goals.
However, developing countries like Nigeria, whose infrastructural deficit is significant, require IDPs to attain such goals, especially the SDG numbers 1-4, 6-13, and 15-17. These Socio-economic performances from the various IDPs were cross-examined in Table 2 below based on the relationship with the 17nr-DGs within Nigeria’s context and its BE.

Table 2. Cross-matrix relationship/interaction between the types of IDPs and the 17nr. SDGs in achieving Socio-economic development in Nigeria’s BE

| Sustainable Development Goals | Roads & Rail Projects | Airport & Sea Ports Projects | Dams, Hydro, Power & Water projects | Residential & Commercial Buildings | Manufacturing and Industrial Zones | Health, Education and ICT Facilities |
|------------------------------|------------------------|------------------------------|------------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|
| SDG nr. 1                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 2                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 3                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 4                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 5                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 6                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 7                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 8                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 9                    | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 10                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 11                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 12                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 13                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 14                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 15                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 16                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |
| SDG nr. 17                   | ✓                      | ✓                            | ✓                                  | ✓                                 | ✓                                 | ✓                                   |

Source: Authors, 2021 (✓ = Directly Related; * = Somehow / marginally Related)

3. Research Methods

Desk research methods (Internal and External) were adopted in this study. The desk research method concepts involve gathering, reviewing, and analyzing extensive information in print or published or from internet sources that were readily available to the researcher. These led to the understanding of the adequacy/sufficiency of existing and planned IDPs examined concerning the SDGs. Also, 16nr of socio-economic performance factors from the IDPs serving as SD mechanism affecting Nigeria's overall development were the basis for this study's discussion and conclusions.

4. Discussions

In order to achieve SD in Nigeria's BE, there is a strong need to bridge the existing infrastructural deficits through the provision of IDPs like Roads & Rail Projects; Airport & Sea Ports Projects; Dams, Hydro-Power & Water projects; Residential & Commercial Buildings; Manufacturing, and Industrial Zones; Health, Education and ICT Facilities. Altogether, they will be a great leap towards socio-economic stability and SD of Nigeria. However, all IDPs impact the environment because they significantly affect areas within and beyond their vicinity in the BE due to their complementary infrastructure, carbon footprint, waste generation, and disposal requirements. Developing countries strive hard to bridge the infrastructural gap and while simultaneously attempting to achieve the SDGs targets. These create a conundrum with paradoxical issues in attaining the desired level of socio-economic development. Because in contrast, IDPs affect the environment and bridge the socio-economic deficit in the society, which is part of the SDGs.

5. Conclusions

This study identified the adequacy of existing and planned IDPs in Nigeria’s BE, with a profound socio-economic impact on the population. Such effects were cross-examined based on the 17nr of SDGs. The 16nr of socio-economic performance factors from the IDPs serve as the SD mechanism whose absence negatively affects Nigeria's socio-economic performance as a whole. Whereas the provision of IDPs
positively impacts Nigeria's overall development and goes a long way in helping the country have a significant achievement of its SDGs targets.

REFERENCES

[1] Salisu Gidado Dalibi, “Green buildings and environmental sustainability issues in the Nigeria’s built environment,” in Nigerian Institute of Quantity Surveyors (NIQS) National Training Workshop held at At Ibom Hall, IBB Avenue, Uyo, Akwa Ibom State, under the Theme: “The Challenges of Environmental Sustainability and the Imperatives of Efficient Cost management in Nigeria,” 2014, [Online]. Available: https://niqs.org.ng/.

[2] United Nations., “Transforming Our World: The 2030 Agenda for Sustainable Development,” A New Era in Global Health, 2018. doi: 10.1891/9780826190123.ap02.

[3] World Commission on Environment and Development, “Our Common Future: A Report of the World Commission on Environment and Development. The Brundtland Commission Report,” 1987. [Online]. Available: http://www.un-documents.net/wced-ocf.htm.

[4] S. G. Dalibi, H. Balarabe, and J. B. Mai-Auduga, “Green Buildings: A Concept aligning the interests of Stakeholders (Developers / Clients and End-users) in Estate Development Projects in Abuja - F.C.T (Federal Capital Territory), Nigeria,” 2016, [Online]. Available: www.kit.eu.

[5] S. G. Dalibi, A. M. Kabir, and A. Hassan, “Factors Determining the Employability of Quantity Surveying Graduates in Nigerias Built Environment,” in Nigerian Institute Of Quantity Surveyors: 3rd Research Conference– NIQS RECON3: Confluence of Research, Theory and Practice in the Built Environment, 2017, pp. 186–203.

[6] S. J. Macdonald, J. Nixon, and L. Deacon, “‘Loneliness in the city’: examining socio-economics, loneliness and poor health in the North East of England,” Public Health, vol. 165, pp. 88–94, 2018, doi: 10.1016/j.puhe.2018.09.003.

[7] M. J. Andrade-Núñez and T. M. Aide, “The Socio-economic and Environmental Variables Associated with Hotspots of Infrastructure Expansion in South America,” Remote Sens., vol. 12, no. 116, 2020, doi: 10.3390/rs12010116.

[8] Treasury Today, “Nigeria : the giant of Africa,” 2014.

[9] Worldometers, “http://www.worldometers.info/world-population/.” [Online]. Available: http://www.worldometers.info/world-population/.

[10] World Atlas, “Worlds largest oil reserves by country.” http://www.worldatlas.com/articles/the-world-s-largest-oil-reserves-by-country.html.

[11] Punch Newspapers Nigeria, “Full breakdown of 2017 budget of Nigeria. Published December 14, 2016.,” Punch newspaper, Dec. 14, 2016.

[12] A. Balogun, “Infrastructure Development in Nigeria: Better late than never,” Pwc Advisory outlook, p. 6, 2016.

[13] G. Ofori, “Challenges of Construction Industries in Developing Countries: Lessons from Various Countries,” Citeseerx.Ist.Psu.Edu, pp. 15–17, 2000, doi: 10.1.1.198.2916.

[14] B. S. Bello, L. Shuangqin, A. Professor, and S. G. Dalibi, “SOCIAL IMPACTS OF PACKAGED AND BOTTLED WATER BUSINESSES IN NIGERIA,” 2017. [Online]. Available: http://ijecm.co.uk/.

[15] B. S. Bello, L. Shuangqin, S. G. Dalibi, M. Candidate, A. Professor, and P. Candidate, “ECONOMIC IMPACTS OF PACKAGED AND BOTTLED WATER BUSINESSES IN NIGERIA,” Int. J. Adv. Eng. Manag. Res., vol. 2, 2017, [Online]. Available: www.ijaemr.comwww.ijaemr.comwww.ijaemr.com.

[16] J. Bello-Schünemann and A. Porter, “Building the future: infrastructure in Nigeria until 2040,” 2017. [Online]. Available: https://issafrica.s3.amazonaws.com/site/uploads/war-21.pdf.

[17] Ş. Gherghina, M. Onofrei, G. Vintilă, and D. Armeanu, “Empirical Evidence from EU-28 Countries on Resilient Transport Infrastructure Systems and Sustainable Economic Growth,” Sustainability, vol. 10, no. 8, p. 2900, 2018, doi: 10.3390/su10082900.

[18] S. G. Dalibi, J. C. Feng, L. Shuangqin, A. Sadiq, B. S. Bello, and I. I. Danja, “Hindrances to
Green Building Developments in Nigeria’s Built Environment: ‘the Project Professionals’ Perspectives’, 2017, doi: 10.1088/1755-1315/63/1/012033.

[19] B. Flyvbjerg, N. Bruzelius, and W. Rothengatter, Megaprojects and Risks: An Anatomy of Ambition. Cambridge Univ. Press, Cambridge, UK., 2003.

[20] Odunjo and O. Omolola, “Why Nigeria is not yet Sustainably Developed,” APCBEE Procedia, vol. 5, pp. 383–387, 2013, doi: 10.1016/j.apcbee.2013.05.066.

[21] S. Drewer, “Construction and development: A new perspective,” Habitat Int., vol. 5, no. 3/4, pp. 395–428., 1980.

[22] J. Raftery, B. Pasadilla, Y. H. Chiang, E. C. M. Hui, and B. S. Tang, “Globalization and construction industry development: implications of recent developments in the construction sector in Asia,” Constr. Manag. Econ., vol. 16, pp. 729-737., 1998.

[23] G. Ofori, “International contractors and structural changes in host-country construction industries: Case of Singapore. Engineering,” Constr. Archit. Manag., vol. 3, no. 4, pp. 271–288, 1996.

[24] L. Baumann, “The impact of national culture on Project management in the Middle East,” Loughborough University, United Kingdom, 2013.

[25] S. Barthorpe, R. Duncan, and C. Miller, “A literature review on studies in culture: A pluralistic concept. In Ogunlana, S.O. (Ed.),” in Profitable Partnering in Construction Procurement., Spon, Lond., 1999, pp. 533–542.

[26] F. O. Nedozi, J. O. Obasanmi, and J. A. Ighata, “Infrastructural Development and Economic Growth in Nigeria: Using Simultaneous Equation.,” J Econ. 5(3) 325-332 (2014)., vol. 5, no. 3, pp. 325–332, 2014.

[27] M. A. Alkali, L. Jie, S. G. Dalibi, and I. I. Danja, “Hindrances to the Utilization of Climate Responsive Architecture Principles for Residential Design in Northeast Nigeria,” Int. J. Sci. Eng. Res., vol. 11, no. 9, pp. 1333–1341, 2020.

[28] BAC Australia., “B9: new parallel runway draft EIS/MDP for public comment- Social Impact Assessment. Brisbane Airport Construction.” http://www.bne.com.au/sites/all/files/content/files/B9 Social Impact.pdf (accessed Aug. 28, 2017).

[29] S. G. Dalibi, “RESULTANT EFFECTS OF POOR SUPERVISION IN CONSTRUCTION PROJECTS IN NIGERIA.”

[30] Ernst & Young, “Economic and Social analysis of potential airport Sites. Australian Government, Commonwealth Department of Infrastructure and Transport. Sydney Aviation Capacity Study 1 February 2012,” 2012.

[31] T. Scudder, “Development-induced community resettlement.,” in In F. Vanclay & A. M. Esteves (Eds.), New Directions in Social Impact Assessment., Cheltenham: Edward Elgar Publishing Limited., 2011.

[32] J. Kirchherr and K. J. Charles, “The social impacts of dams: A new framework for scholarly analysis. Environmental Impact Assessment Review.,” Environ. Impact Assess. Rev., vol. 60, pp. 99–114, 2016, [Online]. Available: http://www.sciencedirect.com/science/article/pii/S0195925515300330.

[33] I. Wakili, “Mambilla power project gets $5.79bn for takeoff.,” Daily trust newspapers of Nigeria., p. Publish Date: Aug 31 2017 2:10AM, Aug. 31, 2017.

[34] R. Cascarjo, “Socio-Environmental Benefits of Rail Urban Projects: European Benchmarking.,” 2004.

[35] G. Schivelbusch, The Railway Journey: Industrialization and Perception of Time and Space in the 19th Century. Oxford: Berg., 1986.

[36] HKIS, “Hong Kong Information Services Department of the Hong Kong SAR Government. Hong Kong 2009.” Hong Kong SAR Government., 2009.

[37] M. Nishida, “The Shinkansen High-Speed Rail Network of Japan.,” 1977.

[38] E. R. F.- ERF, “ERF’s position on the Socio-economic Benefits of Roads to Society.,” 2001.
[39] R. Amaechi, “Nigeria to complete rail projects with $6.1 billion China Exim Bank loan.,” *Financial Nigeria*, Mar. 28, 2017.

[40] A. Adamu, “Nigeria secures $7.5 billion loan from China for rail project – Rotimi Amaechi, Nigeria’s Minister for Transport, Nigeria.,” *Premium times newspaper, Nigeria*, Feb. 06, 2017.

[41] S. G. Dalibi and B. S. Bello, “Socio-economic impacts of Chinese government financed infrastructural development projects in Nigeria,” in *Second International Conference on Economic and Business Management (FEBM 2017)*, 2017, pp. 579–588.

[42] S. G. Dalibi et al., “Socio-Economic Performances of Mega Construction Projects (MCPs) in the Light of Sustainable Development of Nigeria’s Built Environment,” *IOP Conf. Ser. Earth Environ. Sci.*, vol. 495, no. 1, 2020, doi: 10.1088/1755-1315/495/1/012046.