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Social Priorities of Less Developed Countries Sustainable Housing (Case of Sudan)

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Abstract

Sustainable development and sustainable housing indicators are a response to the trend of adopting sustainable development objectives, adopted by most countries, especially developed and less developed countries. It is difficult to implement indicators developed for a developing country context in other contexts with different social, economic and environmental conditions. Social sustainability is the most important priority regarding evaluating the housing development projects in the developed and less developed countries. Economic conditions is linked in many aspects to the social sustainability indicators. Environmental indicators are important, but the less developed countries in general has a very low environmental foot prints, this is because the industry sector is usually weak comparing to the developed countries. This paper reviews the sustainable housing indicators, with a focus on United Nations reports and indicators developed for contexts similar to study area, without ignoring the most reputable indicators developed for developing countries context. The research came with a set of indicators reflects the social priorities of the new housing development in Sudan. A questionnaire participants decided the relative important of each indicator and also the importance of the parameters of each indicator. Developing a set of social priorities for Sudan will give extra efficiency in promoting and assessing sustainability in the study area. Description of the questionnaire results which reflects the national social sustainable housing development priorities are discussed. The researches came with a set of recommendations to enhance the social aspects for new housing development projects in Sudan. Using this set of priorities and recommendations will give extra efficiency in promoting and assessing sustainability in the study area.

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Keywords

Housing; Social priorities; less developed countries; Sudan

1. Background

Provision of affordable housing is a big challenge and priority for all governments. Because of the lack of economic resources it is more difficult in less developed countries. Serious problems is facing housing development in less developed countries such as slums prevention, urban divide, economic development, human development and climate change. Sustainable housing can play an important role in achieving sustainable development, especially in poor less developed areas. In most developed and less developed countries, housing polices are not addressed

within an integrated policy, the social, economic and environmental issues (UN-HABITAT, 2012). If the affordability aspects excluded, it is very difficult to call such housing projects, a sustainable housing development. What usually called social housing is a standard practice in most less developed countries, including the study area. It provides shelters for poor people, with poor standards, usually in remote locations without considering their lifestyle, economic and social needs. The provision of such housing units is still covering a very low percentage of the real demand, especially with the high population growth areas.

Sudan annual growth population rate is 2.6% with over 37 million estimated population according to the 2007 national population survey. It is one of the biggest countries in Africa, covering over 250 million hectares. The climate range from hot dry in the north, and change gradually to dry and semi dry in the center, sub-tropical region in the south with heavier rains and dense tree cover. Most human settlements clustered around the rivers valley. 25-30% of the population live in Khartoum the capital city. Immigration because of war and conflicts and lack of services was a key factor in this high percentage (NPC, 2010). Less than 400 US dollar a year is the average of per capita income. Sudan considered a less developed country because of the low average income, level of education, spread of diseases, lack or undeveloped and degrading condition of infrastructure. See table 1, (Zakieldeen, 2009).

Table 1. Basic poverty indicators for Sudan compared to other countries (LDCs) and Arab countries, Zakieldeen (2009)

Indicators	Sudan%	Future targets based on expected available budget	Less developed countries%	Arab Countries	Developing Countries
Basic Education					
Basic education enrolment rate	75.2%	90%	60%	86.4%	85.7%
Literacy rate	50.1%	41.1%	59.1%	59.7%	28.3%
Health					
Infant mortality rate	68/1,000	65/1,000	103/1,000	55/1,000	64/1,000
Child mortality rate	103/100,000	96/100,000	161/100,000	72/100,000	93/100,000
Maternal mortality rate	509/100,000	478/100,000	na	na	Na
Malaria rate	25%	22%	37.3%	19%	na
AIDS rate	1.6%	1.12%	4.13%	0.16%	10.18%
Water					
Drinking water provision	60%	64.5%	64%	83%	72%
Sanitation coverage	60%	66%	40%	77%	44%

As a result of migration from rural to urban areas, and also from neighbor countries like Ethiopia, Eretria, South Sudan and Chad, slums and informal settlements spread around the major cities. Lack of infrastructure, sanitary, formal planning and building regulations is associated with such slums. Addressing the issue of affordability is, therefore, a necessary condition for transformation towards sustainable housing. If affordable housing create a negative environmental, social or economic impact, it can not be considered sustainable. In the last decade Sudan government changed the housing strategy from site & service and upgrading programs, to state built housing. This shift to state built housing reduces the beneficiaries, because of the high demand and low supply. But it can be an opportunity to implement sustainable housing indicators, including social aspects of a sustainable housing.

In the last few years many sustainable housing indicators and assessment tools appears, but its notice most of it developed in a developing country contexts, therefore the priority was environmental sustainability, due to the

huge environmental impacts coming from industries and the relative social and economic stability. (Gibberd, 2005) stated that social and economic issues are the most important priorities to developing and less developed countries, environmental issues should not be ignored, but considered as a less priority. In the same line, (Libovich, 2005) also stated that environmental performance can not be the main consideration for developed countries, he agrees with Gibberd that each developing and less developed country should concentrate on developing its own social and economic indicators.

In this paper, social sustainable housing priorities in the less developed countries are discussed, and a set of priorities and parameters developed for Sudan will be presented.

(Sonntage, 2007) argued that securing human basic needs, live and social capital lead to a flexible human society, which is a definition of social sustainability. Maintaining the relations between individuals and groups, provision of human basic needs, and improving the human wellbeing are basic indicators of implementing social sustainability according to Sonntage. (Strener, 2008) identify the basic needs as providing food, water, air, safety, security and shelter. If governments cannot provide all needs directly, it should facilitate the means to the individuals to obtain it themselves. Governments should invest in education, and building skills and capacities to increase the individual's income and opportunities to access basic needs. Fighting extreme poverty is a basic social priority for less developed countries, governments should make sure that all residents have equal opportunities to use goods and services, and has financial means to procure it.



Figure 1. Relationships of social to environmental and economic components. (Strener, 2008)

2. Methodology

The research used both quantitative and qualitative approaches, pilot study, survey, questionnaire, and structured and unstructured interviews. The first step was determining the initial variables suitable to inform the interviews.

The research reviewed and analyzed the local, national and international indicators of sustainable development and sustainable housing, with a focus on social indicators and also environmental and economic indicators linked to social issues. Sudan indicators of sustainable development was the main source to extract suitable social housing indicators. The research also reviewed indicators developed for similar contexts. Considering the natural and physical conditions, the research identified the local housing social sustainability indicators. A questionnaire was distributed to the integrated stakeholders (private, public, governmental agencies), the purpose was to identify the relative importance of each proposed indicators, and also to the relative importance of the parameters designed to ensure a sound implementation of the indicators.

2.1. Data collection

The results of literature review was a set of social indicators related to housing; the main analyzed indicators can be divided into three groups:

2.1.1. International sustainable development indicators

Social priorities of sustainable development, according to 21st agenda are health, social equity, production and consumption patterns, social equity, security and housing (United Nations, 1992). United Nations Commission on Sustainable Development (UNCSD) developed guidelines representing sustainable development, social sustainability was one of the four key aspects of these guidelines, with 12 indicators under it (UNCSD, 2001). The consultative group to sustainable development indicators (CGSDI), developed UNCSD indicators, the result was a set of sustainable development measuring indicators, which adopted by the United Nations under the name Sustainability Dashboard (IISD, 2012). Millennium development goals indicators MDGs, was a natural development of the previous attempts, it sets quantified targets to address many social issues, such as poverty, hunger, shelter, gender equality, education. All the previous social issues should be considered as basic human rights. The Canadian genuine progress indicators also reviewed (Talberth et al., 2007).

2.1.2. National Sustainable Development Indicators

As a result of collaboration between the government of Sudan and the United Nations agencies, Sudan MDGs report was developed. The report was written after examining Sudan's social, economic and environmental context. It is a useful tool to evaluate the country sustainable development different aspects. Social aspects was addressed in this eight goals report. The main social priority was fighting poverty, hunger and social justice (NPC, 2010).

2.1.3. Sustainable Urban Development Indicators

UN Habitat urban development agenda was reviewed from Istanbul declaration 1996, to the latest Quito new urban agenda 2016, the main social issues discussed in these agendas are right to adequate housing, affordable drinking water, sanitation, fighting discrimination, equal access to public goods and quality of services, education, food security, health, infrastructure within a participatory and friendly society, which promoting civic engagement. The researchers reviewed also (Hyogo) 2005-2015: International Strategy for Disaster Reduction, building the resilience of nations and communities to resist disasters. Previous reports critically reviewed. The research also reviewed some local urban sustainable development indicators, such as Zurich sustainable development indicators, Karachi, Jakarta, Urban Cincinnati, and Seattle sustainable urban development indicators. The focus was on social urban indicators.

2.1.4. Sustainable Housing Rating Systems

The researchers reviewed four housing sustainability rating systems, the purpose was extracting social indicators suitable to a less developed country. LEED-ND v4 is a third party neighborhood development assessment tool, developed by the United States green building council (USGBC). LEED-ND v4 addressed many important social issues, such as housing affordability, job proximity, connected and open communities, local food production, schools and also access to civic and public spaces and recreational facilities (USGBC, 2017). The second system was the UK based BEEAM Communities, like LEED it is a third party assessment certification standard. Comparing to LEED, the social dimension is poor, it appears in some indicators like housing provision, consultant and engagement, utilities and access to transport facilities (BREEAM, 2012). CASBEE for Urban Development (CASBEE – UD), is a system developed to evaluate the outdoor environment and compound function of group of buildings, social infrastructure is one of eight scoring criteria's, but because of the environmental focus of this tool, the criteria concentrate in the water use within the community (IBEC, 2008). It is fair to say this assessment system is the poorest regarding social issues. Pearls Community Rating System for Estidama, was the last reviewed urban development assessment tool. (Abu Dhabi Urban Planning Council, 2010). Livable communities category contains many social related issues, such as safe and secure community, housing diversity, accessible community facilities, neighborhood connectivity, open space network and community walkability. The social issues weight in this system exceeds 23%.

2.2. Sudan's Current Social Situation

The study of the previous literature review helped the researchers to find the investigation areas, to review the local sustainable development context, with a focus on issues connected to social aspects of housing situation. It can be summarized in the following points:

- Poverty rate is high, especially in slum areas.
- School leavers and children labor is increasing, because of the high poverty rate.
- Quality of education is facing problems, such as overcrowded classrooms, lack of quantitative and qualitative teachers and the imbalance in the distribution of schools geographically and demographically (HPG, 2011).
- Health sector is in malaise condition, the percentage of the number of doctors to the population is the lowest in the region, and the number of centers providing health services with a disproportionate number of the population. cholera, malaria, typhoid, AIDS and other diseases are prevalent in the study area (Elkheir, 2012) and (NPC, 2010).
- There is a significant progress in gender issues.
- Affordable housing policies are not responding to the increasing demand in terms of quantity, quality and affordability.
- Community participation in housing policies decision making is very weak.

The final result of the previous three steps is a set of social sustainable housing priorities developed to suit the context of Sudan, and suitable for less developed countries after slight modifications to suit any local differences.

3. Analysis

The Analytic Hierarchy Process (AHP) is a mathematical decision-making technique provides an effective means to deal with complex decision-making, developed by Thomas Saaty in 1980. AHP allows consideration of both

qualitative and quantitative aspects of decisions; it can reduce complex decisions to a series of one-on-one comparisons by assisting with identifying and weighting selection criteria, analyzing the data collected for the criteria and expediting the decision-making process, (Satty, 2008). AHP was used to set the relative importance of the developed priorities. A questionnaire was developed, and 50 participants involved in this experiment. The participants are experts in sustainable development, housing, environmental studies, economy, social studies, and architects working with private housing developers and government. The following figures 2 -7 will explain the relative importance of the priorities and the parameters according to the questionnaire participants.

4. Results

The outcome of the previous data collection and analysis is a comprehensive list containing Sudan sustainable housing social priorities, degrees of relative importance, and parameters to ensure total fulfillment of those priorities. See table 2.

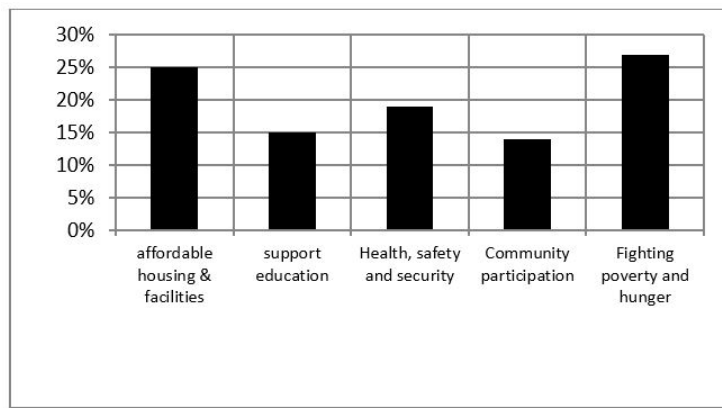


Figure 2. Sustainable Housing Social Priorities in Sudan

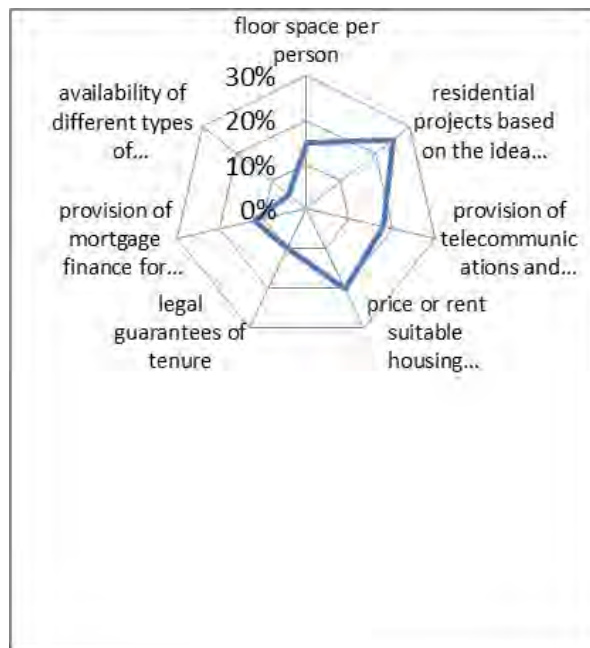


Figure 3. Availability of affordable housing and the provision of facilities

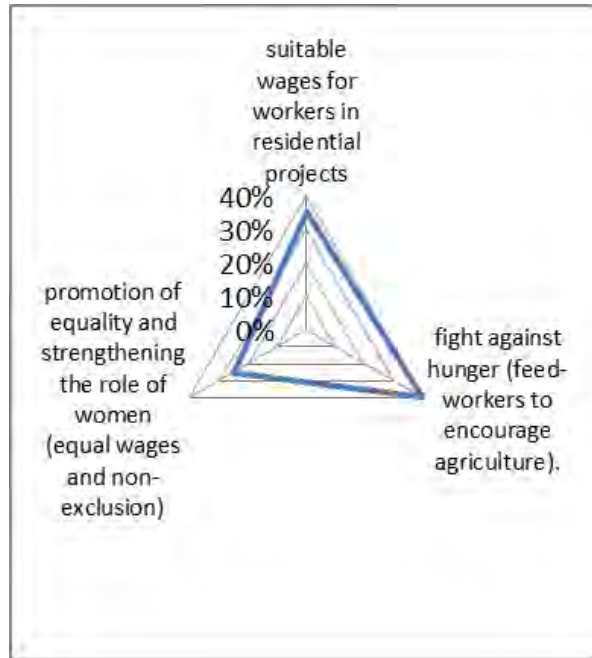


Figure 4. Fighting poverty and hunger

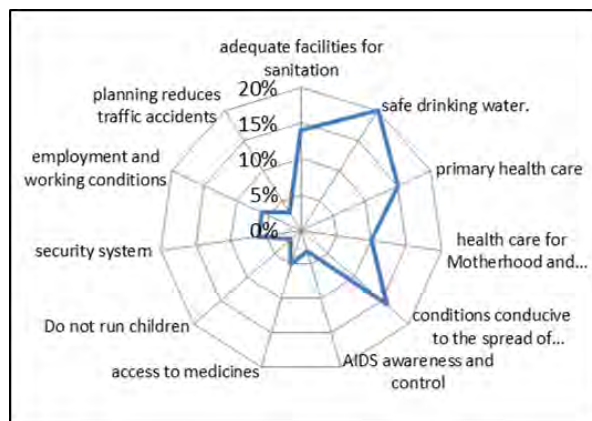


Figure 5. Promote health, safety and security

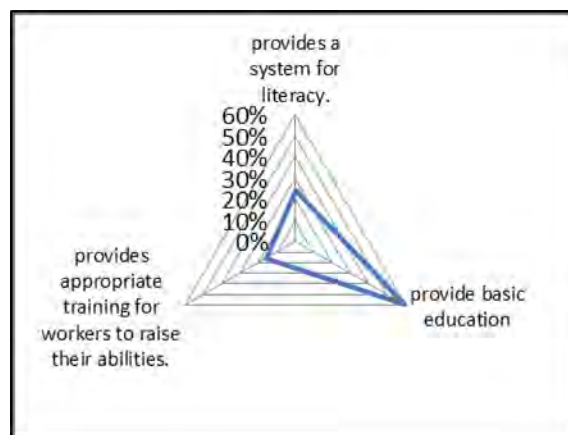


Figure 6. Support education

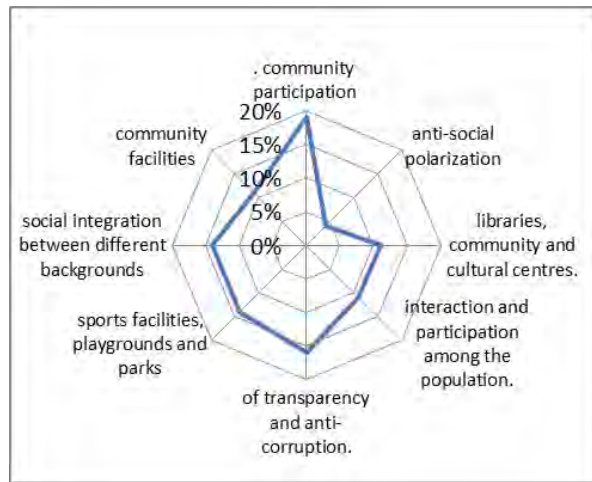


Figure 7. Support community participation and interaction among residents

Table 2. Sustainable Social Housing Priorities, relative importance and parameters in Sudan.

Priorities	Relative importance	Parameters
1. Ensure the availability of affordable housing and the provision of facilities	25%	Appropriate floor space per person.
		Encourage residential projects based on the idea of developing slums
		Provision of telecommunications and Internet service.
		Price or rent suitable housing compared to income.
		Legal guarantees of tenure
		Provision of mortgage finance for the poor.
		Ensures the availability of different types of transportation for the residents of the housing project.
2. Support education	15%	Provides a system for literacy.
		Provide basic education
		Provides appropriate training for workers to raise their abilities.
3. Promote health, safety and security	19%	Provides adequate facilities for sanitation.
		Providing safe drinking water.
		Provision of primary health care.
		Provides health care for Motherhood and Childhood.
		Reducing conditions conducive to the spread of malaria and other diseases endemic in the study area.
		AIDS awareness and control.
		Access to medicines.
		Do not run children
		Provide effective security system and not just for the project
		Commitment to the standards of employment and working conditions
		Planning reduces the likelihood of injury in traffic accidents.
4. Support community participation and interaction among residents	14%	Community participation in decision-making.
		Anti-social polarization
		Encourage the establishment of libraries, community and cultural centres.
		Encourages interaction and participation among the population.
		Encourages entertainment within the residential project.
		Consecration of the principles of transparency and anti-corruption.

Continued on next page

Table 2 continued

		Provision of sports facilities, playgrounds and parks open.
		Encourage social integration between different backgrounds within a single project
		Encourage the construction of community facilities
5. Fighting poverty and hunger	27%	Suitable wages for workers in residential projects alleviate poverty.
		Fight against hunger (feed-workers to encourage agriculture).
		Promotion of equality and strengthening the role of women (equal wages and non-exclusion)

5. Discussion and Conclusion

Population under poverty line in Sudan is over 45%, this is why fighting poverty and hunger was in the top of social priorities. Number two is to ensure the availability of affordable housing and the provision of facilities. The other three priorities are almost equal in importance, promote health, safety and security, supporting education, and supporting community participation and interaction among residents are the three priorities respectively.

In the category (Fighting poverty and hunger), participants choose fighting hunger as the first priority. This can be insured through many parameters such as promoting agriculture within the new housing projects, and initiatives to promote feeding the workers and school students in the new housing projects. Another strategy to decrease poverty through new sustainable housing projects is setting suitable wages for construction workers to help them supporting their families. Equality and strengthening the role of women (equal wages and non-exclusion) is also an important strategy to decrease the level of poverty.

The second category in weight is to ensure the availability of affordable housing and the provision of facilities (To ensure that urban housing development support facilities access to land and adequate shelter, finance, information and public services, technology and communications wherever there was a request to do so). Slums belts is noticeable in all Sudanese major cities, and with the current political and economic situation it is predicted to increase. This why encouraging residential projects based on the idea of developing slums is the heights parameter on weight of this category. Taking measurements to insure suitable prices or rent value considering the low income of the beneficial, is the second parameter. Provision of mortgage finance for the poor is also important ease the process of owning a house. Other parameters are lower in relative importance weight, such as provision of telecommunications and Internet service, ensures the availability of different types of transportation for the residents of the housing project, appropriate floor space per person, and legal guarantees of tenure.

The third category in relative importance is promoting health, safety and security (ensure that urban housing development consider human rights, and supports the strengthening of measures of health and safety and security). Lack of safe drinking water is the most serious priority in the category (Promote health, safety and security). Even the capital city Khartoum is not fully covered by water supply, especially the slums around it. Reducing conditions conducive to the spread of malaria and other diseases endemic in the study area came as the second parameter in this category. AIDS awareness and control was also an important parameter. This cannot be done without provision of primary health care inside the new housing projects and providing a good sanitation system to avoid series diseases like cholera. Provides health care for Motherhood and Childhood is also important piece of the community health system. Issues of security came after the health issues, the reason is Sudan urban areas and most rural areas can be considered relatively safe. The main security parameter is provides effective security system and not just for the project. Other issues also included in this category such as commitment to the standards of employment and working conditions and planning to reduces the likelihood of injury in traffic accidents.

The category (support education) came fourth with 14% relative importance rate. This category is about ensuring that urban housing development raise levels of education and awareness, including the awareness of sustainable development. . Providing basic education is the most important parameter in this category. Many new housing

projects and city's expansions came without planning to open new public schools, private schools in concentrated in the wealthy neighbourhoods, and out of reach of the poor. Education is not only about school students, sustainable development should also care about adult literacy and building capacities and skills for the work forces.

The last category is about supporting community participation and interaction among residents, to ensure that urban housing development support partnerships and social interaction and overlap, and it is affected by the wishes of the people influenced by it.

The following recommendations should be considered in any future plans of housing in Sudan and similar context less developed countries:

- Availability of affordable housing and the provision of facilities is an essential element in any sustainable housing plan. Appropriate floor space per person. Slum developing must a priority before planning new projects. The average income should be considered before renting or selling housing units, financing plans can be organised by the government. New housing projects quality of live can be enhanced by measurements like provision of facilities such as internet services, communications and transportation.
- Education system can be supported through provision of system for literacy, compulsory fully funded basic education, and considering educational facilities and adequate budget for it before the approval of any housing development.
- Less developing countries urban housing development, should consider human rights, and supports the strengthening of measures of health, safety and security. Governments need more efforts to provide adequate facilities for sanitation, safe drinking water and primary health care especially for motherhood and childhood. It is a priory to fight endemic diseases and increase the public health awareness. Effective security for the new projects is an important social sustainability indicator, and part of it is to consider reducing traffic accidents using planning appropriate techniques.
- New urban housing development should support partnerships and social interaction and overlap, and it should be affected by the wishes of the people who influence them.
- Urban housing development can play an important role in fighting poverty, it can support provision of housing measures that would alleviate poverty and fighting

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