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Strategies for Realization of Socially Sustainable Residential Buildings: Experts' Perspectives

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Abstract: Over the recent decades, the concept of social sustainability (SS) has been increasingly recognized as a key component of sustainable development incorporated in sustainable communities' agendas. However, SS measures and practices have been insufficiently applied and underrepresented with regard to residential buildings. The aim of this paper is to employ experts' perspectives to identify interdisciplinary, multilevel strategies/drivers for the integration of SS measures and practices into governmental and operational activities in relation to residential buildings. The selected strategies emerged from a detailed literature review and a two-round Delphi survey collecting responses from an expert panel, which were carried out in order to determine the relevancy of the proposed strategies. Of the 38 preselected strategies, 32 were deemed significant. In addition to a number of relevant strategies, the panelists especially recommended disseminating new concepts of growth that would contribute to breaking the link between materialism and social progress and to the adoption of new ways of life characterized by a more harmonious and healthy coexistence of people and the environment. They also suggested a gradual introduction of SS principles into value systems and their implementation in all aspects of personal and social life as an essential precondition for achieving the goals of sustainable development on a large scale. These results lay the groundwork for the incorporation and development of SS strategies by policy makers, developers, and planners and provide a starting point that will allow other researchers to identify the most relevant strategies in different contexts, i.e., countries and regions with their specific characteristics, which will further create the conditions for the more efficient implementation of SS measures and practices and contribute to the fulfilment of Sustainable Development Goals (SDGs).

Keywords: Delphi method; expert panel; residential buildings; SDGs; social sustainability; strategies; sustainable construction

1. Introduction

The origins of social sustainability lie in the concept of social ecology, which was introduced in the latter half of the 20th century following the human ecology foundations defined by Robert Park, a prominent representative of the Chicago School of Sociology, in 1936 [1]. Social ecology emerged as a reaction to the socially unbalanced development occurring as a consequence of the industrial era, which was followed by sudden and extensive urban growth [2]. Additionally, since the introduction of sustainable development as a central global concept (i.e., in the Brundtland Report, 1987), the social aspect was distinguished as a relevant, integral part of the sustainability triad. Over the succeeding decades, social integration was identified as one of the socio-political priorities that was perceived as a governmental, academic, and third-sector organizational pathway for reinforcing common identities, supporting cooperation, and lessening the likelihood of violence

and conflict [3]. However, the employed methods and interventions have commonly been limited to policy-making and dialogue practices, without further practical implementations.

Despite the fact that the concept of sustainable development encompasses three main aspects (pillars), namely, environmental, economic, and social aspects, the first two dimensions have been dominant, that is, theoretically and empirically prioritized by scholars and practitioners since establishing the sustainable development concept in the 1980s. Therefore, the concept of social sustainability remained underrepresented and insufficiently explored. Furthermore, the discourse regarding social sustainability is still ambiguous, thereby raising the question of whether social sustainability implies securing the social preconditions of sustainable development or the need to sustain certain aspects of communities and societies (e.g., specific structures and customs) [4]. Additionally, the three sustainability pillars are intertwined and inseparable, giving rise to the necessity of conducting a more comprehensive and integrative research approach. This tendency was recognized in the UN 2030 Agenda's Sustainable Development Goals (SDGs), wherein environmental, economic, and social aspects represent equally important sustainable development directions/targets [5].

The social discourse of sustainability ('social sustainability') currently represents the least developed and conceptualized concept within the sustainability triad (in comparison to the other two pillars) [6–9]. It received recognition in the late 1990s and has been constantly evolving ever since towards a more comprehensive and integrative approach. Two critical groups can be distinguished in the debate on social sustainability: the first group underlines the close bonds and interlinks of the three components of sustainable development, thus stressing the necessity of adopting an integrative research approach in order to achieve the SDGs, while the second (revisionist) group asserts the need for a more comprehensive approach (i.e., a theoretical and practical framework) to sustainable development, encompassing four or more sustainability pillars [7]. Despite the differences in the approaches, both groups recognize the social sustainability aspect as a fundamental and integral component of sustainable development [7]. However, this concept is still under-theorized or oversimplified, hinging on individual authors' and policy makers' discipline-specific criteria or study perspectives and referring to partially integrative approaches [10]. In this regard, the research, design, and building-related methodologies of social sustainability are still underdeveloped and require the development of a more thorough and interdisciplinary approach. Considering that residential buildings represent a major share of the of buildings worldwide, e.g., 75% in Europe, of which 36% corresponds to multi-apartment buildings [11], and as they number among the main carriers of social sustainability and sustainability in general, the aim of this paper is to address this knowledge gap by proposing a theoretical framework for social sustainability strategies in relation to residential buildings, which is divided into several key categories:

(1) Financial/economic strategies;
(2) Governmental/political/regulatory strategies;
(3) Professional/technical strategies;
(4) Market strategies;
(5) Cultural strategies.

The social sustainability strategies developed herein are responses through which to overcome or means of overcoming the same categories of barriers defined during the first phase of the study [12]. Furthermore, this previous research has shown that countries lack clear and adequate implementation mechanisms and instruments in terms of all five categories of the above social sustainability barriers/strategies. Additionally, social sustainability should be understood as a framework rather than a definition, which must be clarified and developed to be used as a tool to communicate, make decisions, and measure development [13]. The strategies presented in this paper are process-oriented, with the aim of fostering the integration of social sustainability aspects into theoretical and empirical developmental processes focused on sustainable construction in reference to residential buildings.

2. Literature Review

The scope of the literature on social sustainability has been limited, which has precipitated the formation of partial and scarce interpretations referring to specific, key topics. The first 'hard' definitions relied on basic values: equity, democracy, and human rights, particularly political, civil, economic, social, and cultural rights [4,10]. In addition, the Brundtland report (1987) identified the social aspects of ''needs'' and ''rights'' (e.g., the need for/right to adequate food, sound housing, safe water, and access to the means of choosing the size of a family) [6]. Gradually, the social sustainability concept is developing toward more intangible, qualitative, process-related, long-term sustainable development categories, i.e., nature–society relationships, cohabitation, identity, networks, and social integration. Ultimately, the crucial 'soft' objective of social science becomes understanding the conditions for and methods of contributing to human happiness in all its complexity [10].

Over the past few decades, the methodology for sustainability assessment has been transformed from the predominantly environmentally oriented, technical, and quantitative concerns that were prevalent at the end of the 20th century, wherein two thirds of sustainability indicators were environmentally driven [14], to hybrid and complex concerns, consisting of both quantitative and qualitative systems of indicators covering all three sustainability pillars. Furthermore, in reference to the environmental sustainability aspect, three main social sustainability approaches can be distinguished: (1) the social sustainability approach, which is equivalent to that of environmental sustainability; (2) the environmentally driven approach (i.e., concerning social preconditions in relation to achieving environmental sustainability); and (3) the people-oriented approach, which is oriented toward enhancing people's well-being [15]. The last approach, which is both human-centric and happiness-oriented, represents the current social sustainability paradigm, whose objective is the synergy and integration of all three sustainability parameters (environmental, economic, and social). Moreover, social sustainability implies diverse aspects measurable by qualitative, commonly personal/individual parameters, e.g., social interaction and activities, social participation, security and safety, social equity, a sense of place, and neighborhood satisfaction [16–18]. Additionally, the sustainability assessment methodology refers to a strategic, comprehensive, three-pillar model encompassing Environment Impact Assessment (EIA) and Social Impact Assessment (SIA). In this regard, the research is carried out within the strategic three-pillar sustainability developmental framework, which focuses on the prevalent social sustainability categories. In contrast to older, technically weighted sets of criteria based on fundamental needs, the standpoint represented in this paper concerns the interdisciplinary processes employed in sustainable design and construction, e.g., governance, regulations, finances, education, technology, and representation.

The social sustainability debate inevitably relates to issues of the physical (built) environment (e.g., urban planning and design, housing, and public spaces). More specifically, one relevant social sustainability concern is the question of the cohabitation of individuals, communities, and societies in relation to the physical boundaries of their locations and planet Earth itself 10]. Housing (dwelling) is a relevant part of the economic, social, and political development of every modern, socially oriented country that is responsible for its residents' quality of life, and it must be accompanied by the adequate implementation of social sustainability strategies, especially within the residential domain [19]. Some countries have enacted new laws on dwelling, encompassing innovative forms of housing such as co-housing (e.g., the 'habitat participative' scheme introduced in France in 2015) [20]. Furthermore, professional organizations and associations dealing with residential topics (e.g., the European Network for Housing Research [21], the European Federation for Living [22], the Housing Studies Association [23], the Urban Affairs Association [24], the European Housing Forum [25], etc.) significantly contribute to the improvement of social sustainability strategies and to the degree to which they are implemented, and this is also true of many non-profit organizations [26,27]. The growing number of debates about social sustainability topics (e.g., residence, renewal, and community empowerment with multi-stakeholder participation) play a vital role in decreasing the current gap between

institutions and communities [28]. The needs of residents and local communities must be met first. Therefore, residential (multi-apartment) buildings have become the most representative research subjects in social sustainability studies. Therefore, this paper focuses on residential buildings, as they are the most important and representative buildings within the social sustainability domain.

The literature review section encompasses the following three subsections: (1) a literature review on social sustainability barriers and strategies, exploring the theoretical state of the art with respect to the subjects' research methodologies; (2) the 2030 Agenda's (a globally relevant strategic document on sustainable development) SDGs analyzed through the defined social sustainability aspects; and (3) the implementation of the SDGs, from the global to local level, via a case study of Freiburg, Germany, demonstrating the relevance of the local implementation of social sustainability strategies for achieving the advanced socio-cultural transformation of the area's residential quarters and communities contributing to fulfilling the SDGs. The literature review proves the complexity of the social sustainability aspects, the lack of clearly defined strategies in this regard, and the various levels of their implementation, which all underline the necessity of expanding the theoretical (and methodological) social sustainability framework, especially in terms of the processes of the planning, design, and construction of residential buildings.

2.1. Social Sustainability Barriers and Strategies

The construction industry greatly contributes to civilization's environmental footprint, thereby influencing the achievement of economic standards and quality of life (social well-being). Therefore, sustainable construction represents a key social sustainability topic/objective, which concerns the well-being of the community with regard to environmental, social, and economic aspects [29,30]. In contrast to the conventional modes of design and construction, which only focus on cost, performance, and quality objectives, sustainable construction considers additional aspects/objectives: minimizing resource depletion and environmental degradation as well as the creation of healthy built environments [31,32]. Furthermore, the key features of sustainable construction presented in the literature are a whole building project's lifecycle, environmental protection, technological and non-technological solutions related to social and economic sustainability, and addressing the needs of present and future stakeholders [32].

It is noteworthy that a growing amount of social sustainability research is focusing on sustainable construction and accompanied barriers and developmental strategies. The low levels of knowledge, awareness, and governmental support/incentives with respect to sustainable construction have been recognized as the main barriers for the implementation of green construction practices [30]. Hence, educational programs and financial support (e.g., economic incentives, awards, etc.), along with the introduction of standards, regulations, and legislations on sustainable construction, have been identified as relevant driving factors. Furthermore, the basic understanding of the sustainable development formula, namely, ecology, economy, and social equity, is quite utopian, requiring ideal conditions [33]. However, a holistic approach to sustainability encompasses at least three more relevant factors: technology, politics, and culture, an intertwined chain of causes and consequences perceived through quantitative and qualitative parameters, wherein culture represents a corrective, fundamental parameter constituting the root of all social processes [33].

Furthermore, some authors have conducted comprehensive, interdisciplinary surveys encompassing multiple key barriers and drivers of sustainable construction, including those socio-cultural, economic, stakeholder-related, political, technological, and environmental [32]. In this regard, socio-cultural drivers encompass increased awareness and education regarding sustainable construction among stakeholders in the building industry and enhanced indoor environmental quality (i.e., ensuring the health, comfort, and well-being of building occupants). It is noteworthy that the socio-cultural drivers in the study additionally relate to economic factors (e.g., the reduced lifecycle cost of a building,

high return on investment, etc.), thereby demonstrating the symbiotic and intertwined relationship of the social and economic factors in sustainable construction. In addition, the environmental drivers concern environmental protection and waste reduction; the stakeholder drivers concern integrated building design approaches with multiple project stakeholders; the technological drivers concern product and material innovation; and the political drivers concern governmental support for sustainable construction through upgraded regulations and urban-planning policies as well as financial (tax relief) and other market-based incentives [32]. This theoretical, online-based study on social sustainability analyzed through the aspects/objectives of sustainable construction demonstrates the relevance of the three-pillar, integrative research approach, which, in this paper, is implemented with respect to social sustainability strategies.

Collective housing, originating in the 1850s, has been constantly evolving due to the mass-housing developments that occurred during the second half of the 20th century. Changes in the conservative housing politics and the housing market started in the 1980s and 1990s, impacting the transformations within this sector in the following years [34]. Over the last few decades, the old housing models have been questioned, and numerous attempts have been made to discover new, more sustainable policies and construction models of residential buildings, for which 'sharing models' have been prioritized, i.e., housing evolution has developed ''from collective housing to co-housing'' [35,36]. Furthermore, ecological (green) concepts became more popularized in the housing domain and in residential politics, wherein the social aspects remain dominant, which underlines the necessity of developing an integral, holistic approach to social sustainability research. Additionally, within the housing sector, social sustainability principles prevail in the new, similar housing models, e.g., eco villages, social and affordable housing, collaborative housing, and cooperative housing/co-housing. Eco-villages represent specific neighborhood and international community concepts designed to be environmentally and socially and economically sustainable [37,38]. Although more related to rural zones, these significantly affected communities are raising awareness of environmental impacts and social sustainability issues both practically (e.g., by using locally grown and managed food sources; renewable energy and waste treatment systems; shared spaces, resources, and businesses; and engaging in community gatherings) and through educational programs [39].

Notably, the revitalization of residential quarters/blocks/buildings (constructed in the second half of the 20th century) plays a vital role in the implementation of sustainability strategies within developed countries, especially those in the European Union, wherein the social sustainability aspect represents a crucial factor of sustainable development. In this regard, the dominant contemporary principle of social and affordable housing becomes achieving a ''social mix'' (mixed-income and mixed-tenure) residential community on different levels (building, street, block, and neighborhood). This social sustainability strategy, which has been implemented in many urban regeneration and neighborhood revitalization projects throughout Europe, Canada, and the USA, contributes to the realization of favorable urban diversity and the balanced urban growth of residential quarters and entire cities [40]. Along with flexibility (the possibility of changing residential units) and participation, the 'social mix' strategy is considered the key factor in achieving social equity, inclusion, resilience, and security and thus improving quality of life [41]. Additionally, common (public) spaces play a vital role by promoting interaction between residents and easing the adjustments to changed living conditions within local communities. Urban revitalization is a crucial aspect of systematic housing politics with the objective of achieving more human-scale and sustainable urban models and thus enhanced well-being and quality of life, with the latter two representing crucial social sustainability indicators [42–47]. However, multiple stakeholders and their complex interrelations and impacts on communities during construction additionally complicate ongoing processes. Therefore, it is essential to expand the sustainability assessment and management framework and develop more complex, interdisciplinary, and integrative multileveled strategies (e.g., with respect to corporate, business, and functional aspects) [48]. The strategies represented in this

paper address these complex, diverse, and multileveled relations and interdependences by proposing a theoretical framework encompassing several interdisciplinary categories relevant to sustainable construction.

2.2. 2030 Agenda's Sustainable Development Goals (SDGs) in Reference to Social Sustainability Topics

The UN's 2030 Agenda: "Transforming our World: The 2030 Agenda for Sustainable Development", which was adopted in 2015, comprises 17 Sustainable Development Goals (SDGs) accompanied by 169 targets measurable by 232 indicators [5]. The agenda represents an integrative approach to sustainability that encompasses all three pillars (ecological, economic, and social) equally. Additionally, social sustainability aspects are to a major extent included within the eight SDGs: (1) No poverty, (3) Good health and well-being, (4) Quality education, (5) Gender equality, (8) Decent work and economic growth, (10) Reduced inequalities, (11) Sustainable cities and communities, and (17) Partnerships for the Goals. In terms of urbanity (urban planning) and the built environment, SDG eleven (make cities and human settlements inclusive, safe, resilient, and sustainable) is highly relevant, prioritizing adequate, safe, and affordable housing; accessible and sustainable transport systems; inclusive and sustainable urbanization; participatory, inclusive, and accessible green and public spaces; the development of resilient buildings utilizing local materials; and multi-stakeholder partnerships. The agenda underlines the vital role of global and, to a greater extent, national and regional sustainability policies and politics as well their mutual hierarchies.

Furthermore, the European Union carried out a study on social sustainability, "Social Sustainability—Concepts and Benchmarks", in 2020 [49], exploring the definitions, quantitative parameters, and benchmarks of social sustainability and the means of the concept's integration into EU policy-making processes at the national, regional, and local level. This relevant document relies on the 2030 Agenda, recognizing the complexity of the aspects of social sustainability and identifying indicators and a statistical basis for their assessment and better integration into national and local politics. Moreover, analysis has shown that the concept of social sustainability is still underdeveloped in the EU in comparison to sustainability's ecological and economic aspects. Additionally, the implementation of the 2030 Agenda's SDGs is noticeable, but the focus mainly remains on specific social sustainability aspects (e.g., social rights, guaranteeing the rights of children, inclusion, social economy, gender equality, etc.), while the relevant social sustainability topics of urban planning and housing (residential buildings) maintain underrepresented. However, the research in this field has provided valuable examples of social sustainability practices that demonstrate the implementation of green and inclusive housing models accessible to all, thereby promoting social cohesion and supporting social life in deprived neighborhoods [49]. Accordingly, the participative planning of urban quarters has been recognized by researchers, e.g., Sweden's Vallastaden; the E-Co-Housing/public–private co-creation of a regenerative housing project together with the local community in Budapest; the Belgian project of Brussels Capital Region—CALICO—Care and Living in Community; and the Paris OASIS Project, concerning the renovation of urban space via the creation of ecological 'islands of freshness'.

In conclusion, the 2030 Agenda sets relevant SDGs that are equally related to all three sustainability pillars, thus having an impact on national sustainability strategies. The European Union's sustainability policies and politics follow this globally relevant agenda. Despite this supposedly integrative approach, the implementation of social sustainability concepts and strategies remains underdeveloped and insufficiently present in comparison to the other two sustainable development aspects (ecological and economic).

2.3. Implementation of the SDGs through Social Sustainability Strategies: Case Study of Freiburg, Germany

The 2030 Agenda and its specified Sustainable Development Goals (SDGs) represent a globally relevant, crown-strategic document on sustainability that has been adopted and disseminated at the national, regional, and local level worldwide. The involvement of local governments is highly relevant for the implementation of the social and ecological strategies leading to the realization of the three pillars of sustainable development. Sustainability strategies provide horizontal integration at the local level and link municipal achievements to national and global strategies vertically [50,51]. As a highly regulated country that has been dealing with sustainability processes and concepts for a long time, Germany represents a valuable case study of the national and local implementation of sustainability strategies derived from the 2030 Agenda, e.g., SDG-related budgeting, sustainability controlling and reporting, indicator-based sustainability strategies, and local government financing [51].

The first German Sustainable Development Strategy (GSDS) was proposed in 2002 and presented at the United Nations World Summit on Sustainable Development in Johannesburg. Furthermore, starting from 2004, the GSDSs have been updated every four years (i.e., 2004, 2008, and 2012), followed by the release of progress reports devised by the German government. Additionally, in 2015, the German Sustainable Development Strategy began following the 2030 Agenda's Sustainable Development Goals, thereby addressing the 17 SDGs at the national level. Since then, all federal subsidies must be assessed in terms of their sustainability impact, comprising their long-term economic, environmental, and social impacts in reference to the National Sustainability Strategy. In this regard, the attention paid to sustainable budgeting is growing, and the first steps remain to be taken with respect to the promotion of a systemic and holistic approach. Finally, the most recent Sustainable Development Strategy for Germany was adopted in 2021 [52]. Therein, the construction industry and the transport sector are addressed, which are recognized as relevant parts of the sustainable building and mobility transition–transformation sectors. These sectors are related to the SDGs number 7, 8, 9, 11, 12 and 13.

Moreover, the so-called "Club of Agenda 2030 Municipalities" represents a German network of municipalities, cities, and districts dedicated to the implementation of the 2030 Agenda's Sustainable Development Goals proclaimed in the resolution "2030-Agenda for Sustainable Development: Shaping Sustainability at the Municipal Level" signed by 190 German cities in September 2021 [51]. The participating municipalities are engaged to various degrees in socio-political activities relating to the SDGs' implementation on the local (municipal) level, where citizens' and multi-stakeholders' engagement, the fostering of interdepartmental processes, and governmental regulatory mechanisms represent the crucial sustainability strategies leading to a socio-ecological transformation and the achievement of the SDGs.

Freiburg has a long tradition of dealing with sustainability topics. It was the first city in Germany that introduced sustainability-related budgeting in order to align the municipal financial resources with sustainability objectives (i.e., localized SDGs) [51]. In reference to the social sustainability strategies' implementation in Freiburg, the key topics are social equity, sustainable community, and the social mix, which were implemented in the so-called 'fresh cell strategy' wherein young families with children became residents of newly erected buildings constructed in dwelling quarters with a predominantly elderly population (built in the 1960s and 1970s). This example represents a proactive social sustainability model contributing to achieving a more balanced residential neighborhood in terms of its demographic structure, services, and community infrastructure, thus encouraging more intensive face-to-face contact between neighbors [53]. The 'fresh cell strategy' is based on the analysis of the new city quarters encompassing smaller residential units inhabited by the younger population (Rieselfeld, Vauban), which have been successfully developed through 'building group' (Baugruppen) models [54]. Moreover, it represents a continuation of the already-developed, well-known sustainable strategies implemented in Freiburg, which are defined according to the following 12 principles within "The Freiburg Charter

for Sustainable Urbanism": diversity; safety and tolerance; neighborhoods; short distances; urban development along public transport routes/high-density model; education, science, and culture; commerce, economy, and employment; nature and environment; quality design and long-term planning; communication, reliability, obligation, and fairness; and cooperation, participation, and partnership [54]. The strategies are implemented through diverse levels, e.g., regional/local; neighborhood/quarter; group of buildings/public space; or house/building.

In conclusion, owing to the well-planned nature of the local strategies, the principles of social sustainability have been implemented in cities, especially in relation to residential zones (e.g., mix of uses; communication/social spaces; accessibility; identity/neighborhood culture; nature in the immediate residential environment; quality of design/designing residential areas, streets, and/or squares; traffic; citizen participation; and innovative forms of accommodation). In addition, traffic and public-space-related policies have been specifically developed, prioritizing car reduction measures, the social use of street space and child-friendly environments, non-car travel networks and services, home-zone streets, shared-surface streets, etc. The authors of [55].

3. Materials and Methods

The methodology applied in this study comprises three phases: (1) the identification of strategies through a literature review; (2) the design and preparation of a Delphi survey; and (3) the execution of the Delphi survey and a data analysis. The selection and development of the strategies are explained in detail in the following sections.

3.1. Identification of Strategies—Phase I

An extensive literature review was conducted to identify a set of relevant strategies for overcoming barriers to the realization of socially sustainable residential buildings (SSBs). In the first phase, research was initiated by gathering the most relevant studies on social sustainability (SS) from three types of primary sources:

(a) Research related to SS principles, criteria, and goals together with regulations and practices affecting SS of residential buildings [7,9,12,14–28,34–48,56–64];

(b) Research carried out to identify barriers and strategies influencing buildings' social and environmental sustainability [8,10,11,30,32,49–55,65–74] both in terms of those that specifically apply to the social aspect and those that might be common to both aspects;

(c) SS reports published by international organizations such as the United Nations [3,5,6,75], United Nations Department of Social and Economic Affairs (UNDESA) [76], Eurostat [77], and OECD [78].

Based on the researched literature, it can be concluded that there are no specific studies addressing SS strategies in relation to residential buildings. Moreover, a rather limited amount of research dealt with strategies related to sustainable construction in general, and an overview of such studies was provided in [32]. On the other hand, significantly more studies were conducted on barriers and strategies related to "green buildings" and implementation of "green energy" technologies in buildings to reduce environmental impacts and enable energy savings. A comprehensive overview of these berries and strategies was given in [74]. Therefore, compilation of an initial set of SS strategies in relation to residential buildings was carried out by researching strategies related to three areas, namely, (a) sustainable construction in general [30,32,68,69], (b) sustainable renovation of commercial buildings [70,72], (c) and "green buildings" and "green buildings" energy technologies [65–67,71,74], in order to distinguish those that might also be relevant to the SS of residential buildings. The quantities of selected strategies for each area were 17, 2, and 23, respectively, forming an initial set of 42 strategies that were classified into five groups: Financial/Economic (FE), Professional/Technical (PT, Governmental/Regulatory (GR), Market (MA) strategies, and Cultural/Behavioral (CB) strategies. Duplication of strategies arising from the use of different formulations by different authors was analyzed

and eliminated in the next stage: "Content analysis of the published articles". The number of strategies was reduced to 38, thereby affording a preliminary set of strategies for the preparation of the Delphi survey, which is described in the following subsection.

3.2. Design and Preparation of the Delphi Survey—Phase II

The second phase included the preparation and tailoring of the Delphi method. The Delphi method is a qualitative method that was developed in the 1950s by the Rand Corporation for military uses [79]. A decade later, it was adopted by academia [73] and is now fully accepted by today's scientific community [80]. The Delphi method is employed to collect experts' opinions (data) in a given field [81] and broaden perspectives [82]. Its fundamental value comes from the fact "that the statistical aggregate of several experts is more relevant than the judgment of just one expert" [83]. The authors in [84] argue that the use of the Delphi method is particularly suitable with respect to new industries. For these reasons, it is generally preferred over other forecasting techniques [85] and was considered adequate for this study as well.

The Delphi survey consists of at least two rounds in which experts' opinions are collected and shared among all panelists, the experts involved in the survey, with the ultimate goal of reaching a consensus opinion [86]. A detailed description of the Delphi methodology is given in [87].

The adopted Delphi technique is structured according to the approach suggested by authors of [87–89], which is characterized by the following steps: (i) selection of a set of sustainability categories and indicators through literature review; (ii) submission of the initial pre-selected set of categories and indicators (strategies) for analysis by experts through Delphi technique; and (iii) the collection of the experts' assessments of the relevance of each indicator (strategy), which they have arrived at based on the analyzed results and rated using a Likert scale.

3.2.1. Step 1: Selection of Experts—Delphi Panel

The Delphi technique "helps provide a group conclusive component that requires experienced professionals with a background of the target study" [90]. Therefore, the selection of a panel of participants is of great importance. The Delphi panel included the same group of experts who participated in the study that identified the barriers affecting the social sustainability of residential buildings [12].

Given that this work is a continuation of the research that was conducted in the previously cited study, the same panel of experts was used, i.e., an initial panel of 65 international experts in the field of sustainability. The panelists were selected to gain a comprehensive view of barriers and strategies related to SSBs, covering different aspects of planning, design, construction, urban planning, project management, and real estate sales. The panelists were selected from among the authors' chain of contacts, selecting experts with a balance of skills, knowledge, and experience and that could contribute meaningfully to the study. Accordingly, they were chosen both from academic sectors, for which those with expertise in the field of sustainable development and practice (51%, i.e., 33 experts) and practitioners with expertise in design/planning/construction/urban planning/project management/real estate (49%, i.e., 32 experts) were chosen. Finally, 60 experts from 21 different countries worldwide participated in the study: 14 were from Europe (Austria, Belgium, Croatia, England/UK, France, Germany, Netherlands, Hungary, Luxembourg, Poland, Serbia, Spain, Montenegro, and Switzerland) and the rest were from Asia, the Middle East, New Zeeland, Cuba, and the USA. Since time constraints usually influence experts' decisions to participate in a Delphi survey, the participants were informed in advance that the prospective Delphi survey consisted of two rounds.

3.2.2. Step 2: Compilation of Questionnaire

Before conducting the questionnaire survey, the following intermediate steps were carried out: (a) the first draft of the questionnaire was discussed with two experts (an architectural designer and a professor) in a face-to-face interview and through written correspondence to confirm clarity, legibility, and precision of the questionnaire; (b) using semi-structured interviews with one professor and one designer, an intermediate step was carried out to assess whether the questionnaire covered all potential strategies and whether strategies could be added or removed from the survey. The feedback received resulted in the reformulation of four strategies and removal of two strategies. The total number of pre-selected strategies in the final version of the Delphi questionnaire for the 1st round was 36, which was then divided into five groups. They were listed and described in the second part of the Delphi questionnaire, while professional data about the respondents were collected in the first section of the questionnaire (Appendix A).

3.2.3. Step 3: Pretesting the Questionnaire

Before it was finally sent to the selected list of panelists (experts), the questionnaire was sent to two more experts (one designer and one researcher) to conduct a final test of the readability and the time required to answer the questions. Since positive responses were received from both of these experts, the process of testing was concluded, and the third phase was ready to be performed (Section 3.3). The final version of the questionnaire was also translated into German because a certain number of participants were from German-speaking areas (Switzerland, Germany, Austria, etc.), which helped to reduce language-based misunderstanding to a minimum.

3.3. Conducting the Delphi Survey—Phase III

Step 1—Conducting the First Round of the Delphi Survey

The research team contacted the panelists via direct invitation (email, telephone, and/or LinkedIn), informing them of the aims of the study and the confidential treatment of the data to encourage their engagement from the beginning and ensure their commitment to completing the survey. They were also asked to forward the survey to their colleagues whom they considered sufficiently competent for participation in the survey. The final version of the questionnaire was sent directly to each panelist who accepted the participation via email. The experts were asked to rate the relevance of the strategies using a five-point Likert scale [91], ranging from 1 to 5, where 5 indicates high relevance and 1 indicates irrelevance. Subsequently, the experts were allowed to add potential new strategies, which they considered relevant and that had not been included on the list, to each group of strategies.

After sending several reminders to the panelists to answer the survey, a total of 60 experts out of 71 responded (65 of whom were invited by direct invitation from the researchers and 6 by direct invitation from among the panelists' chain of contacts), i.e., 84.5% of the selected panelist completed the Delphi survey in the 1st round. A response was received from 56 of the experts invited by the researchers and another 4 from among those in the panelists' chain of contacts. The percentage of questionnaires completed (84.5%) is quite high due to the use of personally addressed invitations and the persistence of the researchers in reminding the experts to fill in the questionnaire. The aim of the questionnaire in the first round of the Delphi survey was to validate the hypothetically derived set of strategies and add potential new ones in case some were omitted (three bars for each group of strategies were left blank so that panelists could add new ones as they deemed necessary, as shown in Appendix A).

Consequently, the objective of the 1st round has been fulfilled; the recommendations, comments, and new strategies (three of them) were considered and integrated in the second round of the Delphi procedure. The mean values were set at 75% (>3.75) as the cut value for each strategy (which had been rated using a 5-point Likert scale) and standard deviation (SD) < 1. The results are discussed in detail in Section 4.

After the end of the 1st round, the results obtained were analyzed, and the mean and SD for each strategy were determined. Section 4 gives a detailed description and analysis of the results. The outcome of the 1st round was sent to the panelists for review and to allow them to re-rank the strategies. In addition, they were asked to mark three strategies whose implementation would have the greatest positive effect on the implementation of social sustainability measures. After the completion of the second round, the mean score and SD of each strategy were again calculated. The minimum acceptable rate for a strategy's mean score was 3.75, and this value was below 1 for SD [64,92,93]. In the event that the panelists eliminated a strategy in this round, the strategy would be excluded from the final set of strategies. The results are presented and analyzed in the following section.

4. Results and Key Findings

A total of 60 of the 71 experts that were initially invited to join the panel completed the 1st round of the Delphi questionnaire (65 were directly invited by the researchers and 6 by a chain of panelists), i.e., 84.5% of the invited experts completed the 1st round. In the 2nd round, 43 of the experts participated, which means that the final response rate was 71.6%, exceeding the recommended 70%. The dropout rate in the second round was expected. Although there was a great degree of willingness among the panelists to contribute to the research, time is always a limiting factor for the experts given their various business commitments. Thus, some dropouts were inevitable. However, the resulting response percentages (84.5% in the first round and 71.6% in the second) are quite high and demonstrated the commitment of the panelists to contributing to the study. In addition, individual follow-up (reminding each participant to respond) is another factor that contributes to panelist engagement, as personal involvement adds to the importance of research and enhances participation [64,94].

As can be seen from Table 1, the composition of the panelists who participated in the first round was characterized by a fairly balanced ratio between experts currently employed in terms of academia and practice, namely, 27 (45%) in academia and 33 (55%) practitioners. In addition, all the selected panelists (100%) had experience in terms of the sustainability of the built environment in practice and/or research, while 86.7% of them also had experience in SS, which is an area of particular interest to this study (Table 1). Further, the vast majority of the participants (85%) had experience in the design or construction of residential buildings and 81.7% had more than 10 years of professional experience, which also significantly contributed to the credibility and reliability of the survey. Moreover, the added value of this panel is that the majority of the academic experts (81.5%, i.e., 22 members out of 27 in the 1st round and 22 out of 24 in the 2nd round, i.e., 91.67%) also had previous experience in practice, which helped to consider the problem in greater detail and depth.

Through the initial search of the literature, a total of 42 strategies were identified. After the content analysis, this number was reduced to 38 due to duplication arising from the different formulations used by different researchers. During the consultation process, which incorporated two experts who had considerable experience in the sustainability of the built environment, four strategies were reformulated and two were eliminated; thus, the total number of strategies that made up the preselected list of strategies in the 1st round of the Delphi method was 36. Table 2 shows the number of strategies within each of the five groups in the considered phases of strategy selection, while a description of the strategies and results after the first and second rounds of the Delphi survey is given in Table 3.

Table 1. Data on participants' sustainability-related and professional experience.

Panelists	No. from Academia	No. from Practice	Experience of Panelists						
			In Practice		In Sustainability %	In Social Sustainability %	In Design and Construction %	In Profession	
			From Academia %	Other Profession %				>10 y. %	<10 y. %
Participation in the 1st Round	27 (45%)	33 (55%)	81.5%	100	100	86.70	85.00	81.70	18.30
Participation in the 2nd Round	24 (55.8%)	19 (44.2%)	91.60%	100	100	83.10	78.21%	82.60	17.40

Table 2. Number of strategies by group—both preselected and added by experts—for the first and second round.

Group	Financial/ Economic Strategies	Govern./ Regulatory Strategies	Profess./ Technical Strategies	Market Strategies	Cultural/ Behavior Strategies	Total Preselected	Total 1st Round	Total 2nd Round	Total Final Strategies
Preselected from Literature	13	10	11	3	5	42			
After Content Analysis	11	9	10	3	5	38			
After Consultation with 2 Experts	10	9	9	3	5	36	-	-	-
After 1st Round (+ Added by Experts)	5 + 1	9 + 2	8	3	5	-	36 − 6 + 3 = 33	-	-
After 2nd Round	5	11	8	3	5	-	-	33 − 1 = 32	-
Final Strategies per Group	5	11	8	3	5	-	-	-	32

Table 3. The list of strategies for SSBs: preselected strategies, added by experts and eliminated strategies after 1st and 2nd round of the Delphi survey.

Groups	Index	Individual Social Sustainability Strategies	Pre-Selected	Added by Experts	1st Round Mean SD		2nd Round Elimination Mean SD of Strategies				Urgent
1	2	3	4 (*)	5 (*)	6	7	8	9	10 (**)	11 (**)	12
Finanacial/Economic Strategies	FE1	Governmental financial incentives to encourage investors/developers to invest their capital in SS projects).	√		4.55	0.72	4.47	0.68			U1
	FE2	Development of a financing model to enable easy and simple access to financing for investors/developers).	√		4.43	0.62	4.40	0.67			U2
	FE3	Educational projects related to financial analysis (as a means of counteracting the "fear of high investment" barrier)	√		3.78	0.85	3.63	0.81		X	
	FE4	Educational projects related to risk analysis (helping to realistically assess the potential losses associated with the adoption of SS measures).	√		3.63	0.80			X		
	FE5	Excellence awards to professionals involved in SS projects (to stimulate their commitment to developing high-quality SS projects)	√		3.70	1.01			X		
	FE6	Financial rewards given to owners that are provided by the government (various discounts and benefits, partial tax exemption, etc.).	√		4.00	0.96	4.03	0.61			
	FE7	Public–private partnership for land and building ownership.	√		3.50	0.87			X		
	FE8	More specialized and affordable prices of courses and seminars for enhancing knowledge about SS.	√		3.05	1.00			X		
	FE9	Financing innovation and technological advancement to develop and improve products and processes related to sustainability (including the SS aspects of a building).	√		3.85	0.88	3.90	0.80			
	FE10	Financial (and alternative) support for participatory engagement	√		3.77	1.25			X		
	FE11	Construction of a body of evidence regarding the financial benefits of investment in SS targeted at developers (proof of market demand for these kinds of products, etc.)	√				4.20	0.66			U3

Table 3. *Cont.*

Groups	Index	Individual Social Sustainability Strategies	Pre-Selected	Added by Experts	1st Round Mean SD		2nd Round Elimination Mean SD of Strategies				Urgent
1	2	3	4 (*)	5 (*)	6	7	8	9	10 (**)	11 (**)	12
Governmental/Regulatory Strategies	GR1	Developing more efficient codes/regulations/standards	√		4.63	0.64	4.63	0.49			U1
	GR2	Simplification of certification procedures for sustainability of buildings, including all three pillars.	√		3.98	0.91	4.17	0.70			
	GR3	Clear and user-friendly policy guidance on financial implications.	√		4.05	0.81	4.03	0.56			
	GR4	Training in sustainability (including all three pillars) for regulators and legislators. (By increasing their knowledge, the regulations related to SS will become more adequate and efficient.)	√		4.00	0.93	4.00	0.74			
	GR5	Certificate of sustainability, including with respect to all three aspects, should be mandatory.	√		3.93	0.98	4.23	0.73			
	GR6	Rigorous policy framework should be implemented to disseminate information on the benefits of SS measures.	√		3.97	0.76	3.80	0.76			
	GR7	Government commitment to SS projects.	√		4.46	0.68	4.47	0.51			U2
	GR8	Government commitment to developing social and environmental links between urban, peri-urban, and rural areas by strengthening national and regional development planning.	√		4.20	0.78	4.28	0.71			
	GR9	Creating more inclusive, safe, green, and public spaces, particularly for women and children, older persons, and persons with disabilities.	√		4.13	0.99	4.33	0.76			U3
	GR10	Sensitization of professionals, users, and investors to the SSBs.		√			4.03	0.72			
	GR11	Sensitization of children starting at preschool age to SS and sustainability in general (video games, books, films, etc.).		√			4.07	0.87			

Table 3. *Cont.*

Groups	Index	Individual Social Sustainability Strategies	Pre-Selected	Added by Experts	1st Round Mean SD		2nd Round Elimination Mean SD of Strategies				Urgent
1	2	3	4 (*)	5 (*)	6	7	8	9	10 (**)	11 (**)	12
Professional/Technical Strategies	PT1	Development of proficiencies and skills of professionals in SS provided by recognized institutions	√		4.15	0.99	4.30	0.60			U1
	PT2	Provision of clear and reliable instructions on the value and benefits of SS measures.	√		4.22	0.83	4.37	0.67			
	PT3	Provision of user-friendly guidelines (useful instructions and examples of the successful design of building spaces in addition to various tools that facilitate the design of SS buildings.	√		4.17	0.85	4.40	0.77			U3
	PT4	Improved communication between design team members and other stakeholders.	√		3.92	0.83	4.13	0.90			
	PT5	Providing excellence awards to professionals involved in SS projects.	√		3.62	1.06			X		
	PT6	Commitment of the management team to SS measures.	√		3.97	0.76	4.10	0.61			
	PT7	Providing sufficient time for design, especially during early design phases.	√		4.28	0.74	4.40	0.62			
	PT8	Improving urban planning in terms of sustainability (including all three pillars).	√		4.60	0.67	4.73	0.64			U2
	PT9	Opening research centers/labs as platforms for research, development, and learning regarding sustainable technologies, measures, tools, etc.	√		3.85	0.88	4.17	0.83			
Market Strategies	MA1	Development of an efficient practical guide for marketing of sustainable buildings with respect to all three pillars (simple and effective guide to meeting market requirements).	√		4.05	0.77	3.97	0.76			U3
	MA2	Investing in marketing strategies that disseminate advantages of sustainable buildings through various channels (workshops, project demonstrations, etc.) and use various media to promulgate the benefits of sustainable buildings (including SSBs).	√		4.23	0.87	4.27	0.69			U2
	MA3	Government actions toward promotion of SS buildings by demonstrating "green image" and sustainable development to the public through various channels (journals, social media, conferences, project demonstration, etc.).	√		4.48	0.77	4.60	0.56			U1

Table 3. *Cont.*

Groups	Index	Individual Social Sustainability Strategies	Pre-Selected	Added by Experts	1st Round Mean SD		2nd Round Elimination Mean SD of Strategies				Urgent
1	2	3	4 (*)	5 (*)	6	7	8	9	10 (**)	11 (**)	12
Cultural Strategies	CB1	Promoting new concepts of growth that do not depend on a production–consumption cycle that continually reduces the Earth's resources. It will involve exploring new social, economic, and political paradigms that 'break the link between materialism and social progress'.	√		4.57	0.65	4.67	0.55			U2
	CB2	Raising awareness among and increasing the knowledge of tenants regarding the value and significance of SS; promoting greater consumer responsibility, production efficiencies, and recycling and reuse practices; the development of larger markets for eco-products.	√		4.57	0.59	4.53	0.51			U3
	CB3	Raising awareness among and increasing the knowledge of investors with respect to social sustainability aspects of buildings through various measures and channels.	√		4.75	0.51	4.83	0.38			U1
	CB4	Raising awareness regarding the role of experts in ensuring social sustainability in the construction industry.	√		4.57	0.62	4.60	0.56			
	CB5	Promotion of successful and inspiring socially sustainable buildings and their appearance in journals and other important media, organizing visits and sightseeing, etc.	√		4.02	0.87	4.17	0.75			

Note: * (√)-indicates those strategies that were pre-selected from the literature (column 4) or were added by the panelists (column 5); ** (X)-indicates those strategies that were eliminated after the 1st round (column 10) or after the 2nd round (column 11) of the Delphi survey.

After the first round of the Delphi procedure, five strategies from the Financial/ Economic group and one from the Professional/Technical group were eliminated due to a low mean score (i.e., under the 75% threshold) and/or an SD greater than or equal to 1 (columns 8 and 9 in Table 3). However, three new strategies were added by the experts, and they were incorporated into the second round. One of them was from the Financial/Economic group, namely, "Building a body of evidence of the financial benefits of the investment in SSBs", which was targeted toward developers (FE11 in Table 3), and the other two were from the Governmental/Regulatory group, namely, "Sensitization of the professionals, users and investors regarding the benefits of SSBs" and "Sensitization of children already at preschool age regarding SS and sustainability in general (video games, books, films, etc.". They are presented in Table 3 as GR10 and GR11, respectively, and marked in the fifth column as added by the experts. Finally, a total of 33 strategies entered the 2nd round of the Delphi survey (Table 3).

In the second round, the Delphi questionnaire was sent to the same number of experts from the first round (60 experts) together with the results of the first round. The response rate was 71.6% (43 panelists responded). The information about the results sent to the panelists in the subsequent round is a vital factor in any Delphi survey because it provides the panelists with the information that allows them to reexamine their opinions in light of those held by others [64]. After calculating the mean values and SD in the second round, one more strategy was eliminated due to a low mean score (below 75% threshold): "Educational projects related to financial analysis (as a means to counteract the barrier—Fear of high investment" (strategy FE3 in Table 3).

Finally, after the 2nd round of the Delphi survey, 32 strategies were selected, which represent the final list of strategies (with a mean score above 3.75 and SD < 1 (Table 3)). Table 3 also shows the means and SD after first and second rounds, while a comparison between the number of strategies within the groups in the first and second rounds is presented in Table 1.

4.1. Financial/Economic Strategies

This group includes strategies for overcoming the economic and financial barriers identified in the previous study [12]. The final list of strategies within this group is given in Table 4, followed by a brief description. Out of a total of 11 strategies (10 pre-selected from the literature and 1 added by panelists), 5 were selected as significant strategies that can be used to overcome financial barriers. The "governmental financial incentives" (strategy FE1 in Table 4) was viewed by the panelists as the most effective one from this group in terms of encouraging investors to invest in SSBs. In addition, it is important for governments to develop a "financing model that will provide investors with easy access" to the necessary funds (the second most efficient strategy, FE2, in Table 4) and facilitate the entire financing process, which will lead to investors' greater interest in SSBs' and, consequently, the realization of SSBs. The panelists suggested that building a "body of evidence on the financial benefits of investing in SBBs" (FE11 in Table 4) was one of the most effective strategies with which to overcome investors' "fear of higher investment costs"; therefore, complementing it with the other two abovementioned strategies would significantly increase investors' interest in the construction of SSBs.

Moreover, government-provided financial rewards to owners (e.g., various discounts and benefits, partial tax exemption, etc.) were considered by the experts to constitute an important strategy for increasing occupants' interest in buying and renting SS housing (FE6 in Table 4). Investment in innovative technologies, techniques, and tools (FE9 in Table 4) that can improve materials, products, and the various processes required for the design and construction of SSBs (reflected in the better health and wellbeing of the occupants) is also an important strategy that has positive effects in the long term since social sustainability is a dynamic process that is constantly evolving [95]. This strategy, which also includes further scientific research on the influence of SS housing on people's health and wellbeing and a building's environment, is instrumental to gaining more concrete and reliable data on

these issues; thus, it indirectly helps overcome the "difficulty of translating social benefits into monetary/financial values", which is significant for both the investors and occupants with respect to their decision making regarding SSBs.

Table 4. Final list of strategies from the Financial/Economic group and the three most efficient ones.

Index	Definition of Strategies	1st Round		2nd Round		Urgent
		Mean	SD	Mean	SD	
FE1	Governmental financial incentives to encourage investors/developers to invest their capital in SS projects.	4.47	0.68	4.47	0.68	U1
FE2	Development of a financing model to enable easy and simple access to financing for investors/developers.	4.40	0.67	4.40	0.67	U2
FE6	The governmental provision of financial rewards to owners (various discounts and benefits, partial tax exemption, etc.).	4.00	0.96	4.03	0.61	
FE9	Financing innovation and technological advancement to develop and improve materials and processes regarding building sustainability (including the SS aspects of a building).	3.85	0.88	3.90	0.80	
FE11	Construction of a body of evidence on the financial benefits of investing in socially sustainable buildings (targeted at developers, e.g., proof of market demand for these kinds of products, etc.).			4.20	0.66	U3

4.2. Governmental/Regulatory Strategies

The "development of efficient regulations, norms and standards" along with "government commitment to socially sustainable projects" and the "sensitization of the profession, users and investors on sustainability including SS aspect" (GR1, GR7, and GR10, respectively, in Table 5) were the three strategies that the panelists determined to be most effective for the faster and more effective implementation of SS measures in residential buildings. Accordingly, sustainability "training for regulators and legislators" (GR2 in Table 5) to increase their knowledge and awareness of all three aspects of sustainability (which will be reflected in the adoption of more effective and adequate regulations and codes for SSBs) is a way in which to achieve that goal. Furthermore, the statement that a "certificate of sustainability including SS aspect should be mandatory" (GR5 in Table 5), which would be applicable to all new buildings and those under renovation up to a certain level, was another significant strategy selected by the panelists in order to obligate designers and other important stakeholders to apply SS measures in the design and construction of residential buildings. This can overcome the obstacle presented by a "lack of specification of mandatory measures that support the adoption of SS measures and practices" [12], which is considered one of the most significant strategies to be addressed for the faster adoption of SS measures and practices.

The "Government's commitment to the development of social and ecological links between urban, suburban and rural areas by strengthening national and regional development planning" along with the "creation of more inclusive, safer and greener public spaces" (GR8 and GR9 respectively, in Table 5) can also significantly contribute to the more adequate and complete implementation of building's SS measures and practices since the implementation of SS measures, apart from the building itself, includes the building's surroundings as well as other factors such as transport, facilities, the social fabric and culture, etc., which contribute to realizing the full potential of the building's social sustainability and sustainable development in general [96–99]. In addition, the panelists suggested working on the "sensitization of children already at preschool age" (GR11 in Table 5) regarding SS and sustainability in general (video games, books, films, etc.) in order to adopt SS principles as an integral part of their value systems and thus support and ensure the adoption of even more sustainable measures in the future.

Table 5. Final list of strategies from the Governmental/Political/Regulatory group and the three most efficient ones.

Index	Definition of Strategies	1st Round Mean	SD	2nd Round Mean	SD	Urgent
GR1	Developing more efficient codes/regulations/standards.	4.25	0.84	4.40	0.74	U1
GR2	Simplification of certification procedures for sustainability of the buildings including all three pillars.	3.77	0.83	3.87	0.82	
GR4	Training in sustainability (including with respect to the SS aspect) for regulators and legislators. By increasing their knowledge and awareness, the regulations related to SS will become more adequate and efficient.	4.30	0.93	4.33	0.84	
GR5	Certificate of sustainability, including all three aspects, should be mandatory.	4.23	0.81	4.20	0.66	
GR6	Rigorous policy framework should be implemented to disseminate information on the benefits of SS measures.	3.83	0.91	3.90	0.84	
GR7	Government commitment to SS projects.	4.22	0.72	4.07	0.58	U2
GR8	Governments should commit to the development of social and environmental links between urban, peri-urban, and rural areas by strengthening national and regional development planning.	3.95	0.85	3.93	0.78	
GR9	Creating more inclusive, safe, green, and public spaces, particularly for women and children, older persons, and persons with disabilities.	4.02	0.99	4.17	0.58	
GR10	Sensitization of the professionals, users, and investors regarding the SSBs.	-	-	4.21	0.77	U3
GR11	Sensitization of children starting at preschool age regarding SS and sustainability in general (through video games, books, films, etc.)	-	-	4.16	0.59	

4.3. Professional/Technical Strategies

According to the experts' opinions, the most effective strategies from this group are the following: "improving the sustainable skills and abilities of professionals" (PT1 in Table 6) through specialized training provided by recognized institutions (which leads to a more efficient and effective implementation of SS measures in the design and construction of SSBs), together with "improving urban planning from the aspect of SS" (PT8 in Table 6), which can enable the more comprehensive implementation of SS measures and practices such as the planning and design of green areas and playgrounds, places for public gathering and recreation, places for engaging in cultural activities, etc. In addition, "providing user-friendly guidance" (PT3 in Table 6), which includes useful instructions and examples of the successful design of building spaces and facilities together with various tools and techniques for facilitating the design of SSBs, was also suggested by the panelists to be one of the most effective strategies for the more successful application of SS measures and practices in residential buildings.

Furthermore, it is also important to "provide sufficient time for the design process", especially during the early stages of design (PT7 in Table 6), along with "management team commitment to SS measures" and "improved communication between design team members and other stakeholders" (PT6 and PT 4, respectively, in Table 6), which are all necessary for the adequate assessment of the needs, preferences, and aspirations of tenants/investors/owners and other interested parties, whose fulfillment ensures the high-quality design of SSBs. The "opening of research centers/laboratories, as a platform for research, development and learning" (PT9 in Table 6) related to sustainable principles, goals, techniques and technologies" [95] was also considered by the panelists as one of the important strategies for upgrading professional skills; thus, the process of implementing SS measures in residential buildings is being improved and accelerated.

Table 6. Final list of strategies from the Professional/Technical group and the three most efficient ones.

Index	Definition of Strategies	1st Round		2nd Round		Urgent
		Mean	SD	Mean	SD	
PT1	Development of proficiencies and skills of professionals in SS provided by recognized institutions.	4.15	0.99	4.30	0.60	U1
PT2	Provision of clear and reliable instructions on the value and benefits of SS measures.	4.22	0.83	4.37	0.67	
PT3	Provision of user-friendly guidelines (useful instructions and examples of the successful design of building spaces in addition to various tools that facilitate the design of SS buildings).	4.17	0.85	4.40	0.77	U3
PT4	Improved communication between design team members and other stakeholders.	3.92	0.83	4.13	0.90	
PT6	Commitment of the management team to SS measures.	3.97	0.76	4.10	0.61	
PT7	Providing sufficient time for design, especially during early design phases.	4.28	0.74	4.40	0.62	
PT8	Improving urban planning in terms of sustainability (including all three pillars).	4.60	0.67	4.73	0.64	U2
PT9	Opening research centers/labs as platforms for research, development, and learning with regard to sustainable technologies, measures, tools, etc.	3.85	0.88	4.17	0.83	

4.4. Market Strategies

The strategies/measures for overcoming market barriers are presented in Table 7. According to the panelists' opinions, one of the most efficient measures for strengthening public awareness and knowledge about SSBs and thus indirectly increasing the corresponding market demand is "promoting the concept of 'green image' and sustainable development" (MA3 in Table 7), which is conducted by governments through various channels including magazines, social media, conferences, demonstration projects, etc. Furthermore, "investment in marketing" (MA2 in Table 7) that spreads the values of SSBs (financed by the government) through various channels, including workshops, project demonstrations, competitions, etc., and uses different media to promote the advantages of SSBs over traditional buildings constitutes another effective strategy that operates in the same direction as increasing public awareness and, consequently, market demand, ultimately leading to the large-scale implementation of such projects in practice. The development of an "efficient practical guide for marketing of SSBs" (MA1 in Table 7) with technical guidance that will be helpful for investors and owners as a 'quick guide' to meeting market requirements" is also considered to be a significant strategy for increasing investors' and occupants' interest in SSBs and thereby market demand for SSBs.

4.5. Cultural/Behavioral Strategies

Table 8 shows the strategies for overcoming the cultural/behavioral types of barriers concerning the awareness, knowledge, and behavior/interactions of tenants and their relationship with the building itself, its facilities, and the environment. These obstacles can arise from a lack of information and education regarding the value and benefits of a building's SS characteristics. Furthermore, the lack of information increases uncertainty about the costs and benefits of such buildings, thus inhibiting their demand and, accordingly, materialization.

Table 7. Final list of strategies from the Market group.

Index	Definition of Strategies	1st Round		2nd Round		Urgent
		Mean	SD	Mean	SD	
MA1	Development of an efficient practical guide for marketing of socially sustainable buildings (simple and effective guide for meeting market requirements).	3.90	0.93	3.93	0.94	U3
MA2	Investing in marketing strategies that disseminate advantages of SSBs through various channels (workshops, project demonstrations, etc.) and use various media to promulgate the benefits of sustainable buildings (including SSBs).	4.05	0.97	4.20	0.96	U2
MA3	Government actions toward promotion of SSBs by demonstrating "green image" and sustainable development to the public through various channels and activities (journals, social media, conferences, project demonstration, etc.)	4.43	0.79	4.37	0.85	U1

Table 8. Final list of strategies from the Cultural/Behavioral group.

Index	Definition of Strategies	1st Round		2nd Round		Urgent
		Mean	SD	Mean	SD	
CB1	Promoting new concepts of growth that do not depend on a production–consumption cycle that continually reduces the Earth's resources. This will involve exploring new social, economic, and political paradigms that 'break the link between materialism and social progress'.	4.57	0.65	4.67	0.55	U2
CB2	Raising awareness among and increasing the knowledge of tenants about the values and significance of SS, promoting greater consumer responsibility, production efficiencies, recycling and reuse, and larger markets for eco-products.	4.57	0.59	4.53	0.51	U3
CB3	Raising awareness among and increasing the knowledge of investors about the social sustainability aspects of buildings through various measures and channels.	4.75	0.51	4.83	0.38	U1
CB4	Raising awareness of the role of experts in ensuring social sustainability in the construction industry.	4.57	0.62	4.60	0.56	
CB5	Promotion of successful and inspiring socially sustainable buildings and their appearance in journals and other important media, organizing visits and sightseeing, etc.	4.02	0.87	4.17	0.75	

Developing strategies and measures for overcoming such barriers is essential for increasing public acceptance and demand for SSBs. According to the experts' opinions, the most effective strategy with which to "raise the awareness and knowledge of investors about the advantages of SSBs" (CB3 in Table 8), on the one hand, and "awareness of the professionals' role to ensure such advantages" (CB4 in Table 8) and the "knowledge and awareness of tenants about the values of SS housing" (CB2 in Table 8), on the other, is the improvement of available information about the characteristics and benefits of SSBs. Except during formal schooling, the panelists recommended that the dissemination of such information should be conducted through various measures and channels, including via efficient marketing strategies since they are quite intertwined with these issues. For example, implementing public participation programs improves occupant awareness, making them less resistant to the adoption of SSB measures and technologies [100]. Similar recommended measures include educating occupants via training projects that include the use of open channels of communication, as well as the development of regular workshops, internet dissemination, TV advertisements, etc. All these strategies can motivate tenants to look for housing that has a less negative impact on their health and the environment, thus increasing the demand for SSBs [65,100].

The experts also suggested promoting tenants' responsibility in terms of recycling and reuse, production efficiency, the use of eco-materials and eco-products, etc., constituting a measure to help overcome consumerism, which casts "wasteful/conspicuous overconsumption" as a means of personal satisfaction and well-being [96,97,101] and promulgates the adoption of more sustainable lifestyle models instead. Accordingly, the "spread of new concepts of growth that do not depend on the cycle of production and consumption" (CB1 in Table 8) that continuously depletes the Earth's resources helps to "break the link between materialism and social progress" [97,101] and unfold new ways of living characterized by greater harmony and the healthier coexistence of people and the environment.

5. Discussion and Conclusions

According to previous studies, the implementation of SS measures and practices in residential (multi-apartment) buildings has not yet reached a satisfactory level. The aim of this study was to identify strategies/drivers for the integration of SS measures and practices into governmental and operational activities in relation to residential buildings according to experts' perspectives. To this end, a detailed literature review was conducted to gather an initial set of strategies, which was followed by a two-round Delphi survey to obtain a consensus on the validity/relevancy of the proposed strategies among an expert panel that was specially selected for this purpose. Out of the 38 strategies derived from the literature review and grouped into five categories, 32 were identified as significant (29 from the literature and 3 added by the panelists). From each group, the panelists singled out the three most effective strategies whose application would significantly accelerate the implementation of socially sustainable measures in the design and construction of multi-apartment residential buildings.

The most effective strategies identified are the following: The implementation of governmental financial incentives along with an easy and simple procedure for their use, including a clear set of evidence on the financial benefits of investing in SSBs. Investment in effective marketing strategies that promote the advantages of SSBs along with the promotion of a 'green image' and sustainability development through various channels and activities, such as journals, social media, workshops, project demonstrations, conferences, competitions, etc., are also effective strategies that the panelists suggested would increase the awareness and knowledge of both tenants and investors with respect to the values and advantages of SSBs, which will be reflected in a higher market demand and, therefore, in the large-scale implementation of SS measures and practices. Moreover, in order to ensure high-quality SS design (i.e., the fulfillment of SS goals to the greatest extent possible) in addition to improving the sustainable proficiencies and skills of building professionals (by organizing specialized SS training programs), the experts also recommended increasing the awareness and knowledge of regulators and legislators about principles, goals, criteria, indicators, successful measures and practices of SS, etc., in order to enable the creation of more adequate and efficient codes/regulations, which also greatly affect the quality of building design and its implementation in construction. Opening research centers/laboratories such as the one in London [102] as platforms for research, development, and learning about sustainable technologies, measures, tools, etc., was considered an effective strategy for achieving that goal.

The panelists also suggested promoting tenants' responsibility in terms of recycling and reuse, production efficiency, the use of eco-materials and eco-products, etc., in order to help overcome consumerism, which is the leading modus vivendi based on "wasteful/conspicuous overconsumption" as a means of personal satisfaction and well-being [97,102], and instead adopt more sustainable lifestyle models that are more congruent with SS principles and practices. To this end, the panelists recommended the spreading of new concepts of growth that help to "break the link between materialism and social progress" contributing to the adoption of new ways of life characterized by a more harmonious and healthy coexistence of people and the environment. That is, the gradual introduction of SS principles into value systems and their implementation in all aspects of

personal and social life is an essential precondition for achieving the goals of sustainable development on a large scale.

The case study of Freiburg demonstrated a successful implementation of many of the identified SS strategies. Firstly, the sustainability-related budgeting in this city reflects governmental financial incentives encouraging investment in SS projects (strategy FE1). Moreover, the "fresh cell" planning and design model corresponds to strategy FE9, i.e., the government provided financial incentives for innovative projects related to sustainable construction in order to realize some of the crucial SS principles contributing to achieving a more socially balanced residential neighborhood. Additionally, the case study of Freiburg demonstrates the possibility to realize "more inclusive, safe, green, and public spaces, in particular for women and children, older persons and persons with disabilities" (strategy GR9) and achieve the "sensitization of profession, users and investors regarding the SSBs" (strategy GR10). In terms of the Professional/Technical strategies, the case study shows the relevance of PT1, implying the necessity of education and the development of "proficiencies and skills of professionals in SS" leading to the fulfillment of project goals at a high level. In addition, the government of Freiburg recognized the relevance of concrete examples in practice, thereby establishing a paradigm for future projects (strategy PT3), and participated in financing and realization, which also implies "government commitment to SS projects" (strategy GR7) and thus the implementation of all three market strategies, namely, MA1, MA2 and MA3, since a concrete, successful example in practice promotes the perceived importance, advantages, and methods for the realization of SSBs to the greatest extent. Moreover, the case of Freiburg demonstrates the implementation of strategy PT4: "improved communication between design team members and other stakeholders". In addition to cooperation and good communication between members of the project team and other important stakeholders (investors, tenants, government authorities, construction companies, etc.), the citizens of Freiburg also participated in decision making for some important issues concerning the community as a whole (issues related to green places, pedestrian zones, the multi-functional use of streets, etc.). This example also demonstrates the valuable implementation of adequate sustainability measures at diverse levels, including regional/local, neighborhood/quarter, group of buildings/public space, and house/building, thus reflecting strategy PT8: improving urban planning in terms of sustainability (including all three pillars). Regarding the Cultural/Behavioral strategies, the implementation of CB1 and CB2 was identified, i.e., promoting non-car travel, car-reduction measures, the usage of streets for socializing, the creation of a child-friendly environment, etc., contributes to mitigating the depletion of Earth's resources (strategy CB1) and "raising awareness and knowledge of tenants about the values and significance of SS, promoting greater consumer responsibility, production efficiencies, recycling and reuse, bigger markets for eco-products" (strategy CB2). In conclusion, the case study of Freiburg confirms the relevance of the identified SS strategies, in reference to residential buildings/neighborhoods, to the aim of achieving the sustainable development goals.

Finally, the research results presented herein lay the groundwork for SS strategies for policy makers, developers, and planners and provide a starting point for other researchers to identify the most relevant strategies in different contexts, i.e., countries and regions and their specific characteristics, which will further create the conditions for the more efficient implementation of SS measures and practices and contribute to the fulfilment of Sustainable Development Goals (SDGs).

Author Contributions: Conceptualization of the study; definition of methodology; development of the survey; literature review; investigation; and writing—review and editing, K.G.; conceptualization of the study; preparing and performing survey; analysis of survey results; investigation; and writing—review and editing, V.K.; literature review; investigation; and writing—review and editing, S.S.V.; literature review; investigation; and writing—review and editing, K.K. All authors have read and agreed to the published version of the manuscript.

Appendix A. Survey on Social Sustainability of Apartment Buildings

Social sustainability could be defined as "Concerning how individuals, communities and societies live with each other and set out to achieve the objectives of development models which they have chosen for themselves, also taking into account the physical boundaries of their places and planet earth as a whole. At a more operational level, social sustainability stems from actions in key thematic areas, encompassing the social realm of individuals and societies, which ranges from capacity building and skills development to environmental and spatial inequalities. In this sense, social sustainability blends traditional social policy areas and principles, such as equity and health, with emerging issues concerning participation, needs, social capital, the economy, the environment, and more recently, with the notions of happiness, wellbeing and quality of life. A process for creating sustainable, successful places that promote wellbeing, by understanding what people need from the places they live and work. Social sustainability combines design of the physical realm (Figure A1) with design of the social world—infrastructure to support social and cultural life, social amenities, and systems for citizen engagement and space for people and places to evolve [103,104]".

Figure A1. Apartment buildings.

Appendix A.1. Informative Questions

1.   Your profession? (E.g., Architect, Engineer, Project Manager, Researcher, University professor, etc.)

2. Which sector do you work in? (E.g., Design, Planning, Engineering, Project management, Construction, Academic–Research, Consulting, Other, etc.)

3. How many years of professional experience do you have? (E.g., 1–5, 5–10, 10–15, 15–20, over 20)

4. Do you have any experience in planning/design/building of (new) apartment buildings? (YES or NO) If yes, please specify the number of years of working experience.

5. Do you have any experience in renovation of (existing) apartment buildings? (YES or NO) If yes, please specify the number of years of working experience. (1–5, 5–10, 10–15, 15–20, Over 20)

6. Do you have experience in practice and research in sustainability of built environment (e.g., buildings, green areas, public places, etc.)? If yes, please specify the number of years of working experience. (1–5, 5–10, 10–15, 15–20, Over 20)

7. Do you have experience in research or practice in social aspects related to built environment?

Appendix A.2. Survey Questions

In the following 5 tables, the strategies are divided into five groups: (A) Financial/Economic, (B) Governmental/Regulatory, (C) Market, (D) Professional/Technical, and (E) Cultural/Behavioral strategies.

1. Please assign grades 1–5 to each of the strategies proposed to overcome the Barriers related to social sustainability of apartment buildings.

Level of relevance—It answers the question of the relevance/suitability of observed strategies for the problem under consideration (Table A1).

Table A1. Level of relevance.

5	4	3	2	1
Extremely suitable/relevant	Highly suitable/relevant	Medium level of relevance	Low level of relevance	Not suitable/relevant

2. For each of five groups of strategies select three (3) strategies the most urgent strategies for financial, governmental and professional group of strategies and two (2) the most urgent strategies for market group of strategies.

Appendix A.2.1. Survey Questions Related to Financial/Economic Strategies (Table A2)

- Please assign grades 1–5 to each of the strategies proposed in Table A2.
- Please select three (3) the most urgent strategies.

Table A2. Financial/Economic strategies.

	Financial/Economic Strategies	Level of Relevance (1 to 5)	3 Urgent Strategies (X)
1	Governmental financial incentives. Various economic incentives offered by the government to encourage investors/developers to invest their capital in socially sustainable projects		
2	Easy access to financing provided by the government. Development of a financing model to enable easy and simple access to financing for investors applying social sustainability principles in building design and construction (as an effective way to help overcome the barrier "difficult access to financing")		
3	Educational projects related to financial analysis (as a means to counteract the barrier "fear of high investment")		

Table A2. *Cont.*

	Financial/Economic Strategies	Level of Relevance (1 to 5)	3 Urgent Strategies (X)
4	Educational projects related to risk analysis. Financial risk analysis should be performed as a regular step before adoption of any social sustainability measures in order to realistically identify and assess the potential losses associated with their adoption.		
5	Excellence awards to professionals (designers, engineers and others) involved in socially sustainable projects in order to stimulate their engagement and commitment to developing high quality socially sustainable projects		
6	Financial rewards to owners provided by the government (through various discounts and benefits, bonus GFA (gross floor area), partial tax exemption, etc.).		
7	Public-private partnership for land and building ownership		
8	More specialized and more affordable prices of courses and seminars for enhancing knowledge about social sustainability		
9	Financing Innovation and Technological Advancement. This strategy aims to develop and improve products and processes regarding sustainability (including all three aspects).		
10	Financial (and other) support for participatory engagement		
	Add a new one if any:		
	1.		
	2.		

Appendix A.2.2. Survey Questions Related to Governmental/Regulatory Strategies (Table A3)

- Please assign grades 1–5 to each of the strategies proposed in Table A3.
- Please select three (3) the most urgent strategies.

Table A3. Governmental/Regulatory strategies.

	Governmental/Regulatory Strategies	Level of relevance (1 to 5)	3 Urgent Strategies (X)
1	Developing more efficient codes/regulations/standards		
2	Simplification of certification procedures for sustainability of the buildings including all three pillars.		
3	Clear and user-friendly policy guidance on financial implications.		
4	Training on sustainability (including all three pillars) for regulators and legislators. By increasing their knowledge and awareness, regulations and measures related to sustainability will become more adequate and efficient.		
5	Certificate of sustainability including all three aspects should be mandatory for all new buildings and those under renovation.... or certain parts		
6	Rigorous policy framework to disseminate information on the benefits of social sustainability measures.		
7	Government commitment to socially sustainable projects.		
8	Government commitment to develop social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning		
9	Creating more inclusive, safe, green and public spaces, in particular for women and children, older persons and persons with disabilities		
	Add a new one if any:		
	1.		
	2.		

Appendix A.2.3. Survey Questions Related to Market Strategies (Table A4)

- Please assign grades 1–5 to each of the strategies proposed in Table A4.
- Please select three (3) the most urgent strategies.

Table A4. Market strategies.

	Market Strategies	Level of Relevance (1 to 5)	3 Urgent Strategies (X)
1	Development of efficient practical guide for marketing of sustainable buildings including all three pillars (simple and effective guide to meeting market requirements).		
2	Investing in marketing strategies that disseminate advantages of sustainable buildings through various channels such as workshops, project demonstrations, etc. and use of various media to divulge the benefits of sustainable buildings including all three pillars of sustainability.		
3	Government actions toward promotion of socially sustainable buildings by demonstrating "green image" and sustainable development to the public through various channels (journals, social media, conferences, project demonstration, etc.) Add a new one if any: 1. 2.		

Appendix A.2.4. Survey Questions Related to Professional/Technical Strategies (Table A5)

- Please assign grades 1–5 to each of the strategies proposed in Table A5.
- Please select three (3) the most urgent strategies.

Table A5. Professional/Technical strategies.

	Professional/Technical Strategies	Level of Relevance (1 to 5)	3 Urgent Strategies (X)
1	Sustainable proficiencies and skill development (specialized education and trainings (studies, modules, courses, seminars, conferences) of professionals in sustainability including social sustainability area provided by recognized institutions		
2	Provision of clear and reliable instructions on the value and benefits of social sustainability measures.		
3	Provision of user-friendly guidelines that include useful instructions and examples of successful design of building spaces that play a key role in achieving social sustainability (building entrance, common room, public space, etc.) in addition to various tools and software that facilitate the design of socially sustainable buildings		
4	Improved communication between design team members and other stakeholders.		
5	Providing excellence awards to professionals involved in SS projects.		
6	Commitment of the management team to sustainability measures including social sustainability		
7	Providing sufficient time for design especially during early design phases.		
8	Improving urban planning in terms of sustainability (including all three pillars)		
9	Opening research centers as platforms for research, development and learning on sustainable technologies, technics, measures, etc. Add a new one if any: 1. 2. 3.		

Appendix A.2.5. Survey Questions Related to Cultural/Behavioral Strategies (Table A6)

- Please assign grades 1–5 to each of the strategies proposed in Table A6.
- Please select three (3) the most urgent strategies.

Table A6. Cultural/Behavioral strategies.

	Cultural/Behavioral Strategies	Level of Relevance (1 to 5)	3 Urgent Strategies (X)
1	Promoting new concepts of growth that do not depend on a production–consumption cycle that continually reduces the earth's resources. It will involve exploring new social, economic and political paradigms that 'break the link between materialism and social progress' ([101], p. 85).		
2	Raising awareness and knowledge about the values and significance of social sustainability as well as promoting greater consumer responsibility, production efficiencies, more recycling and reuse, and bigger markets for eco- products.		
3	Raising awareness and knowledge of investors about social sustainability aspects of buildings through various measures and channels.		
4	Raising awareness of the role of experts in ensuring social sustainability in the construction industry.		
5	Promotion of successful and inspiring socially sustainable buildings and their appearance in journals and other important media, organizing visits and sightseeing, etc.		
	Add a new one if any:		
	1.		
	2.		
	3.		

Thank you very much for taking the time to complete our survey! Your answers are important to us and will help us better understand where change is needed to break down the obstacles and facilitate construction of socially sustainable multi-family buildings!

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