FOCUSING ON THE SOCIAL IMPACT OF SUSTAINABLE AND COST-EFFECTIVE INFRASTRUCTURE

QS. (DR.) FEYISETAN LEO-OLAGBAYE (MNIQS, RQS)

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Theme: Integrated Cost Management Solutions for Sustainable Infrastructure Projects Delivery: a Key to National Economic Development

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Nigeria's infrastructure development context

- Nigeria's infrastructure development setting is characterised by an intricate interplay of possibilities, difficulties, and essential requirements.
- Nigeria faces challenges in its transportation infrastructure, with inadequate road networks and traffic congestion in major cities but this simply highlights the opportunity to invest in road and rail infrastructure to improve connectivity and facilitate economic activities.
- The power sector has historically struggled with insufficient generation and distribution capacity,
- the telecommunications sector, despite experiencing significant growth, still has gaps in broadband penetration and digital connectivity, particularly in rural areas,
- the housing sector has received significant attention over the years, but rapid urbanisation has led to a housing deficit, informal settlements, and inadequate housing conditions in urban areas

Overview of Nigeria's infrastructure development context

- Infrastructure serves as the backbone of the nation's economic growth, facilitating trade, industrialization, and foreign investments.
- The Nigerian government has recognized the urgency of addressing these infrastructure deficits and has embarked on several ambitious initiatives to bridge the gaps.
- The National Integrated Infrastructure Master Plan (NIIMP) and other programs aim to provide a roadmap for comprehensive infrastructure development.

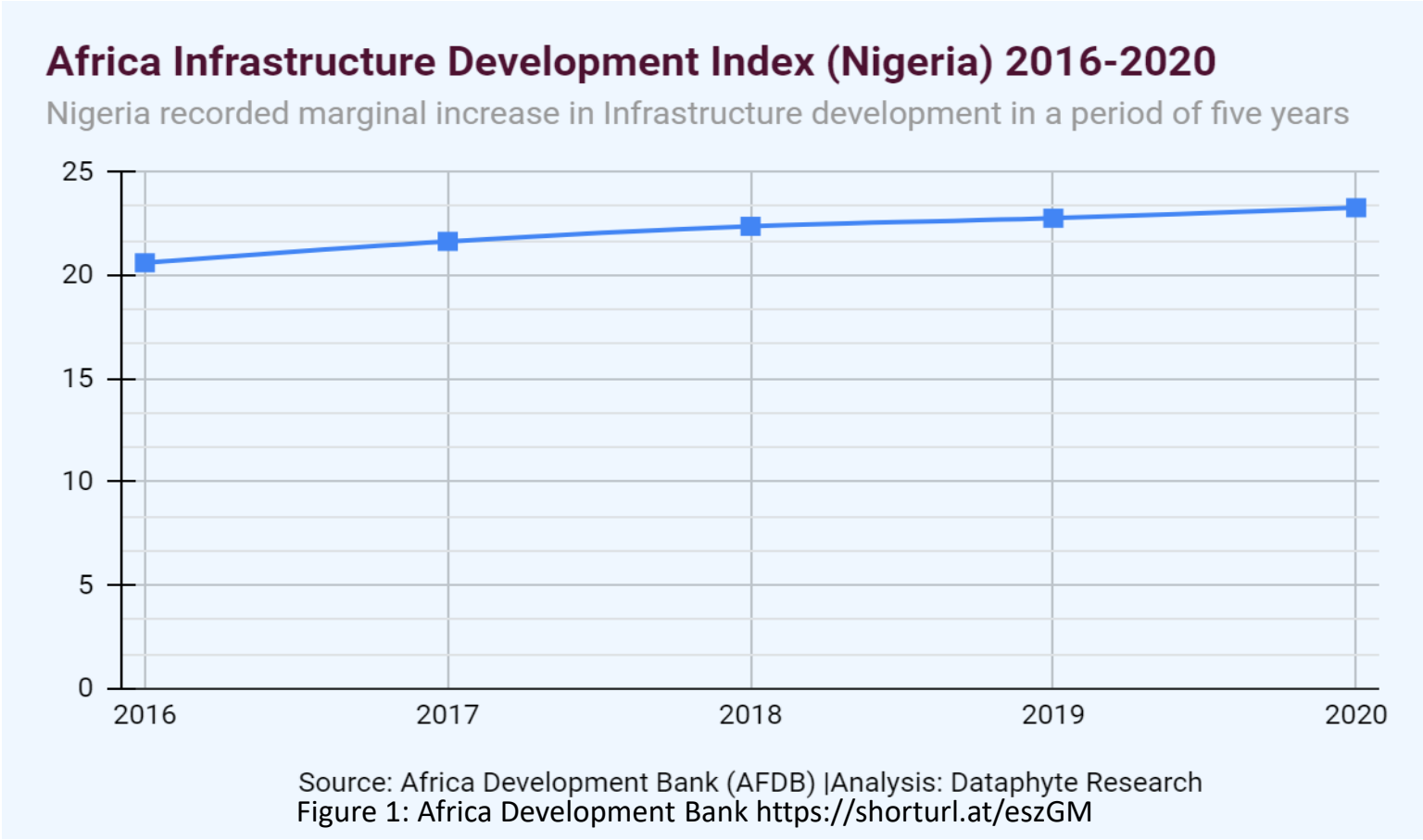


Figure 1: Africa Development Bank https://shorturl.at/eszGM

Overview of Nigeria's infrastructure development context

- Nigeria's infrastructure development context is characterized by a mix of challenges and opportunities.
- Focusing on key sectors and targeting ‘sustainability’ and cost effectiveness is vital for fostering economic development but social impact/value should be core to the discussion.
- The paper presents a holistic perspective on the crucial relationship between infrastructure development, sustainability, and societal well-being. It seeks advance the collective goal of creating infrastructure that serves the broader interests of society.

Sustainable Infrastructure in Nigeria – a snapshot

- Sustainability involves a holistic approach that considers economic, environmental, and social factors and aims to create a harmonious coexistence between people, planet, and prosperity.
- Projects classed as sustainable have been witnessed in different sectors in Nigeria
- Renewable energy projects, such as the Solar Power Naija program, to increase access to clean and sustainable energy sources (Government of Nigeria, 2021). It targets 5 million new connections
- The Lagos Bus Rapid Transit (BRT) system incorporates eco-friendly buses and dedicated lanes, promoting sustainable urban mobility and reducing carbon emissions.

Sustainable Infrastructure in Nigeria – a snapshot

- Huge advocacy for the use of eco-friendly construction practices and materials in the housing sector, but most discussions usually focus on energy efficiency and greenhouse gas impact reduction with very limited attention to the social implications of the entire project.
- Where is the social value when ‘affordable houses’ are not ‘affordable’? – economic benefit to the investor is often a deprivation of social benefit to a potential user
- More progress is needed

Cost-Effective Infrastructure Planning and Design

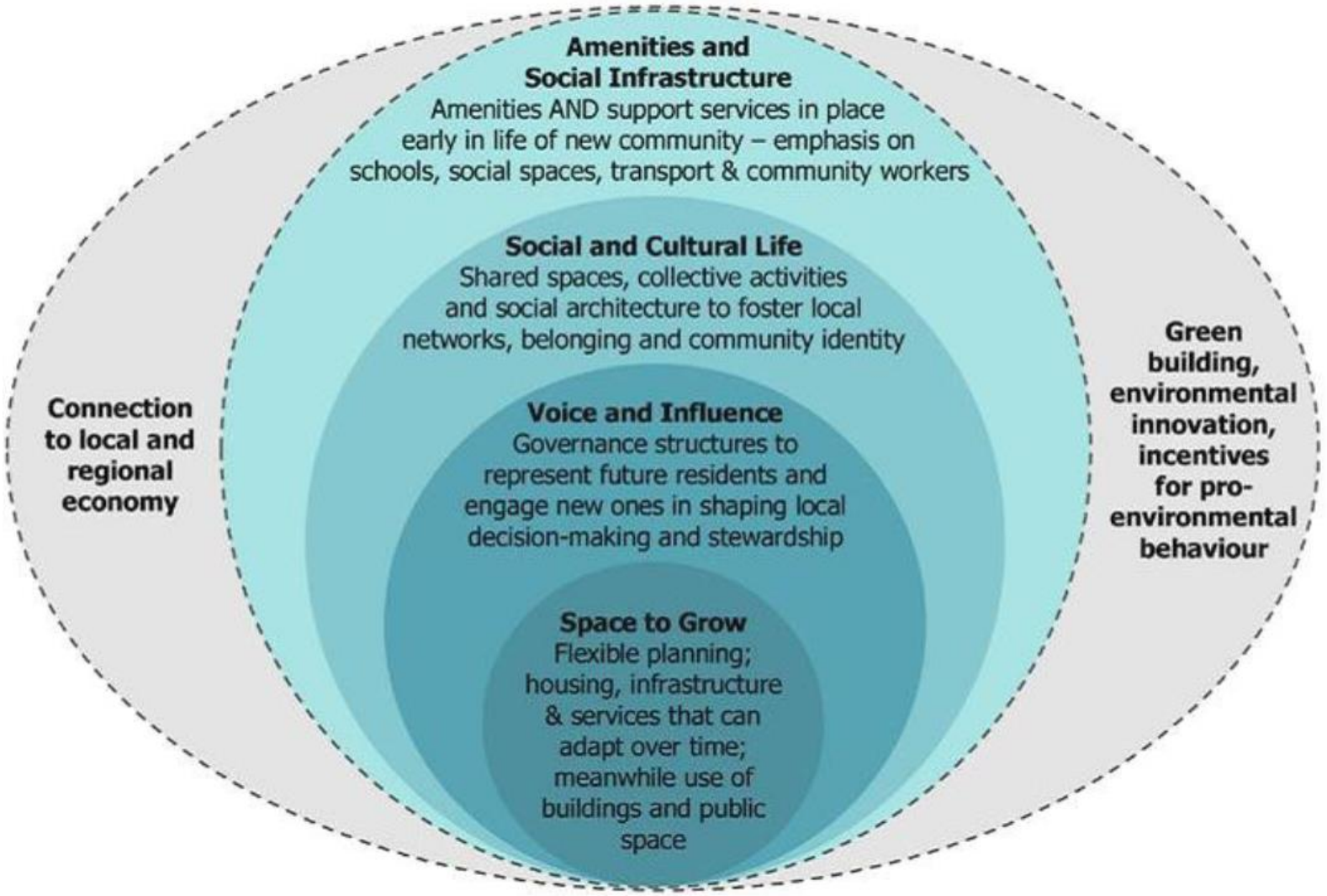
- It involves optimizing design, construction, operation, and maintenance to achieve desired outcomes while minimizing costs and environmental impacts.
- Such infrastructure should promote the allocation of resources to other critical areas, promoting overall economic growth and social well-being

Figure 2: Cost-effective infrastructure

Cost-Effective Infrastructure Planning and Design

- Infrastructure that is both affordable and sustainable is essential for social well-being and economic growth.
- Oftentimes, ‘cost-effective’ infrastructure is simply a loss of ‘sustainability’ and erosion of social value, for instance, a poorly built road can be seen as ‘cost-effective’ but surely it is not sustainable and would not deliver the expected social impact because it will get damaged early.

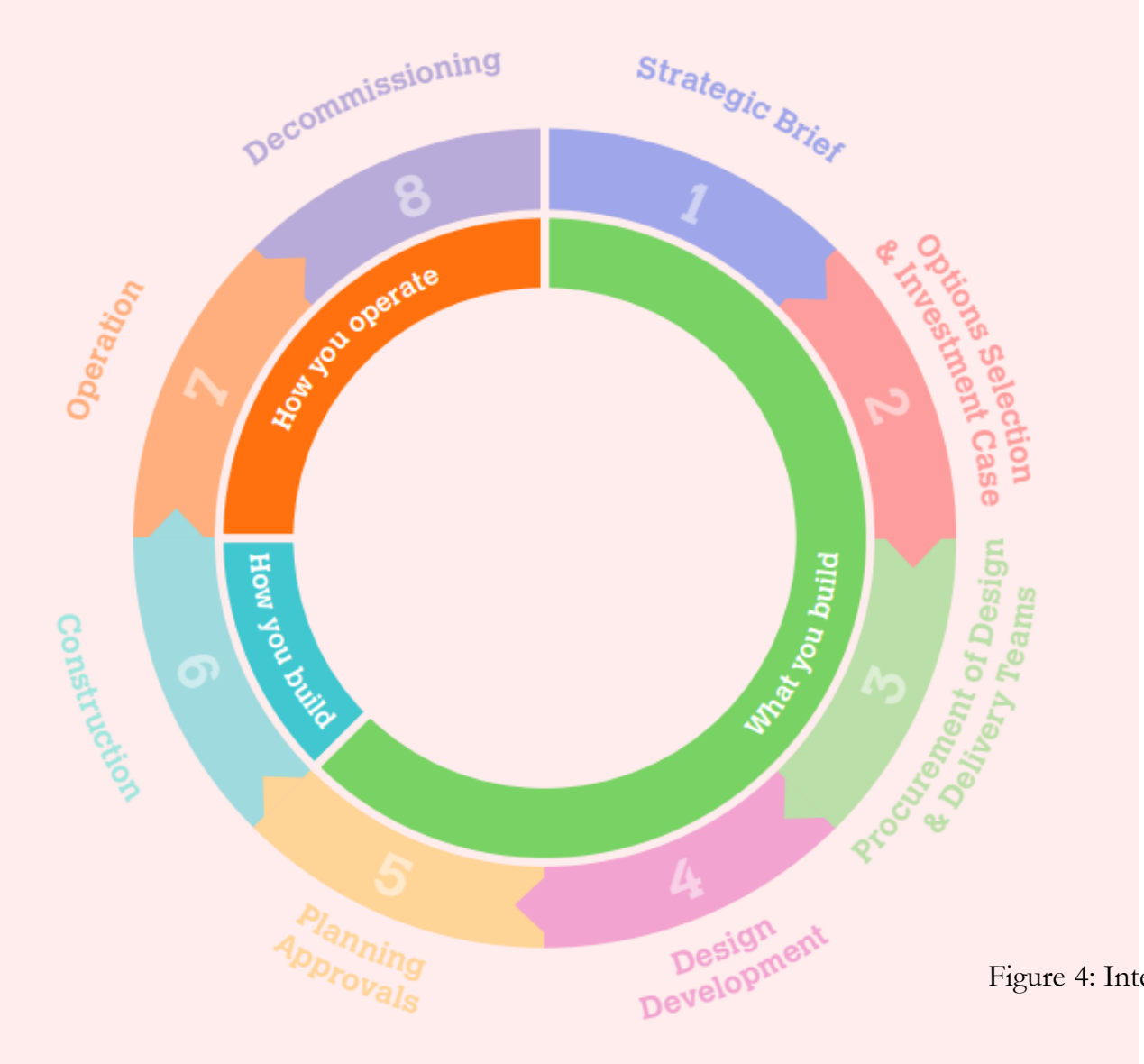
Sustainability and Cost-Effectiveness: Let's Restore the 'Social' in Sustainability



- There are always discussions and thoughts on cost reduction or effectiveness and sustainability, unfortunately, such conversations often overlook social perspectives
- Among the accepted pillars of sustainability, the social dimension is considered the least explicit

Figure 3: Social Sustainability – Illustration of Design for Social Sustainability Framework, Young Foundation (Source: Woodcraft, Hackett & Caistor-Arendar, 2011)

Sustainability and Cost-Effectiveness: Let's Restore the 'Social' in Sustainability



Infrastructure projects can, and should, deliver many more benefits for individuals, communities, and local economies. This can only be achieved by focusing on delivering broader social outcomes, not just engineering outputs, infrastructure projects can create additional 'social value' at the different stages in project lifecycle

Figure 4: Integrating social impact across project lifecycle (Institution of Civil Engineers, 2020)

Actionable steps to integrate more social benefits in projects

1

Engage trained personnel and organisations **to entrench social value i**n your project programmes

2

Think beyond the popular social value channels such as job creation for the community, utilise local knowledge and creative opportunities

3

Before defining infrastructure projects, **define the social needs** that are required and identify a range of different options for delivery.

4

Outline **measures of social value evaluation** & evaluation of attainment should be done at intervals on the project. Analyse the social dimension of projects

5

Produce designs with clear social value content

Actionable steps to integrate more social benefits in projects

6. Strategic infrastructure planning should ensure that social value benefits are generated at the network and system level, not just projects in isolation and that adverse social impacts are minimised.
7. Consider project needs, resources, and impacts beyond project boundaries
8. Establish exemplar infrastructure projects as models for the delivery of social value
9. Approach each project with a sharp social value strategy – be sure of what to deliver or what to recommend.
10. Partner with organisations that can creatively deliver social value strategies within and beyond projects

Actionable steps to integrate more social benefits in projects

11. Consider using new infrastructure delivery models that are outcome-based, social value-driven, and result-focused to support the creation and delivery of social value
12. Early collaboration with the supply chain to identify opportunities for social value creation
13. Align possible social values to the respective phases of the project
14. Establish a mechanism for ensuring compliance with minimum quality standards based on standard benchmarks
15. Document achievements, share knowledge and seek improvements

This looks like an area to standardise, advocate for, and diversify into as Quantity Surveyors.

General examples

- Creating access, through a project or within a project, to basic services and resources such as transportation. contributes to the quality of life, peace of mind and wellness of the spirit.
- Extending access – Bridging the gap between urban and rural communities – bridging the gap between urban and rural communities is inclusion. Gives everyone has equal opportunities to thrive, fostering social cohesion and reducing inequalities.
- Job creation, and internship opportunities can be with regards to the project level or the professional service level.
- social infrastructure, such as community centres and educational facilities, such facilities promote social cohesion and human development, contributing to sustainable communities.

Case Study 1 – Winter Road Maintenance, Newcastle, UK

- Project Value: £8 million, snow-clearance of roads, Newcastle City Council, UK

- A market consultation/social value workshop was undertaken, size of the project determined the extent of the consultation.

- Approaches considered - Employing local people will increase the likelihood of staff being knowledgeable about relevant routes and communities.

- Support local supply chains and encourage contractors to look at local sourcing options for goods and materials required.

- Using a local business will increase the resilience to respond to severe weather occurrences at short notice (Minimum response times will be built into the contract specification. The successful contractor would be expected to deliver these times).

Case Study 1 – Winter Road Maintenance, Newcastle, UK

- Training and apprenticeships for unemployed, local people/ex-offenders / returning veterans.

- Work with local care providers/schools to ensure access to places where vulnerable communities may be. Grit roads to ensure access for emergency vehicles during the season. Internship for students.

- Pay national living wage and avoid the use of temporary contracts. The budget should allow for this.

- Contractors should pay their supply chain within 30 days of receipt of the invoice. Use public sector standards in the supply chain.

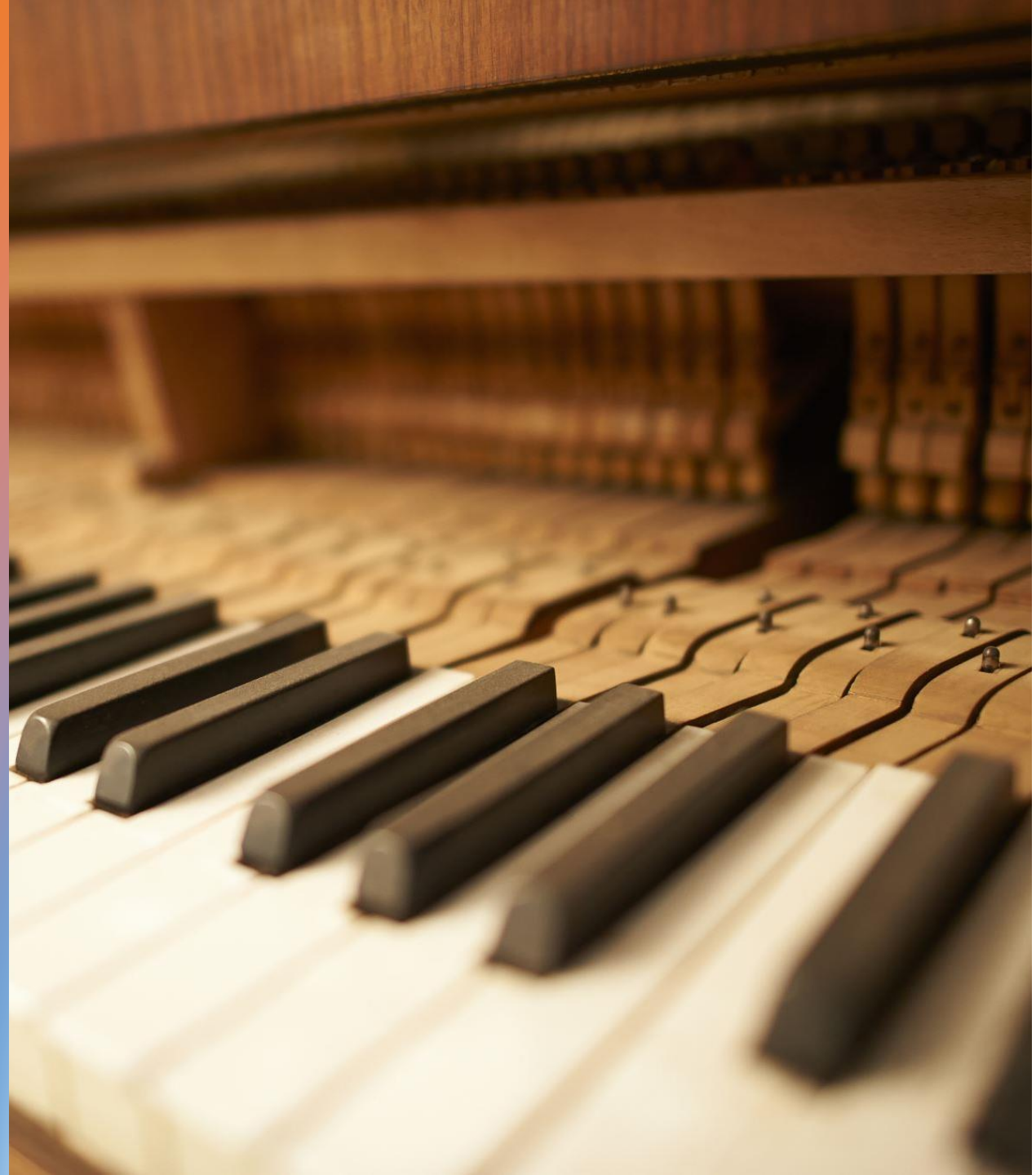
- Consider options to improve route optimisation and if there is potential to combine routes. Consider changes to routing in line with any feedback received.

- The options were considered under the theme: Think, Buy, Support, Community focused, Ethical leadership, Green and sustainable, and Enabling change

Figure 5: Social stairs applying pressure on each step plays a musical note (Source: Peters et al, 2013; https://youtu.be/SByymar3bds)

Case study 2 - The piano stairs experiment - 'The Fun Theory'

- An ad campaign ran by the car company Volkswagen Sweden and the ad agency DDB Stockholm, Germany to promote Volkswagen's new, more fuel-efficient brand.
- The theory was that people would take the stairs more often *(about 60% more)* instead of the escalator or elevator by making the staircase "fun" (Figure 6). The groups turned a normal staircase at a subway station in Sweden into a "piano staircase," where stepping on a stair produced a sound.



Case study 2 - The piano stairs experiment - ‘The Fun Theory’

- It appears that some improvements are required to enhance the prominence of social impacts and value in infrastructure developments. It appears that the general understanding of social value must be enhanced among professionals and stakeholders. Key actors in the construction sector might have to define this further and probably produce actionable standards.

Case Study 3 – Hinkley Point C (HPC) Power Station, Somerset, South-West England

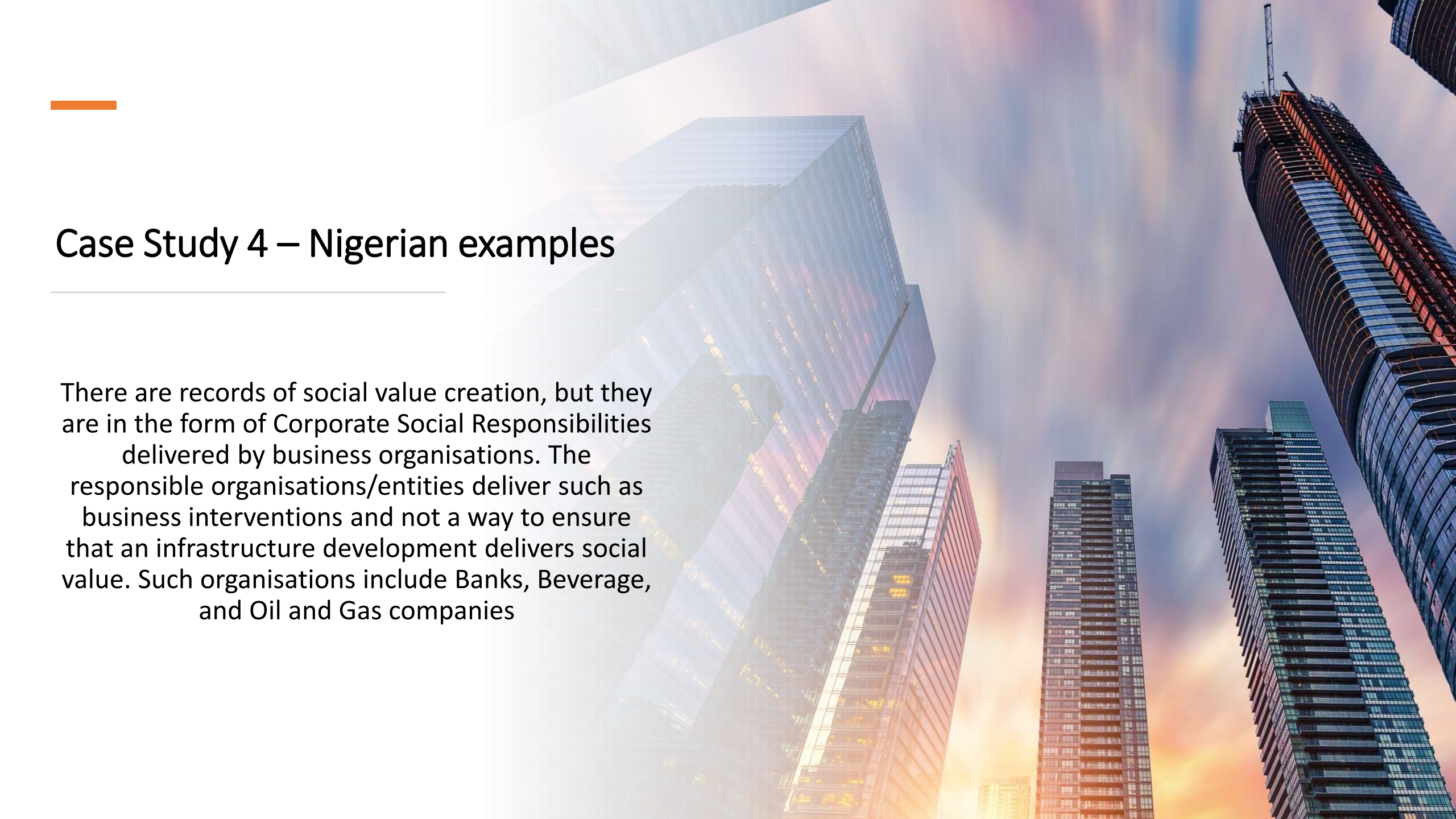
Hinkley Point C (HPC) is the first new nuclear power plant to be built in the United Kingdom in 20 years, and its massive industrial size makes it one of Europe's largest and most complicated infrastructure projects. The two EPR nuclear reactors at Hinkley Point C will be capable of supplying low-carbon power to about six million households, with the first reactor expected to be online in 2025.

Case Study 3 – Hinkley Point C (HPC) Power Station, Somerset, South-West England

- Local business integration in the supply chain, investing resources and time in developing local business capabilities.
- Providing training and advice on the complexities of nuclear construction and engineering contracts,
- providing advice on forming consortia and helping SMEs secure loans.
- Beyond the project, a key aim is to create a legacy of local capability and enable local suppliers to participate in future large-scale infrastructure projects.
- 'Inspire,' an industry-leading school engagement project, is being implemented across the area to encourage young people to pursue careers in science, technology, engineering, and mathematics.
- Creating an innovative bridge from education to the workplace through mentoring through a programme Young HPC project.

Case Study 4 – Nigerian examples

There are records of social value creation, but they are in the form of Corporate Social Responsibilities delivered by business organisations. The responsible organisations/entities deliver such as business interventions and not a way to ensure that an infrastructure development delivers social value. Such organisations include Banks, Beverage, and Oil and Gas companies



Barriers

Just like any other human venture, there are *barriers* to achieving positive social impact.

- Limited understanding of how to integrate this in projects and procurement,
- lack of leadership focus on it,
- difficulty in quantifying social value/impact,
- limited creative strategies,
- long-term interest in cost, time, and quality,
- inconsistency of definition

Conclusion and Future Directions

- The infrastructure development landscape of Nigeria has been discussed. The landscape is characterized by a mix of challenges and opportunities, and strategic investments are essential to overcome hurdles
- Focusing on key sectors and targeting ‘sustainability’ and cost effectiveness is vital for fostering economic development but social impact/value should be core to the discussion.
- Effectively ‘restoring the social in sustainability’ in construction to ensure that development is environmentally conscious, socially inclusive, and economically viable requires a collaboration between the government, private sector, professionals, and local communities.
- Clear strategies for improvement, research, and education is necessary.

Thanks for your attention!

Dr Feyisetan Leo-olagbaye (MNIQS, RQS)
Acting Head/Coordinator
Department of Quantity Surveying,
University of Ibadan, Nigeria
feyileo2@gmail.com