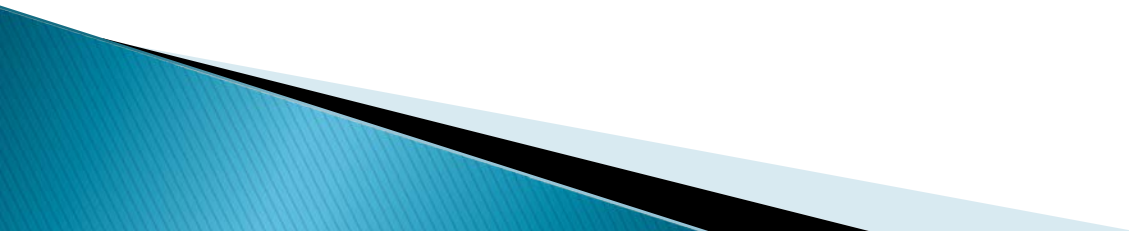


**Delivery and Infrastructure: Building  
innovations to achieve the delivery of  
500,000 housing units by 2016 –  
Panel Discussion**

**Prof. A.O. Olorunnisola  
Dean, Postgraduate School  
University of Ibadan**

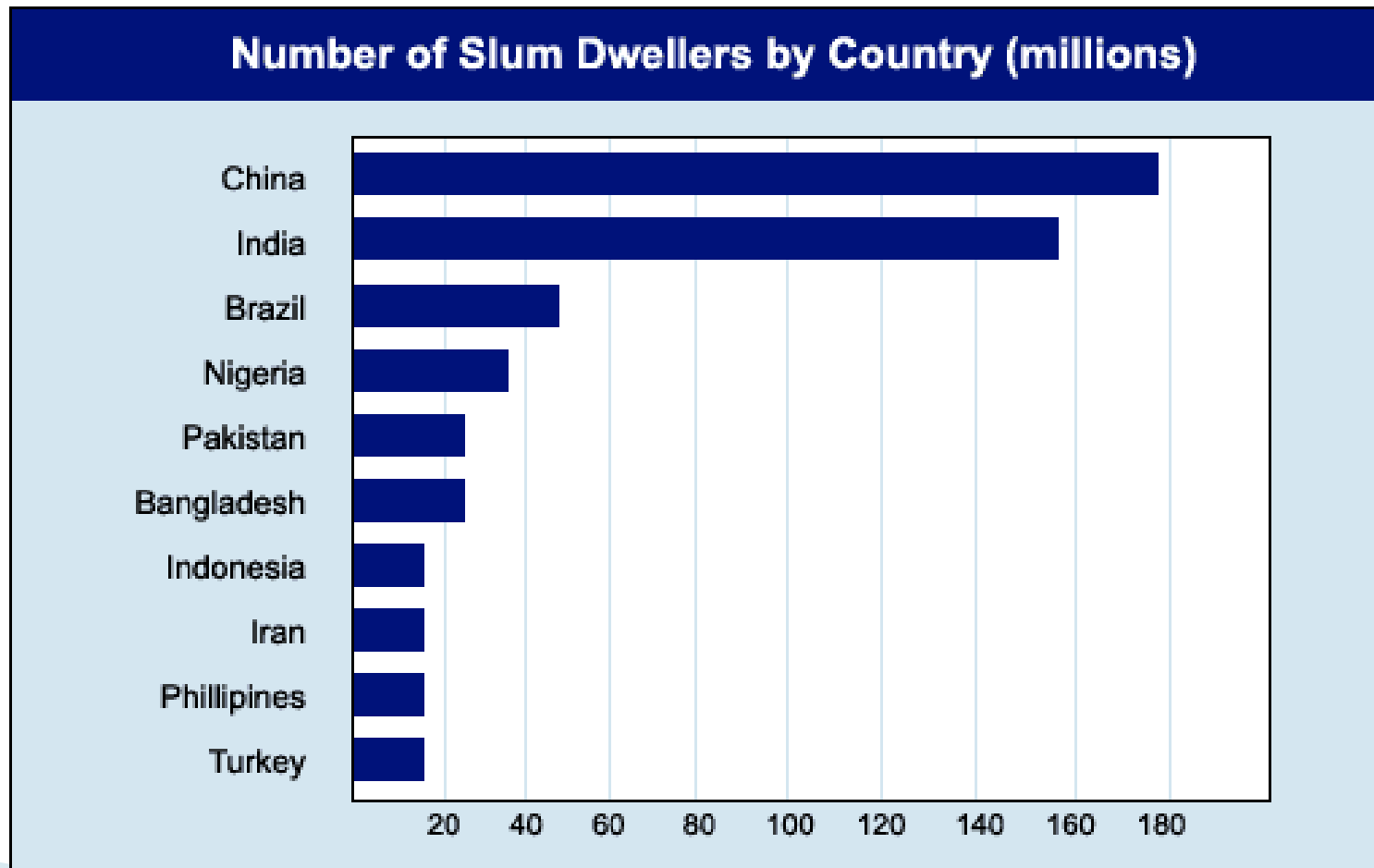
# **The Challenges and Obstacles delivery of affordable housing in Nigeria**



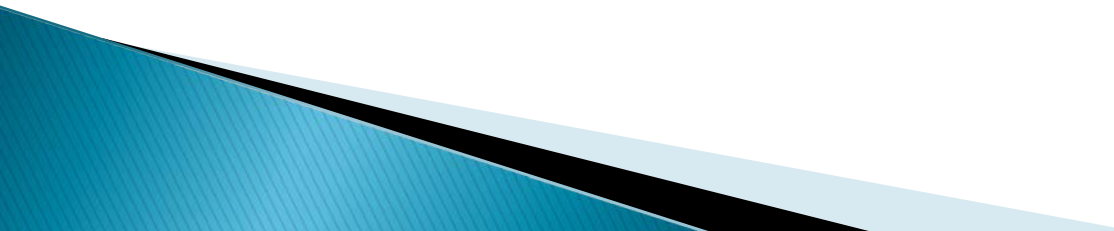
# Housing Situation in Urban Nigeria

- ▶ Rapid urban growth (5% per annum ) has resulted in problems of urban congestion, poor housing/environmental sanitation
- ▶ Lagos is now a mega-city with at least 9 slums : Agege, Ajegunle, Amukoko, Badia, Bariga, Ijeshatedo/Itire, Ilaje, Iwaya and Makoko
- ▶ 2 out of every 3 Lagosians live in a slum

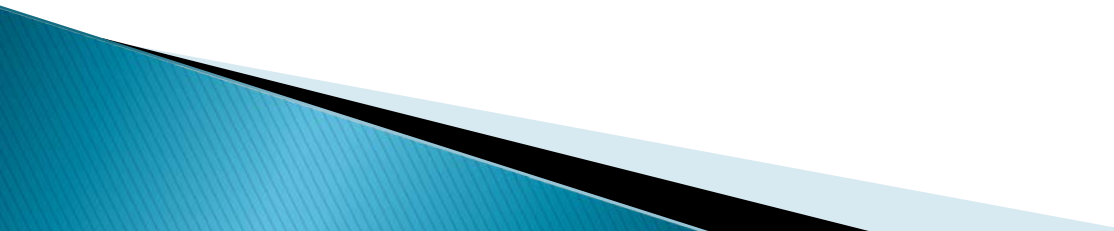
# Nigeria has the 4th Largest No of Slum Dwellers in the World



# Demand for Housing

- ▶ Existing housing stock in Nigeria is a source of concern with over **16 million gap** in housing provision
  - ▶ An average of **1 million housing units per year** is required to replenish decaying housing stock and to meet rising demand
- 

# Government's Interventions over the years

- ▶ All governments since independence have highlighted housing as a major priority
  - ▶ NBRRI was established in 1978
  - ▶ The Babangida Administration launched “*Housing for all by the year 2000*” campaign in the 80s
  - ▶ The Obasanjo administration created Federal Ministry of Housing & Urban Development in 2004
- 

# Recent Examples of Government's Intervention.....

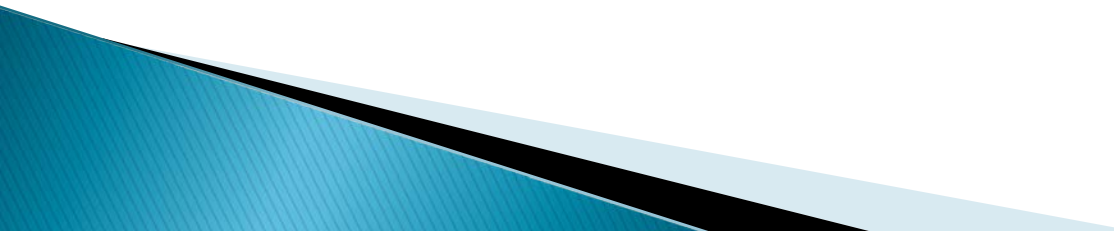
- ▶ *'Rivers to partner with bank on housing development'* – The Nation April 14, 2009 (p. 45)
- ▶ *'Federal Govt courts foreign firms on housing'* – The Nation Dec 22, 2009 (p. B8)
- ▶ *'Lagos woos French investors on housing'* – The Nation Jan 5, 2010 (p. B2)
- ▶ *'2010: Yobe sets housing target'* – The Nation Jan 5, 2010 (p. B2)

# More Examples.....

- ▶ *'Fed Govt to support women on home ownership'* – The Nation Mar 2, 2010 (p. B6)
- ▶ *'Akwa Ibom earmarks N16b for housing'* – The Nation Mar 16, 2010 (p. B2)
- ▶ *'Housing Projects: Ogun woos cooperative societies'* –Punch August 20, 2012 (p. 45)
- ▶ *'Lagos housing scheme to produce 430 landlords next year'* – The Nation August 21, 2012 (p. 17)



# Results of the interventions?

- ▶ Between 1973 and 2006, the FHA built only 30,000 housing units nationwide
  - ▶ New housing construction by FHA is only about 10,000 units per annum
  - ▶ The houses are hardly what can be referred to as “affordable”
  - ▶ Many Nigerians living in cities spend 36–40 % of their gross income on rents
- 

# So what do we have?

### Bumpy road to affordable, mass housing

**Following the recent inauguration of the First Implementation Plan of the Vision 2020 by the Federal Government, EMEKA EZEKIEL examines its prospects and challenges for the housing sector.**

WITH the recent inauguration of Nigeria's Vision 2020 Economic Transformation Blueprint by President Goodluck Jonathan, and the approval of the First Implementation Plan by the Federal Executive Council, the country appears set to embark on a fresh journey towards economic growth and development.

In line with the three key pillars of Vision 2020, the First Medium Term Implementation Plan seeks to engender accelerated growth, achieve Gross Domestic Product growth rate of 11 per cent and raise the GDP per capita from \$1,075 in 2009 to \$2,008.75 by 2013.

It also seeks to create jobs; generate new opportunities; improve the country's global competitiveness and raise public confidence in governance in order to attain the Millennium Development Goal of halving poverty by the year 2015.

With respect to providing decent and affordable mass housing to meet the nation's requirements, currently estimated at over 16 million units, the NV20:2020 blueprint recommends the construction of 600,000 housing units by the Federal Ministry of Housing and Urban Development; 240,000 units by the Federal Housing Authority and 500 prototype units across the federation through the Public-Private Partnership arrangement within the next four years.

According to latest statistics from the United Nations Agency for Human Settlement, about 56 million Nigerians, representing 70 per cent of the country's urban population, currently live in slums.

Painting a grim picture of the challenges militating against the provision of decent and affordable housing in Nigeria during the public awareness and sensitisation workshop for the housing



• A house being constructed by Cornerstone Construction Limited in Oregun, Lagos.

Bank of Nigeria to provide a linkage between the mortgage market and the capital market;

- Enforcing National Housing Fund contributions for both public and private sectors;
- Privatising the Federal Housing Authority to compete with other players in the industry in the provision of mass housing;
- Providing incentives and the necessary legal and regulatory environment to attract Public-Private Partnership in mass housing development;
- Establishing an efficient foreclosure system that will give more guarantees to lenders in cases of default;

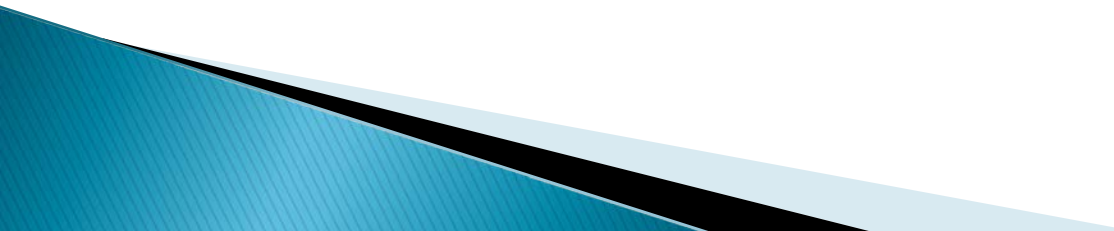
such as the Article 25 of the UN Universal Human Rights Declaration on housing as a fundamental human right, the Habitat Agenda adopted in 1996 on the provision of adequate shelter for all, and Goal 7 of the Millennium Development Goals on improvement of the lives of the people living in slums.

"More importantly, Nigeria, as 'the giant of Africa,' needs to take a giant stride to promote national programmes on providing adequate shelter for Nigerians and adopting sustainable and participatory approaches to land use planning, architectural design, building construction and management of towns, cities and villages to achieve the goal of the National Housing Policy of

# And ....a Complaints Galore.....

- ▶ *'Depositors accuse FHA of insincerity'* – The Nation Feb 2, 2009 (p. B7)
- ▶ *'Dearth of houses causes arbitrary agency fees'* – The Nation Jan 5, 2010 (p. B8)
- ▶ *'Lagosians criticise tenancy bill'* – The Nation Mar 9, 2010 (p. B7)
- ▶ *'FHA seeks return of subvention'* – The Nation Mar 16, 2010 (p. B2)

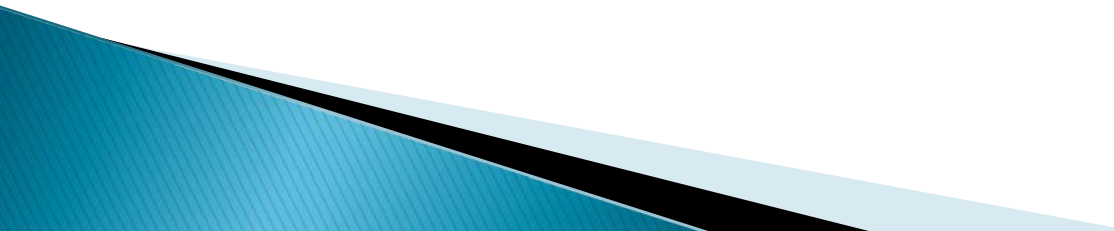
**What are some of the challenges?**



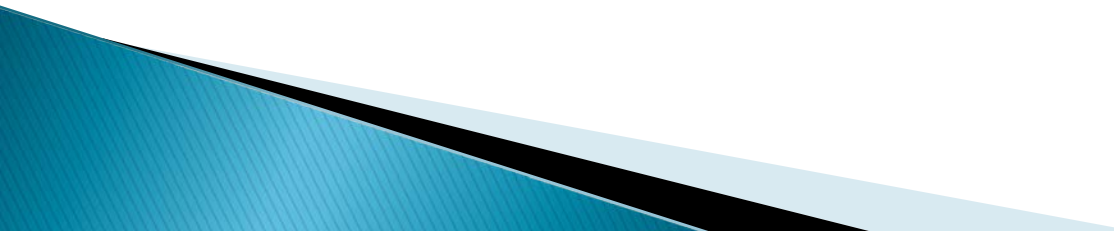
# Dilapidated Infrastructure

- ▶ Lack of primary infrastructure –roads, water, electricity etc– accounts for about 30 %of housing costs
- ▶ Private developers & home owners spend a large proportion of their income on self-generation of electricity, provision of water and security, thereby raising the cost of home ownership and maintenance

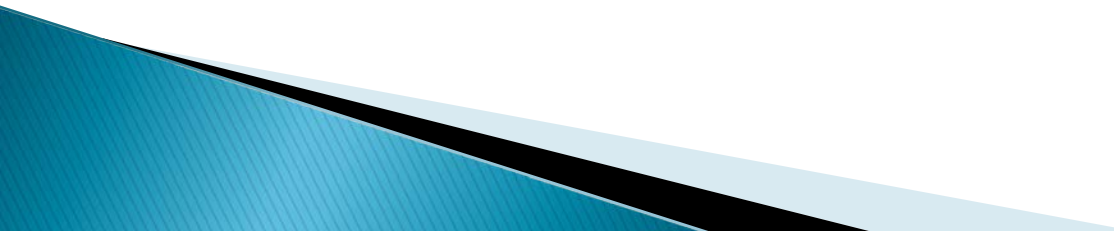
# High Cost of Building Materials

- ▶ Most of the conventional building materials are imported and therefore expensive
  - ▶ Cost of cement alone constitutes about 40% of building materials
  - ▶ Local consumption of cement in 2009 was about 19 million tonnes. Only 9.6 million tonnes was produced locally
- 

# Poor Quality of Building Materials

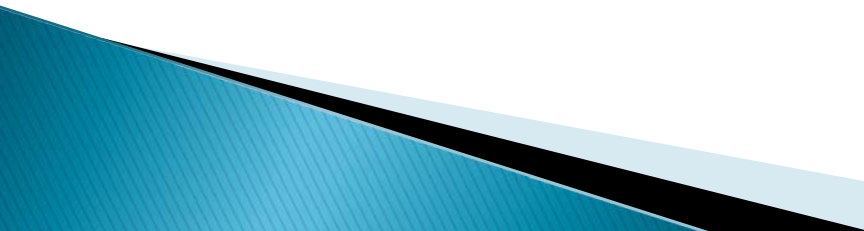
- ▶ Quality control measures are not taken in the production of sandcrete blocks, bricks, planks and other wood products used in the building industry
  - ▶ Building collapse, high construction and maintenance costs, etc are the resultant effects
- 

# Dearth of Qualified Craftsmen and Artisans

- ▶ Getting good masons, carpenters, allied craftsmen and artisans is a Herculean task in Nigeria today
  - ▶ Vocational training schools are very few and poorly funded
  - ▶ Poor workmanship therefore adds to the cost of construction
- 



# Obsolete Design Codes

- ▶ Many of the building codes are obsolete
  - ▶ For example, the last edition of Nigerian Code of Practice for Timber Design was released in 1973!
  - ▶ Many practising Civil Engineers and Architects involved in wood structural design are not aware of the existence of this code and therefore over- or under-design wooden elements
- 

# Inappropriate Architectural Design

- ▶ Design concepts of many of the mass housing Units do not take into account the current situation regarding existing infrastructure - electricity and water supply in particular

**The Way forward towards the delivery of  
500,000 housing units by 2016**



# Infrastructural Renewal

- ▶ Government at all levels –Local, State and Federal– should tackle head long the challenges associated with road construction and maintenance, water supply and general infrastructure

# Local Manufacture of Non-Convention Building Products

- ▶ Natural fibres derived from jute, coconut husk, pineapple, bagasse, elephant grass, bamboo, banana, etc., can be used to manufacture fibre composites as substitutes for plywood and medium density fibre boards, panel and flush doors, partition boards, ceiling boards & roofing sheets for low-cost housing needs

# Selected Local Vegetable Fibres Suitable for the Manufacture of Building Component



# Locally Manufactured Fibre-Reinforced Composite Floor Tiles



# Locally Manufactured Non-Conventional Fibre-Reinforced Roofing Sheets





# Locally Manufactured Bamboo-Composite Roofing Sheets



# Locally Manufactured Non-Conventional Cement-Bonded Composite Ceiling Boards



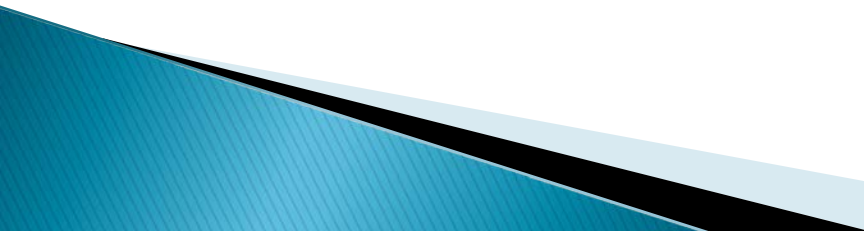
# Locally Manufactured Non-Conventional Wastepaper-Cement Composite Ceiling Boards



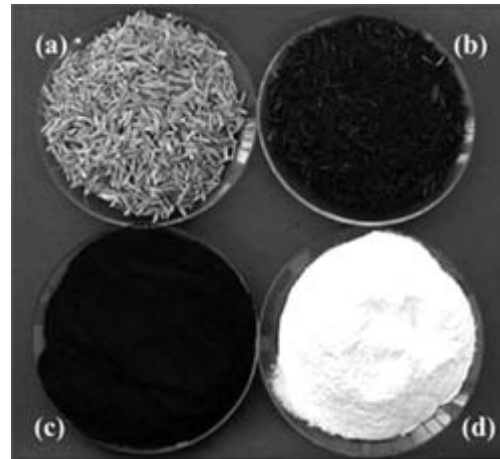
# Partial Replacement of Cement with Pozzolanas

- ▶ Artificial pozzolanas such as calcined clays, pulverized fuel ash and ash from burnt agricultural wastes can be used for Ordinary Portland Cement (OPC) substitution
- ▶ Replacement of OPC up to 50% is possible

# Pozzolanas from Agric Wastes

- ▶ Many plant ashes have relatively high silica content and are therefore suitable as a pozzolana
  - ▶ **Rice Husk Ash (RHA)** has the greatest potential
  - ▶ Other agricultural wastes having potential as a pozzolana include rice straw, maize cobs & bagasse
- 

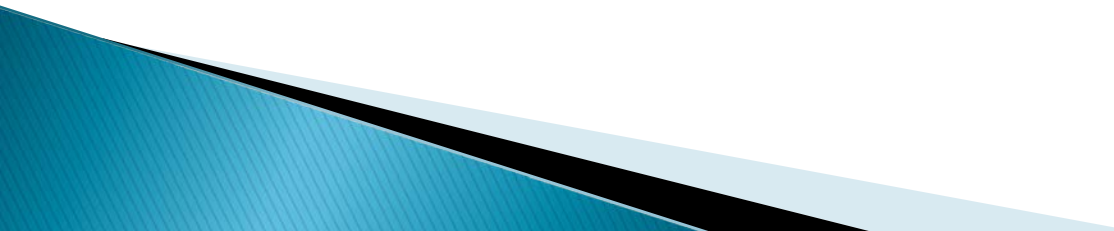
# Rice husk at different stages of processing to produce different kinds of ashes



# Cement Substitution in Building Construction

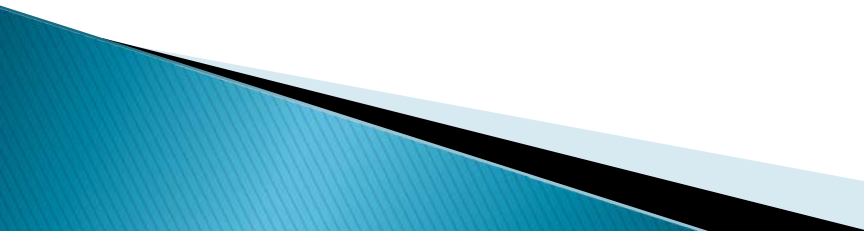
- ▶ Alternative cements from blast furnace slag, lime sludge, etc., can also provide an excellent technical option to OPC at a much lower cost and have the potential to make a significant contribution towards the provision of low-cost building materials and, consequently, affordable shelter

# Adoption of existing Local Building Technologies

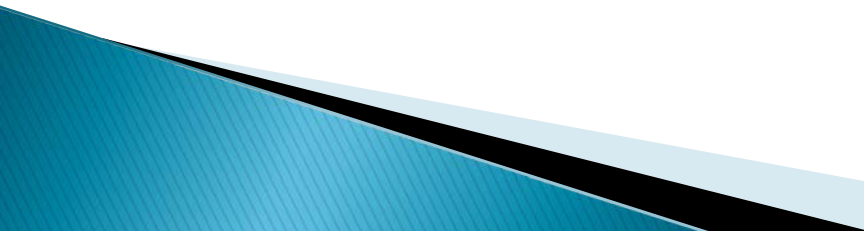
- ▶ **Stone – crete blocks:** derived from a mixture of brick, little cement and sand
  - ▶ It is ideal for areas where there is abundance of stones
  - ▶ The machine for producing stone–crete and the required stones are available in different colours in some states including Kogi and Ekiti
- 



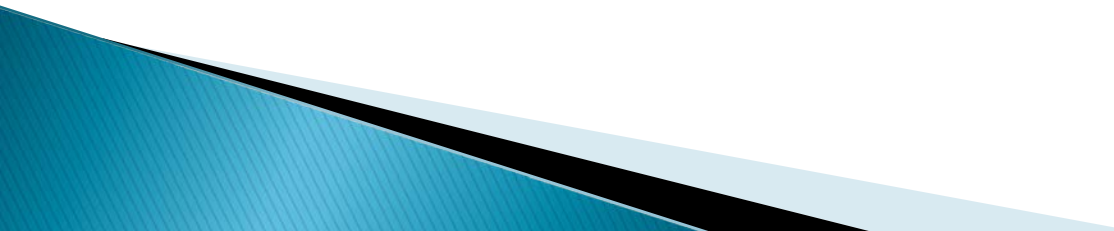
# Adoption of existing Local Building Technologies Contd.

- ▶ **Sand lime brick:** made from a mixture of sand and lime and most suitable in locations having an abundance of sharp sand
  - ▶ Lime can currently be sourced from Ewekoro (Ogun State)
  - ▶ This technology can be used in parts of Lagos State (e.g. Eti-Osa LGA) where sharp sand abounds
- 

# Adoption of existing Local Building Technologies Contd.

- ▶ **Laterite bricks:** made from laterite stabilized with just 5 % cement.
  - ▶ This technology reduces the use of laterite and cement, thereby potentially reducing the cost of building by half.
  - ▶ The design can be assembled anywhere in the country and that advantage of mobility promises to bring down the cost further
- 

# Recycling Waste Materials

- ▶ Careful dismantling and separation of various components (metal parts, timber boards and beams, windows, doors, tiles, pipes, etc.) can provide recycled materials in new constructions
  - ▶ Brick waste can be finely ground for use as a pozzolan or crushed for use as coarse aggregate in concrete
- 

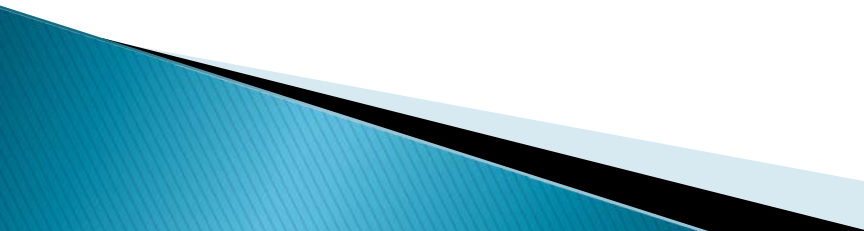
# Modular Construction

- ▶ To reduce cost and fast-track construction in wet season, component parts of houses can be produced in a manufacturing facility and then delivered in sections to a construction site for assembly onto a foundation

# Modular Construction in progress



# Standardisation of Building Materials

- ▶ Production sandcrete and blocks and bricks must be standardised in terms of size and minimum compressive strength
  - ▶ Lumber grading must be standardised such that there is little deviation from nominal sizes from sawmill to sawmill
- 

# Adequate Attention to Vocational Training

Nigeria must invest copiously in vocational and technical education

Vocational training centres should be set up in local government areas from where the unemployed youths could acquire some job skills and current artisans and craftsmen could upgrade their skills to improve their productivity

# Development of Local Design Codes

- ▶ Appropriate engineering design codes must be developed for both conventional and non-conventional locally available building materials



# Development of Eco-Friendly Buildings

- ▶ Modern low cost houses should
  - be designed for natural lighting and ventilation
  - Incorporate installation of solar panels for electricity supply
  - Incorporate rain water harvesting and treatment facilities

**Thank you for your attention!**

