Thriving communities: salutogenic approach to neighbourhood scale retrofit in the UK.

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BUILDINGS FIT FOR CLIMATE CHANGE

ICAT 2025
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THRIVING COMMUNITIES - SALUTOGENIC APPROACH TO NEIGHBOURHOOD SCALE RETROFIT IN THE UK

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Abstract. Evidence based research identifies effects of buildings on human health and wellbeing. Poor living conditions too often result in adverse physical and mental health, where energy efficiency improvements are a major factor in enhancing people's comfort and Quality of Life (QoL). However, retrofit standards are focused predominantly on addressing building performance gaps and resulting carbon reductions. While the primary driver for retrofit action is carbon-centric, rather than human-centric, the focus must shift to addressing health inequalities and supporting long-term wellbeing in the neighbourhood scale interventions. Currently, psycho-social determinants of health in the context of the existing built environment are not well recognised, nor equally assessed.
This paper explores how salutogenic theory of health promotion can be applied to retrofit interventions. Salutogenesis is considered a life orientation where life experiences and confidence in predictability of environment shape one's sense of coherence (SOC). Salutogenic architecture is characterized by design of enabling environments focusing on health outcomes, with consideration to socio-cultural factors and affordances. Ensuring people can be supported by their homes as their circumstances change through their lives, the theoretical approach proposed in this paper focuses on human needs. Salutogenic approaches applied to architecture can support multiple coping mechanisms and strengthen one's SOC, recognising psycho-social factors of health promotion in the long-term perspective. The approach has not yet been explored in retrofit design and delivery, even though National Health Service (NHS) promotes the model of healthcare at home. This paper proposes a theory-based approach to examining the sociological phenomenon of coping within the home environment, going beyond the carbon reduction focused opportunities associated with retrofit of homes.

Keywords: retrofit, Salutogenesis, health and wellbeing, psycho-social determinants of health, sense of coherence, manageability, comprehensibility, meaningfulness, ageing population**.**

1. Introduction

Effects of homes on the physical health of the occupants has been widely recognized (Bolton, et al., 2023; Craft, et al., 2017; Garrett, et al., 2021; Marmot, 2010; Public Health Scotland, 2021; Thomson, H. et al., 2013). It is also acknowledged that poorly performing buildings affect the vulnerable groups most adversely (Lee, 2022,

Marmot, 2010, WHO, 2018). In the UK, this has been evidenced with the recognition of the first formally reported fatality, directly attributable to the effects of exposure to mould and associated inadequate housing conditions (UK Government, 2023). It has been evidenced that we spend majority of our lives indoors, therefore our quality of life (QoL) is profoundly impacted by buildings. (Pelsmakers, et al., 2022).

Domestic properties in the UK account for as much as 21% of national carbon emissions (Energy Saving Trust, 2021). Retrofitting the poorly performing existing building stock is therefore necessary not only to meet the obligations of the Paris Climate Agreement (Climate Change Committee, 2019), but also to address the issues around fuel poverty and social justice. The latter is associated with socio-economic inequalities, adequacy of housing and high energy cost (IEA, 2019). However, implications of inadequately applied and inappropriate retrofit measures can have a direct correlation between the detrimental effect on buildings, and the corresponding mental and physical wellbeing of the occupants, affecting the trust of the occupants in quality of advice, suitability of proposed measures and quality of work (Bonfield, 2016, Rickaby, 2022b). Despite steps being undertaken to rectify safeguarding of the customers (Bonfield, 2016, BSI, 2023), the current approach to retrofit in the UK is still largely carbon-centric, focusing on effects of poor housing, rather than solutions to complex socio-economic causes. It lacks the assessment of factors that are largely intangible, supporting understanding of how people live, interact and share space and resources (Griffiths, 2021). It does not consider living environment from a cultural and social perspective. Furthermore, it does not consider salutary means of coping and promotion of health, in what Antonovsky (1979) described as resistance resources helping to shape one's sense of coherence (SOC) and inherent coping mechanisms supporting one's health.

There is therefore a distinctive need for an integrated strategy to support difficult to quantify, non-physical performance aspects of interventions, such as happiness, belonging and QoL. This alternative approach recognises the importance of neurological balance resulting from sensory perception in response to delight in design (Pelsmakers, et al., 2022, Ruggles, 2018) with consideration of meaning of home (Sixsmith, 1986) in effective domestic retrofit.

This paper highlights the importance of contextual assessment and cross-disciplinary skills within Architectural Technology and other related architectural professions required when engaging with retrofit of homes. The methodology is promoting understanding of socio-cultural dimension as an integral part of shaping long term societal health and wellbeing goals (Public Health Scotland, 2021) and creating and improving homes withing the concept of forever neighbourhood (Public Health Scotland, 2022).

The paper presents a theoretical foundation for the application of qualitative research in the field of Architecture and Architectural Technology to identify the needs of occupants in the context of home retrofitting. This study prioritizes the identification of underlying theoretical phenomena based on the hypothesis rooted in the work associated with humanities, subjective experiences and health promotion fields. With recommendation of advancing toward the development of practical methodologies for data collection among relevant demographic groups in the further stages of this research. The proposed approach is grounded in an exploratory

analysis of the physical experience of the built environment and its affordances, focusing on the lived experiences of occupants.

2. Methodology

Reflective of the breadth of the context of this research and the limited outputs on application of salutogenic theory in design, architecture and spatial planning, this paper is focused on narrative literature review as a basis for consideration of the theory in a neighbourhood scale retrofit of homes. The paper elaborates on the origins of the theory of Salutogenesis and its application in the built environment and infrastructure. It also makes recommendations on translating these concepts into people-centred benchmarks in the context of retrofit of homes. The researchers look at concepts of psychology of health, positive psychology, theory of motivation, subjective wellbeing and sociological origins of the theory of Salutogenesis and human flourishing.

The authors additionally review currently recognized retrofit standards in the UK, predominantly PAS 2035:2023, and reflect on compatibility and divergence of selected current retrofit standards, guides and Green Building certification schemes with the principles of Salutogenesis. This approach is considered to be supportive of the associated health and wellbeing outcomes through home improvements in a beyond carbon approach.

3. Introduction to salutogenic theory and health promotion

In his extensive research into the origins of health, medical sociologist Aaron Antonovsky (1979) proposed a shift away from the pathogenic orientation of the definition of health. This allowed him to assess the ability of people to cope with tension caused by psycho-social stressors in the context of their communities and with the aid of support mechanisms – generalized resistance resources (GRRs) and specific resistance resources (SRRs). To distinguish between the two, the GRRs are facilitators of individual abilities to deal with tension whereas SRRs are situation specific (Mittelmark et al., 2022). These coping mechanisms may vary for each individual and are developed throughout a lifetime (Meier Magistretti, 2022) with a role of promoting strong sense of coherence (SOC), required to prevent the health breakdown within the functional limitations.

Antonovsky (1979, 1987) re-evaluated the definition of tension, stress, response and resolution, recognising the possibility of stressors, having both pathogenic and salutary effects, within their role of stimulating response for coping and psycho-physical prevention of sensory deprivation. This also brings focus to the effect of the health enhancing socio-cultural environment on facilitating coping and people's ability to adapt to changing circumstances (Mittelmark et al., 2022). Importantly, the definition of health as proposed by WHO (1946), has been criticised by Antonovsky (1979) as being utopian in nature and lacking correlation between physical and social wellbeing. He referred to Dubos' (1968) definition of health as much more realistic, accepting imperfection of human health in what formed a basis for the development of Antonovsky's health ease/dis-ease continuum hypothesis in the

salutogenic theory. Antonovsky describes key components of salutogenesis as comprehensibility, manageability and meaningfulness, which are fundamentals of individual perception and ability to thrive in a given environment (Mittelmark et al., 2022).

In his first book Antonovsky (1979) was clear to distinguish wellbeing from health in the proposed health ease/dis-ease model. He argues that the definition of health should not be confused as an integral measure of wellbeing, however correlation between the two should be recognised. Wellbeing is subjective, has a multifaceted and complex structure (Diener, 2009), consists of more than happiness and life satisfaction (Ruggeri et.al, 2020) but can support good mental health as described by WHO (2001). Huppert and So (2013) acknowledge the prevalence of pathological assessment of mental health disorders, such as depression and anxiety, as failing to recognise the importance of sociological foundation for wellbeing supporting coping, engagement and meaning. Wellbeing cannot be simply measured by absence of mental disorder. All these aspects directly relate to the salutogenic theory described by Antonovsky (1979) highlighting the importance of perception and individual life orientation on health and wellbeing outcomes. To accurately portrait wellbeing reflective of this research and in relation to the built environment, the authors consider wellbeing to be a subjective interpretation of what has positive impact on one's QoL and supports perception of a good life associated with positive feelings and resilience to adversities (Brunelli, Smith and Woolrych, 2022; Diener, 2009).

4. Salutogenic theory and the built environment

In the context of the built environment, the most significant contribution in consideration to salutogenic theory emerged from Jan Golembiewski and Alan Dilani. Both authors explored the benefits of application of Antonovsky's theory to design of health care settings, supporting recovery from physical illness as well as promoting healthy behaviours and improved mental health. Dilani (2008) highlights the connection between individual SOC and the surrounding physical environment. Golembiewski (2022) additionally writes that although promotion of healthy choices, such as being active and thus improving individual fitness levels, can support health and wellbeing, the benefits derived from the socio-cultural salutogenic factors are normally psychological rather than physical. It is the positive and indirect effects of having choices, strengthening sense of meaningfulness, rather than the activity itself that is the basis of the success of salutogenic approach to the design interventions (Golembiewski, 2022). The ability to make choices, widely considered as self-efficacy (Alder, 1995), can shape individual perception of environmental affordances (Gibson, 1986) and reduce perceived levels of stress (Alder, 1995). It is observed that "life orientation that helps people to perceive life as comprehensive, manageable and meaningful" (Suominen and Lindstrom, 2008, p.337) strengthens their coping ability supporting development of strong SOC.

Translating this into a holistic approach to evaluation of existing homes, focus should be on supporting context, occupant understanding of the ability to control one's environment, improve comfort, adaptation to the circumstances and to meet intangible sensual benchmarks. This would not only allow for upgrading of the building fabric but also strengthen the relationship between people and places,

strongly rooted in the salutogenic principles found in architecture (Golembiewski 2012, 2022, Craft et al., 2016). The figure below summarizes what salutogenic orientation in retrofit should consider, under each component of SOC, before exploring in more depth outcome-based considerations for assessment of homes.

SOC in retrofit/built environment		
Manageability	**Comprehensibility**	**Meaningfulness**
allowing people to live their lives well, to remain in their homes and neighbourhoods as their individual circumstances change, possibly due to age, disability or ill health.	predictability, simplicity and readability in design, support for independent decisions, knowledge and understanding of systems within the building.	interventions harmonious with the surroundings, supporting positive emotions through multisensory experience of beauty without overstimulation.

Figure 1: SOC in retrofit and built environment (by authors)

4.1. IMPERATIVE OF MANAGEABILITY IN DOMESTIC RETROFIT

Manageability is the first characteristic of SOC. In retrofit it could be defined as places that permit people to live their lives well, allowing them to remain in their homes and neighbourhoods as their individual circumstances change, possibly due to age, disability or ill health. Levasseur and Naud (2022, p.251) emphasise how "ageing at home strategies" can promote health and wellbeing. Demographic challenges related to the changing needs of the ageing populations in the UK will require investment in outcome-based solutions to improving housing stock, to allow people to remain in the neighbourhood of their choice throughout life (UK Government, 2024; Scottish Government, 2011; Stewart, et al., 2014).

Physical and mental health and wellbeing of occupants can be improved by energy efficiency measures alleviating fuel poverty (Marmot, 2010). However, this approach is only pathogenic, recognizing baseline issue of cold related illness and death (Lee, et al., 2022) without focusing on co-benefits of interventions and consideration of higher needs of the occupants (Maslow, 1943) through salutogenic lens. The interventions in the existing built environment should thus address safety, independence, self-efficacy, accessibility and even comfort as well as building performance improvements. In the paper titled Design for manageability Bordass and Leaman (2010) explain how understanding user behaviour is essential to propose design solutions that support simplicity, even if designing for flexibility. Manageability in Bordass and Leaman paper may have been predominantly defined in reference to use and management of the building itself, however these aspects very much correlate with the salutogenic theory applied to the built environment – supporting health through understanding "strategic issues of how human and

physical systems interact" (p.148). This leads to the next element of SOC – comprehensibility.

4.2. TRANSLATING COMPREHENSIBILITY IN RETROFIT

Comprehensibility is often described as certain predictability, which in design should also encompass simplicity and readability (Golembiewski, 2022). It is the sense we make of the surroundings, which in a home setting should provide a feeling of safety and security, satisfying our basic needs (Maslow, 1943). This perception would most definitely change if personal and health circumstances changed as a result of life events, illness or accident. Environmental adjustments, including adaptations of physical spaces have been demonstrated to encourage heathy behaviours, coping and to improve overall QoL (Golembiewski, 2023, Henry, et.al, 2023, Mittelmark, et al., 2022). In retrofit specifically, understanding of building maintenance and how the services work can aid independent decisions and support health and wellbeing of each occupant. Effective coping efforts to influence outcomes of one's situation are associated with perceived self-efficacy (Bandura, 1978), which in turn depends on understanding of own situation (Antonovsky, 1987). Changes to systems as part of the whole house retrofit strategy including ventilation and heating that may be unfamiliar to the occupants, need to be well explained, to allow the occupants not only to come on board with the proposed solutions but also to have confidence in ability to operate these systems and enabling decisions around personal comfort (Bonfield, 2016; Rickaby, 2022b) Improved thermal envelope and air permeability will additionally require adequate behavioural response of occupants to these changes to maintain healthy indoor environment and support long term health and wellbeing of the household.

In addition to the basic understanding of technical aspects of retrofit, predictability of own situation in the home environment should also answer questions such as: will I be able to sufficiently heat my home and how much will it cost? or: will my home affect my health or the health of those I care for? Confidence in the building to provide shelter and support, alleviating anxiety associated with predictability of own situation (Antonovsky, 1987) are important considerations in addressing individual housing needs (Golembiewski, 2012; National Housing and Dementia Forum, 2022; Public Health Scotland, 2021).

4.3. MEANINGFULNESS AS THE CATALYST OF RESILIENT RETROFIT

Aspects of both manageability and comprehensibility can be fulfilled through more tangible outcomes, easier to benchmark than meaningfulness. However, this last element of SOC is perhaps the most important, as Antonovsky (1979) himself recognised – to have a purpose and belief that life is worth living. Meaningfulness is not only intangible but also subjective, relating to perception of purpose and belonging. It is therefore difficult to measure against any given target. It has psycho-social foundation and derives from belonging to a social group, a community with shared values and beliefs (Antonovsky, 1972, Golembiewski, 2022). Reflective of the evaluation of meaningfulness resources in design proposed by Golembiewski (2022), we could observe that in retrofit the interventions should be harmonious with the surroundings and having symbolic meaning of being *"part of something bigger than ourselves"* (p.271). Promoting health and wellbeing benefits of a

reciprocal relationship with the natural environment and engaging our senses with the building can support neurological response which Ruggles (2018) describes as homeostatic balance between stress and pleasure. The interventions should therefore go beyond functional considerations (Golembiewski, 2023) of manageability and comprehensibility, supporting positive emotions through multisensory experience of beauty without unnecessary (or meaningless) overstimulation. Golembiewski (2012, p.69) points out that *"simple concepts like comfort, joy and aesthetics have had no place in traditional hospitals […], yet they are the psychological bricks and mortar of all healthy buildings, whether or not they are healthcare facilities"*.

In order to understand meaningfulness, one should look at neurological responses to environmental stimuli (Golembiewski, 2016, 2022, Ruggles, 2018) and the effects of supportive environments on personal wellbeing, long term health, even recovery. Aesthetic improvements to homes linked to psychological effects of personalization, daylight and connection with nature (Dilani, 2008; Golembiewski, 2022; Wilson, 1984) highlight the importance of architecture as a medium for good mental wellbeing. (Golembiewski, 2013, 2016, 2022).

Provision of resources within own home that can support development of coping mechanisms in the face of adversity, can have positive effects on personal resilience (Wong, 2011). Golembiewski (2022) highlights salutogenic design offers solutions to support an unknown future, identifying relationship between health and social approaches to health promotion. Moreover, if dwellings are considered as a social construct (Heidegger, 1971; Lefebvre, 1991), the use of salutogenic theory in retrofit assessment can appear rather appropriate.

4.4. AGEING AS A FACTOR IN THE ASSESSMENT OF RETROFIT OF HOMES

Many authors have explored salutogenic approach to design in supporting non-medical management of cognitive decline of individuals (Golembiewski, 2012, 2022, 2023; Golembiewski and Zeisel, 2022; Henry, et al, 2023). However, the concern for wellbeing focused designs supporting the ageing population should not be discussed only in relation to health care and assisted living settings. Integrative approaches need to take into consideration the suitability of the new and existing homes (UK Government, 2024; Henry, et al, 2023; Public Health Scotland, 2021). In the report on ageing and health, WHO (2015) highlights the importance of the concept of '*functional ability'* focusing on support for independence, community engagement and choice of *'ageing in place'* (National Housing and Dementia Forum, 2022), rather than limitations posed by age related frailty and cognitive decline. The population in the UK is expected to continue ageing, with prediction of significant increase of average age by 2039, predominantly in rural Scotland (Office for National Statistics, 2018).

Dementia is one of the conditions affecting primarily the ageing population, that needs a mention when discussing resilience of the communities, integrated care and housing modifications (Henry, et.al, 2023, WHO 2015). According to WHO (2015) dementia in older adults leads to reduced dependence, raising cost impact on health service, communities, families and individuals (Public Health Scotland, 2021). Additionally, as a consequence of lack of awareness people living with dementia may face barriers to independent decisions, living in their homes of choice and long-term care strategies respecting their wishes (WHO, 2015). Physical and social

environments can be modified to support people living with dementia (Henry, et.al, 2023) and often simple adaptations to homes can enable safe and independent living (National Housing and Dementia Forum, 2022). It is worth highlighting in this context that visual perceptual and cognitive processing of information are fundamentally interconnected (Gibson, 1986, Golembiewski, 2023, Tacca, 2011,). Therefore, to support the connection with the place where people live (Brunelli, Smith and Woolrych, 2022; Degnen, 2016) and prevent risk averse design decisions, identification of wider psycho-social measures and resources promoting health and wellbeing can have positive effects on individual SOC (Antonovsky, 1979).

In the context of retrofit, to meet housing, social and health needs (Stewart, et al., 2014), the support mechanisms must address autonomy, social inclusion, respond to cognitive decline and perception of the occupant. Golembiewski (2010, p. 103) goes on to explain that *"perception is a complex neuro-chemical process that is highly reactive to the surrounding environment"*. We need not forget that the environments can become meaningful to individual perception, with sufficient socio-cultural support strengthening effects of local places on individual SOC.

Many sources confirm that mental health can be affected by inadequate housing that does not support primary needs of the occupants (Evans, et al. 2003; Marmot, et al. 2010; Newton, et al. 2022, Public Health Scotland, 2021). It is also considered that energy efficiency improvements can have indirect effect on social functioning (Marmot, 2010). Thus, adequate interventions could contribute to prevent social isolation and loneliness considered by WHO (2021) a priority public health issue most severely affecting QoL and health and wellbeing of vulnerable groups including older people.

5. Current approaches and retrofit standards in the UK

Retrofitting of our homes should not solely focus on achieving improved thermal performance and associated carbon reductions. The primary concern must be the promotion of health and wellbeing through adaptation of our immediate environments, supporting coping in changing situations in our lives and resilience to climate change. This approach would significantly reduce burden on healthcare services and address long term indirect results of unsuitable housing as identified in *The cost of poor housing in England* report (Garrett, et al., 2021). According to the document, the societal cost of poor housing is estimated to be in a region of £18.5bn in England alone. This value is reflective of the indirect and long term cost of health treatment due to risks such as exposure to mould, damp, cold, excessive heat, radon, pests, accidents due to unsuitable living conditions restricting independence, but also mental health and trauma and aggravation of socio-economic inequalities (Garrett, et al., 2021; Garrett, et al., 2023). Current challenges of social isolation and loneliness, trust in advice and tradespeople, fuel poverty and helplessness were all identified in the *Age, Home and Community* (Scottish Government, 2011) publication assessing how people can be supported by their home with adequate healthcare provision within the community (Scottish Government, 2024).

Current standards such as PAS 2035:2003 *Retrofitting dwellings for improved energy efficiency* (BSI, 2023) focus on building physics and performance and limited post occupancy evaluation aimed at quality control through the process, safeguarding the interest of the occupants. This standard was a direct response to

recommendations of *Each Home Counts* report (Bonfield, P, 2016; Rickaby, 2022b) conducted to review and address recognized issues around customer advice, protection and industry wide retrofit standards. Understanding behavioural changes and assessment of long term health and wellbeing outcomes associated with the interventions, occupancy patterns, personal preferences and knowledge of the occupants is, however, not the aim of the process.

If QoL of the individuals within their communities was measured, we would discover a pattern or a shortfall in the approaches we take in assessing retrofit of housing and the cross-sectoral benefits the interventions could offer if designed within the salutogenic framework. Current approaches do not sufficiently support the most vulnerable with consideration of long term effects of the retrofit interventions on the QoL and health and wellbeing outcomes.

In PAS 2035:2023 the reference to the importance of human factor is solely assessed in the context of building assessment and the effect of human interaction with the building on its performance (BSI, 2023). Retrofit advice is considered a mandatory aspect of certification and relative to the scope of the improvements. According to the document, the role of the Retrofit Coordinator is to act in the best interest of the client and the public and propose interventions supporting improved indoor air quality (IOQ), comfort and resilience against climate related issues such as increased flooding risk. The standard also states that *"[t]o be most effective, intended outcomes should ideally be specific, measurable, achievable, relevant and time-bound"* (BSI, 2023, p.11). Engagement with the occupants is focused on ensuring understanding of the retrofit plan, installation and maintenance and handover processes and requirement for post occupancy evaluation (POE), all which contribute to the comprehensibility aspect of the interventions under the salutogenic model. There is however no recognition of the holistic aspects and advice on sociological and psychological outcomes of a place-based neighbourhood scale retrofit. Nor is there any reference to assessing whether the home is fit for purpose, addressing adaptability and inclusion required to ensure longevity of properties and supporting people in changing circumstances to remain in their homes and within their communities. But perhaps the clue and justification for this approach is in the title: *Retrofitting dwellings for improved energy efficiency*. This however makes the process carbon-centric and without consideration for what Peter Rickaby (2022a), one of the authors himself argued to be essential to success, which is provision of beautiful places where people can thrive.

Supporting documents such as UKGBC Retrofit Paybook (Wheeler, Alker and Box, 2021) refer to *'customer journey'*, which is still focused primarily on quality control and understanding of behavioural psychology, motivation for early adopters and trigger points for retrofit and renovation considerations. The document also recognises potential for social impact and the requirement of raising awareness, communication, POE, monitoring and customer engagement.

Other standards such as Passivhaus EnerPHit (Passivhaus Institute, 2023) or AECB Retrofit Standard (AECB 2024), are technical guides mandating high quality control. These are predominantly focused on technical aspects of design and delivery, including POE and testing to ensure high standard of workmanship and compliance. IAQ improvements and monitoring and evaluation of building ensuring adaptability, accessibility and inclusion are not the primary concerns. Similarly to the *Retrofit for the Future* guide (UK Government, 2014) there is a reference to

engagement with the residents, ensuring they understand the design proposal, the process, maintenance requirements and use of the systems and controls. This again only addresses one of the salutogenic components of SOC – comprehensibility. It can be accepted that improved thermal performance and resulting running cost reductions could also partially support manageability.

In order to achieve a more holistic approach, one may look to supplement the standards with Green Building certification schemes. Standards such as BREEAM, NABERS, LEED are commonly used by industry to demonstrate excellence in achieving sustainability goals primarily in large scale projects (Xue, et al., 2019). However, two standards that align with the focus on the wellbeing of the occupants are WELL Standard and the Living Building Challenge (LBC), both based on scientific evidence of health promotion (WELL and LBC, 2017). WELL emphasises relationships between buildings and people, promoting designs addressing issues such as health, comfort, operation and behaviour. LBC is a more holistic standard with broader imperatives promoting regenerative development addressing aspects that other standards may not fully explore, such as toxic chemicals, human connectedness, social interaction, sufficiency and resilience. LBC also emphasises the importance of equity, with one of the sections of the standard mandating development supporting thriving, just communities.

The latter two standards could be used to inform a supplementary framework assisting in development of holistic neighbourhood retrofit plans. The key factors encouraging systemic approaches are taking into consideration wider focus of a location specific interventions beyond individual building or single indicator, for example carbon. These values and philosophy align not only with regenerative practice fundamental to the UN Development Goals (UN, 2023), but also with strengthening SOC supportive of meaningfulness resources in addition to comprehensibility and manageability addressed to some extent in the current retrofit standards.

6. Limitations

This paper is focused on literature review, representing the initial, theoretical phase of a broader investigation into the application of salutogenic theory to neighbourhood scale retrofitting. Subsequent stages will involve practice-based applications and hypothesis testing through phenomenological methodologies, aiming to explore and understand subjective perceptions of home improvements and environmental affordances. Each section of the paper could be expanded to form an individual focus on review of current practice and evidence-based recommendations for the future. Further research involving data collection and interaction with communities is recommended, to gain understanding in priorities and overlaps in health promotion and retrofit action, supporting resilience and flourishing of communities in Scotland and across the UK. The focus of this paper was on highlighting lack of assessment of meaningfulness in the current approaches and identification of possible solutions using available guidance. However, this is not to say that manageability and meaningfulness need no further attention. The authors recommend further investigation of standards relative to inclusion, accessibility and support for ageing population, predominantly people living with dementia, through review of resources such as (Henry, et al., 2023; National Housing and Dementia

Forum, 2022) and recommendations of reports such as *Age, Home and Community* (Scottish Government, 2011) and any updated versions of these documents.

7. Conclusions

Evaluation of behaviours assisting in purpose driven approach to design of retrofit interventions, inclusive of adaptations as well as energy efficiency improvements takes cognisance of dynamic systemic (Meadows 2008). relationships of economy, determinants of health, equality and identification of purpose. Antonovsky (1966) in further studies into salutogenic theory observes that adequate health promotion needs to include the creation of appropriate social conditions, not simply support for lifestyle choices. Informing scalable action in interventions such as neighbourhood scale retrofit thus requires a holistic approach, to ensure human-centric, health and wellbeing focused strategies.

Quality of housing environment and socio-economic context, self-efficacy, subjective wellbeing and safety are all factors that could be addressed through application of salutogenic principles to neighbourhood scale, place-based retrofit measures. Shifting the focus of environmental benefits through carbon reductions to support for long term health and wellbeing of the communities and individuals recognises sociological dimension of wellbeing and prioritises health as a fundamental human right.

Professionals engaging in retrofit, including Architectural Technologists, need to develop skills and understanding of psycho-social determinants of health connected to technical considerations of retrofitting of homes. Accordingly, this paper is aimed at demonstrating dependency of factors affecting human health and wellbeing and the role retrofitting homes in salutogenic framework can play in supporting people-centred outcomes.

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