sustainability

MDPI

Article

A Methodological Framework to Foster Social Value Creation in Architectural Practice

Vibeke Grupe Larsen [1,*], Valentina Antoniucci [2], Nicola Tollin [1], Peter Andreas Sattrup [3], Krister Jens [3], Morten Birkved [2], Tine Holmboe [4] and Giuliano Marella [2]

[1] Faculty of Engineering, University of Southern Denmark, 5230 Odense, Denmark
[2] Department of Civil, Environmental and Architectural Engineering, University of Padua, 35122 Padova, Italy
[3] Danish Association of Architectural Firms, Vesterbrogade 1E, 2., 1620 Copenhagen, Denmark
[4] Dissing + Weitling, Artillerivej 86, 3. Tv., 2300 Copenhagen, Denmark
* Correspondence: vgl@iti.sdu.dk; Tel.: +45-26-280-289

Abstract: The building industry is essential for a national transition towards a circular economy (CE) in Denmark. The Danish state subsidises the Danish affordable housing sector, which is the largest single sector within the Danish building industry, making the sector an essential driver for the transition. The social components of sustainability are considered crucial to ensuring the quality of the environmental and economic components of the CE. However, social value creation (SVC) has been neglected in building processes, and public investments are being used without the policymakers thoroughly assessing the CE's socioeconomic efficiency and effectiveness. The sector therefore needs integrated methodologies to support comprehensive decision making on the CE during construction and renovation. SVC is an apparent field for architectural firms. Two surveys were conducted among business and sustainability managers of Danish architectural firms to identify the challenges and potentials regarding assessing sustainability and SVC in architects' practices. The results of the surveys are described and analysed in this study. Several impact categories, indicators and tools are identified, discussed and summarised in a methodological framework that can support architects in decision making about SVC in constructing and renovating affordable housing. Further refinement of the framework is anticipated to support dynamic and iterative decision making as future work.

Keywords: circular economy; sustainable building; social value creation; S-LCA; social sustainability; affordable housing; social housing; architectural profession; sustainability; Denmark

Citation: Larsen, V.G.; Antoniucci, V.; Tollin, N.; Sattrup, P.A.; Jens, K.; Birkved, M.; Holmboe, T.; Marella, G. A Methodological Framework to Foster Social Value Creation in Architectural Practice. *Sustainability* **2023**, *15*, 1849. https://doi.org/10.3390/su15031849

Academic Editor: Wen-Hsien Tsai

Received: 19 December 2022
Revised: 13 January 2023
Accepted: 14 January 2023
Published: 18 January 2023

1. Introduction

1.1. The Building Sector in Denmark and the Transition to a Circular Economy (CE)

The current system of consumption and production is based on the assumption that exponential growth is possible on a finite planet with limited resources and timescapes [1–5]. The global building industry is responsible for 40% of all CO_2 emissions, which result in the construction and use of buildings, as well as their demolition, disposal or recycling [6]. Therefore, the building industry is essential in transitioning towards a circular economy (CE) to ensure a decent livelihood for future generations.

Denmark has ambitious national policies on sustainable development, the climate and the CE which have led to the creation of policy frameworks for the construction sector as guides for action, such as the National Strategy for Sustainable Construction [7] and the Danish classification of sustainable buildings [8]. Furthermore, the latest revision of the Building Regulations aims to introduce legal requirements on construction forms to document the environmental impact of all new buildings larger than 1000 m^2 through life cycle assessments (LCAs) for the Danish construction sector by January 2023 [9].

Denmark also has an action plan for a circular economy that includes the 2021 plan for preventing and managing waste in 2020–2032. The action plan describes Denmark's targets, indicators, policies and initiatives in the circular value chain, ranging from design and

consumption to waste management, from which natural resources are recycled into new products and materials [10]. Buildings can be understood as the temporal and dynamic storage of valuable building materials and components that are easily changed in response to changing needs and preferences or disassembled into parts that can be used again for new purposes [11,12]. Therefore, buildings are an important action area in this action plan, as they can act as material banks. This approach assumes a circular understanding of buildings when developing, designing, constructing, handing over, using and reusing buildings [13–16].

However, a change in perspective from linear short-term cost efficiency to circular long-term life cycle costing is necessary to ensure a successful transition to a CE. This challenges the building industry. Managing the construction and renovation of buildings' sustainably is further complicated by the different interests of diverse stakeholders in the life cycle and hence their business models, which are highly dependent on their organisational positions and sizes, as well as project timelines. On top of this, the stakeholders may have competing interests between short-term and long-term profitability [16].

As a recent literature review points out, the building industry lacks coherent and operational instruments and methodologies to support comprehensive decision making for builders and consultants during construction processes to overcome these challenges [17,18]. This review identifies four knowledge gaps to be considered when developing evaluation methodologies for a CE: 1. it is necessary to take a circular view of the life cycle of buildings, which includes the service life phase, the reuse phase and the recycle phase; 2. it is necessary to continue research regarding the possibilities of integrating LCAs, life cycle costs (LCCs) and social life cycle assessments (S-LCAs) into life cycle sustainability assessments (LCSAs); 3. S-LCAs need further maturation and development; 4. it is imperative to focus upon implementing LCSAs for practitioners in all phases of a building's life cycle [17].

The present study analyses how to mature and develop S-LCAs [18] to achieve sustainable building and a circular economy in Denmark's affordable housing sector.

1.2. The Affordable Housing Sector and Its Challenges

The Danish affordable housing sector is the largest single sector in the Danish building industry. The percentage of the country's housing stock that is affordable housing is 20%, with approximately six hundred thousand affordable homes inhabited by 1 million people, equivalent to a fifth of the Danish population [19]. The Danish affordable housing sector can thus become an essential driver toward fulfilling Denmark's policies and frameworks on sustainability, the climate and the CE. At the same time, the sector can be a power for developing the social components of sustainability.

Affordable housing is spread across the country, with significant variation in architecture, typology and house sizes. The affordable housing sector is challenged by solid demands for physical renewal, upgrades and retrofitting, both physically and socially. The percentage of the existing stock of affordable housing that was built before 1974 is 54%, and now needs updating to be attractive and to function. More than 200,000 affordable housing units were built as assembly buildings between 1960–1979, unfortunately often of a low technical quality, which has already made it necessary to renovate many of them several times [20–23]. The tarnished reputation of the assembly buildings is not only due to their appearance and technical problems, such as the unhealthy indoor climate, poor insulation and structural failures [24]. It is also due to social challenges related to differences in ethnic and cultural groups of inhabitants and the fact that these areas are frequently perceived as unsafe to live in and move around in [24–28].

Affordable homes are owned and administered by social housing associations. Housing associations that run, administer and own affordable housing in Denmark are called social housing associations as a relic of earlier times. The sector is non-profit and should offer safe housing of excellent standards at affordable rents for all residents [29]. The affordable housing sector is characterised by a very high degree of resident democracy and participation in, among other things, building renovations [30].

The percentage of affordable homes classed as 'social housing' is 25%, being allocated to population groups with urgent social housing needs. Affordable housing is aimed at a broader range of household incomes than social housing. Households do not need to be eligible for social housing to live in affordable housing. Conversely, households eligible for social housing may be eligible for affordable housing.

There are strict budgets for building and renovating affordable housing, as the law stipulates that rents must not respond to market forces. Danish housing policies for affordable housing regulate rental housing construction and renovation, including financial support for low-cost and cooperative housing construction, rent regulation and housing support schemes [28]. These instruments are cornerstones of the affordable housing policy, which was one of the pillars of Denmark's welfare state throughout the 20th century.

Over the years, the Danish state has used affordable housing activities to create jobs in the construction and service sectors during periods of recession by providing public subsidies to social housing associations through the National Building Fund (LBF) [31] in the form of interest payment subsidies for building and renovating affordable housing. In 2020, a political agreement in parliament allocated EUR 4 billion from the LBF for the renovation of affordable housing between 2020–2026 to support a socially balanced sustainable transformation of the existing housing stock. EUR 2.4 billion was used to initiate the renovation of 72,000 units by the end of 2020, and EUR 1.5 billion will be allocated to future renovations by 2026 [18].

The public authorities, however, need a means for evaluating the sustainability impacts of public investments in affordable housing [29].

1.3. Architectural Planning offices and Social Value Creation

S-LCA is a methodology for assessing the social components of sustainability regarding services, projects and products [17]. The social components of sustainability in the built environment are considered as crucial to ensuring the actual quality of both the environmental and economic components for users when burden shifting should be avoided during a building's lifetime [17,32–39]. However, the social components are economic values that are mostly not assessed or evaluated. The absence of an evaluation of social components and impacts achieved through CE may mean that positive social long-term solutions are not prioritised. This can contribute to negative consequences for the operation and utility of buildings over time [40,41].

Therefore, it is essential to build competences to assess and monitor public investments from a social perspective to support the circular transformation of affordable housing in Denmark.

In the present paper, the social value of building stock is defined as the attractiveness, originality, historical environment and cultural history of buildings, as well as the feeling of identity that people can derive from living in an area of attractive buildings with a range of derivative effects that can be classed as social impacts of sustainability. Architectural design contributes to providing social value, cohesion and security in local areas and to attracting new residents, which has an economic impact on turnover, employability and job creation [42–44] and can be considered an aspect of the CE in building and renovation. Furthermore, this impacts on the housing market, increasing the price and value of buildings [45–53]. Evaluating social value creation (SVC) is then about assessing how buildings fulfil the needs and expectations of their end-users and make the CE an attractive investment for the latter from a long-term perspective.

Building up the capabilities to assess SVC will help to change the focus from short-term construction economics to long-term social value creation in a CE paradigm. The architectural profession can play a crucial role in contributing to such necessary behavioural change regarding the CE through its ability to design lasting building quality for society, clients and end-users [54–61], with time and the economy as the paramount priorities [40,62,63].

These reflections form the basis for the present study and lead to the following research question: how can the architectural profession foster SVC in building and renovating affordable housing in Denmark?

The study is organised as follows: First, the methods used in the study are described in Section 2. Then, the study's results are described and analysed in Section 3. Next, several impact categories are identified that illustrate why SVC is difficult to handle as a part of the CE because of different scales and diversity. This is exposed and discussed by approaching different high-level tools and methodologies that can handle SVC in Section 4. Everything is brought together using the social Sustainable Development Goals (SDGs) to ensure that the stakeholders in the building sector's value chain can work with the impact categories in a goal-oriented way. Finally, the results are summed up and recommendations for future research and development are made in Section 5.

2. Methodology and Description of Survey Materials

The research question is investigated by conducting a qualitative and semi-quantitative survey [64–66] among members of the Danish Association of Architectural Firms (DA) with the following goals:

- Understanding the level of competencies and mapping the reality regarding the CE and sustainability in daily practice as understood by the respondents;
- Understanding the level of competencies and mapping the reality regarding SVC by assessing the respondents' approach to this in their daily practice.

This daily practice is investigated both strategically and operationally by splitting the survey into two parts, Survey 1 and Survey 2 (Supplementary Materials).

In both parts, the sample section asked the respondents to enter data to identify the reality. The questions required them either to select one of several statements or to make multiple choices. The respondents were also allowed to add personal comments. The surveys were not anonymous.

2.1. Survey Process

2.1.1. Survey 1—Strategic Level

The Danish Association of Architectural Firms (DA) contains 95% of all registered architectural firms in Denmark. By 1 January 2022, the DA counted 700 firms as members, who were all invited to participate in Survey 1. Survey 1 was launched online via Survey Monkey [66] on 10 January 2022 and ran until 25 January 2022.

Survey 1 addresses company representatives registered as contact persons for the DA who are often (in around 90% of cases) the same as the business leaders and CEOs of the architectural firms. One hundred and twelve business leaders/CEOs responded to Survey 1, corresponding to an overall response rate of 16%. The DA sends out 2–3 surveys to all members on general issues each year, with an average of 8–10% of members responding. From this point of view, therefore, the response rate to Survey 1 is considered satisfactory [67].

Survey 1 is designed to map the status of the members' generic level of knowledge about CE and the environmental, economic and social components of sustainability, and it primarily asks questions about strategic sustainability. It consists of eighteen qualitative and semi-quantitative questions [65], bridging four categories of question, from a generic and general level to a concrete and personal level: 1. firm identification and size, subject areas and readiness for future sustainability demands (VQ1–5 and VQ10); 2. daily practice regarding sustainable performance, deliveries and services (VQ6–9); 3. expectations of development and skill needs (VQ11–13); 4. the respondents' roles, education, backgrounds and particular competencies in sustainability (VQ14–18).

2.1.2. Survey 2—Operational Level

Survey 2 was launched online via Survey Monkey [66] on 31 January 2022 and ran until 31 February 2022.

Most DA members are small firms, and the business leaders may act as part- or fulltime sustainability managers or equivalent figures in their firms. This is the case among 75% of the responding firms in Survey 1. If somebody other than the business leader takes on the role of sustainability manager or an equivalent figure, this person is identified by name by the remaining 25% of responding companies. Two persons share the role of a sustainability manager or an equivalent figure in two cases, both being large firms. As a result, one hundred and fourteen persons were invited to participate in Survey 2 as sustainability managers or equivalent figures. Fifty-one sustainability managers or equivalent figures responded, corresponding to an overall response rate of 45%.

Survey 2 asks operational, in-depth questions about the firms' sustainability practices, and is designed to gather specialised input. Survey 2 consists of twenty-three qualitative and semi-quantitative questions [33], divided into four categories, bridging from the general level to the personal level: 1. identification of competencies, expectations and needs (BQ1–2); 2. CE, LCA and LCC—degree, desire of knowledge and ways of evaluating (BQ3–14); 3. SVC—perception, practice, desires and ways of evaluating (BQ15–20); 4. the respondents' roles, education, backgrounds and particular competencies in sustainability (BQ20–23).

3. Results

The results of the two surveys were collected and processed through Power BI between February–April 2022. Power BI is a collection of software services, apps and connections that combine to transform disjointed data into robust, visually immersive and interactive insights. Two dashboards, one per survey, were established in Power BI to analyse the survey data by cross-referencing categories of questions and identifying significant trends.

3.1. Description of Data and Analysis, Survey 1

In Survey 1, the company managers were asked about their sustainability practices and strategic considerations. A significant part, 74%, of the DA members are small firms (1/2–4 employees), medium-sized firms (5–9/10–19 employees) make up 16% and 10% are large firms (20–39/40-400 employees—large firms are titled "40+" in the following figures). Small firms stand for less than 10% of the turnover of the entire Danish architecture industry, and the 10% largest firms stand for 75% of the entire turnover, as shown in Figure 1 (source: Danish Association of Architectural Firms).

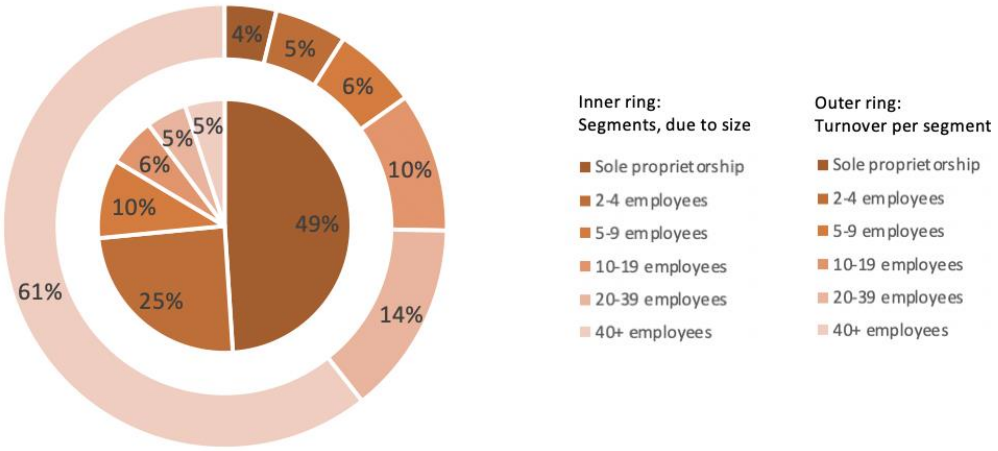

Figure 1. Distribution of company sizes across all 700 members of DA/turnover for the architecture profession, related to sizes, January 2022.

3.1.1. Identification and Company Size, Subject Areas and Readiness for Sustainability

The percentage of large firms answering Survey 1 is more significant than the number of large firms in total in the DA (Figure 2). The more considerable turnover of the large firms is thus even more evident in the response rate. Likewise, the differences between

large and small firms are more apparent regarding affiliation with countryside or city, clients, areas of task and the degree of commitment to sustainability.

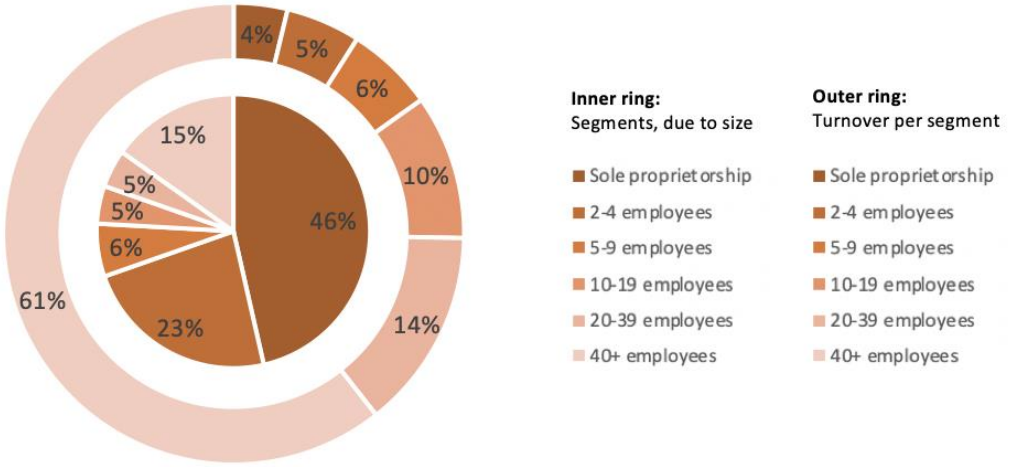

Figure 2. Distribution and company sizes among 112 respondents in the member survey, January 2022/turnover for the architecture profession, related to sizes, January 2022.

The respondents were asked to name subject areas of work. Subject areas (VQ3) are, from most to least widespread: 'Private housing' (private, new construction, transformation, renovation, restoration), 'Client advice', 'Office building' (new construction, transformation, renovation, restoration), 'Area Development', 'Education buildings and institutions', 'Urban planning', 'Affordable housing' (new construction, transformation, renovation, restoration), 'Sports and culture', 'Landscape' and 'Other' (including specialist consultancy on sustainability topics), with a majority of smaller firms practicing within 'Private Housing' and 'Client advice', and larger firms practicing within the remaining areas. More large firms work on 'Affordable housing' compared to other work areas.

The respondents were asked to self-assess their readiness for the upcoming obligations regarding LCA (VQ4) (Figure 3). They were also asked to self-assess their expectations regarding the future market for sustainable buildings (VQ5), their levels of competence and their experiences regarding client demand following introduction of the obligations (VQ10).

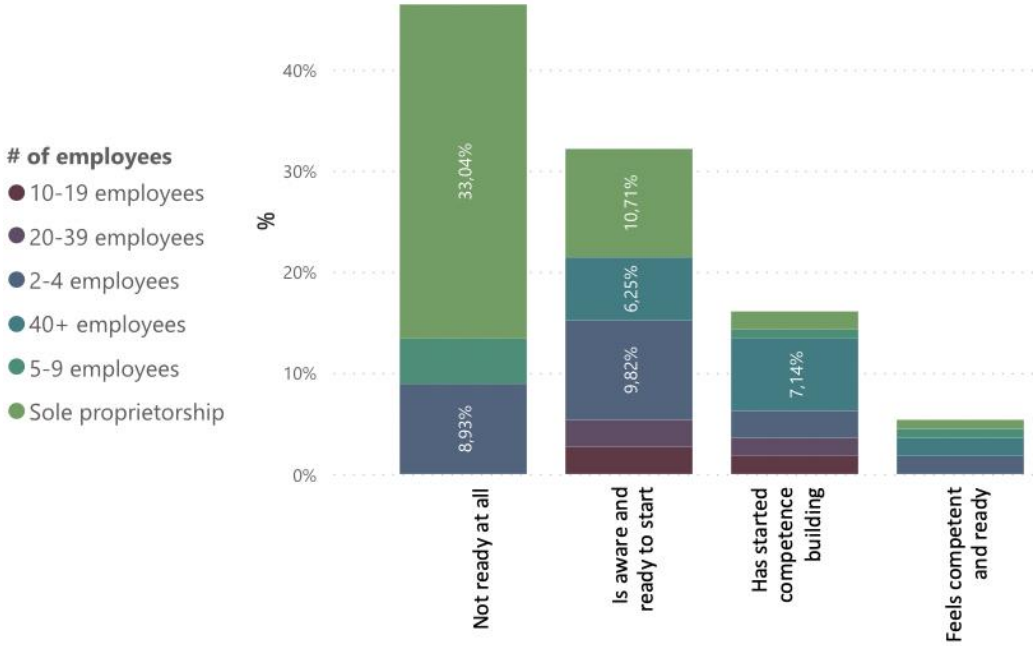

Figure 3. VQ4: Readiness to meet upcoming obligations.

All respondents expect the demand for delivery of sustainability to increase in the coming years, though not to 100% (VQ5). The percentage of primarily small firms that expect that up to 25% of their turnover will involve sustainable building is 41%, while just 17% expect a figure in the range of 75–100%. The percentage that feels that they still need more time to prepare for the mandatory sustainability requirements (by 1 January 2023) is 46%, while just 6% feel ready. Proportionally, more small firms feel that they need more time to be ready, and proportionally more large ones do feel ready (VQ4).

More than 50% of the respondents experience clients asking for stand-alone sustainable solutions rather than coherent, integrated, sustainable building concepts, while 20% (many of which are among the larger firms) face demands for sustainability-certified buildings. In addition, 10% of the respondents, mainly from small firms, find that clients need to demand sustainability more explicitly or find that their demands are diffuse (VQ10). These trends are confirmed in the individual comments in response to VQ10.

Most small firms among the respondents design private homes for private house owners. Private house owners are less capable or willing to demand sustainable construction than larger professional clients. Therefore, it is reasonable to assume that the demand for sustainable solutions is lower among private house owners than among the more professional clients of medium and large firms with broader portfolios of more extensive projects (VQ1–3).

Despite national policies and frameworks, most respondents find that clients can only be somewhat exact while demanding sustainable construction. At the same time, larger architectural firms that work with large, professional and international clients experience more qualified demands than smaller firms serving less professional and smaller clients.

3.1.2. Daily Practice Regarding Sustainable Performance, Deliveries and Services

The respondents were provided with opportunities to self-assess their practices and their levels of maturity regarding how they understand sustainability in the day-to-day running of their businesses (defined as operations) and in designing for the built environment (defined as deliveries) (VQ6–9). About half of all respondents declared they perform sustainably in both day-to-day operations and their projects' solutions (VQ6). It can be noted that sustainability is understood as 'business development', 'continuing education' and 'knowledge sharing about sustainability' more than as 'green accounts' or 'green procurement', especially among the larger respondents (VQ7). The percentage that answered that they do not perform sustainably was 7%, either in the day-to-day running of their business or in designing solutions, although they would like to. This is especially the trend among small businesses.

Half of the respondents state that they always design integrated sustainable solutions, and another quarter considers sustainability to be a core issue in their design, when asked about sustainable deliveries. The remaining quarter thinks of sustainable design as add-ons, among which is a relatively high number of small businesses (VQ8–9).

Smaller firms find it more challenging to allocate time to documentation and continuing education than larger firms. Predominant tendencies to regard sustainable solutions as questions of using common sense in the design can be traced among the individual comments to VQ6, VQ7 and VQ9, as can some scepticism and uncertainty as to whether clients are committed to achieving sustainable building. For example, a noticeable reply to VQ9 is: "Good architecture is sustainable. Good buildings are never demolished. They are being renovated and transferred to other uses, but they remain in being. The environmental impact is low". Such statements are plentiful and make it seem that most of the respondents may be more oriented towards designing "sustainably" out of common sense rather than towards running their firms in environmentally sustainable ways and that the willingness to calculate environmental value is somewhat absent.

3.1.3. Expectations Regarding Development and Skills Needs

The respondents were provided with opportunities to self-assess their sustainability practice in VQ11 regarding how often they deliver sustainability as CE, LCA, LCC and SVC services. The following figure (Figure 4) shows that most respondents still do not deliver sustainability often.

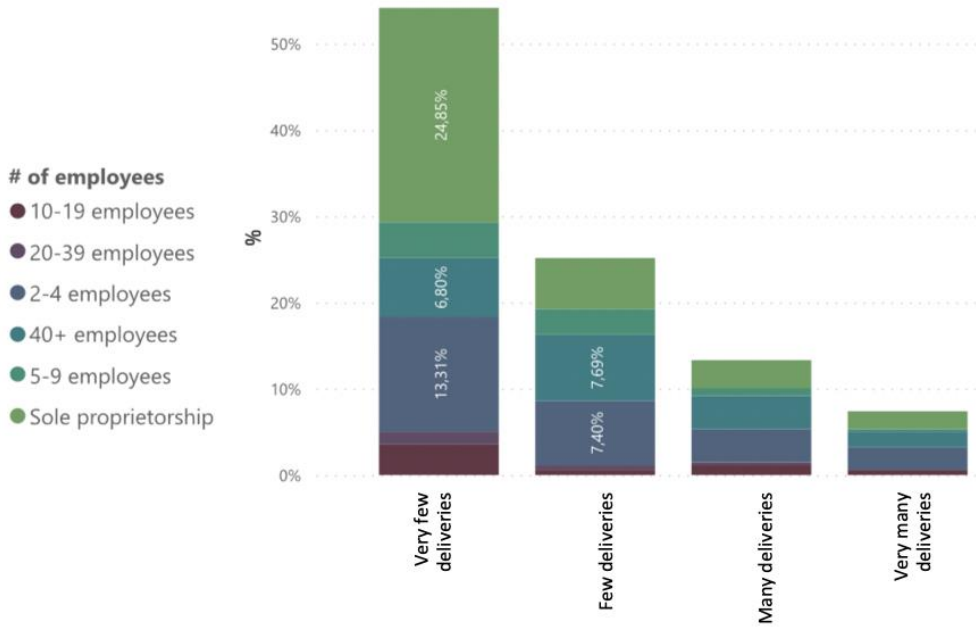

Figure 4. VQ11: Sustainability deliveries in general, according to company size.

The deliveries are split up into whether the respondents deliver more or less (Figure 5):

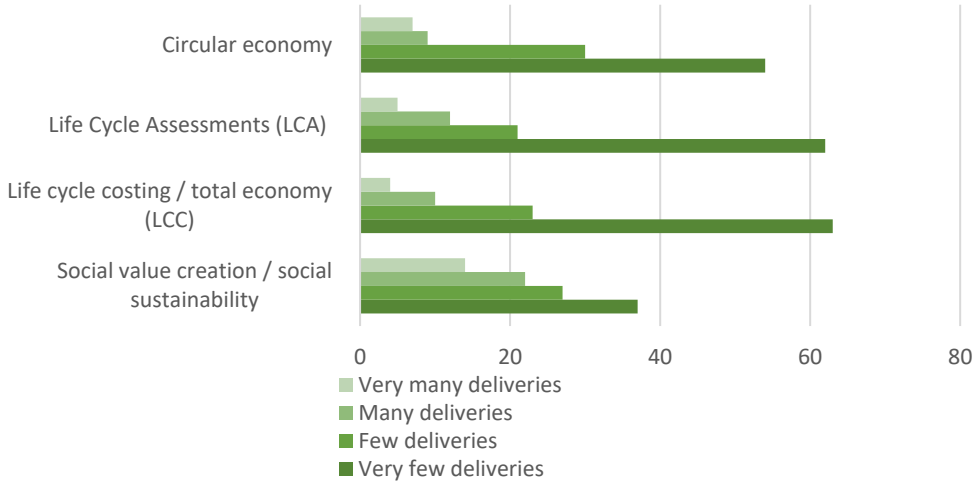

Figure 5. VQ11: Sustainability deliveries, character and extent.

More than 50% claim that they only deliver a few sustainable solutions. A general claim is that SVC is more often delivered than the CE, LCAs or LCCs. Among the individual answers, it can be noted that some respondents distance themselves from categorising their deliveries and state that " . . . it cannot be put in the formula" and that " . . . all that 'circular' is mostly buzzwords for greenwashing. The good architecture delivers in itself".

The respondents were offered opportunities to self-assess their confidence levels regarding delivering sustainable solutions and at what points they want to build competencies for this in VQ12.

The self-confidence regarding the ability to deliver sustainable solutions seems relatively high at a general level (Figure 6). However, individual comments to VQ12 describe different levels of engagement from intentions being in the top five to intentions to deliver sustainable solutions only when the client demands this, and going even further to intentions of not wanting to make sustainable solutions at all.

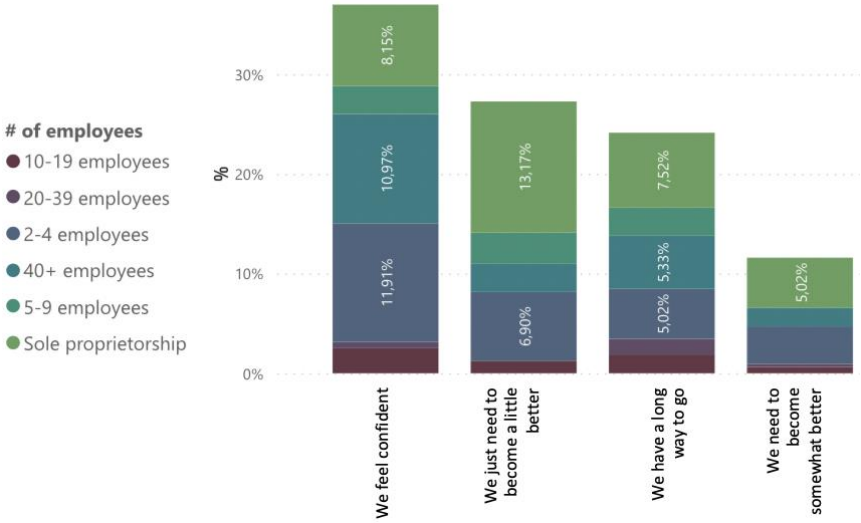

Figure 6. VQ12, self-confidence level regarding competencies for delivering sustainable solutions.

The deliveries are split into CE, LCA, LCC and SVC services to analyse the fields within which respondents see a need to build their competences and to what degree. Asked directly about specific needs, there are more wishes for competence building within LCAs, LCCs and the CE (VQ12–13) than SVC (Figure 7).

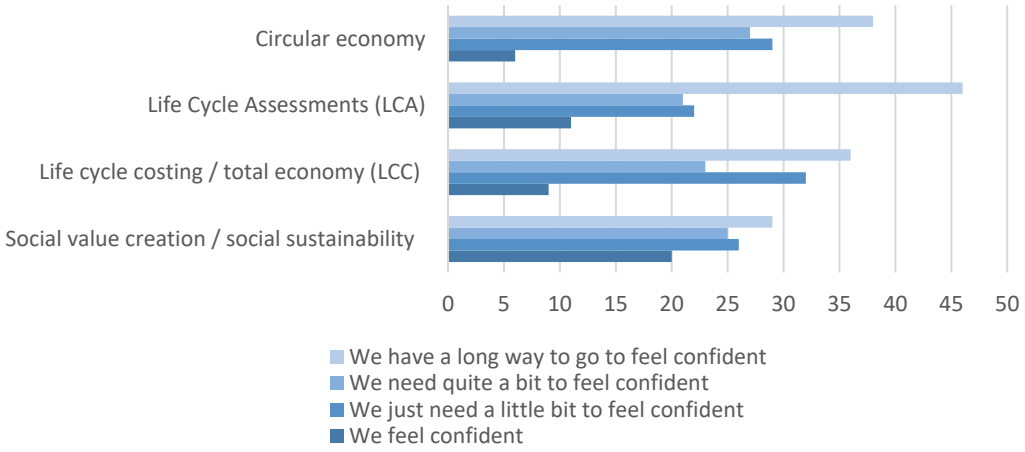

Figure 7. VQ12, confidence level regarding competencies for delivering sustainable solutions and areas with needs for future competence building.

Almost 50% of the total number of respondents (VQ11) still say, when directly asked, that they rarely or never deliver sustainable solutions, despite the trends according to VQ9. The remaining 50% offer varying degrees of sustainable solutions. There is a slight over-representation of large firms among the respondents who deliver sustainable solutions in more than half of their projects.

The predominant trend about levels of ambition to improve reveals that a majority feel that they should improve in a controlled way (. . . "a little bit" . . .). Among those who want to go further than a little bit or who already feel safe, there is a slight majority of larger firms. The ambitions are predominantly within the fields of LCA, LCC and the

CE (VQ12), which can be characterised as fields, which can be calculated and evaluated numerically. The amount of paperwork connected to documentation as such worries the smaller firms.

3.1.4. The Respondents' Roles, Education, Backgrounds and Particular Competencies in Sustainability

Questions VQ14–18 are about the respondents' roles, backgrounds, company roles and expert knowledge and experience about sustainability. The general impression given by the answers is that the respondents acknowledge that they need to be more qualified on the topic of sustainability. However, they are also sceptical about the relevance of sustainability in daily practice.

3.2. Description of Data and Analysis, Survey 2

Survey 2 dives further into operational matters on selected issues while asking questions directly to what are assumed to be advanced practitioners on sustainability.

3.2.1. Identification of Competency, Expectations and Needs

Two thirds of the respondents in Survey 2 have specific roles as operational sustainability managers or equivalent figures in the participating firms. They characterise themselves as personally engaged in sustainability to a high degree. The remaining third comes from small businesses and are often managers who have responded to Survey 1 (Figure 2). Therefore, these respondents can represent their commitment and understanding of sustainability not as a personal commitment but rather view sustainability as something they take responsibility for because they have to. This relationship may play into the findings of Survey 2 (BQ1).

It is assumed that operational sustainability managers may think differently regarding status, practice and needs in Survey 2 than the strategic company leaders responding to Survey 1. One question about the need for competence building posed to business leaders in Survey 1 (VQ13) was therefore also posed to the sustainability managers in Survey 2 (BQ2) (Figures 8 and 9).

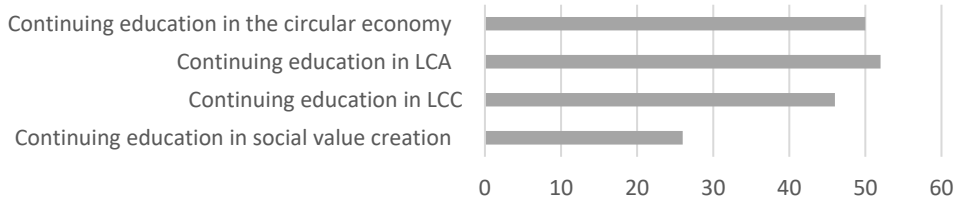

Figure 8. VQ13—"At DA, we plan competence development programs to help you achieve your goals. Therefore, we want to hear more about what the company needs in knowledge and input".

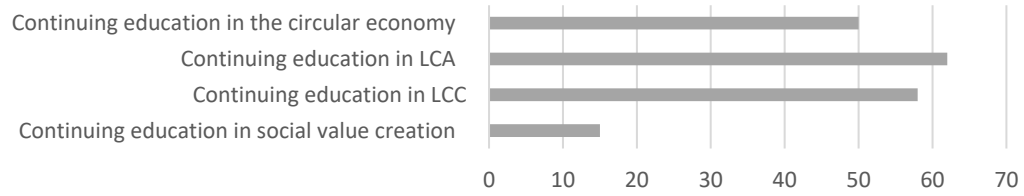

Figure 9. BQ2—"At DA, we plan competence development programs to help you achieve your goals. Therefore, we want to hear more about what the company needs in knowledge and input".

A deviation can be observed as business leaders prioritise the CE, LCAs and LCCs evenly and SVC somewhat below (VQ13) these, while sustainability leaders prioritise LCAs over SVC (BQ2) very clearly. In addition, the sustainability managers are very concrete in their comments upon their desire for competence building in sustainability matters and focus on the upcoming sharpening of the building regulations regarding documentation and technical solutions.

3.2.2. CE, LCA and LCC—Degree, Desire of Knowledge and Ways of Evaluating

It is anticipated that the CE, LCAs and LCCs will receive special attention from the Danish construction sector because of the stricter legislation being introduced in January 2023. Therefore, the CE is addressed as a strategy for achieving sustainability, and LCAs and LCCs are addressed as tools for assessing sustainability in Survey 2. The purpose is to map out how the respondents prioritise seeking more knowledge on the CE, LCAs and LCCs.

The business leaders (Survey 1) consider SVC to be a vital part of their brand and communication. In contrast, the sustainability leaders (Survey 2) are more focused on documenting the numerical values of LCAs and LCCs. The respondents desire upskilling in all three areas (the CE, LCAs and LCCs).

Regarding LCAs and LCCs, a trend is noted that the respondents entrust the actual calculations to engineers in many cases, mainly in the smaller firms. Very few respondents feel so knowledgeable about the three themes that they will take it upon themselves to teach LCA and LCC to others (BQ3–12) (Table 1).

Table 1. General answers about the CE, LCAs and LCCs—overview of knowledge levels.

How Familiar is the Company with . . .	CE? (BQ3–4)	100	LCA? (BQ7–8)	100	LCC? (BQ11–12)	100
%	What is a circular economy?	4	I have heard of LCA.	38	I have heard of LCC.	42
%	I have heard about the circular economy.	48	I let the engineer perform LCA on company projects.	26	I let the engineer perform LCC on company projects.	23
%	I practise circular economy in company projects.	42	I make LCA calculations in the company's projects.	29	I make LCC calculations in the company's projects.	31
%	I teach circular economy.	6	I teach LCA.	7	I teach LCC.	4
Does the company need to learn more about . . .	Yes No	87 13	Yes No	95 5	Yes No	78 22

The respondents also commented individually on the pros and cons of these matters. Simultaneously, some expressed scepticism and stated that " . . . there is much hot air around CE" and that " . . . LCA is technocratic and greenwashing". Others were concerned about the distribution of risks and responsibilities in the value chain and worried about further complications in private construction cases, which are also traced in the comments, as taking away the focus from the actual purpose of designing good building projects.

There is an obvious commitment to the topics in the individual comments, but also particular uncertainty, scepticism and concern due to expectations of a specific documentation burden arising because of the CE and LCA. It is clear that respondents wanted to prepare for the stricter requirements and that the acquisition is considered to be a steep learning curve. Some respondents would like other specialists aside from the architects to take charge of the LCA, and some mark a significant distance from the topic.

In so far as LCC is concerned, something similar stands out concerning the distribution of the responsibility for the lifetime considerations of buildings. There is, however, a specific desire to handle lifetime considerations in order to identify appropriate solutions for long-lasting architectural quality.

3.2.3. SVC—Perception, Practice, Desires and Ways of Evaluating

SVC is more complex to understand conceptually than LCA and LCC and more challenging to relate to specific assessment methods [17]. The respondents were asked to

describe their understandings of SVC in daily practice and the level of competencies in daily routines (BQ15).

Thirty-nine respondents commented and provided a list of descriptions of SVC going in many directions. Many statements among the comments demonstrate the respondents' views of themselves as consultants being indeed capable of handling the social aspects besides technical issues, such as (quotations):

- " . . . the understanding (is) that residents primarily want a place they can afford to live in and have the opportunity to feel safe, to belong and pride in where they live. Meaning fullness is about how the physical environment can help create this";
- " . . . social sustainability (is) completely integrated and, of course, part of our practice and our projects", " . . . we promote (it) in all phases of our projects and (. . .) we use many words for it: a listening approach to ground the project and in how people will use it, co-ownership, architectural quality, durability, robustness and beauty", "Ease of use and accessibility", "Security-creating and eventful";
- " . . . the effect of architecture. The architecture supports the lived life and the results one wants to achieve. For example, well-being, productivity and knowledge-sharing in an office building. Or well-being, learning and movement in a school";
- " . . . social sustainability is a concept in itself—not just a quality that contributes to promoting environmental and economic sustainability . . . ".

The respondents were also asked to categorize SVC by selecting suggested headlines to sum up their understandings of SVC (BQ16) (Figure 10)

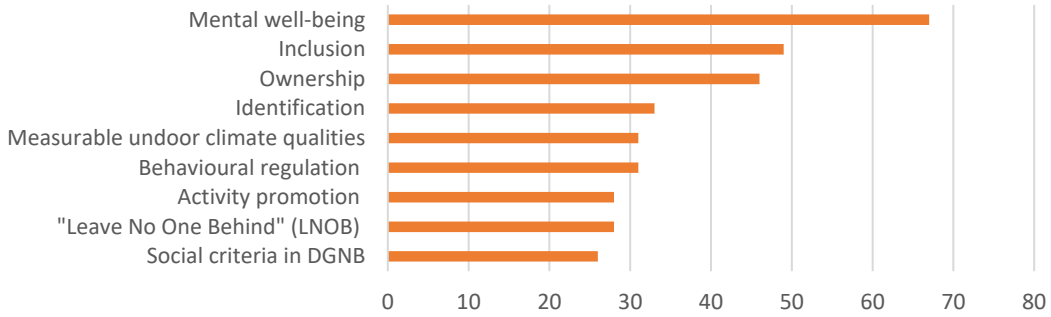

Figure 10. BQ16—categorisation of SVC in headlines (Mental well-being—e.g., aesthetics, health, healing architecture, well-being, liveability, etc.; Inclusion—e.g., equality, community, universal design, accessibility, neighbourliness, clear boundaries, etc.; Ownership—e.g., co-creation, participation, co-ownership, etc.; Identification—e.g., identity, community, sense of solidarity, belonging, etc.; Measurable indoor climate qualities—e.g., durability, resilience, flexibility, indoor climate, working environment, social commissioning, post-occupancy evaluation, etc.; Behavioural regulation—e.g., nudging for sustainable behaviour, safety, security, overview, wayfinding, etc.; Activity promotion—e.g., functionality, learning, competence building, etc.; "Leave No One Behind" (LNOB)—the central, transformative promise of the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals; Social criteria in DGNB (thermal comfort, air quality, visual comfort, control of the indoor climate, quality of outdoor areas, safety, accessibility, condi-tions for cyclists, architectural quality, plan layout).

The respondents were then asked how they document and evaluate SVC today (BQ17). The percentage who do not document or evaluate SVC at all is 41%. The percentage who answered the methods suggested in the survey (interviews, observations, questionnaires and post occupancy evaluation (POE) [68]) is 26%, while the remaining 29% provided very diverse and individual answers to the question.

The percentage of respondents who felt they needed to learn more about assessing SVC (BQ18) is 55%. Most respondents out of the 55% want to improve in documenting SVC after a project is completed when given the opportunity to choose between different aspects hereof, while the lower proportion prioritise communication with potential clients (BQ19).

The other 45% felt they did not need to learn more about documenting SVC (BQ18). One statement, "The subject is implicit in one's work as an architect, and there are already far too many extreme documentation requirements", stands out in the comments in response to this (BQ20).

The focus for some is that SVC can be key when it comes to environmental and economic value creation (BQ16). Many respondents see SVC as an implicit core discipline for architects and as an indirect sustainable quality. Most claim they always work for "Mental well-being—e.g., aesthetics, health, healing architecture, well-being and livability". However, they are aware that SVC definitions are manifold and often unprecise (BQ15). Almost half of the respondents say they do nothing to document SVC (BQ17), based on the idea that architecture is SVC in itself and needs no further documentation. Therefore, they are not interested in having additional documentation requirements imposed on them. At the same time, however, two thirds consider it necessary to be upskilled to evaluate SVC (BQ18).

3.2.4. The Respondents' Roles, Education, Backgrounds and Particular Competencies in Sustainability

Most respondents deal with sustainability management, architectural design and project management (BQ21). The percentage that answered the questions on continuing education in Survey 1 is 30%, 39% of which had no formal continuing education on sustainability (BQ22). Another 12% are DGNB consultants [69]. A quarter of the respondents answered that they only have limited general knowledge of sustainability (BQ23), while fewer than 10% claimed they have good knowledge.

3.3. Findings across Survey 1 and Survey 2

The respondents' significant commitment to sustainability and the circular economy can be noted. However, many respondents, especially in the smaller firms, seem reluctant to offer sustainable solutions and shy away from scientifically documenting sustainability. The smaller firms are especially concerned about the extra burdens of handling sustainability in their daily practices.

Uncertainty about definitions of sustainable building and operational sustainability causes scepticism in handling sustainable building and renovation. In general, the respondents claim that there needs to be more clarity around sustainable building. Most respondents, especially the smaller firms, experience limited demand for sustainable building, SVC or the CE, unlike the larger ones. Additionally, the respondents note that the clients need to be more aware of the implications of their expectations. There is some frustration about the lack of demand, a situation that makes it challenging to address and assess SVC and thus the CE in construction processes. However, the respondents do expect the demand to increase and improve due to national and legislative attention.

There is an evident gap between the smaller and bigger firms regarding the handling of sustainability through the CE, LCAs, LCCs and SVC. The larger firms feel better prepared and more confident than the smaller firms, except when the smaller firms are specialist consultants.

Many respondents are groping concerning implementing, evaluating and documenting the social components of sustainability. More attention needs to be paid to assessing SVC because unambiguous definitions of SVC make concrete documentation difficult. Therefore, it appears more manageable for the respondents to relate to quantitatively assessing and evaluating the CE, LCA and LCC rather than SVC with its lack of precision. The respondents associate SVC with their understanding of social conditions as design parameters. In many cases, the respondents see themselves as promoters of self-defined approaches to holistically creating sustainable buildings with implicit SVC. This sentiment can be found in a statement such as "The subject (SVC) is implicit in the work of an architect".

4. Discussion

The building industry is slow to change, as there are significant financial risks and thus a limited willingness to experiment and embrace new ways to plan and collaborate between the parties involved [70–73]. Therefore, a significant change in perspectives on buildings' lifetimes challenges the building industry regarding its management of sustainability. Furthermore, the very different interests of stakeholders complicate sustainability management even more. On top of this, competing interests between short- and long-term profitability indicate that more holistic and operational instruments and methodologies are needed to support comprehensive decision making for builders and consultants during the construction processes of affordable housing [9].

Absolute sustainable development [74], i.e., development that meets both environmental boundaries and social challenges, triggers a particular fear reaching out for the parties involved in the construction value chain due to their uncertainty in dealing with this complexity. Additionally, a concern is raised regarding the risk of additional documentation burdens. Architects already feel that the daily practice is so complex to challenge that they consider their true professionalism even further. In addition, the standard view of buildings as short-term investment objects does not create an incentive to look at the long-term co-benefits from a social perspective, which also opposes a focus on qualitative value creation through construction and renovation.

A general understanding of the CE as being instrumental dominates the perception of sustainability in addressing the most fundamental issues of sustainable development from this perspective. The primary focus is currently on the environmental issues, which can be measured using LCA and LCC concerning short-term investments from a production point of view [75] rather than social, more volatile, long-term issues from a social point of view.

The circular transformation of the construction sector does, however, require the integration of environmental, economic and social value creation at several levels. One such level is a lifetime perspective that goes beyond the initial costs to support the regeneration of resources in a future perspective [17] in order to meet the Paris Agreement [76]. Moreover, an integrated approach requires a shift in mindset from the prevailing linear economic paradigm based on material growth to a circular economic paradigm that is in balance with the present natural basis [1,5,77–79].

Assessment tools to support decision making in the building and renovation of affordable housing from a social perspective need attention regarding more than solely environmental issues in a sustainable future [17,78]. The building industry—and indeed the architecture profession—need to control the assessment tools that should help highlight the increasing long-term economic value creation related to improving building projects' social features or SVC [40]. As a result, socioeconomic value creation associated with socially sustainable perspectives for the built environment should be prioritised in project economics. As another result, the economic relevance of SVC related to projects' sustainability should be considered and evaluated [79]. The approach should be based on understanding the economics of the built environment not only as project costs but also as socioeconomic means. With this, economics also contribute to and support environmental value creation through a reduction in environmental impacts in the form of SVC that can improve social conditions (as conceptualised in the Doughnut Economy [77] and by the Ellen MacArthur Foundation [80–82]).

Where affordable housing is concerned, it is particularly relevant to implement a link between public investment and its effectiveness from an SVC point of view so that the economic co-benefits from the CE can become concrete and integrate parameters in socially sound building and renovation projects [83]. There is a need to improve assessments of economic value creation from a social perspective in an integrated way, such as life cycle sustainability assessment (LCSA) [17,84] to support the implementation of the CE. The necessary development is illustrated in Figure 11.

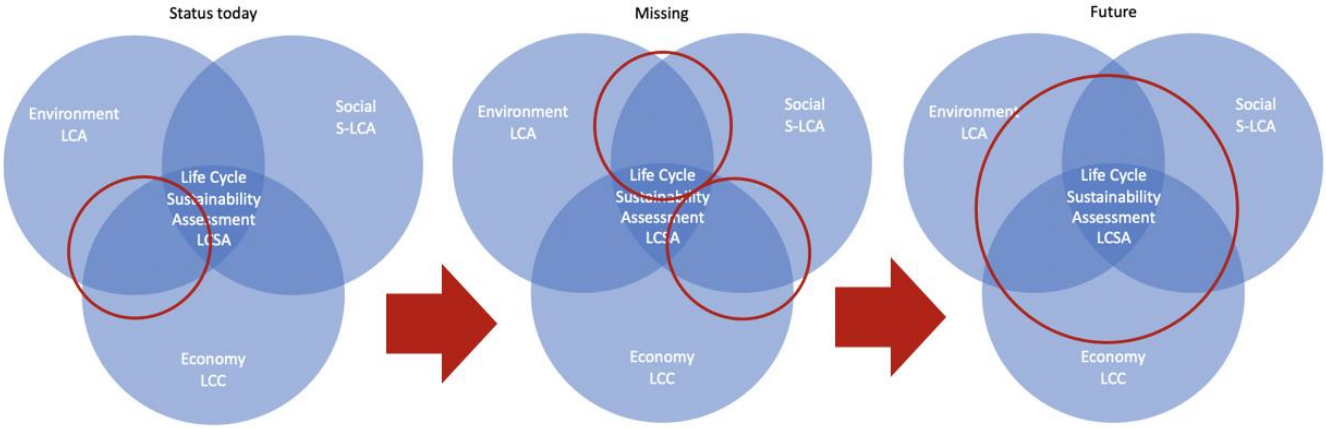

Figure 11. From present to future, regarding the development of assessment tools for the built environment. Red circles indicate focus that changes over time.

Environmental and economic value creation can be assessed through LCAs and LCCs. However, LCA tools are manifold [85] and must be handled carefully. LCC helps to assess the economic features of cost savings but is primarily a one-dimensional evaluation tool. Tools for assessing the social components of sustainability, such as social value creation, exist theoretically, e.g., social LCA (S-LCA) and social cost benefit analysis (SCBA) (These tools must be developed further if socio-economically sustainable value creation is to be assessed in an integrated way, as S-LCA cannot be merged with LCC and LCA [17,86].

There is an urgent need to speed up the implementation of a CE [74,76]. Two points will therefore need attention in the attempt to support the development of an integrated tool for the assessment of the CE, namely the evaluation and documentation of SVC and the role of architectural firms in these processes.

4.1. Evaluation and Documentation of SVC

There is a significant focus on building competencies in handling the measurable aspects, such as the environmental impacts (LCAs) and the financial impacts (LCCs), in the Danish architecture profession, because of the upcoming revision of the building regulations in 2023. Danish tools, called LCAByg [87] and LCCByg [88], exist for this and LCAByg is the tool to document the environmental impact of all new buildings larger than 1000 m^2 in Denmark [89] from January 2023.

Standards and comprehensive methodologies still need to be developed for managing the social components of sustainability and SVC, in the upcoming revision of the building regulations. Therefore, introducing an integrated understanding of these issues [36,39,90–98] is necessary. Defining the impact categories for SVC is challenging on several levels. Therefore, it is necessary to develop a terminology and a language for SVC to express and utilize the social impact categories whenever evaluation shall occur.

Two significant high-level initiatives for developing assessment methodologies for social sustainability in the built environment can be taken as a starting point in developing such a terminology, namely the EN 16309:2014 Sustainability of construction works—Assessment of social performance of buildings—Calculation methodology of construction works program [99] and the Social LCA Initiatives [68–70].

EN 16309:2014 Sustainability of construction works describes a methodology for assessing the social performance of buildings. The European standard aims to provide specific methods and requirements for assessing social performance while considering the building's functionality and technical characteristics, both new and existing. The aforementioned standard is under revision and will become EN 15978-2. An international task force is working to define its component social impact categories. A Danish member of the task force states that social impact categories such as "accessibility", "spatial characteristics", "noise", "contributions to local well-being" and "resilience" are under debate.

Social LCA Initiatives (S-LCAs) [17,100–102] aim to assess the social and socioeconomic aspects of services, projects and products, accounting for both actual and potential positive and negative social impacts along a product's life cycle. However, there are as yet no standards for S-LCAs for construction. The Guidelines, published by the UNEP/SETAC Life Cycle Initiative [100], is a significant step toward addressing the construction value chain and developing a methodology that may eventually become standardised. S-LCAs work with many social impact categories, for instance, "corruption", "cultural heritage", "forced labour", "health and safety" and "respect for indigenous rights" [101].

The social impacts do not just go in many directions within the two initiatives; they are also perceived differently by different stakeholders. Furthermore, the many stakeholders have different scopes, depending upon localisation in the decision-making process and the building and renovation supply chains. The stakeholders' different business models complicate SVC even further. Additionally, all parties are likely to feel responsible only for the little piece of the value chain that they can oversee [101,103,104].

Because of SVC's extreme diversity in impact categories, it is first of all necessary to map how existing interpretations of SVC can be relevant at different levels of complexity and different scales for different stakeholders. This is illustrated in Figure 12.

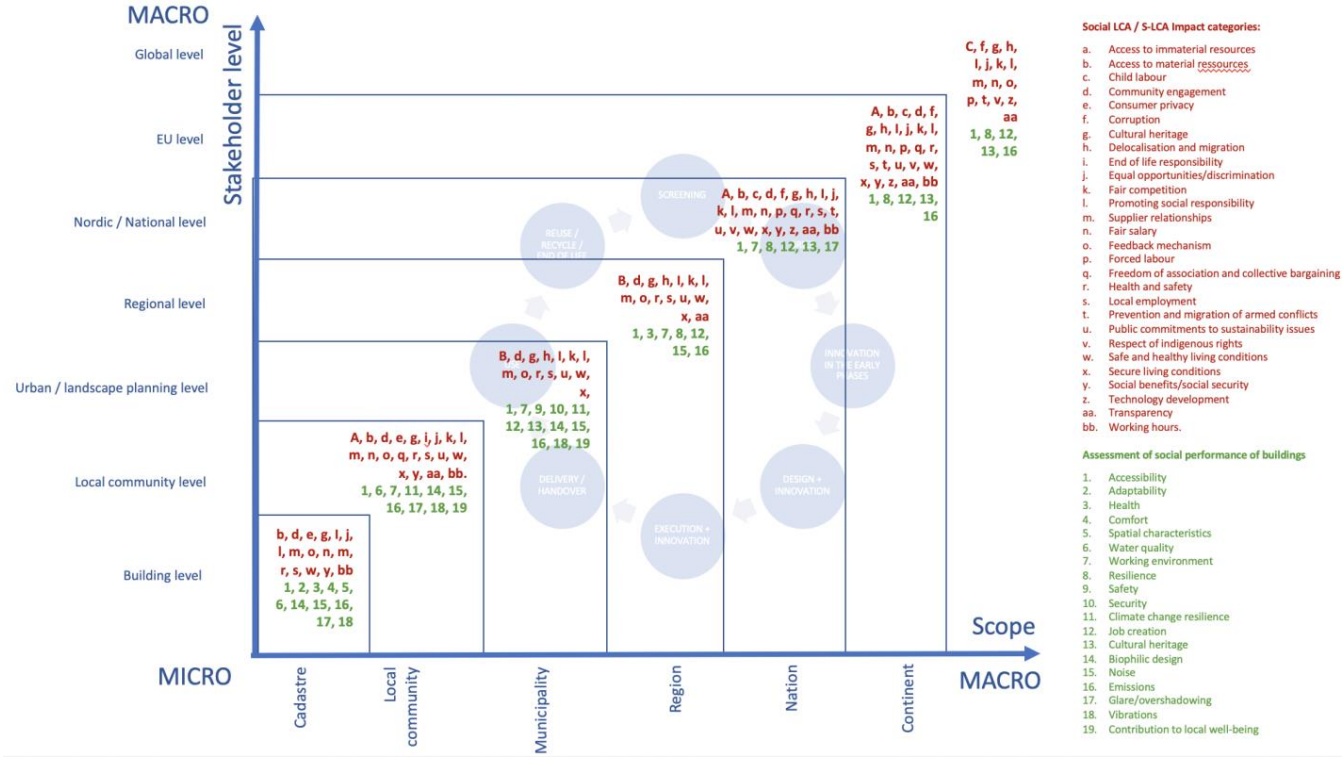

Figure 12. Stakeholders and their levels. The underlying phase model is adapted and modified from "What are the challenges in assessing the Circular Economy for the built environment?" [9].

Here, the proposed social impact categories are mapped in a two-axis graph about 'stakeholders' and 'scope' while considering a circular phase model for the construction and renovation of affordable housing [17,18,105,106]. Contexts and scales are illustrated with this, within which the architectural firms interact and collaborate with other stakeholders to foster SVC in construction. The purpose is to identify at what level decisions about SVC are taken and by whom. Decisions at the micro-level impact on stakeholders such as individuals and local communities; decisions at the meso-level impact on stakeholders such as municipalities and regions and decisions at the macro-level affect stakeholders such as society and the global community. Differences in what needs to be decided upon at different levels affect the policy-makers, citizens and value chains differently on top of

this. For example, decisions on child labour may be taken globally. In contrast, different stakeholders may make decisions about the working environment at a building site locally.

These innovative scientific points are connected to organising, valuing and prioritising social impact categories according to the level at which decisions need to be made and by whom, ranging from the individual to the global level.

4.2. Architectural Firms and SVC

SVC may be measurable in some cases, but most often it is not. This aspect may lead to contradictory and non-sustainable prioritisations in building processes. It is therefore necessary to develop ways of establishing SVC throughout the phases of the building project, in order to assess the effectiveness of public investment in it [78].

The architecture profession has the potential to handle the volatility of SVC and sustainability through design for circularity. At the same time, the architects need to change accordingly [41,105–107] to maintain and develop their domain in the value chain [40,41,106,107] when a design process is transforming from a linear to a circular way of thinking. Therefore, it is necessary to specify the social impact factors that it is essential to deal with in all phases of a construction or renovation project.

The respondents were asked about their knowledge and comprehension of SVC, the intention being to identify how architects work with SVC today. However, the respondents' words and concepts associated with SVC are almost as diverse as the respondents themselves, although they were provided with the possibility to categorise their perceptions (Figure 10). The difference corresponds to the different impact categories mentioned for EN 16309:2014 Sustainability of construction works—Assessment of social performance of buildings—Calculation methodology of construction works program and Social LCA (Section 4.1). Examples include "well-being", "experienced sustainability", "functionality", "inclusion" and "identity" (quotations from personal comments).

Figure 13 describes a possible application for how architects can work with social impact categories in a circular process model. Typical architect services are suggested, based on existing performance descriptions, etc., in the circular design process [17] for building and renovating affordable housing [17,105,106,108].

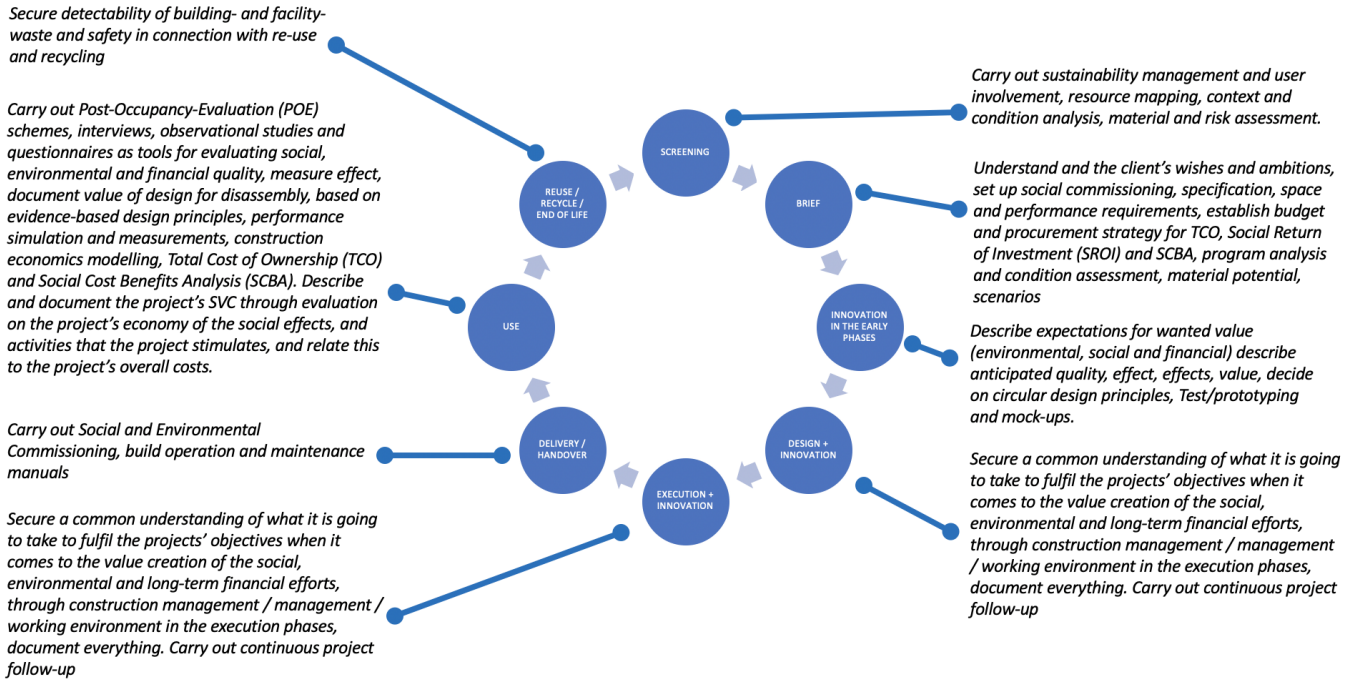

Figure 13. Examples described of services for the planning and designing of SVC in execution, operation and reusing/recycling. The underlying phase model is adapted and modified from "What are the challenges in assessing the Circular Economy for the built environment?" [9].

The circular phase model shows possible approaches per phase in building projects, corresponding to the cadastral and local community levels in Figure 12. Strategies and tools for the assessment of SVC can be identified as a result of this. Evaluating these from the perspective of scale and level can help the architects define what SVC they are designing for and whom it may benefit.

Both socioeconomic and environmental components are essential in assessing the effectiveness of public investments in affordable housing to broaden the current understanding of environmental, economic and social value creation. The aim must be to promote skills so that actors in the value chain in the affordable housing sector can both demand a CE and deliver a CE on demand.

Indicators, methodologies and tools for this are already widely available in the construction industry. However, it is necessary to work with these in a new, integrated and coherent way to support a CE. Institutional indicators are therefore connected with the day-by-day perceptions of architects in a framework shown in Table 2, and the relationship with existing tools is highlighted to help to assess SVC:

- European institutions recognise the sustainable development goals (SDGs) as tools for sustainable change [107,109]. Therefore, transverse indicators for SVC are pointed out in the first column, using the socially oriented SDGs to verbalise them.
- EN standards are internationally acknowledged tools. The impact categories discussed in the EN 16309:2014 task force are related to the SDGs in the second column.
- Quotations from the architects' answers from the survey are connected with the SDGs and the related impact categories in the third column to verify the coherence between institutional indicators and architects' perceptions.
- The S-LCA methodology can be considered the most coherent tool for handling social LCA for now, as described in the guidelines [100]. The S-LCA categories are related to the SDGs in the fourth column.
- Finally, already-known evaluation tools and methods are listed in the fifth column, including social cost–benefit analysis models [110,111] (SCBA) as tools to concretise and evaluate SVC. This is to identify where tools could be improved to support the partners' decision making in construction and renovation processes in the public sector on both the micro- and macro-scale. Indicators, such as the willingness to pay for SVC, can come into play and support a long-term circular economy and sustainable development with this.

As a result, a methodological framework is provided in Table 2 that can be developed further to support dynamic and iterative decision-making processes about goals for SVC in the affordable housing sector.

Table 2. A methodological framework for decision making in social value creation in affordable housing.

Indicators—SDGs as Common Denominators	Impact Categories, Standardisation Work	Impact Categories, Quotations from Respondents' Answers to the Surveys	Impact Categories, S-LCA	Tools, Micro-Scale	Tools, Macro-Scale
Comfort, indoor climate and micro-climate, SDG 3 ("Ensure healthy lives and promote well-being for all at all ages")	"Health" (3), "Comfort" (4), "Noise" (15), "Emissions" (16), "Glare/Overshadowing" (17), "Vibrations" (18)	"Well-being", "healing surroundings", "daylight", "indoor quality", "comfort", "health", "recreation"	"Health and safety", "Safe and healthy living conditions", "Feedback mechanism"	POE S-LCA LCA	POE S-LCA SCBA
Cultural heritage, place, layout, detailing, functionality, SDG 11 ("Make cities and human settlements inclusive, safe, resilient and sustainable"), SDG 17 ("Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development")	"Spatial characteristics" (5), "Cultural heritage" (13), "Contribution to local well-being" (19)	"Good outdoor areas", "meeting places", "experienced sustainability", "functionality", "usability", "aesthetics", "place", "cohesiveness", "cultural heritage", "beauty", "anchoring", "belonging", "support for the beautiful life", "experience", "presence" and "identity"		POE SCBA S-LCA	SCBA S-LCA
Durability, SDG 12 ("Ensure sustainable consumption and production patterns")	"Adaptability" (2)	"Long lifetime", "good quality"	"Supplier relationships", "Consumer privacy"	LCA LCC S-LCA	LCA LCC S-LCA
Human rights and no conflicts, SDG 16 ("Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels")		"Identity", "promote social agenda"	"Prevention and mitigation of armed conflicts", "Delocalization and migration", "Respect for intellectual property rights"	S-LCA SCBA	S-LCA SCBA
Inclusion, SDG 5 ("Achieve gender equality and empower all women and girls"), SDG 10 ("Reduce inequality within and among countries")		"Equality", "involvement", "ownership", "diversity"	"Equal opportunities/discrimination"	POE SCBA	SCBA
Innovation, SDG 4 ("Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"), SDG 9 ("Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation")	"Biophilic design" (14)	"Innovation"	"Access to immaterial resources", "Technology development"	S-LCA LCA	S-LCA LCA

Table 2. *Cont.*

Indicators—SDGs as Common Denominators	Impact Categories, Standardisation Work	Impact Categories, Quotations from Respondents' Answers to the Surveys	Impact Categories, S-LCA	Tools, Micro-Scale	Tools, Macro-Scale
Leave no one behind, SDG 4 ("Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"), SDG 8 ("Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all")	"Accessibility" (1), "Working environment" (7)	"Inclusion", "Universal design", "Communal houses", "Accessibility", "Ownership", "Co-ownership", "Interaction", "Diversity", "Belonging", "Transparency"	"Freedom of association and collective bargaining", "Child labour", "Fair salary", "Working hours", "Forced labour", "Contribution to economic development", "Equal opportunities/discrimination", "Social benefits/social security", "Transparency", "Promoting social responsibility"	S-LCA POE SCBA	S-LCA SCBA
Robust communities, SDG 13 ("Take urgent action to combat climate change and its impacts"), SDG 17 ("Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development")	"Resilience" (8), "Climate change resilience" (11)	"Robustness"	Community engagement, feedback mechanism	LCC LCA	LCC LCA
Safety and security, SDG 10 ("Reduce inequality within and among countries")	"Safety" (9), "Security" (10)	"Safety", "security"	Secure living conditions, social benefits/social security	POE S-LCA	POE S-LCA
Quality, SDG 6 ("Ensure availability and sustainable management of water and sanitation for all")	"Water quality" (6)		Feedback mechanism	LCA	LCA
Welfare, SDG 1 ("End poverty in all its forms everywhere")			Social benefits/social security	S-LCA	S-LCA

5. Conclusions

The affordable housing sector has the ambition to combine social housing and physical building initiatives in construction and renovation for rent that everyone can afford. The sector is being subsidised in this effort, thus becoming a lever in Danish economic policy. Many initiatives are already underway in the sector, facing significant efforts in the next ten years.

The sector's size and scope make it an obvious candidate as a lever for the sector's transition to a CE. However, public investments in affordable housing are used without the policymakers thoroughly assessing the efficiency and effectiveness of a CE, so there is a need to develop integrated approaches to life cycle sustainability assessments covering SVC.

SVC is an overlooked aspect of the construction value chain. There are a lack of tools and methods to concretise the social components of sustainability for use in the coherent assessment of SVC and the CE.

The architecture profession has an opportunity to manage and document SVC as a player in the construction value chain, but this presupposes that it does in fact take on this task. Therefore, two surveys were conducted among business and sustainability managers of Danish architectural firms to assess the needs and identify the challenges. This is the first time that an overall understanding of the connection between sustainability and social value creation in the building value chain has been attempted within a pool of 95% of all architectural firms in a country.

The surveys show that the Danish building industry still needs to improve its definitions of sustainability and general CE to accelerate progress with sustainable development. Furthermore, a lack of demands is creating uncertainties about services and competencies, as well as insecurity and scepticism in the architectural profession, despite the profession's inherent prerequisites for managing and documenting SVC. Therefore, the architectural profession in Denmark is hesitating to manage and document SVC for many reasons, for instance, a need for concretisation and a shared language regarding the social components of sustainability.

The survey results have been discussed and summarised to provide a methodological framework of indicators, impact categories and tools that can support the architectural profession in fostering SVC and CE for the Danish affordable housing sector in respect of construction and renovation projects (Table 2).

Based on this, a structured dialogue will have to be conducted with relevant parties in the affordable housing sector (housing associations and architects) to identify needs and expectations and examine how agile decision-making processes can utilize SVC to support CE. Good decisions to integrate physical and social building planning and the renovation of affordable housing depend on future conditions [112]. Requirements change over time, and good decisions require assessing what will be likely or preferred over different periods. Therefore, it will be necessary to develop the framework further with agile decision-making processes within which the complexity of the scope, scale and time can be handled to make proper decisions about the CE, taking Figures 12 and 13 into account. The analytic hierarchy process (AHP) and analytic network process (ANP) [113] will be included as tools to develop further a methodological framework for decision-making support in the affordable housing sector. In addition, recognised frameworks such as 'Infrastructure Pathways' [114] and 'Integrating the SDGs in Urban Project Design: —Recommendations from the Global Future Cities Programme' [115] will be analysed to describe a methodology for the affordable housing sector.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su15031849/s1, Survey 1: Business Leaders; Survey 2: Sustainability managers.

Author Contributions: Conceptualisation, V.G.L. and V.A.; methodology, V.G.L., P.A.S. and K.J.; software, K.J.; formal analysis, V.G.L. and V.A.; investigation, V.G.L. writing—original draft preparation,

V.G.L.; writing—review and editing, V.A. and N.T.; supervision, N.T., P.A.S., M.B., T.H. and G.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Danish Association of Architectural Firms, Innovation Fund Denmark and Realdania Denmark, Research Grant Number 153-00169B, date 1 July 2020.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Acknowledgments: The authors thank the Circular Built Environment Research Team BLOXHUB for providing valuable input and discussions.

Conflicts of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

1. Boulding, K. The Economics of the Coming Spaceship Earth. In *The Earthscan Reader in Environmental Economics*; Routledge: Oxfordshire, UK, 2017.
2. Meadows, D.H.; Meadows, D.L.; Randers, J.; Behrens, W.W., III. *The Limits to Growth*; Universe Books: New York, NY, USA, 1972.
3. Kirchherr, J.; Piscicelli, L.; Bour, R.; Kostense-Smit, E.; Muller, J.; Huibrechtse-Truijens, A.; Hekkert, M. Barriers to the Circular Economy: Evidence From the European Union (EU). *Ecol. Econ.* **2018**, *150*, 264–272. [CrossRef]
4. Kirchherr, J.; Reike, D.; Hekkert, M. Conceptualizing the circular economy: An analysis of 114 definitions. *Resour. Conserv. Recycl.* **2017**, *127*, 221–232. [CrossRef]
5. Bauwens, T.; Hekkert, M.; Kirchherr, J. Circular futures: What Will They Look Like? *Ecol. Econ.* **2020**, *175*, 106703. [CrossRef]
6. UNEP. *Global Status Report for Buildings and Construction—Towards a Zero-Emmissions, Effecient and Resilient Buildings and Construction Sector*; UNEP: Nairobi, Kenya, 2022.
7. Regeringen [Government]. National Strategi for Bæredygtigt Byggeri [National Strategy for Sustainable Construction. 2021. Available online: https://www.trm.dk/media/ldsnyjpd/udspil-strategi-for-baeredygtigt-byggeri-final-a.pdf (accessed on 17 December 2022).
8. Danish-Housing-and-Planning-Authority. *Guide to the Voluntary Sustainability Class*; Danish-Housing-and-Planning-Authority: Copenhagen, Denmark, 2020.
9. Danish-Housing-and-Planning-Authority. *Danish Building Regulations (BR2018)*; Danish-Housing-and-Planning-Authority: Copenhagen, Denmark, 2019.
10. Ministry of Environment. *Actionplan for Circular Economy*; Ministry of Environment: Copenhagen, Denmark, 2020.
11. Jensen, K.G.; Sommer, J. *Building a Circular Future*; GXN Innovation: Copenhagen, Denmark, 2016.
12. McDonough, W.; Braungart, M. *Cradle to Cradle: Remaking the Way We Make Things*; North Point Press: New York, NY, USA, 2010.
13. Guerra, B.C.; Shahi, S.; Mollaei, A.; Skaf, N.; Weber, O.; Leite, F.; Haas, C. Circular economy applications in the construction industry: A global scan of trends and opportunities. *J. Clean. Prod.* **2021**, *324*, 129125. [CrossRef]
14. Bertino, G.; Kisser, J.; Zeilinger, J.; Langergraber, G.; Fischer, T.; Österreicher, D. Fundamentals of Building Deconstruction as a Circular Economy Strategy for the Reuse of Construction Materials. *Appl. Sci.* **2021**, *11*, 939. [CrossRef]
15. Blomsma, F.; Brennan, G. The Emergence of Circular Economy: A New Framing Around Prolonging Resource Productivity. *J. Ind. Ecol.* **2017**, *21*, 603–614. [CrossRef]
16. Kamari, A.; Corrao, R.; Kirkegaard, P.H. Sustainability focused decision-making in building renovation. *Int. J. Sustain. Built Environ.* **2017**, *6*, 330–350. [CrossRef]
17. Larsen, V.G.; Tollin, N.; Sattrup, P.A.; Birkved, M.; Holmboe, T. What are the challenges in assessing circular economy for the built environment? A literature review on integrating LCA, LCC and S-LCA in life cycle sustainability assessment, LCSA. *J. Build. Eng.* **2022**, *50*, 104203. [CrossRef]
18. Larsen, V.G.; Tollin, N.; Antoniucci, V.; Birkved, M.; Sattrup, P.A.; Holmboe, T.; Marella, G. Filling the gaps Circular transition of affordable housing. *IOP Conf. Ser. Earth Environ. Sci.* **2022**, *1078*, 012078. [CrossRef]
19. Andersen, H.S.; Fridberg, T. *Den Almene Boligsektors Rolle i Samfundet. Hvad ved vi fra Hidtidig Forskning og Undersøgelser? [The Role of the Public Housing Sector in Society. What Do We Know from Previous Research and Studies?]*; SBI: Melbourne, Australia, 2006.
20. Bech-Danielsen, C.; Jensen, J.O.; Kirkeby, I.M.; Ginnerup, S.; Clementsen, A.; Hansen, M.Ø. *Renovering af Efterkrigstidens Almene Bebyggelser [Renovation of Post-War Affordable Housing]*; SBI: Melbourne, Australia, 2011; Volume 2011, p. 22.
21. Bech-Danielsen, C.; Kirkeby, I.M.; Ginnerup, S. *Renovering af Efterkrigstidens Almene Bebyggelser [Renovation of Post-War Affordable Housing]*; SBI: Melbourne, Australia, 2014; Volume 2014, p. 12.
22. Bech-Danielsen, C.; Mechlenborg, M. *Renovering af Almene Boligområder [Renovation of Affordable Housing]*; SBI: Melbourne, Australia, 2017; Volume 2017, p. 11.
23. Bech-Danielsen, C.; Stender, M. *Renovering af Almene Boligområder 2017–2019 [Renovation of Affordable Housing 2017–2019]*; Polyteknisk Boghandel og Forlag: Lyngby, Denmark, 2021.

24. Bjørn, N. *Arkitektur, der Forandrer–Fra Ghetto til Velfungerende Byområde [Architecture That Moves—From Ghetto to Well-Functioning Urban Areas]*; Gads Forlag: Copenhagen, Denmark, 2008.
25. Government, R.T.D. *Et Danmark uden Parallelsamfund [A Denmark without Parallel Societies] (Law)*; Government, R.T.D: Copenhagen, Denmark, 2018.
26. BL—Danmarks Almene Boliger [BL—Affordable Hosuing in Denmark]. De 16 "Hårdeste Ghetooområder"—Dokumentation af de Konkrete Virkninger af Parallelsamfundspakken [The 16 "Toughest Ghetto Areas"—Documentation of the Concrete Effects of the Parallel Society Package]. 2018. Available online: https://bl.dk/nyheder/2018/11/analyse-de-16-haardeste-ghettoomraader/ (accessed on 17 December 2022).
27. Kjeldsen, L.; Stender, M. Bringing social sustainability into the mix: Framing planning dilemmas in mixed-tenure regeneration. *Build. Res. Inf.* **2022**, *50*, 709–721. [CrossRef]
28. Indenrigs-og-Boligminsteriet [Ministry of Internal Affairs and Housing]. *Lov om Almene Boliger [Law of Affordable Horusing]*; Ministry of Internal Affairs and Housing: Copenhagen, Denmark, 2021.
29. Engberg, L.A. *Social Housing in Denmark*; Department of Social Sciences, Roskilde University: Roskilde, Denmark, 2009.
30. Bech-Danielsen, C.; Stender, M.; Davidsson, S.S. BOUNDARIES | ENCOUNTERS | CONNECTIONS: Papers Presented at the Housing & Welfare Conference, Copenhagen, 7–9 May 2015. Available online: https://vbn.aau.dk/en/publications/boundariesencountersconnections-papers-presented-at-the-housing-a (accessed on 17 December 2022).
31. The National Building Fund. Available online: https://lbf.dk/om-lbf/english-read-more-about-us (accessed on 21 June 2022).
32. Räikkönen, M.; Kunttu, S.; Uusitalo, T.; Takala, J.; Shakeel, S.R.; Tilabi, S.; Forss, T.; Koivunen, J. A Framework for Assessing the Social and Economic Impact of Sustainable Investments. *Manag. Prod. Eng. Rev.* **2016**, *7*, 79–86. [CrossRef]
33. Benoît, C.; Norris, G.A.; Valdivia, S.; Ciroth, A.; Moberg, A.; Bos, U.; Prakash, S.; Ugaya, C.; Beck, T. The guidelines for social life cycle assessment of products: Just in time! *Int. J. Life Cycle Assess.* **2010**, *15*, 156–163. [CrossRef]
34. Benoit-Norris, C.; Cavan, D.A.; Norris, G. Identifying Social Impacts in Product Supply Chains:Overview and Application of the Social Hotspot Database. *Sustainability* **2012**, *4*, 1946–1965. [CrossRef]
35. Norris, C.; Norris, G.; Aulisio, D. Efficient Assessment of Social Hotspots in the Supply Chains of 100 Product Categories Using the Social Hotspots Database. *Sustainability* **2014**, *6*, 6973–6984. [CrossRef]
36. Liu, S.; Qian, S. Evaluation of social life-cycle performance of buildings: Theoretical framework and impact assessment approach. *J. Clean. Prod.* **2018**, *213*, 792–807. [CrossRef]
37. Van Haaster, B.; Ciroth, A.; Fontes, J.; Wood, R.; Ramirez, A. Development of a methodological framework for social life-cycle assessment of novel technologies. *Int. J. Life Cycle Assess.* **2016**, *22*, 423–440. [CrossRef]
38. Jorgensen, A.; Le Bocq, A.; Nazarkina, L.; Hauschild, M. Methodologies for social life cycle assessment. *Int. J. Life Cycle Assess.* **2008**, *13*, 96–103. [CrossRef]
39. Jensen, J.O.; Jørgensen, M.S.; Elle, M.; Lauridsen, E.H. Has social sustainability left the building? The recent conceptualization of "sustainability" in Danish buildings. *Sustain. Sci. Pract. Policy* **2017**, *8*, 94–105. [CrossRef]
40. Sattrup, P.A. Documenting Value Creation: A Business Opportunity for Architects, Their Clients and Society. *Arch. Des.* **2020**, *90*, 22–29. [CrossRef]
41. Danish-Association-of-Architectural-Firms. *Architect—Document Your Value Creation*; Danish-Association-of-Architectural-Firms: Copenhagen, Denmark, 2019.
42. Samuel, F. *Social Value Toolkit for Architecture*; RIBA: London, UK, 2020.
43. Samuel, F.; Hatleskog, E. Why Social Value? *Archit. Des.* **2020**, *90*, 6–13. [CrossRef]
44. Serin, B.; Kenny, T.; White, J.; Samuel, F. Design value at the neighbourhood scale. What does it mean and how do we measure it? *Tech. Rep.* 2018. Available online: https://housingevidence.ac.uk/wp-content/uploads/2018/11/R2018_04_01_Design-Value.pdf (accessed on 17 December 2022).
45. Antoniucci, V.; Marella, G. Is social polarization related to urban density? Evidence from the Italian housing market. *Landsc. Urban Plan.* **2018**, *177*, 340–349. [CrossRef]
46. Fleischmann, M.; Romice, O.; Porta, S. Measuring urban form: Overcoming terminological inconsistencies for a quantitative and comprehensive morphologic analysis of cities. *Environ. Plan. B Urban Anal. City Sci.* **2020**, *48*, 2133–2150. [CrossRef]
47. D'Acci, L. Monetary, Subjective and Quantitative Approaches to Assess Urban Quality of Life and Pleasantness in Cities (Hedonic Price, Willingness-to-Pay, Positional Value, Life Satisfaction, Isobenefit Lines). *Soc. Indic. Res.* **2013**, *115*, 531–559. [CrossRef]
48. Antoniucci, V.; Marella, G.; Raga, R.; Suzuki, S. Relevance of Cultural Features in Contingent Valuation: A Literature Review of Environmental Goods Assessments. In *Smart and Sustainable Planning for Cities and Regions*; Springer: Cham, Switzerland, 2021; pp. 277–292.
49. Lazrak, F.; Nijkamp, P.; Rietveld, P.; Rouwendal, J. The market value of cultural heritage in urban areas: An application of spatial hedonic pricing. *J. Geogr. Syst.* **2013**, *16*, 89–114. [CrossRef]
50. Lazrak, F.; Nijkamp, P.; Rietveld, P.; Rouwendal, J. *Cultural Heritage: Hedonic Prices for Non-Market Values*; Department of Spatial Economics, VU University Amsterdam: Amsterdam, The Netherlands, 2009.
51. Ruijgrok, E.C.M. The three economic values of cultural heritage: A case study in the Netherlands. *J. Cult. Herit.* **2006**, *7*, 206–213. [CrossRef]
52. Realdania. Værdien af Bygningsarv (The Value of Building Heritage). 2015. Available online: https://realdania.dk/publikationer/faglige-publikationer/v\T1\aerdien-af-bygningsarv (accessed on 17 December 2022).

53. Canesi, R. Urban Policy Sustainability through a Value-Added Densification Tool: The Case of the South Boston Area. *Sustainability* **2022**, *14*, 8762. [CrossRef]
54. Geels, F.W. Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study. *Res. Policy* **2002**, *31*, 1257–1274. [CrossRef]
55. Buchanan, R. *Wicked Problems in Design Thinking*; The MIT Press: Cambridge, MA, USA, 1992.
56. Cross, N. Designerly Ways of Knowing: Design Discipline Versus Design Science. *Des. Issues* **2001**, *17*, 49–55. [CrossRef]
57. Rittel, H.W.J.; Webber, M.M. Dilemmas in a general theory of planning. *Policy Sci.* **1973**, *4*, 155–169. [CrossRef]
58. Cuff, D. *Architecture—The Story of Practice*; The MIT Press: Cambridge, MA, USA, 1992.
59. Geels, F.W.; McMeekin, A.; Mylan, J.; Southerton, D. A critical appraisal of Sustainable Consumption and Production research: The reformist, revolutionary and reconfiguration positions. *Glob. Environ. Change* **2015**, *34*, 1–12. [CrossRef]
60. Schot, J.; Geels, F.W. Strategic niche management and sustainable innovation journeys: Theory, findings, research agenda, and policy. *Technol. Anal. Strateg. Manag.* **2008**, *20*, 537–554. [CrossRef]
61. Samuel, F. *Why Architects Matter: Evidencing and Communicating the Value of Architects*; Routledge: Oxfordshire, UK, 2018.
62. Dokter, G.; Thuvander, L.; Rahe, U. How circular is current design practice? Investigating perspectives across industrial design and architecture in the transition towards a circular economy. *Sustain. Prod. Consum.* **2021**, *26*, 692–708. [CrossRef]
63. Kongebro, S. *Design with Knowledge—New Research in Sustainable Building*; Henning Larsen Architects: Copenhagen, Denmark, 2012.
64. Bjørner, T. *Qualitative Methods for Consumer Research—The Value of the Qualitative Approach in Theory and Practice*; Hans Reitzels Forlag: Copenhagen, Denmark, 2015.
65. Brinkmann, S.; Tanggaard, L. *Qualitative Methods*, 3rd ed.; Hans Reitzels Forlag: Copenhagen, Denmark, 2020.
66. Larsen, V.G.; Sattrup, P.A.; Jens, K.; Brøgger, K. Monkey Survey 1 and 2 Questions. Available online: https://www.danskeark.dk/content/survey-sustainability-architectural-firms (accessed on 17 December 2022).
67. Mellahi, K.; Harris, L.C. Response Rates in Business and Management Research: An Overview of Current Practice and Suggestions for Future Direction. *Br. J. Manag.* **2016**, *27*, 426–437. [CrossRef]
68. Li, P.; Froese, T.M.; Brager, G. Post-occupancy evaluation: State-of-the-art analysis and state-of-the-practice review. *Build. Environ.* **2018**, *133*, 187–202. [CrossRef]
69. DGNB. DGNB Brochure Navigator EN. Available online: https://www.dgnb-navigator.de/fileadmin/user_upload/DGNB_Brochure_Member_EN.pdf (accessed on 17 December 2022).
70. Jofre, S. *The Challenge of A Greener European Construction Sector: Views on Technology-Driven (Eco)Innovation*; DTU Management: Hovedstaden, Denmark, 2011.
71. Iqbal, M.; Ma, J.; Ahmad, N.; Hussain, K.; Usmani, M.S.; Ahmad, M. Sustainable construction through energy management practices in developing economies: An analysis of barriers in the construction sector. *Environ. Sci. Pollut. Res. Int.* **2021**, *28*, 34793–34823. [CrossRef]
72. Akhimien, N.G.; Latif, E.; Hou, S.S. Application of circular economy principles in buildings: A systematic review. *J. Build. Eng.* **2020**, *38*, 102041. [CrossRef]
73. Ottosen, L.M.; Jensen, L.B.; Astrup, T.; McAloone, T.C.; Ryberg, M.; Thuesen, C.; Christiansen, S.; Pedersen, A.J.; Odgaard, M.H. Implementation Stage for Circular Economy in the Danish Building and Construction Sector. *Detritus* **2021**, *16*, 26–30. [CrossRef]
74. Hauschild, M.Z.; Kara, S.; Røpke, I. Absolute sustainability: Challenges to life cycle engineering. *CIRP Ann.* **2020**, *69*, 533–553. [CrossRef]
75. Goel, A. Sustainability in construction and built environment: A "wicked problem"? *Smart Sustain. Built Environ.* **2019**, *8*, 2–15. [CrossRef]
76. IPCC. *Climate Change 2022: Impacts, Adaptation and Vulnerability*; Summary for Policymakers; IPCC: Geneva, Switzerland, 2022.
77. Raworth, K. *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*; Cornerstone Digital: Sydney, Australia, 2017.
78. Lowe, B.H.; Genovese, A. What theories of value (could) underpin our circular futures? *Ecol. Econ.* **2022**, *195*, 107382. [CrossRef]
79. Bauwens, T. Are the circular economy and economic growth compatible? A case for post-growth circularity. *Resour. Conserv. Recycl.* **2021**, *175*, 105852. [CrossRef]
80. Ellen-MacArthur-Foundation. *Towards the Circular Economy—Accelerating the Scale-Up Accross Global Supply Chains*; Ellen MacArthur Foundation: Cowes, UK, 2014; p. 3.
81. Ellen-MacArthur-Foundation. *Towards the Circular Economy—Economic and Business Rationale for an Accelerated Transition*; Ellen MacArthur Foundation: Cowes, UK, 2013; pp. 21–34.
82. Ellen-MacArthur-Foundation. *Towards the Circular Economy—Opportunities for the Consumer Good Sector*; Ellen MacArthur Foundation: Cowes, UK, 2013; p. 2.
83. Stender, M.; Walter, A. The role of social sustainability in building assessment. *Build. Res. Inf.* **2018**, *47*, 598–610. [CrossRef]
84. Valdivia, S.; Ugaya, C.M.L.; Hildenbrand, J.; Traverso, M.; Mazijn, B.; Sonnemann, G. A UNEP/SETAC approach towards a life cycle sustainability assessment—our contribution to Rio+20. *Int. J. Life Cycle Assess.* **2012**, *18*, 1673–1685. [CrossRef]
85. Andersen, S.C.; Birgisdottir, H.; Birkved, M. Life Cycle Assessments of Circular Economy in the Built Environment—A Scoping Review. *Sustainability* **2022**, *14*, 6887. [CrossRef]
86. Gebler, M.; Juraschek, M.; Thiede, S.; Cerdas, F.; Herrmann, C. Defining the "Positive Impact" of socio-technical systems for absolute sustainability: A literature review based on the identification of system design principles and management functions. *Sustain. Sci.* **2022**, *17*, 2597–2613. [CrossRef]

87. Bolig-og-Planstyrelsen [Danish-Housing-and-Planning-Authority]. *Introduktion til LCA på Bygninger [Introduction to LCA for Buildings]*; Danish-Housing-and-Planning-Authority: Copenhagen, Denmark, 2016.
88. Bolig-og-Planstyrelsen [Danish-Housing-and-Planning-Authority]. *Introduktion til LCC på Bygninger [Introduction to LCC for Buildings]*; Danish-Housing-and-Planning-Authority: Copenhagen, Denmark, 2016.
89. BUILD. Vejledning om den Frivillige Baeredygtighedsklasse, Maj 2020 [Guide on the Voluntary Sustainability Building Class May, 2020]. Available online: https://b\T1\aeredygtighedsklasse.dk (accessed on 17 December 2022).
90. Onat, N.C.; Kucukvar, M.; Tatari, O. Integrating triple bottom line input–output analysis into life cycle sustainability assessment framework: The case for US buildings. *Int. J. Life Cycle Assess.* **2013**, *19*, 1488–1505. [CrossRef]
91. Onat, N.; Kucukvar, M.; Halog, A.; Cloutier, S. Systems Thinking for Life Cycle Sustainability Assessment: A Review of Recent Developments, Applications, and Future Perspectives. *Sustainability* **2017**, *9*, 706. [CrossRef]
92. Janjua, S.Y.; Sarker, P.K.; Biswas, W.K. Development of triple bottom line indicators for life cycle sustainability assessment of residential bulidings. *J. Environ. Manag.* **2020**, *264*, 110476. [CrossRef]
93. Janjua, S.Y.; Biswas, W.K.; Sarker, P.K. A Review of Residential Buildings' Sustainability Performance Using a Life Cycle Assessment Approach. *J. Sustain. Res.* **2019**, *1*, e190006. [CrossRef]
94. Janjua, S.Y.; Biswas, W.K.; Sarker, P.K. Sustainability Assessment of a Residentual Building using a Life Cycle assessment Approach. *Ital. Assoc. Chem. Eng.* **2019**, *72*, 19–24. [CrossRef]
95. Blundo, D.S.; Ferrari, A.M.; Fernandez del Hoyo, A.; Riccardi, M.P.; Muina, F.E.G. Improving sustainable cultural heritage restoration work through life cycle assessment based model. *J. Cult. Herit.* **2018**, *32*, 221–231. [CrossRef]
96. Toosi, H.A.; Lavagna, M. Optimization and LCSA-Based design method for energy retrofitting of existing buildings. In Proceedings of the LeNS World Distributed Conference, Politecnico di Milano, Milan, Italy, 3–5 April 2019.
97. Ostermeyer, Y.; Wallbaum, H.; Reuter, F. Multidimensional Pareto optimization as an approach for site-specific building refurbishment solutions applicable for life cycle sustainability assessment. *Int. J. Life Cycle Assess.* **2012**, *18*, 1762–1779. [CrossRef]
98. Liu, S.; Qian, S. Towards sustainability-oriented decision making: Model development and its validation via a comparative case study on building construction methods. *Sustain. Dev.* **2018**, *27*, 860–872. [CrossRef]
99. *EN 16309+A1*; Sustainability of Construction Works—Assessment of Social Performance of Buildings—Calculation Methodology. European Committe for Standardisation: Brussels, Belgium, 2014.
100. UNEP-SETAC. *Guidelines for Social Life Cycle Assessment of Products*; UNEP-SETAC: Cincinnati, OH, USA, 2009.
101. UNEP-SETAC. *The Methodological Sheets for Subcategories in Social Life Cycle Assessment (S-LCA)*; UNEP-SETAC: Cincinnati, OH, USA, 2013.
102. Benoît-Norris, C.; Vickery-Niederman, G.; Valdivia, S.; Franze, J.; Traverso, M.; Ciroth, A.; Mazijn, B. Introducing the UNEP/SETAC methodological sheets for subcategories of social LCA. *Int. J. Life Cycle Assess.* **2011**, *16*, 682–690. [CrossRef]
103. Montalbán-Domingo, L.; García-Segura, T.; Sanz, M.A.; Pellicer, E. Social sustainability in delivery and procurement of public construction contracts. *J. Manag. Eng.* **2019**, *35*, 04018065. [CrossRef]
104. Geissdoerfer, M.; Savaget, P.; Bocken, N.M.P.; Hultink, E.J. The Circular Economy – A new sustainability paradigm? *J. Clean. Prod.* **2017**, *143*, 757–768. [CrossRef]
105. RIBA. *Plan of Work*; RIBA: London, UK, 2020.
106. Danish-Association-of-Architectural-Firms. *Cirkulære Udbud [Circular Procurement]*; Danish-Association-of-Architectural-Firms: Copenhagen, Denmark, 2021.
107. Danish-Association-of-Architectural-Firms. *The 17 Global Goals—How to Get Going!* Danish-Association-of-Architectural-Firms: Copenhagen, Denmark, 2021.
108. Danish-Association-of-Architectural-Firms/The-Association-of-Consulting-Engineers. *Description of Services for BUILDING AND LANDSCAPE—YBL 2018 English*; Danish Association of Architectural Firms/The Association of Consulting Engineers: Copenhagen, Denmark, 2018.
109. UN. The 17 Goals. Available online: https://sdgs.un.org/goals (accessed on 10 January 2023).
110. Nas, T.F. *Cost-Benefit Analysis—Theory and Application*, 2nd ed.; SAGE Publications: Thousand Oaks, CA, USA, 2016.
111. European-Commission. *Guide to Cost-Benefit Analysis of Investment Projects*; European-Commission: Brussels, Belgium, 2014. [CrossRef]
112. Weigend Rodríguez, R.; Pomponi, F.; Webster, K.; D'Amico, B. The future of the circular economy and the circular economy of the future. *Built Environ. Proj. Asset Manag.* **2020**, *10*, 529–546. [CrossRef]
113. Saaty, T.L. Time dependent decision-making; dynamic priorities in the AHP/ANP: Generalizing from points to functions and from real to complex variables. *Math. Comput. Model.* **2007**, *46*, 860–891. [CrossRef]
114. The Resilience Shift. Infrastructure Pathways. Available online: https://www.resilienceshift.org/securing-our-future-through-resilient-infrastructure/ (accessed on 11 August 2022).
115. UN HABITAT. *Integrating the SDGs in Urban Project Design*; Recommendations from the Global Future Cities Programme; UN HABITAT: Nairobi, Kenya, 2022.