

## REVISITING ECONOMIC HOUSING SYSTEMS TOWARDS SUSTAINABLE NATIONAL DEVELOPMENT



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### Abstract

The Provision of economic infrastructures, especially housing for the masses has been characterized with major challenges over the years. To salvage this situational trend, certain innovative constructions (materials and methods), principles, laws and regulations among others are expected to facilitate access to economic houses. Ever increasing demands for economic housing systems in the country can never be under estimated which calls for adequate sustainable national development. Such economic houses are geared to meet up with all global practices and standards (economic, environmental and social). At least, minimum design standard requirements within the general accepted level of environmental friendliness, safety, security, health, access and ecological considerations are to be put in place. As a result of the above, this paper revisits as well as appraises the exposition of duly accredited indigenous construction and technology such as innovative designs systems, economic systems, modular systems, and energy systems and zero emission systems, etc. for implementation.

**Keywords:** *Sustainable, Economic, Housing and Development, Systems*

### Background to the Study

Housing is a reflection of the social, cultural and economic evolution of a society while the shortage of decent and affordable accommodations for urban low income earners is a major difficulty facing Nigeria today (Anthony, Valentine, and Paul, 2014). The connections among economic infrastructures, sustainable development and housing had always been used interchangeably, means many things to many people though with specific meanings. Housing and infrastructure development represent an important aspects of capital development that governments all over must pay attention to as part of their social responsibilities (Dikko, 2002). Therefore, infrastructures are basic essential services that should be put in place to enable development to occur. Socio-economic development can be facilitated and accelerated by the presence of social and economic infrastructures. If these facilities are not in place, development will be very difficult and in fact can be likened to a very scarce commodity that can only be secured at a very high price and cost (Familoni, 2007).

The historical trend of vision 20: 2020 in Nigeria is a long one. Each regime usually attributes itself to one or more specialized project such as Operation Feed The Nation (OFN), Structural Adjustment Programme (SAP), National Economic Empowerment And Development Strategy (NEEDS), Mass Mobilization For Self Reliance, Social Justice Of Economic Recovery (MAMSER), National Poverty Alleviation Programme (NAPEP), Millennium Development Goals (MDG), others are Vision 20:2020 and the current being the Transformation Agenda. Cases of government interventions at various regimes Vis a vis sustainability is therefore very important because majority of such programmes failed while only few were successful.

The vision of the Institute of National Transformation (INT) is to develop leader of integrity and exceptional organization skills from both private and public sector throughout the world that will prefer performance instead of pronouncements: expert and competence instead of the title and position, bold developmental initiatives instead of seeking handouts, respect and honor for our people instead of dictatorship, control and abuse, and leave legendary positive impact on the continent instead of failure and excuse. As a result of this, Nasiru (2011) reported that transformation actually means a complete change from one situation to another, a total departure from the old order to a new one. Transformation does not come accidentally, but requires deliberate effort.

To change from a failure to a successful person calls for performance of some activities that will facilitate the actualization of such dreams, transformation call for practical action and go beyond mere expression or verbal pronouncement, but requires a number of tasks to be performed. He concluded that it is logical to say it takes a performer to be a transformer. Looking critically at all the above, in the construction industry, the performing effort of the architect in design and the builder who build it are directed towards same aim (goal) through different objectives (how to achieve it) i.e. creation of something which serve the purpose for which it is build in a satisfactory manner. Hence, they are both highly purposeful in promoting national transformation. Transformation according to the United Nations Development Programme (UNDP) therefore is a social practice and construction is same, a social service to private, public and government.

This condition of transformation is inadequate in which professionals in construction especially the architect have to improve on their various contributions and self education through training and re-training processes. National Development means the ability of a country to improve the social welfare of the people by providing social amenities like quality education, potable water, affordable housing, access to food, good transportation, adequate medical care and access to communication, etc. Sustainable Development is about making sure that people throughout the world can satisfy their basic needs presently, while making sure that future generations can also

look forward to the same quality of life. It therefore recognizes that the three 'pillars'-the economy, society and the environment are inter connected. Sustainable development could therefore be termed as the use of renewable resources in a manner that does not eliminate or degrade them or otherwise diminish their renewable usefulness for future generation while maintaining effectively constant or non-declining stocks of natural resources such as soil, groundwater and biomass (Adedeji, 2011).

### Statement of the Problem

In order to achieve the very best of success in tackling the factors militating against housing infrastructure, efforts to solve the problems of low-cost housing have often been concentrated on reducing their cost. This is so as the critical problem of this sector of the built environment is its prohibitive cost relative to the incomes of benefitting families (Sumaila and Adamu, 2008). The aim of this paper is to improve and safeguard the public on methods that will be economical, sustainable and guarantee sound environmental quality. However, and in spite of the ability of household to partake actively in the housing market depends on the size of their income (Sanda and Jambol, 2010). Therefore, the higher the house rent, the higher the risk of bankruptcy.

### Objectives of the Study

The current situation therefore makes it necessary to investigate more on how economic is housing infrastructure in relation to sustainability which gave rise to the objectives of the study as itemized below:

- 1 To examine the present and future of economic housing infrastructure in theory and practice.
- 2 To identify economic, environmental and social issues associated with economic housing infrastructure.
- 3 To recommend possible measures to overcome the difficulties being experienced as a result of cost, labour and time.

### Methodology

The need of this study makes it necessary to seek information on the theory and practice of economic housing infrastructure in relation to sustainability. By ways of primary and secondary means, information was gathered. Primary information was gathered from guided oral interviews, direct observation, practical experiences enhance qualitative assessment. Secondary information was gathered through electronic publications, newspapers and library sources.

### Conceptual Framework

The conceptual framework adopts Anyakora, Akinmoladun, Ilechukwu, and Gambo (2013) perception, where he used environmental, economic and social parameters to investigate the

impact of open space conversion on neighbourhood quality in a planned residential estate in Nigeria. Again, Shah (2007) depicted the relationship among environmental, economic and social parameters as illustrated in figure 1 below shows typical issues involved in sustainable development.



Figure 1: Typical Issues and Criteria of sustainable development (Shah, 2007).

#### Sustainability and Economic Housing Infrastructure

Sustainability in relation to environment according to Oduwaye (2009) stated that there are programmes required to achieve sustainable physical development in the less developed world. The illustration of indigenous construction materials and construction technology in the country is such that various issues of buildings with bottles, stabilized earth, interlocking dry construction, angle iron lintel, cross wall roofing, 2 in 1 lintel and binding course with useless to useful ideas had been fully taken care of. The exposition of duly accredited indigenous construction materials and methods as innovative designs systems, economic systems, modular systems, energy systems and zero emission systems will be detailed in due course of our discussion.

#### Emergence of Sustainable Construction Materials

Mostly, in Nigerian construction sites, the common materials are steel, timber, concrete, and stones e.t.c. New technology had made it possible to build with less associated risks and problems with the use of composite building materials, and petrol-chemical compounds, such as polystyrene, polycarbonate, polyurethane, polypropylene and polyester and recycling wood materials, such as cork (Building Quarterly {BQ}, 2011). To choose among these, appropriate materials need to fit in a specific function is a specialized contribution of the architects which pave way for a National Transformation.

#### Emergence of Sustainable Construction Methods

On daily basis, new trend of materials and methods are emerging into the construction industry. According to (BQ 2010), a construction crew in the south-central Chinese city of Changsha

completed a 15-storey hotel building in just 6 days! The work crew erected sound proofed hotel with all pre-fabricated materials, tripple glazed plastic windows and roofs, light weight steel construction with 150mm, thermal insulation for walls, external solar shading, heat insulator, fresh air heat recovery and LED lighting structure built to withstand a magnitude 9 earthquake. Such among other amazing construction technology can be well handled by the architects in Nigeria for a positive National Development.

#### Analysis of Developing the Housing Infrastructure Systems

To understand the concept of 'Systems' as described by Lucey (2004), meaning the assemblage of interrelated components (elements). Now, housing in relation to Infrastructures are sequels, where both work together as a unit. By compare and contrast, the society and economy of UAE supports housing in which a considerable proportion of government spending, at both the federal and local levels, is devoted to constructing and financing housing and to developing civil infrastructure such as power, water, and waste removal. The federation government makes housing available to citizens through direct low-interest loans, subsidies on rental units, and grants of housing at no charge, and thousands of Emiratis have taken advantage of these programs (Encyclopaedia Britannica, 2014).

While the New Zealand government postulated that economic infrastructure supports economic activity and is often characterized by 'user-pays' or demand-based revenue streams. Hence, by merging these two concepts, genuine Nigerian citizens should be able to pay for cheap, low-cost and affordable structures which could be owner's occupier in nature with the support of Public Private Partnership. From past research efforts, it was gathered that it is not as if Nigeria can not afford a social housing infrastructure whereby houses are constructed for citizens free like some countries. However, Nigerian attitude does not support continuity and maintenance culture but the incidence of major forms of abuse is the order of the day. As a result of the narrated indicators and challenges and to bring about a national development (transformation) in the nation, the followings are means of revamping the economic housing infrastructures:

#### Innovative Designs Systems

The creative and innovative thinking of solving housing problems are evident in site planning, behavioural and organic architecture, landscaping, floor planning, construction, materials, and methods and detailing. The focus here is on floor planning and behavioural and organic architecture. Plates 1-3 show that it is possible to get more facilities on a piece of land by proper management (BQ, 1999). Again, plates 4-6 show the natural growth and development of physical structure from stages 1-2-3 (Taiwo and Arayela, 2011). Hence, it is very important to train a new generation of architects in designing low-cost housing (NEEDS).

### Economic Systems

The target of cost, labour and time shall be the central point of discussion. Adequate cost reduction is geared towards achieving relatively affordable houses. There should be a very stringent measure in addressing the choice of skilled, semi-skilled and unskilled labour. If this aspect is properly harnessed, the housing will be economic. The economy of time in reducing the cost of housing infrastructure is very important. This can be realized by gaining positive time in the real sense by undergoing two or three construction operations at a time as long as all factors remain constant

### Modular Systems

The existence of modules in the building elements conforms to standardized repeating patterns in the same size, shape and scale. In the quest to a better future of building construction processes and procedures in Nigeria, hence the possibilities of modular coordination systems which will pave way for perfection, cost effectiveness, waste reduction, speedy construction among others of industrialized housing infrastructures. It will also assist with standard material make-up along with the construction technologies so that the current obstacles are being faced with building construction would be greatly salvaged in the recent future.

### Environmental Impact Assessment (E.I.A.) Systems

This is a structured approach and formal set of procedures for ensuring that all environmental factors such as health, safety, amenity, and social consequences are taken into account at all levels in planning decision and design for the need of a balanced development and sustainable environment. Some of these are broken down into issues concerning pollution, economic impact/feasibility, cultural background, religious and norms, ecological, hydrological effect, climate and micro-climatic factor, ecological value, future development, changes and changing external circumstances, government policy, rigidity and flexibility, noise, traffic, agriculture and landscape. Others are proximity to sensitive areas like nuclear power station, coal mines, and oil-rig, transportation routes, employment level, risk assessment and technological necessity.

### Energy Systems

Energy is used in buildings for various purposes: heating and cooling, ventilation, lighting and the preparation of hot sanitary water among them. In residences and commercial buildings, installed equipment and appliances require energy, as do removable devices like mobile phone chargers and portable computers. However, identification of fixed and fluctuating demand for energy (saving potentials in new buildings, and the use of building codes) rarely appears in a building's consumption metric, as most measurement consider only the total amount consumed by the whole building (Energy Efficiency Policy (EEP), 2009). As a result of these, issues of energy efficiency, use of green, recycleable, 3 Rs (reduce, reuse, recycle), clean energy, energy codes and

standards should always be considered in economic housing infrastructure.

### Zero Emission Systems

In Wikipedia (2014), the zero emission systems include zero net energy consumption and zero energy buildings, passive houses of low energy houses. This is achieved by incorporating energy efficient strategies into the design construction and operation of new buildings and undertaking retrofits to improve the efficiency of existing buildings. Such strategies include the use of natural lighting and ventilating systems, solar energy, wind energy, the rethinking of our human and natural resources in green architecture like conservation, re-cycling, designs, appropriate use of materials and applications of science and technology (Sanusi & AbdulMageed, 2008).

### Indicators of Economic Housing Infrastructure

In theory there are some necessary ingredients responsible for the economic housing. Such economic benefits of housing infrastructure include creating a significant number of new jobs for the working class. Another benefit is the generation of economic growth when money flows through the economy as families spend their incomes and business reinvest profits. Good governance by putting all positive things in the right direction. Infrastructure development is the basis of measuring the performance of democratic leader and it is the foundation of good democratic governance. Level of education in relation to poverty line is also very important in carrying everybody along. If there is high percentage of illiteracy, the poverty will be on the increase as the level of awareness to current trend will be difficult. Emergence of public and private participation will go a long way by unlocking all the difficulties and utilizing all the available potentials. Housing life expectancy deals with the aspect the life span of housing project. New housing construction should conform to global standard practices so that it can last the taste of time.

### Challenges Confronting Economic Housing Infrastructure

In practice there are many factors militating against economic housing infrastructure such as: Late passing of the budget is one of the factors militating against economic housing infrastructure as there will be no adequate time left to pursue the due process in making housing projects a reality. Another one is failure of housing schemes in Nigeria. This trend is not peculiar to a particular regime, but cut across past and present government. Poor implementation of challenging Research and Development policies most of the times will not see the light of the day. There should be a change because other countries are making well defining progress in this aspect. Housing market is a crucial element of the Nigerian economy and the housing need is critical of social wellbeing but the finance is grossly inadequate (Dr. Mrs Ngozi Okonjo Iweala's, in an interview with the Federal Radio Corporation News (FRCN), December 3, 2014). She also added that if prices of materials especially cement are reduced and the stakeholders are up to their

responsibilities, the sector will progress impressively.

### Conclusion and Recommendations

For stake holders to support the effort of the government in providing economic housing infrastructure, the followings should be in place;

- 1 There should be a serious commitment on the part of government, council, senators, and all others stakeholders of tertiary education in Nigeria to appropriately fund the housing sector to ensure production of quality economic housing facilities for Sustainable Development.
- 2 Another important area is that architects in training and practice which are true mirror-reflection of the society should embark on researchable projects that will cover the socio-cultural, political and technological projects so as to meet up with the future economic housing challenges.
- 3 Mass environmental awareness education programmes should be introduced at all levels and the media houses should support architects to achieve sustainable economic housing for a National Development.
- 4 Lastly, government should adopt the Public Private Partnership in the provision of facilities like roads, schools, hospitals, electricity, and especially economic housing infrastructures which will go a long way in providing security, progress and therefore substantial development.



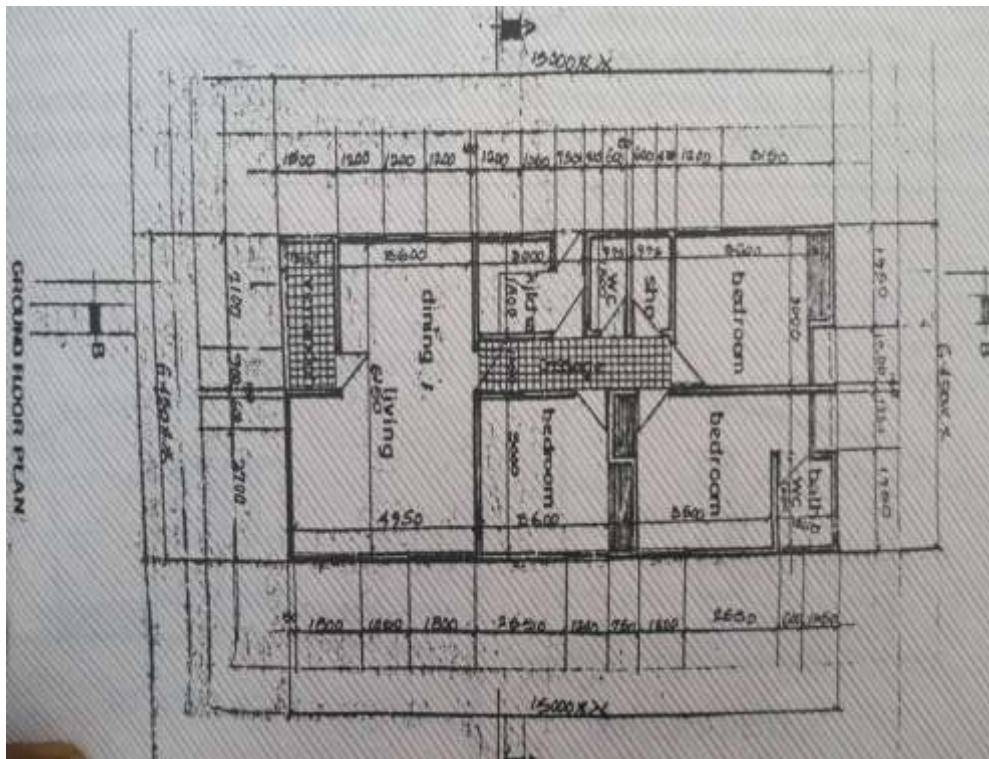


Plate 1: An Economic Three Bedroom apartment (Plan) in Lagos, (BQ, 1999)

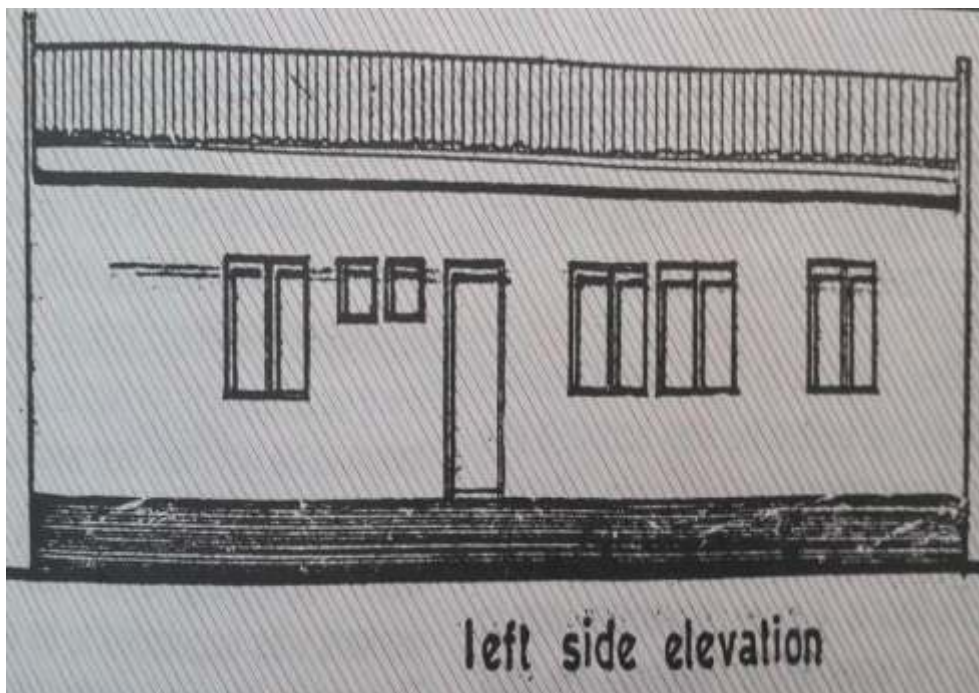


Plate 2: An Economic Three Bedroom apartment (View A) in Lagos, (BQ, 1999)

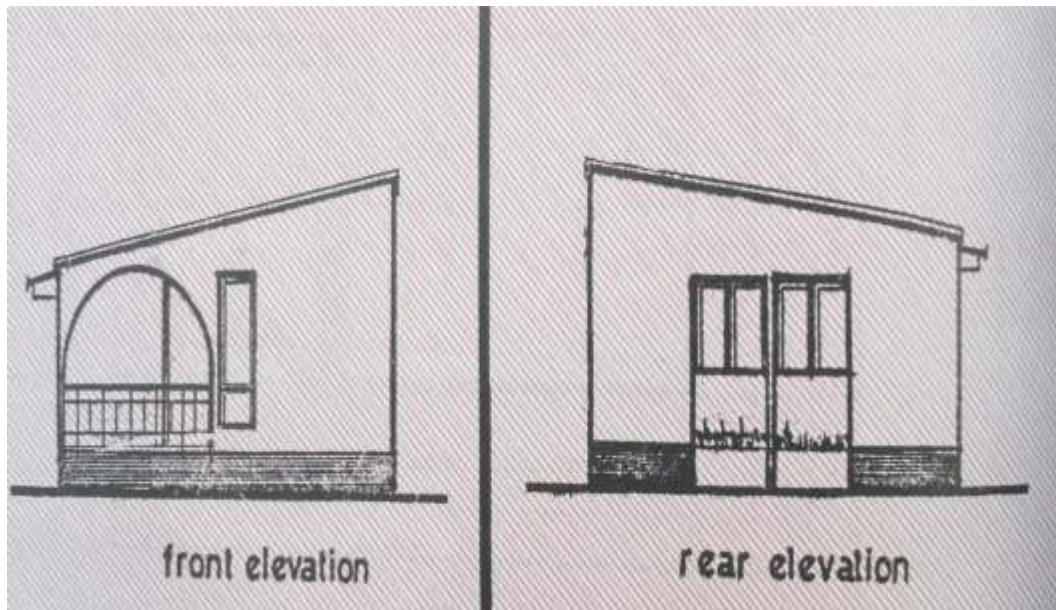


Plate 3: An Economic Three Bedroom apartment (View B&C) in Lagos, (BQ, 1999)

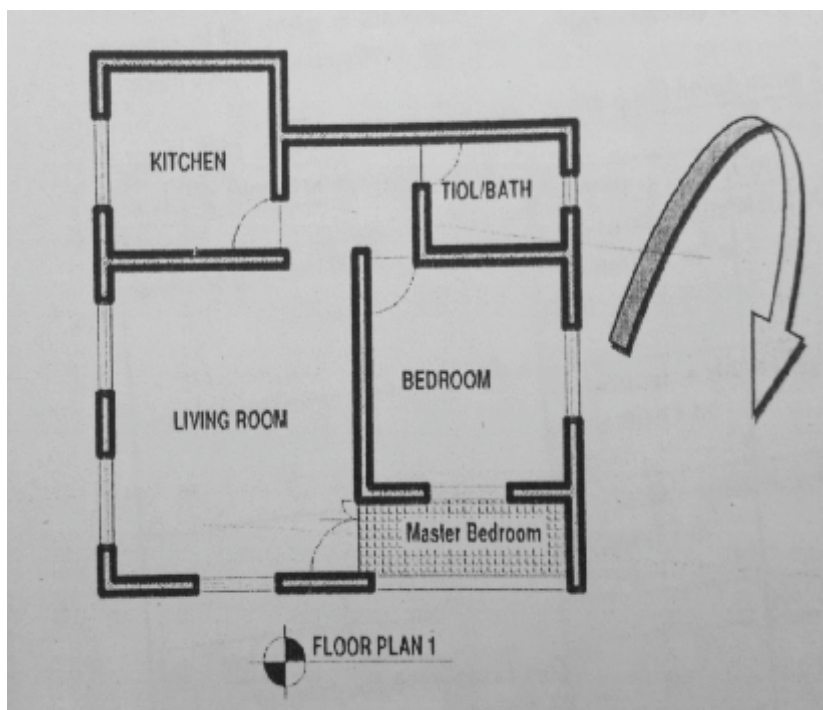


Plate 4: A Regenerating One Bedroom Design, (Taiwo & Arayela 2010)

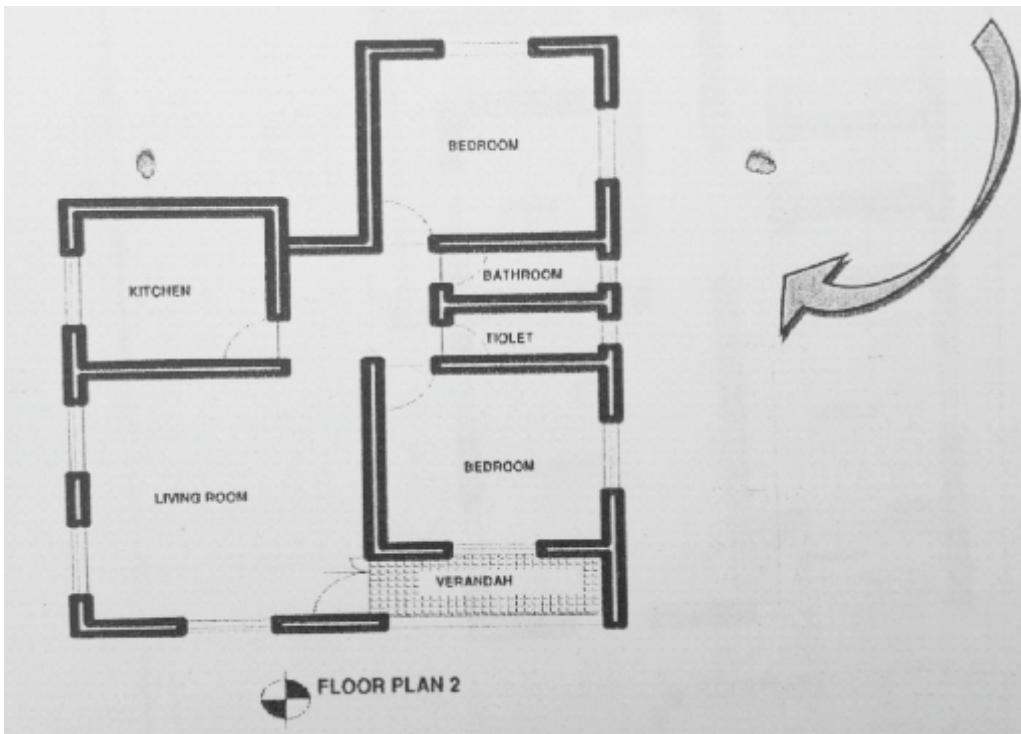


Plate 5: A Regenerating Two Bedroom Design, (Taiwo & Arayela 2010)

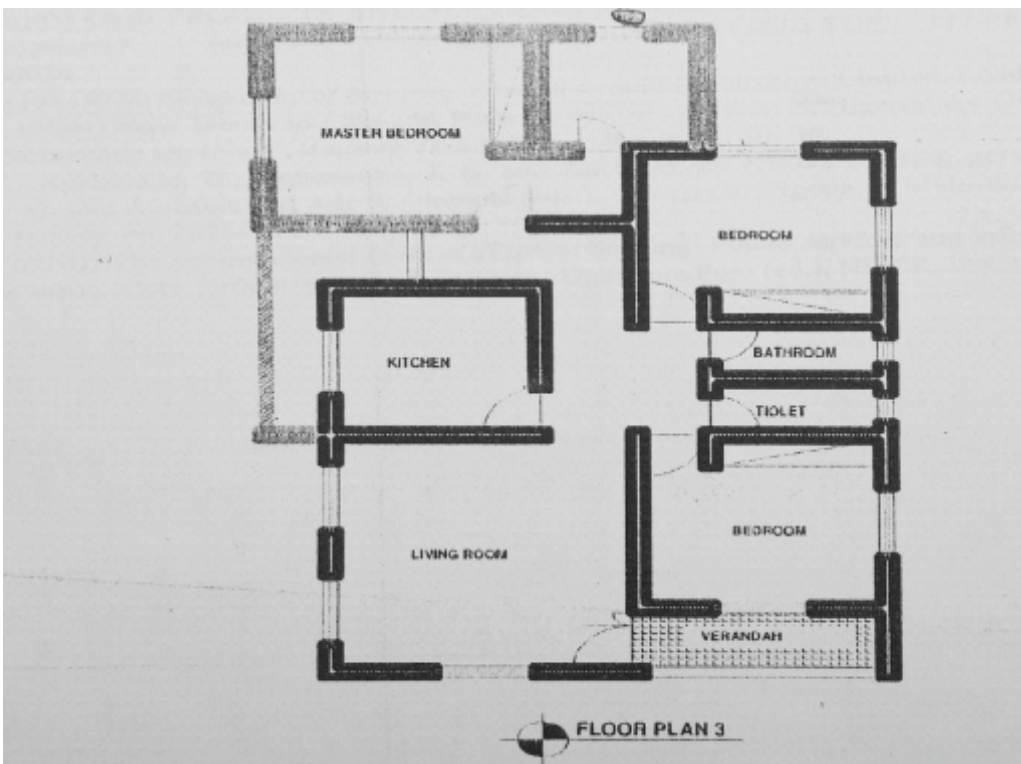


Plate 6: A Regenerating Three Bedroom Design, (Taiwo & Arayela 2010)

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