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UNDERSTANDING SUSTAINABILITY THROUGH BRADFORD AFFORDABLE HOUSING LENS

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ABSTRACT

Sustainability has gained momentum in recent years due to natural threats and government regulations with housing sector being at the center of this debate. Affordable housing providers frequently face a dilemma of delivering sustainable homes while maintaining affordable rent for customers. This paper aims to shed some light on the important considerations of sustainable, affordable housing criteria, and hence increasing understanding of sustainable housing from an affordable, social housing perspective. To achieve this aim, the paper reviews the relevant literature to identify a common ground in defining sustainability, and presents an example of sustainability approach from a social housing provider at Bradford: namely, Incommunities. The outcome suggests that in order to achieve true sustainability, the environmental, social, and economic dimensions must be simultaneously taken into consideration, although the weight of each dimension can differ depending on the context. The outcome also suggests that Incommunities takes a holistic approach to sustainability based on residents and affordability requirements. Incommunities provides affordable rent, employment opportunities, and access to different services and support for residents. The affordable rent is mainly achieved through energy efficiency measures and Decent Homes government programme. These initial outcomes provide the basis of an on-going partnership project, between University of

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Bradford and Incommunities, aimed at developing decision support tools and techniques for sustainable, affordable social housing to ultimately deliver customer satisfaction and quality of life for the Bradford community.

Key words: Affordable housing, Customers, Incommunities, Sustainable housing, UK

Introduction

The World Commission on Environment and Development (WCED), contained in the Brundtland Report in 1987, produced the most widely used definition of sustainable development: *"Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs"* [1]. Similarly, the UK Government has defined sustainable development as: *"ensuring better quality of life for everyone, now and for generations to come"* [2]. Chiu [3] argued that although it is easy to understand the concept of sustainable development, its implications on policies and individual behaviors are often too complex to grasp. There is a consensus that sustainability has three dimensions: namely, environmental, social, and economic. Some approaches focus only on the environmental, social or economic considerations, while others attempt to cover all three dimensions simultaneously [4]. In addition, each discipline attempts to develop its own definition and dimensions of sustainability. For instance, Oltean-Dumbrava et al. [5] developed a practical and contextual definition for sustainable infrastructure projects as follows: *"The optimal consideration of technical, environmental, economic and social factors during the design, construction, operation, maintenance and repair, and removal/demolition stages of civil engineering/infrastructure projects"*. Whatever the definitions and components for understanding sustainable development are, the concepts provide a new perspective to interpret and possibly steer radical change in all aspects of human and natural lives including housing development.

Social housing provides secure and decent housing for those unable to access and afford the market level prices of housing and allocates houses according to need rather than ability to pay [6]. In the UK, the government regulates the social housing which accounts for approximately a fifth of homes. Typically, Housing Associations (HAs) provide homes and most of them have strong and explicit social intentions within communities and neighborhoods in which they are based [7]. Sustainability proved to be a core value for HAs because social housing has significant lower social and economic impacts. Social housing customers are typically among the most vulnerable within a society, a sector which is often associated with high unemployment rate and social exclusion among tenants [8]. The dilemma facing the social housing sector is therefore how to produce sustainable social homes while providing rented homes at

affordable prices. The paper aims to understand sustainable housing from the UK social housing lens. This paper will present an example of sustainability from Incommunities housing stock, one of the largest social housing providers in the UK with approximately 21.300 homes for rent and 1.000 leasehold properties. This paper is the first step of an ongoing Knowledge Transfer Partnership (KTP) project between the University of Bradford and Incommunities to develop comprehensive decision support tools and techniques for sustainable, affordable social housing to ultimately deliver customer satisfaction and quality of life. Following this introduction, the rest of the paper is divided into four sections. The research method is presented in Section 2. Section 3 introduces and defines sustainability within housing context with reference to the UK. In Section 4, we present an overview of Incommunities and their current approaches to sustainable housing and communities. Section 5 summaries the main findings and presents an outline of the future plans of the KTP project.

Method Adopted

This research was conducted in two separate stages. The first stage was a literature survey to consider the various facets pertinent to sustainable and social housing. "Sustainable housing", "housing sustainability", "affordable housing", and "social housing" were used as the search term starting from year 1997 when the Kyoto Protocol agreed because countries have started to develop sustainability actions around that time. Key papers were identified through Google Scholar, ScienceDirect, EBSCO, and different government reports available online. The second stage was focused on analyzing empirical data and reports held by Incommunities about their housing stock and customers base to address its approach to sustainability and compare it with the literature. The analysis focused on extracting meaning from the empirical data by means of qualitative thematic analysis. The thematic analysis refers to an analytical approach involving examination of data to establish meanings and intentions [9]. The data was analyzed and interpreted to derive sustainability approaches as practiced by Incommunities. The researchers examined the data closely to label each approach with one or more of the sustainability dimensions. For example, Incommunities implemented various measures to improve the energy performance of its housing stock. The theme extracted here was that this organization adopted environmental dimension or approach to achieve sustainability. In addition, Incommunities supported customers who seek employment by means of offering dedicated free employment advice services. This approach seems to resonate well with the social dimension and at the same time with the economic dimension because employment opportunity can contribute to improved income and hence financial stability. Therefore, the theme was labelled as socio-economic approach. Then the extracted approaches (themes) have been applied for the rest of the data to see if there was a similar occurrence both implicitly and explicitly.

Sustainable Housing Definition

The Housing sector is a major contributor to the environmental problems and climate change in terms of material and energy consumption, land-use, and pollution [10, 11]. In the UK, the Government reported that approximately 27% of total emissions in 2004 came from direct energy use in homes [12]. The impact of housing on the social dimension is mainly concerned with human feelings such as comfort and satisfaction and human contribution such as skills, knowledge, and health. For example, inadequate housing can result in poor health, insecurity, and dissatisfaction of residents [10, 13]. From the economic sustainability perspective, housing plays an important role. According to Xue [9], housing sector is an important economic sector that supports economic growth and affects economic and social stability. However, poor housing stock can lead to economic loss by generating high maintenance and operational costs. Most definitions available for sustainable housing are aligned with sustainable development dimensions and objectives [14-17]. For instance, Arman et al. [18] stated that *"Sustainable housing is an area where present day sacrifices have noticeable economic, social and environmental benefits for both present and future generations"*. Similarly, Roufechaei et al. [10] suggested that sustainable housing is about *"building a society in which a proper balance is created between environmental, social and economic objectives"*. These definitions can be considered as conceptual rather than operational and it seems that each study tends to develop an operational definition to address a particular issue or context. An example of this can be found in a study conducted by Osmani and O'Reilly [19]. In this study, the authors mainly defined sustainability of housing from a zero carbon perspective. In particular, they investigated the potentials of the Code for Sustainable Homes in delivering zero carbon homes. Furthermore, there are various studies conducted in sustainable homes concentrating on zero and low carbon measures. This can be explained as follows: firstly, the UK government has legally binding obligations to reduce carbon emissions by 80% by the year 2050 [20]. Secondly, the Department for Energy Climate Change (DECC) declared that the UK housing sector contributes approximately 27% of the total emissions. Consequently, it places the housing sector in the forefront to tackle emissions targets. Energy also dominated the definitions of sustainable housing and different studies looked at energy consumption, performance using various measures and alternative clean energies. Lovell [21] even suggested that *"sustainable housing and energy efficient housing are terms that are used interchangeably"*. Energy performance policies and standards are mainly developed and guided by the Building Regulations and the Standard Assessment Procedure for Energy Rating for Dwellings (SAP) [22]. However, Future Energy Solutions found that energy efficiency in houses has one of the poorest levels of compliance although the general levels of compliance with Building Regulations are high within the housing sector [23]. Resource efficiency is also one of the important parameters in defining sustainability. Emphasis is given for resources used during the construction stage such as building materials consumption and water usage [11]. The reason for this can be the assumption that it is easy to quantify and assess the impact during the construction

stage. This is usually done by the provider company which has enough resources to carry out the necessary assessments and to ensure compliance. Resource efficiency in the construction stage often results in significant waste reduction. Another important parameter of sustainability is renewable energy and resources. For example, the National Planning Policy Framework (NPPF) encourages the use of renewable resources, such as renewable energy development, within the 12 core planning principles [24]. In addition, the government introduced a Feed-In Tariffs (FITs) scheme in 2010 as a financial incentive to encourage renewable energy generation uptake and most of the domestic technologies are qualified for the scheme.

From the above, it can be seen that the environmental dimension is dominating the definition of sustainable housing because environmental degradation and climate change are evident and immediate action are required. However, when we look closer to the environmental dimension, it can be immediately relating to the economic and social dimensions. For example, tackling energy through efficient measures can lead to economic and social sustainability by reducing the cost of running houses over the long- term and hence reduction in bills for the end-users. Therefore, it can be suggested that the three dimensions of sustainability are intricately linked and it may prove difficult to consider each dimension in isolation. For social housing providers, it seems sensible that they are evaluating housing sustainability from the social dimension perspective. The costs of use of a home and customer affordability play a major role in deciding sustainability actions. This approach was clearly captured and confirmed by Incommunities approach to sustainability in Bradford district which is discussed in further detail next.

Incommunities Approach to Sustainability in Bradford District

Incommunities housing stock is principally located in neighborhoods across Bradford district which is the 6th largest local authority region in England. Bradford has a population of 522,000 at 2011 census and 180,000 households in which 30,000 are social housing (approximately 17% of the total households). Incommunities provides approximately 71% of the social households in the district with a turnover of over £90 million per year. Bradford Job Seekers Allowance claimant rate is 4.3% of the population aged 16-64 compared to 3.0% at the regional level and 2.3% at the national level. In addition, most of the urban core and 41% of the district as a whole are considered among the most deprived in the UK. These facts demonstrate that affordability of housing is a major driver for Incommunities and it affects all the decisions made regarding sustainability. The general approach for sustainability followed by Incommunities can be broadly divided into two major categories: namely, environmental and socio-economic, they are further discussed in the next subsections respectively. It is worth noting that the approach presented in this paper is related to practices and actions already in place and does not include any future plans and objectives.

Environmental approach

This HA, Incommunities, made a public commitment to attain the government Decent Homes Standards by 2010. Decent Homes aim at refurbishing social housing to meet minimum standards of decency such as being in reasonable state of repair, being free of health and safety hazards, being reasonably insulated, and having relatively modern kitchens, bathrooms, and boilers. These standards resonate well with sustainability objectives in general and with environmental sustainability in particular. Incommunities carried out tenant consultation to find their priorities and tried to achieve a balance between meeting resident expectations and addressing the government standards. The main elements improved by Incommunities, as guided by the Decent Homes, are presented in Table 1 below.

Table 1 : Elements of existing housing improved by Incommunities

Main element	Environmental improvements
Installed "A" rated boilers with full heating controls	These considered as an efficient appliances which reduce the energy usage
Insulation (cavity wall and loft)	It improved the energy performance of the building and eventually less energy used for heating
Replaced electric storage heaters with air-source heat pumps	This considered as a renewable technology with less environmental impact
Installed PVCu double glazed windows	It resulted in less energy usage and consequently less carbon emissions
Installed insulated external doors	It kept the heating inside during winter which meant less energy to heat the space

These improvements had a significant impact among tenant which resulted in 92% customer satisfaction in 2012 with the general conditions of the property compared to 67% in 2004. Furthermore, these improvements resulted in less energy usage in space heating and consequent reduction in carbon emissions. Another result was the achievement of an average 68.5 SAP rating by 2013. This average rating is based on more than 10.000 homes assessments as depicted in Figure 1. This rating is slightly above the national average for social housing stock. The English Housing Survey indicated th average SAP rating for social housing is 60 compared to 53 for the housing stock in all tenures [25]. These results suggest a marginally better performance in the social sector which can be attributed to the Decent Homes upgrade program and the Energy Company Obligation (ECO). ECO is an energy efficiency scheme introduced in 2013 that available from the major energy suppliers to fund energy efficiency improvements for vulnerable households and 'hard to treat' homes. It replaces two previous schemes, the carbon emission reduction target (CERT) and the community energy saving program (CESP).

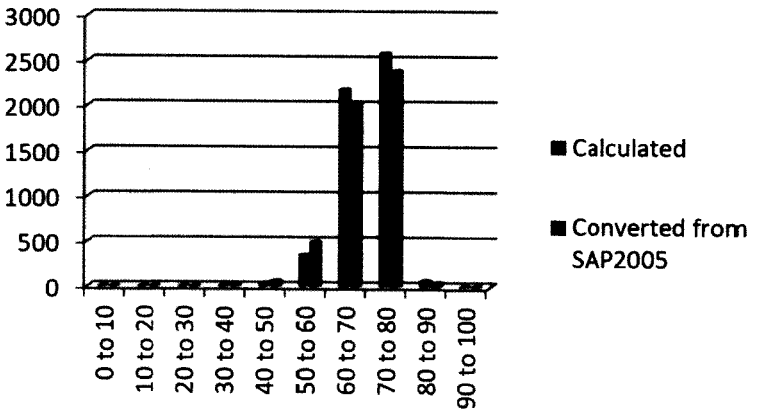

Figure 1 : SAP rating for 10.260 homes

From the Figure above, it can be seen that majority of homes (9.189 homes) achieved SAP rating from 60–80. SAP assessments are carried out when properties are vacant and this may explain why Incommunities has record of 10.260 rated homes out of total 21.300 homes. In addition, Incommunities has built approximately 423 new homes and converted existing buildings as part of the growth plans. Of these, 395 homes achieved Code 3 of the Code of Sustainable Homes which was legal requirement for social housing and 28 homes achieved Code 4. From April 2014, the Code has been replaced by Part L of the Building Re ulations which will both reduce carbon emissions and improve fabric energy efficiency. Figure 2 below shows an example of positively to the environment.

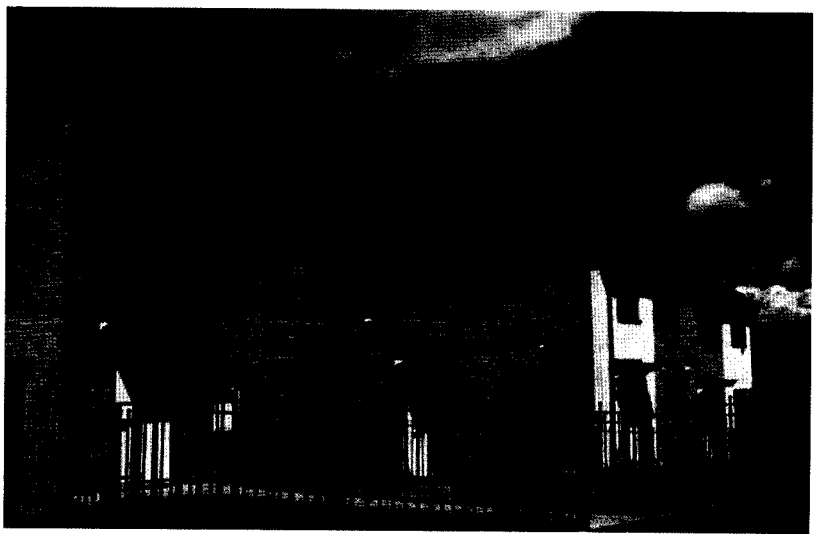

Figure 2 : New housing development located in Ravenscliffe, Bradford

In short, the main environmental approach adopted by Incommunities is related to energy efficiency measures. This is unsurprising, because sustainability is mainly associated with energy efficiency in the housing sector as well as other sectors in the UK. For instance, Swan, et al. [25] conducted a structured survey about sustainable technologies targeting the social housing providers in the UK. The survey revealed that most of the technologies used (such as insulation, photovoltaic, draught stripping, and heat recovery) are aimed at energy efficiency targets to reduce the running costs for residents. In addition, Mulliner et al. [26] considered 20 different criteria to judge, sustainable affordable housing and energy efficiency was among these criteria.

Socio-economic approach

As mentioned earlier, the social and economic situations in Bradford pose enormous challenges to Incommunities as well as to other social housing providers. These situations formed the basis of the socio-economic approach adopted by Incommunities where it places itself to be at the forefront of improving residents lives and hence the Bradford community. The economic status of the Incommunities customer base is characterised by higher levels of deprivation and lower educational attainment. The customers rely heavily on Housing Benefit, a state benefit paid to customers with the lowest levels of income, to pay rent. However, the introduction of the Welfare Reform Act in 2012 has led to significant changes on the benefit system which impacted the customers entitlements. The key areas altered by the Act and affected customers directly are as follows:

- It restricts Housing Benefit entitlement for social housing tenants whose accommodation is larger than they need (Bedroom Tax)
- it caps the total amount of benefit that can be claimed by a household.

Incommunities raised awareness among the customers with the specialist Welfare Reform Team to equip them with necessary tools to face these changes. It approached customers who will be affected by the Bedroom Tax and started to offer an option of moving to smaller properties to maintain the Housing Benefit entitlement. As a result, 44.66% of customers moved to smaller properties between 2013- 2014. It also continues to support the customers seeking employment be means of a free service called Open Field where job seekers can access various resources and support. In addition, Incommunities partially funds the Employment Opportunity Fund (EOF) with Bradford Council. This scheme is considered one of the largest employment schemes with the aim to provide 400 jobs within organisations that can demonstrate community benefits. Furthermore, it opened a Smarterbuys Store where the customers can purchase household items and furniture at affordable prices to improve their housing conditions. Incommunities engages its customers through different channels such as face-to-face surveys and customers conference to understand their needs and expectations and then tailor services to meet these expectations where possible. For Incommunities, customers are among the most important stakeholders because they have an interest in

and influence on this organisation. The key to engage and satisfy customers is to be proactive rather than reactive. This has some support from a recent empirical study about stakeholder engagement in the UK construction industry. Abuzeinab and Arif [27] conducted semi-structured interviews with 19 professionals on a heterogeneous sample of Academics, Architects, Consultants, Contractors, Other including property development and procurement, and Clients. The findings revealed that those professionals companies deployed different practices to engage customers such as: being proactive; understanding customers need; interacting early with customers; building relationships; communicating effectively; and incentivising customers. In general, those professionals suggested that the proactive approach will help organisations to understand and recognise customers need and then act upon that understanding by finding the best way to work with customers.

The evidence above demonstrated that Incommunities works closely and proactively with its customers to improve their living standards and to fulfil their immediate needs. In summary, Incommunities evaluates its approach to sustainability through customers affordability and requirements as presented in Figure 3. This approach has been positively supported by much published literature on social sustainability. For instance, Vallance et al. built on previous studies where they suggested that it will be idealistic to expect people to care about environmental problems such as climate change and biodiversity when they are seeking work, cold, or feel unsafe in their homes [13]. By addressing the socio-economic requirements and needs, it is hoped that environmental benefits will follow. This is highly relevant within the social housing context where every decision is driven by social needs.

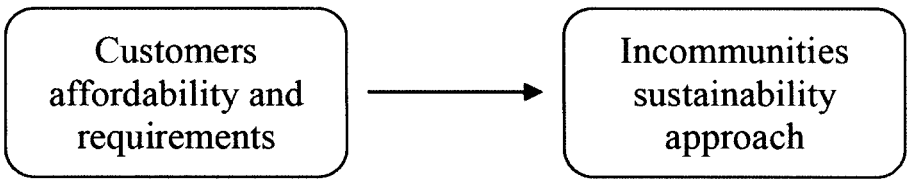

Figure 3 : Incommunities approach to sustainability

Figure 3 indicates that Incommunities starts with customers requirements and needs to achieve sustainability objectives. Addressing customers needs is a major driver for Incommunities and it will sustain this HA in the competition. Incommunities approach can be considered as a sustainable community approach rather than sustainable housing only. Some scholars suggested that sustainable communities must provide affordable housing provisions and at the same time affordable housing ought to be located within sustainable mixed communities [26]. However, the question remains: how to define sustainable communities? The definition can be related to sustainable development in order to impose some order on the diverse range of work that defines sustainability. According to Mulliner et al., sustainable communities can be defined as "Places where people want to live and work, now and in the future" [26]. The different actions taken

by Incommunities, presented above, can be considered as sustainable community indicators. Indeed, one of the key themes of the strategic plan for the organisation is sustainable communities. This theme encompasses assessing issues that have direct impacts on customers, improving housing stock in relation to the market competitiveness, and supporting customers with employment and enterprise activities.

In summary, it can be suggested that sustainability and affordability need to be tackled simultaneously. However, housing affordability is mainly measured and defined through economic terms by comparing household income to housing expenditure. Other important issues such as sustainability, adequate standard of living, location quality, and access to support and services are sometimes ignored [26]. For Incommunities and other HAs, it is crucial to embrace and include all support and services provided for residents in evaluating housing affordability. However, this cannot be done in isolation from residents perspectives, expectations, and requirements. Consequently, it may be useful to embedding business model thinking which focuses on customers value creation and capture [28].

Conclusions

The aim of this paper was to understand sustainable housing from the UK social housing lens. To achieve this aim, the paper reviewed the relevant literature and presented Incommunities, one of the largest UK social housing providers, approach to sustainability to illustrate the social housing perspective. This illustration has shed some light on the important criteria relevant to social housing when practicing sustainability.

The findings revealed that Incommunities takes a wider approach to tackle sustainability within Bradford district with residents and affordability being at the centre of its approach. In other words, it takes actions that reflect the tenant needs and expectations. The findings also demonstrated that Incommunities implements different initiatives and practices to ensure that tenants received: affordable rent, employment opportunities, and access to different services and support whether within the organisation or externally. The affordable rent is mainly achieved through the provisions of energy efficiency improvements and the Decent Homes programme. The supports and services provided by the organisation may contribute to retaining tenants and building loyalty and hence sustaining Incommunities rent incomes. The findings also indicated that housing sustainability and affordability are important topics for research in this age of resource scarcity and social awareness. It is also important to appreciate the close link between housing affordability and sustainability particularly in the context of social housing. This appreciation will help taking a broader view in defining affordable housing that looks beyond the traditional economic measures of comparing household income to housing expenditure only without considering other important criteria such as quality of life.

With these initial findings, the KTP team will develop detailed comprehensive criteria to judge sustainable, affordable housing stock. This will be achieved partly through literature reviews of similar successful programmes and partly through surveys and interviews with relevant stakeholders such as tenants, local authority and policy makers, social housing providers including managers and staff, and academics. The affordability criteria will consider the following question: what households get in return for what they spend on social housing?

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