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Social Sustainability of Aged Care Public-Private Partnership Projects in China: Critical Practices and Realisation Paths

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Abstract:	<p>The profound changes in China's population, economy and social structure have significantly impacted traditional home-based aged care and social welfare, leading to the emergence of Aged Care Public-Private Partnership (PPP) projects for institutional care. Social sustainability is crucial for these projects as it greatly improves stakeholders' quality of life and well-being. Adoption of social sustainability practices enhances elderly and employee satisfaction, offers competitive advantages, and fosters community development. This study aimed to establish a socially sustainable development process for aged care PPP projects. A multiple case study was conducted, and an improved critical incident technique was adopted. Forty-two first-level critical practices that should be adopted by government departments, private investors and Special Purpose Vehicles (SPVs) at different stages in the lifecycle were identified from three main cases and seventeen parallel reference cases. Twenty-one realisation paths and a consolidated realisation path were established based on analysing the enabling relationships between critical practices. The preparation phase is pivotal, with ten of the 21 more important critical practices (i.e., critical practices that appear in all realisation paths) adopted at this phase. The behaviours and decisions of government departments played a key and decisive role, with eighteen more important critical practices adopted by them alone. This study contributes to enhancing knowledge of social sustainability in aged care. The critical practices and the realisation paths provide a complete picture of realising social sustainability of aged care PPP projects. The public and private sectors can adopt corresponding behaviours and decisions at different project stages to deliver projects successfully. The empirical data shows the applicability of stakeholder theory in social sustainability research on aged care. In addition, the results provide insights into the achievement of social sustainability of aged care projects in other countries and the understanding of social sustainability of other public service projects. However, potential biases exist in the study, arising from considering aged care PPP projects as a whole, neglecting lessons from failure cases, and subjective judgments in qualitative research.</p>
Suggested Reviewers:	<p>Magnus Boström Örebro University magnus.bostrom@oru.se Dr Magnus Boström published several good-quality journal articles on social sustainability.</p> <p>Nicola Dempsey The University of Sheffield N.Dempsey@sheffield.ac.uk Dr Nicola Dempsey published several good-quality journal articles on social sustainability.</p> <p>Ashish Goel Indian Institute of Management Sirmaur</p>

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August 1, 2023

Prof Cecília Maria Almeida
Co-Editors-in-Chief, Journal of Cleaner Production
Paulista University - Indianópolis Campus, Sao Paulo, Brazil

Dear Prof Almeida,

We wish to resubmit our original research article entitled “Social Sustainability of Aged Care Public-Private Partnership Projects in China: Critical Practices and Realisation Paths” (manuscript number: JCLEPRO-D-23-14816) for reconsideration by *Journal of Cleaner Production*. We appreciate the detailed and constructive comments from you and the reviewers. The paper has been recast to address the concerns mentioned. The response document displays how we accommodated the feedback in detail.

We thank you for this opportunity to revise and resubmit this manuscript. Please address all correspondence concerning this manuscript to me at wangkun@nbu.edu.cn. Thank you for reconsidering it.

Sincerely,

Kun Wang
Lecturer, Ningbo University, China

Social Sustainability of Aged Care Public-Private Partnership Projects in China: Critical Practices and Realisation Paths

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- Social sustainability is crucial to the development and operation of Aged Care Public-Private Partnership Projects.
- A socially sustainable development process is conducive to achieve the social sustainability of aged care PPP projects.
- Government departments, private investors and SPVs need to adopt a series of critical practices at different phases and stages in the project lifecycle to achieve the social sustainability of aged care PPP projects.

Please note that page numbers in the table refer to the change-tracked version for your ease of cross-checking.

Responses to Reviewer 1

No.	Comments	Responses
1	<p>Firstly, while the reason for using content analysis has been explained properly, there are not enough explanations on the "coding and grouping" and "reliability assessment" sections on page 12. There should be adequate explanations to allow the reviewers and readers to understand how the content analysis was conducted (including information about the coders).</p>	<p>The coding of critical practice #1 has been provided as an example. It explains how content analysis identifies a behaviour or decision as a critical practice. In addition to being mentioned by the interviewees or presented in the case documents, the behaviour or decision must have a clear purpose or intent and a clear consequence or effect. (Please see page 14 lines 17-26, and page 15 line 1)</p> <p>Coder information and more reliability assessment information have also been provided in the “reliability assessment” section. The coding is completed by the first two co-authors independently. The identified critical practices are validated by each of them during the coding process. Furthermore, the independent coding results of the two authors are compared. The inconsistencies are discussed by all the authors to reach a consensus. (Please see page 15 lines 5-13)</p>
2	<p>Secondly, while the stakeholder theory was chosen as a conceptual framework for the study and has somewhat reflected in the case selection, no appropriate link and/or reference has been made to this theory in Sections 4, 5 and 6. This is very important to justify the chosen framework for the study and also indicates some contribution to the theory in the literature beyond the practical suggestions.</p>	<p>Stakeholder theory and related perspectives have been provided in Sections 5 and Section 6. The purpose is to discuss a critical practice from a stakeholder perspective and the reasons for its identification, as well as to highlight the contribution of this article to the theory. (Please see page 22 lines 17-19 and lines 24-26, page 23 lines 7-8, page 24 lines 23-25, page 25 lines 13-15 and lines 23-25, page 27 lines 12-16, and page 29 lines 5-6)</p>
3	<p>The writing also has some unstructured grammar, fragmentary sentences and typos. The paper will need some editing/proofreading before publication.</p>	<p>The paper has been proofread before re-submission.</p>

Responses to Reviewer 2

No.	Comments	Responses
1	<p>The first thing is to rewrite the abstract part because it is too general. Here are some potential weaknesses:</p> <p>1) Lack of specific details: The abstract does not provide specific details about the cases studied, such as the locations, sample sizes, or specific characteristics of the aged care PPP projects. This lack of specific information makes it difficult to fully assess the generalizability and reliability of the findings.</p> <p>2) Limited explanation of the improved critical incident technique: The abstract mentions the use of an improved critical incident technique, but it does not provide a clear explanation of what this technique entails or how it was applied in the study. Additional information on the methodology would have been helpful in understanding the approach and evaluating its validity.</p> <p>3) Inadequate discussion of potential biases: The abstract does not mention any potential biases that could have influenced the findings, such as selection bias or researcher bias. Acknowledging and addressing potential biases is crucial to ensure the credibility and validity of the research.</p> <p>4) Lack of comparative analysis: While the abstract mentions the identification of critical practices and realisation paths, it does not provide a comparative analysis of different cases or reference cases. Without such analysis, it is challenging to assess the uniqueness or generalizability of the findings.</p> <p>5) Limited discussion of practical implications: Although the abstract briefly mentions that the results can guide the public and private sectors in delivering aged care PPP projects successfully, it does not elaborate on</p>	<p>Thank you for your valuable feedback on how to write the abstract. Due to the abstract's length requirements, we could only address some potential weaknesses in the abstract and the remaining ones in the manuscript.</p> <p>Our modifications include:</p> <p>1) The specific details, selection criteria and justification for the three main cases have been provided in Section 3.1. (Please see page 10 lines 19-26, and page 11 lines 1-10)</p> <p>The selection criteria for the 17 parallel reference cases have also been provided in Section 3.1. (Please see page 11 lines 14-19) For their specific details, please see Table A1.</p> <p>2) The improvement and application of CIT have been described and explained in detail in Section 3.2. (Please see page 11 lines 23-26, page 12 lines 1-26, page 13 lines 1-26, page 14 lines 1-26, and page 15 lines 1-13)</p> <p>3) A brief description of the potential biases has been added to the abstract. (Please see page 2 lines 2-3)</p> <p>A detailed description and possible resolution of these biases can be seen in Section 6. (Please see page 29 lines 15-26, and page 30 lines 1-4)</p> <p>4) A new paragraph has been added in Section 4.1 to provide information on the adoption of critical practices in the main cases and parallel reference cases to compare and justify them. (Please see page 17 lines 3-13)</p> <p>5) The findings inform which behaviours and decisions should be adopted by the public and private sectors at different stages of the project to achieve social sustainability. The description in the abstract has been revised to highlight this specific practical implication. (Please see page 1 lines 22-25)</p>

	<p>the specific practical implications or recommendations derived from the findings. Providing more concrete suggestions would enhance the usefulness of the research for practitioners and policymakers.</p>	
2	<p>Second, how could you justify the use of the snowball sampling method page 11?</p>	<p>The snowball sampling method was chosen due to the limited availability of experts in the specific field of social sustainability in aged care PPP projects and the absence of a comprehensive expert list. The novelty of the research topic and the relatively niche area made traditional random sampling impractical. By leveraging the initial participants' networks and referrals, the snowball sampling method allowed us to access experts who might otherwise have been inaccessible, resulting in a diverse and representative group of participants with valuable insights into the subject matter. We have clarified this justification in the revised manuscript. (Please see page 13 lines 3-8)</p>
3	<p>Third, try to avoid general statements. For example, in page 12 while presenting critical practices conducive to social sustainability.</p>	<p>The coding of critical practice #1 has been provided as an example to avoid generalities. It outlines the process of identifying a behaviour or decision as a critical practice using content analysis. For inclusion, it must be either mentioned by interviewees or found in case documents, accompanied by a distinct purpose and consequence. (Please see page 14 lines 17-26)</p>
4	<p>Fourth, why are most CPs adopted during the project implementation phase? what factors contribute to the importance of this phase in terms of achieving social sustainability? In other words, how do the findings suggest the need for coordination and collaboration among key decision makers (government departments, SPVs, and private investors) to achieve social sustainability in aged care PPP projects?</p>	<p>Our study revealed that CPs are adopted across different project phases, with 14 CPs in the preparation phase, 9 CPs in the procurement phase, and 19 CPs in the implementation phase. The higher number of CPs in the implementation phase can be attributed to its extended duration, covering construction, operation, and maintenance activities. (Please see page 25 lines 7-11)</p> <p>The importance of collaboration is evident in two ways: certain CPs are jointly undertaken by both parties, highlighting the interdependence and cooperation needed between government and private stakeholders to effectively address social sustainability challenges. Additionally, several CPs require one party to consider the needs and perspectives of the counterparty, emphasizing the significance of understanding roles, aligning objectives, and working collaboratively towards shared social sustainability goals.</p>
5	<p>Are there any specific examples or case studies mentioned in the paper that illustrate the adoption of CPs by</p>	<p>Yes, there are specific examples and case studies in the paper. We take indicator 1.1.1 as an example to illustrate the realisation path to achieve social sustainability. To achieve this</p>

<p>different decision makers in different phases? How do these examples enhance the understanding of the findings?</p>	<p>indicator, it is necessary for the government, private investor and SPV to adopt a series of CPs at different phases and stages. The consideration and adoption of each CP in each main case and parallel reference case are presented. (Please see page 18 lines 18-26, page 19 lines 1-26, page 20 lines 1-26, and page 21 lines 1-5)</p> <p>More information is available in the Appendix, which demonstrates the details of all CPs. The third component of each CP, i.e., adopted or not, indicates whether a CP has been adopted in the main cases and parallel reference cases.</p> <p>These examples and case studies help to understand the premise of a CP being adopted, the reasons why, and the status quo of adoption.</p>
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Responses to Reviewer 3

No.	Comments	Responses
1	<p>The Abstract is well written and includes a clear research objective and implications. However, one of the most important questions a reader asks after reading an abstract is: why is this topic important? I suggest authors add an answer to this question to the abstract.</p>	<p>The answer to this question has been added. Social sustainability is crucial for aged care PPP projects as it greatly improves stakeholders' quality of life and well-being. Adoption of social sustainability practices enhances elderly and employee satisfaction, offers competitive advantages, and fosters community development. (Please see page 1 lines 7-11)</p>
2	<p>The literature review provides an overview of the current state of knowledge, but the main topics could be given more attention and clarification. First of all, the theoretical underpinnings in section 3.1 should be included in the '2. Literature review' section rather than in the methodology section. More emphasis should be placed on arguing the importance of the phenomenon. Why do we need to know more about this topic? The argumentation is not strong enough.</p>	<p>The theoretical underpinnings in Section 3.1 have been moved into the newly added Section 2.3. This section reviews the key theories in the study of social sustainability and determines the theoretical foundation of this study. (Please see page 8 lines 1-17)</p> <p>Section 2.2 has been adjusted and a new Section 2.2.1 has been added to highlight the importance of social sustainability practices from organisational and stakeholder perspectives. (Please see page 5 lines 13-24)</p> <p>The importance of this phenomenon is also emphasised in Section 2.4. (Please see page 9 lines 12-15)</p>
3	<p>The methodological section describes how the objective of the study will be achieved. The study design is well justified and clearly explained. The collection of qualitative data also adds to the depth of the analysis. However, the author(s) should justify the choice of specific cases. Do they reveal processes, structures or driving forces? Why are they good cases?</p>	<p>A new paragraph has been added in Section 3.1 to explain why the three main cases were chosen. First, being situated in Shenzhen, the vanguard of China's reform and opening-up, these projects benefit from the city's commitment to building a high-quality aged care service system. This strong government strategy provides a solid foundation for the development of aged care PPP projects. Second, all three cases involve reform initiatives for public aged care institutions. Case A stands as Shenzhen's pioneering public institution to adopt the PPP model for reform, while Case B and Case C represent the first reformed projects in their respective administrative regions. Their extensive operational history before adopting the PPP model sets them apart from newly built projects, offering valuable experience. Lastly, these cases exhibit exemplary management and operations. (Please see page 11 lines 2-10)</p>
4	<p>The findings of the study include not only data presentation but also the interpretation of the data. Key findings from the data are well explained and justified. However, taking more details and critical assessment of the data will</p>	<p>The first paragraph of Section 4.1 has been amended to briefly describe the identification and composition of critical practices. (Please see page 16 lines 14-19) In addition, a new paragraph has been added to provide information on the adoption of critical practices in the main cases and parallel reference cases to compare and justify them. (Please see page 17 lines 3-13)</p>

	improve the quality of the analysis.	A new paragraph has also been added in Section 4.2. The purpose is to provide a statement of the achieving process of social sustainability of aged care PPP projects. (Please see page 21 lines 22-26, and page 22 line 1)
5	The academic language is correct, but general proofreading is recommended. Moreover, the quality of Figures is poor and need to be improved.	The paper has been proofread before re-submission. The quality of Figures has been improved.

Social Sustainability of Aged Care Public-Private Partnership Projects in China: Critical Practices and Realisation Paths

Abstract: The ~~profound many~~ changes in China's population, economy and social structure have significantly impacted ~~China's~~ traditional home-based aged care and social welfare, leading to the emergence of Aged Care Public-Private Partnership (PPP) projects for institutional care. ~~Aged care Public-Private Partnership (PPP) projects providing institutional care have emerged.~~ Social sustainability is crucial for these projects as it greatly to the development and operation of such projects because projects that achieve social sustainability can significantly improves stakeholders' quality of life and ~~realise their~~ well-being. Adoption of social sustainability practices enhances elderly and employee satisfaction, offers competitive advantages, and fosters community development. This study aimed to establish a socially sustainable development process ~~to achieve the social sustainability of for~~ aged care PPP projects. A multiple case study was conducted, and an improved critical incident technique was adopted. Forty-two first-level critical practices that should be adopted by government departments, private investors and Special Purpose Vehicles (SPVs) at different stages in the lifecycle were identified from three main cases and seventeen parallel reference cases. Twenty-one realisation paths and a consolidated realisation path were established based on analysing the enabling relationships between critical practices. The preparation phase is pivotal, with ~~was crucial.~~ ~~Ten~~ of the 21 more important critical practices (i.e., critical practices that appear in all realisation paths) ~~were~~ adopted at this phase. ~~In addition,~~ ~~The~~ behaviours and decisions of government departments played a key and decisive role, with ~~Eighteen~~ more important critical practices ~~were~~ adopted by them alone. This study contributes to enhancing knowledge of ~~increased knowledge of~~ social sustainability in aged care. The critical practices and the realisation paths provide a complete picture of realising social sustainability of aged care PPP projects. The public and private sectors can refer to them to adopt corresponding ~~The~~ behaviours and decisions at different project stages ~~can enable the public and private sectors to calibrate their policies and contracting practices~~ to deliver aged care PPP projects successfully. The empirical data shows the applicability of stakeholder theory in social sustainability research on aged care. In addition, the results provide insights into the achievement of

1 social sustainability of aged care projects in other countries and the understanding of social sustainability of
2 other public service projects. However, potential biases exist in the study, arising from considering aged care
3 PPP projects as a whole, neglecting lessons from failure cases, and subjective judgments in qualitative research.
4

5 **Keywords:** social sustainability, aged care, Public-Private Partnership, quality of life, China, case study
6
7

8 **1 Introduction**

9 Social sustainability becomes critical with the increasing number of aged care projects in China. An aged care
10 project refers to a project that provides institutional care, in which an organisation is responsible for providing
11 different forms of accommodation and multiple types of support and care services for the elderly in a selected
12 location. The many changes in population, economy and social structure have significantly challenged China's
13 traditional home-based care. Institutional care is becoming a necessity, especially for the elderly who cannot
14 continue to live in their own homes due to health conditions or family reasons (Shi et al., 2020). An aged care
15 project is socially sustainable when various social impacts on its stakeholders are thoroughly considered
16 during its lifecycle, and their well-being is realised under a specific social, cultural and institutional context.
17 In other words, the social sustainability of aged care projects can be defined as improving stakeholders' quality
18 of life by understanding and satisfying their social needs (Wang et al., 2023). Stakeholders' pursuit of quality
19 of life closely links social sustainability with aged care projects. High quality of life is a prerequisite for a
20 project to attract elderly residents and employees, and to gain support from the local community and society
21 (Hu et al., 2017; Miller et al., 2020). Therefore, social sustainability is particularly critical for developing and
22 operating aged care projects. It is a foundation that enables a project to regenerate itself now and in the future
23 (Boström, 2012).

24 Neglect on social sustainability may lead to harmful situations (Marzouk & Sabbah, 2021). Unfortunately,
25 that is happening in aged care projects. Studies in China show that the residents in aged care institutions often
26 feel lonely and fearful (Lan et al., 2020), with unmet healthcare needs (Han et al., 2020), and limited autonomy

1 and trampled human dignity (Li et al., 2022). Employees have a low professional image, heavy workloads and
2 low salary (Shi et al., 2020). They also lack education and training (Feng et al., 2018). These negative impacts
3 reduce the attractiveness of aged care projects to the elderly and employees, and even cause resistance from
4 the community where a project is located. The average vacancy rate of such projects is 50 percent, and the
5 projects are facing a survival crisis. Moreover, the elderly's care needs cannot be thoroughly satisfied, and
6 their well-being is at stake. According to the research of Nummelin (2005) and Xia, Zuo, et al. (2015), aged
7 care institutions in Western countries face the same dilemma.

8 Social sustainability issues become more critical after the Public-Private Partnership (PPP) model is
9 introduced in the projects. An aged care PPP project is a long-term contract between a public party and a
10 private party, with the private party responsible for providing accommodation and services for the elderly in
11 a selected location. One of the crucial reasons for adopting this model is that governments intend to use the
12 private sector's finance, technology and management experiences to achieve the public goal of improving care
13 services. However, the inherent profit-driven goals, culture and values of private investors often do not align
14 with the realisation of public interests in an aged care PPP project, because the main target of private investors
15 is profit-seeking (Barker et al., 2012). In short, adopting the PPP model has caused people to worry that the
16 social sustainability of aged care projects may be affected negatively.

17 Studies have approached and defined social sustainability from different standpoints and perspectives
18 (Shirazi et al., 2022). Many agree that this concept includes two dimensions, i.e., substantive dimension and
19 procedural dimension (Boström, 2012; Galuppo et al., 2014). The former has to do with what social
20 sustainability is and the themes it encompasses. The latter focuses on how to achieve the aim or what the
21 means are to realise it. Boström et al. (2015) pointed out that substantive social sustainability (“what”) needs
22 the support of procedural social sustainability (“how”), otherwise, it is difficult to be realised. However, the
23 literature review shows that there is a lack of research on the social sustainability of aged care projects
24 (Olmsted, 2021). Some literature on institutional care involves certain means to achieve social sustainability,
25 but they are scattered and for other research purposes, lacking pertinence and systematisation. Research on
26 aged care PPP projects is even more scarce.

1 This paper is part of a broad study entitled “socially sustainable development of China’s aged care Public–
2 Private Partnership projects”. The research question of this paper is proposed as: how to achieve the social
3 sustainability of aged care PPP projects in China? The aim is to establish a socially sustainable development
4 process. To achieve this aim, two tasks need to be accomplished, i.e., identifying critical practices that should
5 be adopted in the project lifecycle, and establishing realisation paths to achieve social sustainability. Critical
6 practices refer to the behaviours and decisions adopted by government departments, private investors and
7 Special Purpose Vehicles (SPVs, which are project companies created to develop and manage the projects,
8 which is a key feature of most PPPs) involved in aged care PPP projects, which are expected to have significant
9 effects directly or indirectly on social sustainability in the short run or the long run. A realisation path is a
10 collection of a series of critical practices that drive the achievement of one social sustainability indicator. The
11 remainder of this paper is organised as follows. “Literature Review” reviews the literature on aged care PPP
12 projects ~~and~~, social sustainability practices, and key theories involved and theoretical foundation. “Research
13 Methodology” presents the ~~theoretical foundation and~~ research methods. The next section presents the results.
14 The discussions about the answers to the research question are carried out in “Discussion”, followed by
15 “Conclusions and Limitations”.

17 **2 Literature Review**

18 **2.1 Aged Care PPP Projects in China and Their Lifecycle**

19 The earliest aged care projects in China were publicly established and managed. They were invested in and
20 built by local governments at all levels and village collectives. Since 2011, the government has been reforming
21 public aged care projects, trying to cooperate with private investors in a broad sense. The government has
22 publicly supported developing aged care projects via PPP since 2015 (Ministry of Civil Affairs, 2015). As of
23 17 June 2022, there were 100 aged care PPP projects in the project management database operated by China’s
24 Ministry of Finance. Of these, 65 were in the implementation phase. See Table A.1 for the details of these
25 projects. The database (<https://www.cpppc.org:8082/inforpublic/homepage.html#/projectPublic>) is used
26 because it provides open, rich and dynamic project information (Cheng et al., 2018). However, not all aged

1 care PPP projects are included. Consequently, the analysis here only represents the overview of projects in the
2 database. Fig. 1. indicates that the earliest project in China was launched in 2015, and the number of such
3 projects peaked in 2017. Recognising the importance of good management practices after an influx of PPPs
4 from 2014 to 2017, the Chinese government issued a series of regulatory documents from 2017 (Wang et al.,
5 2019). Aged care PPP projects have been significantly impacted, and the number of projects dropped sharply.

6 [insert Fig. 1. here]

7 According to the *Public–Private Partnership Operation Guide (revised version)* issued by China’s Ministry
8 of Finance in 2019, the lifecycle of an aged care PPP project contains three phases: preparation, procurement,
9 and implementation. Each phase contains several stages and a series of tasks (Table 1).

10 [insert Table 1 here]

11 12 **2.2 Social Sustainability Practices in Different Research Fields**

13 2.2.1 The Importance of Social Sustainability Practices

14 According to Sellitto et al. (2020), social sustainability practices are the actions and procedures taken by
15 organisations to promote their social responsibilities in the pursuit of sustainable development. ~~Few studies~~
16 ~~have focused on such practices. Existing research is usually for other purposes, while their research findings~~
17 ~~unconsciously involve social sustainability practices. Such research is mainly distributed in two fields, namely,~~
18 ~~social sustainability studies and aged care studies.~~ Social sustainability practices are beneficial to both
19 organisations and their stakeholders. It can improve organisations’ financial benefits and reputation (Marzouk
20 & Sabbah, 2021), enhance customer and employee satisfaction (Mani et al., 2020), and thereby lead to
21 sustainable competitive advantages (Mani et al., 2018). Meanwhile, it helps improve the safety and welfare of
22 individuals and promote the development of communities (Majumdar et al., 2020). Ignoring social
23 sustainability practices will attract wide concern from various stakeholders, cause operational pressure (Mani
24 et al., 2018), and even affect organisations' sustainable development (Tran et al., 2021).

2.2.1-2 *Social Sustainability Practices in Social Sustainability Studies*

~~Social sustainability practices are beneficial to both organisations and their stakeholders. It can improve organisations' financial benefits and reputation (Marzouk & Sabbah, 2021), enhance customer and employee satisfaction (Mani et al., 2020), and thereby lead to sustainable competitive advantages (Mani et al., 2018). Meanwhile, it helps improve the safety and welfare of individuals and promote the development of communities (Majumdar et al., 2020).~~

—Some studies have analysed social sustainability practices from the lifecycle perspective. Goel et al. (2020) pointed out that social sustainability considerations should be incorporated into business decisions when conducting the project feasibility study, seeking to understand the range of stakeholder interests as early as possible. Bubicz et al. (2021) found that some organisations in the apparel supply chains have incorporated social sustainability into their corporate strategy and formulated "Codes of Conduct" and "Sustainability Actions" accordingly. This practice has also been found in the research on the construction supply chain (Marzouk & Sabbah, 2021). In addition, some researchers have pointed out that the prequalification of suppliers is a crucial step in ensuring social sustainability (Thomas et al., 2021). Further, the design and construction of the built environment should not be neglected (Bahador & Bavar, 2022; Yıldız et al., 2020). Finally, stakeholder engagement (Ballet et al., 2020; Kordi et al., 2021) and supervision (Bubicz et al., 2021) throughout the lifecycle are critical to achieving social sustainability.

Other studies have analysed social sustainability practices from the substantive dimension. For example, Carballo- Penela (2019) found that organisations with more responsibility towards their workforce, such as stable employment, health and safety at work, and capacity development, are easier to recruit employees. Valdes-Vasquez and Klotz (2013) believed that the productivity, safety, health, and security of end-users should be paid attention to when conducting planning and design. In addition, a project's impact on the surrounding community should also be considered (Wang et al., 2022).

2.2.2-3 *Social Sustainability Practices in Aged Care Studies*

To the best of the authors' knowledge, there is little, if any, literature devotes to the social sustainability of

1 aged care projects (Wang et al., 2023). However, some literature in aged care studies unconsciously involves
2 social sustainability practices. Although for other research purposes, they can still provide references for this
3 study.

4 Some studies involve social sustainability practices that can improve employees' quality of life. For
5 example, Naccarella et al. (2018) believed that aged care institutions should provide good working workspace
6 for employees, such as a home-like environment and access to outdoor spaces. A good psychosocial climate
7 is also crucial (Sjögren et al., 2015). It can affect employees' work efficiency, security and sense of belonging
8 (Naccarella et al., 2018). In addition, aged care institutions should provide education and training for
9 employees, including professional skill training (British Geriatrics Society, 2021) and mental health training
10 (Moyle et al., 2010). According to Surr et al. (2019), effective training is tailored to the trainees and delivered
11 face-to-face by experienced facilitators. Further, communication with employees is crucial (Wang et al., 2021).
12 Staff meetings, newsletters, supervision and informal discussions are useful tools (Age Cymru, 2011).

13 More studies involve social sustainability practices that can improve the quality of life of elderly residents.
14 In general, aged care institutions should move towards a person-centred care model (Sjögren et al., 2015) and
15 provide an integrated care (Douglas et al., 2017). Integrated care is a network of multiple professionals and
16 organisations across the health and social care system that provide comprehensive services to elderly residents.
17 To this end, aged care institutions must undertake a series of practices. For example, working with residents
18 and employees to develop a shared vision (Age Cymru, 2011); developing a project plan and design to meet
19 the needs of residents and employees (Guerra Santin et al., 2021); and providing various facilities and services
20 (Xia, Skitmore, et al., 2015). In addition, stakeholder engagement is indispensable (Petriwskyj et al., 2018).
21 Aged care institutions should empower residents to make choices to the maximum extent (Age Cymru, 2011),
22 develop a self-organised residents committee, and communicate and share information with residents (Xia,
23 Zuo, et al., 2015). The adoption of digital technology is a trend that could assist in promoting these practices
24 (British Geriatrics Society, 2021; Douglas et al., 2017).

2.3 Key Theories Involved and Theoretical Foundation

The study identifies three key theories commonly used in social sustainability research: a) stakeholder theory, which emphasizes the importance of stakeholders in promoting an organization's socially sustainable development (Bellantuono et al., 2016; Collier et al., 2014; Herazo & Lizarralde, 2016; Hussain et al., 2018); b) system theory, which helps identify and assess the sustainability of social elements in individuals and institutions (Broman & Robèrt, 2017; Janker et al., 2019); and c) network theory, particularly Social Network Analysis (SNA), used to analyze and enhance the social sustainability of construction projects (Doloi, 2012; Wang et al., 2018).

Stakeholder theory is the chosen theoretical foundation of this study. Galuppo et al. (2014) and Mani et al. (2018) believed that it is the most commonly used theory in social sustainability research. The selection is based on two considerations. First, stakeholder theory and sustainability fit well (Herazo & Lizarralde, 2016). "Sustainability" is an essential element of this theory (Freeman et al., 2021), which posits that the purpose of business is to create common value for all stakeholders in a sustainable manner. Second, stakeholder theory can contribute to social sustainability because it focuses on the benefits and well-being of stakeholders (Harrison et al., 2010). Hörisch et al. (2014) pointed out that stakeholder theory usually describes what companies do to propose solutions for business problems. Based on that, this theory is used in this study to identify the critical practices of project participants.

2.3.4 Gap in Knowledge

Accompanied by population aging, the pressure on the Chinese government to solely undertake the responsibility of supplying aged care is increasing, and it is becoming difficult to accomplish. Aged care PPP projects have emerged. However, as described in the Introduction, the institutional care in China is socially unsustainable. A project may be even more unsustainable after the PPP model is introduced, for the inherent profitability of a PPP may mean the private investors do not really care about satisfying the social needs of stakeholders. Moreover, they do not necessarily have expertise in aged care. In short, the adoption of the PPP model has increased people's concern that the social needs of stakeholders cannot be well met and the

1 improvement of their quality of life is affected (Wang et al., 2022). The social sustainability issue of aged care
2 PPP projects must be addressed.

3 However, this issue has not received due attention. The literature review indicates that the current research
4 cannot answer the question of how social sustainability of aged care projects could be achieved, and even its
5 definition needs to be more specific. This is consistent with the conclusion of Olmsted (2021). Even if
6 expanding the scope to a broader field, i.e., social sustainability studies, there is little systematic research on
7 the practices and realisation paths. As Missimer and Mesquita (2022) pointed out, the current academic body
8 of knowledge about the actual implementation of social sustainability is still being determined. Furthermore,
9 given the long-term nature and complexity of PPP projects, consolidating the fragmented behaviours and
10 decisions adopted by different organisations or individuals at different stages of the project lifecycle would be
11 more conducive to achieving social sustainability. Unfortunately, few studies have related social sustainability
12 to a project lifecycle and stakeholders (Kordi et al., 2021). To achieve social sustainability in aged care PPP
13 projects, it is essential to identify social sustainability practices and establish realisation paths from the
14 stakeholders' perspective in the project lifecycle. Without this crucial step, the projects may not effectively
15 address social sustainability concerns.

16 In another paper by the authors of this study ~~which is currently being re-reviewed in another peer-reviewed~~
17 ~~journal~~, an indicator framework for the social sustainability of aged care projects in China has been established
18 (Table 2) (Wang et al., 2023). It can be regarded as the substantive dimension of social sustainability of aged
19 care PPP projects, demonstrating the social needs of the definitive stakeholders. Now, the knowledge gap is
20 how to establish a socially sustainable development process to achieve the social sustainability.

21 *[insert Table 2 here]*

23 **3 Research Methodology**

24 **3.1 Theoretical Foundation**

25 ~~Stakeholder theory is the theoretical foundation of this study. Galuppo et al. (2014) and Mani et al. (2018)~~
26 ~~believed that it is the most commonly used theory in social sustainability research. The selection is based on~~

~~two considerations. First, stakeholder theory and sustainability fit well (Herazo & Lizarralde, 2016). “Sustainability” is an essential element of this theory (Freeman et al., 2021), which posits that the purpose of business is to create common value for all stakeholders in a sustainable manner. Second, stakeholder theory can contribute to social sustainability because it focuses on the benefits and well-being of stakeholders (!!! INVALID CITATION !!! (Harrison et al., 2010)). (!!! INVALID CITATION !!! Hörisch et al. (2014)) pointed out that stakeholder theory usually describes what companies do to propose solutions for business problems. Based on that, this theory is used in this study to identify the critical practices of project participants.~~

3.2 Procedure of Multiple Case Study

According to the research aim and research question, the research process of this study is shown in Fig. 2. A multiple case study is adopted to identify the critical practices and establish the realisation paths. According to Yin (2017), this method is appropriate for an in-depth understanding of a complex phenomenon within its specific context.

[insert Fig. 2. here]

3.2.1 Case Selection

The cases in this study were divided into main cases and parallel reference cases. Main cases were the main objects of the multiple case study. Their primary and secondary data were thoroughly collected and analysed. The two selection criteria of main cases are: the project is in operation and is unanimously considered a success by practitioners; and the project has no negative news. Project success and social sustainability are not interchangeable. However, considering the novelty of social sustainability, it is feasible to replace social sustainability with project success when choosing cases. The main cases were recommended by experts. They were the Delphi survey participants when the authors used to establish a social sustainability indicator framework in another paper. Three aged care PPP projects were chosen. The number was three because the data saturation point was reached when the third case was analysed. Their basic information is shown in Table

3.

1 [insert Table 3 here]

2 These three cases hold high representativeness for several reasons. First, being situated in Shenzhen, the
3 vanguard of China's reform and opening-up, these projects benefit from the city's commitment to building a
4 high-quality aged care service system (Central Committee of the Communist Party & State Council, 2019).
5 This strong government strategy provides a solid foundation for the development of aged care PPP projects.
6 Second, all three cases involve reform initiatives for public aged care institutions. Case A stands as Shenzhen's
7 pioneering public institution to adopt the PPP model for reform, while Case B and Case C represent the first
8 reformed projects in their respective administrative regions. Their extensive operational history before
9 adopting the PPP model sets them apart from newly built projects, offering valuable experience. Lastly, these
10 cases exhibit exemplary management and operations.

11 Meanwhile, this study selected another 17 projects in the project management database operated by China's
12 Ministry of Finance as parallel reference cases. The purpose is to supplement and triangularly verify the data
13 provided by the main cases, as social sustainability has not yet attracted adequate attention in China's aged
14 care projects. Secondary data were collected from these parallel reference cases and analysed. The selection
15 criteria for these cases include the following: the project is a national demonstration project, as national PPP
16 demonstration projects are selected by the Ministry of Finance to highlight key examples of best practice in
17 PPP implementations to further promote PPP on a larger scale (Wang & Ke, 2018); the project is in the
18 implementation phase; the project's documents are accurate and sufficient; and the project has no negative
19 news. Brief information of these cases is presented in Table 4.

20 [insert Table 4 here]

21 **3.2.2 Identification of the Critical Practices**

22 An improved critical incident technique (CIT) was adopted to identify the critical practices. CIT is a procedure
23 to collect certain critical incidents concerning behaviours or decisions in a specific situation, proposed by
24 Flanagan (1954). The traditional CIT does not precisely match this study. Inspired by Event Sequence
25 Mapping (ESM) developed by Soomro and Zhang (2015), the traditional CIT has been improved in three
26

1 aspects.

- 2 • Information sources. The traditional CIT only collects primary data. This study has two sources: a)
3 primary data from expert interviews with government advisors (representatives of the government) and
4 senior managers of the SPVs (representatives of private investors) in main cases; b) secondary data from
5 documents of the main cases, including government publications, archival records of the SPVs, and
6 related news reports; and government publications of the parallel reference cases. In addition, a
7 reliability hierarchy is developed based on different information sources. The data provided by the
8 interviewees is placed at the top of the reliability level; the data that comes from government
9 publications comes second; the data extracted from archival records ranks third; and the data extracted
10 from news reports ranks last. Information that comes from one source is always cross-checked with
11 other sources as far as possible.
- 12 • The observers. The observers in traditional CIT are people who have made numerous observations on
13 persons performing the activity under study. The observer scope of this study is expanded, including the
14 interviewees and the researchers themselves.
- 15 • The relative timing of critical practices. The traditional CIT does not consider this issue. The improved
16 CIT focuses on the relative timing of each practice.

17 This technique is performed individually for all three main cases, and the specific procedure is shown in
18 Fig. 3.

19 *[insert Fig. 3. here]*

20 The criteria of the critical practices include: practices that make significant, direct positive or negative
21 contributions to the social sustainability of a project; practices that lead to success or failure in accomplishing
22 a main task in the project lifecycle; and practices that have positive or negative effects on practitioners'
23 personal job and/or the overall job performance in a project (Haussner et al., 2018). They are not limited to
24 the practices that have already been adopted, and the ones that an observer believes should be adopted are also
25 included.

26 The potential participants in the interview should meet four criteria: direct involvement in the main cases;

1 hold senior positions in the cases; recognise and have some consideration of social sustainability; and have
2 plenty of time for in-depth discussion. The list of potential participants is recommended by the Delphi experts
3 and expanded by using the snowball sampling technique. This method was chosen due to the limited
4 availability of experts in the specific field of social sustainability in aged care PPP projects and the absence
5 of a comprehensive expert list. The novelty of the research topic and the relatively niche area made traditional
6 random sampling impractical. By leveraging the initial participants' networks and referrals, the snowball
7 sampling method allowed us to access experts who might otherwise have been inaccessible, resulting in a
8 diverse and representative group of participants with valuable insights into the subject matter. Nine
9 experienced professionals were identified (see Table 5). They are evenly distributed in the three main cases.
10 Four are from consulting agencies representing the governments. It is common practice that such agencies are
11 hired by governments early in the project lifecycle to conduct due diligence studies and structure the project.
12 The other five are from the SPVs. Interviewees A1– A3 are from Case A, B1– B3 are from Case B, and C1–
13 C3 are from Case C. Stakeholders such as the elderly residents in the projects were not included as potential
14 participants. Their opinions were considered when the authors of this study established an indicator framework
15 for the social sustainability of aged care projects in China.

16 *[insert Table 5 here]*

17 The establishment of the interview protocol is based on the lifecycle division of aged care PPP projects and
18 the indicator framework of social sustainability. For each stage, the participants are required to answer the
19 following questions: which practices were adopted; what caused these practices; what the purposes of these
20 practices were; what the consequences were; and which practices were critical and why. Data collection began
21 in May 2021 and ended in October 2021. The government publications and news reports on the main cases
22 were collected first to familiarise the researchers with the cases and establish interview protocols. In July 2021,
23 the researchers conducted one-to-one and face-to-face interviews with the participants. Each interview lasted
24 around two hours. The researchers then further collected the archival records of the cases provided by the
25 participants and relevant materials of the 17 parallel reference cases. Four interviewees (A1, A3, B2 and C2)
26 were conducted for a second time in October 2021 to collect supplementary information.

1 A content analysis was adopted to analyse the data, as it is the data analysis method used in most CIT studies
2 (Gremier & Dwayne, 2004). According to Riffe et al. (2019), content analysis could produce useful
3 generalisations with minimal information loss such as to describe institutional focus, theme, trend, etc.
4 (Downe-Wamboldt, 1992). To correctly identify critical practices conducive to social sustainability, the
5 following are defined:

- 6 • Sample selection. The transcripts and notes of the interviews, government publications, internal records,
7 and related news reports of the three main cases, as well as the government publications of the other 17
8 cases are the samples. They contain rich and reliable information relevant to the critical practices of
9 government departments, private investors and SPVs in the projects.
- 10 • Analysis unit. Full-length interviews, full-length documents, and individual news coverage are the
11 analysis unit. Graneheim and Lundman (2004) believed that they are the most appropriate analysis unit.
12 They are large enough to be considered as a whole, which is conducive to the correct identification of
13 critical practices.
- 14 • Coding and grouping. According to Bott and Tourish (2016), to be critical, the behaviour or decision
15 involved in an incident must have a clear purpose or intent, and its consequences or effects should also
16 be clear. Therefore, a behaviour or decision is coded when it meets the above requirements and is
17 adopted by the government department, private investor, or SPV. For example, during discussions on
18 practices in the project initiation stage, interviewee A1 stated that “the government should focus on
19 social sustainability. It should play the role of facilitator and consider developing a policy system for the
20 social sustainability of aged care PPP projects. This is valuable and meaningful. However, there isn’t
21 much consideration towards this right now.” “CP-1 The Civil Affairs Department defines social
22 sustainability as the strategic aim of a project” was identified based on this response. First, the practice
23 has a clear purpose, i.e., to promote the realisation of China’s major national strategy – “actively coping
24 with aging”. It is in line with the strategy to improve human capital and build a high-quality aged care
25 service system. Second, the practice has a clear consequence, i.e., positive effects on overall job
26 performance. With social sustainability as a strategic aim, all project participants are motivated to

1 strategize ways to achieve it (Quist, 2007; Robèrt, 2000). Hence, each critical practice consists of five
2 components: title; the observer; adopted or not, i.e., whether a critical practice is adopted in a main case
3 or not; purpose or intent; and consequences or effects, i.e., its identification criteria. There are two
4 grouping criteria: the stage in which the practice is adopted, and its adopter.

- 5 • Reliability assessment. The coding is completed by the first two co-authors independently. The
6 identified critical practices are validated by each of them during the coding process, including self-
7 validation of an individual main case. By switching back and forth between the text and output of
8 content analysis of an individual main case, the coding and grouping are gradually refined and
9 validated. There is mutual validation of all main cases. The critical practices identified in an individual
10 main case are compared with those in other main cases to validate. In parallel reference case validation,
11 the critical practices identified in these cases are used to validate the practices in the main case.
12 Furthermore, the independent coding results of the two authors are compared. The inconsistencies are
13 discussed by all the authors to reach a consensus.

15 **3.2.3 Establishment of the Realisation Paths**

16 After identifying critical practices, two further steps were conducted to establish the realisation paths.

- 17 • Work out the enabling relationships between critical practices. The enabling relationship refers to the
18 relationship between two critical practices, that is, the critical practice adopted earlier triggers the
19 critical practice adopted later. In other words, the presence of the former favours the presence of the
20 latter. The critical practices are distributed throughout the lifecycle of aged care PPP projects. It is found
21 that there may be multiple practices in one stage. They may occur simultaneously or successively. A
22 critical practice may trigger one or more practices closely following it, or practices with a long-time
23 interval. The enabling relationships between critical practices are determined by analysing their
24 consequences or effects, which is the last component of each critical practice.
- 25 • Establish realisation paths for each social sustainability indicator and a consolidated realisation path for
26 a project. The realisation of each social sustainability indicator is not driven by a single critical practice,

1 but by a series of practices that occur simultaneously or successively. This series is termed a realisation
2 path of social sustainability. The consolidation of all realisation paths corresponds to the realisation of
3 social sustainability of an aged care PPP project. A path diagram is used to explain the realisation path.
4 It can illustrate the enabling relationships between critical practices and indicate directly which party
5 needs to adopt what critical practices at certain stages to promote the achievement of social
6 sustainability.

7 A “constant comparison method” was adopted to validate the realisation paths. It uses existing findings,
8 data and cases to validate the hypothesised concept (Silverman, 2014). In this study, the established realisation
9 paths were decomposed into enabling relationships, and then each relationship was compared with specific
10 practices in the chosen cases.

12 **4 Results**

13 **4.1 The Identified Critical Practices**

14 An improved CIT was performed individually for all three main cases to identify the critical practices.
15 Information from 17 parallel reference cases was used to complement and triangulate the critical practices
16 identified. After discussion, the authors finally reached a consensus. A total of 42 first-level and 85 second-
17 level critical practices were identified. Each critical practice consists of five components: title; the observers,
18 either the interviewees or the researcher; adopted or not, i.e., whether a critical practice is adopted in a main
19 case or not; purpose or intent; and consequences or effects, i.e., its identification criteria. A second-level
20 critical practice is an extension of a first-level critical practice. It does not influence the subsequent
21 establishment of realisation paths, but rather helps to better understand the first-level one. When a first-level
22 critical practice contains multiple behaviours and decisions which occur simultaneously, they are set as the
23 second-level ones. This is to reduce the complexity of each first-level critical practice and clarify the logic
24 between them. Table 6, Table 7 and Table 8 demonstrate the first-level critical practices in different project
25 phases respectively. The critical practices are referred to as CPs hereinafter.

26 *[insert Table 6 here]*

1 [insert Table 7 here]

2 [insert Table 8 here]

3 All CPs are validated and supplemented by the main cases and/or parallel reference cases. 14 CPs (i.e. CP-
4 2, CP-3, CP-4, CP-7, CP-9 to CP-16, CP-20, CP-23) are adopted in all three main cases and triangulated in
5 parallel reference cases. 22 CPs (i.e. CP-6, CP-8, CP-17, CP-18, CP-21, CP-22, CP-24 to CP-26, CP-28 to
6 CP-39, CP-41) are adopted in all three main cases and not triangulated in parallel reference cases. This is
7 because the implementation information of these cases is not available in the PPP project database. 2 CPs (i.e.
8 CP-19, CP-27) are adopted in two main cases and triangulated in parallel reference cases. They are not adopted
9 in the third main case because the project does not involve new construction or renovation. 3 CPs (i.e. CP-1,
10 CP-40, CP-42) are not adopted in any of the cases, but the observers believe that they should be adopted. In
11 addition, the latter two CPs are not adopted also because there is no PPP project that has entered the project
12 handover and ex-post evaluation stage. Finally, CP-5 is not adopted in all three main cases but adopted in
13 most parallel reference cases. The interviewees confirmed it in the second supplementary interview.

14 From the perspective of time distribution, most first-level CPs are adopted in the project implementation
15 phase, followed by the preparation phase, and the least CPs are adopted in the procurement phase. From the
16 perspective of the key decision maker or adopter, CPs that need to be adopted by government departments are
17 the most common, followed by SPVs and private investors (Fig. 4). After the superposition of the above two
18 perspectives, it is found that different key decision makers need to adopt CPs at different phases to achieve
19 the social sustainability of aged care PPP projects. Specifically, government departments are most important
20 in the preparation phase, as they are the adopters of all 14 CPs. Private investors become important in the
21 procurement phase. They adopt five of the nine CPs and one in conjunction with government departments.
22 SPVs are critical in the implementation phase. They adopt 12 CPs out of 19, and one in conjunction with
23 government departments (Fig. 5).

24 [insert Fig. 4. here]

25 [insert Fig. 5. here]

26 See Appendix for the identification details of all the first-level and second-level CPs.

1

2 **4.2 The Established Realisation Paths**

3 Twenty-one realisation paths were established, corresponding to the 21 social sustainability indicators in Table
4 2 respectively.

5 Take the realisation path of indicator 1.1.1 for example. Fig. 6 visually demonstrates its realisation process.
6 The circle in the figure represents the indicator. The boxes represent the CPs that need to be adopted. The
7 arrow line between two boxes represents the enabling relationship. As described above, the determination of
8 enabling relationship is based on the analysis of the consequences or effects of each CP. They are the last
9 component of a CP and are analysed in each CP's identification process (see Appendix for details). For
10 example, when initiating a project, the civil affairs department needs to adopt CP-1, to define social
11 sustainability as the strategic aim of the project. The consequence is that "all participants will consider how
12 to realise it. They will plan and take wise approaches step by step." CP-2 is the "wise approach" to follow CP-
13 1. That is, the civil affairs department preliminarily considers the well-being of the employees in the feasibility
14 study. Therefore, there is an enabling relationship between CP-1 and CP-2. It is represented by an arrow line
15 from the former to the latter in the realisation path. In addition, the top of the diagram is the timeline. The
16 stages represented by each character are consistent with Table 1.

17 *[insert Fig. 6. here]*

18 To achieve indicator 1.1.1, i.e., equal employment opportunity, it is necessary for the government, private
19 investor and SPV to adopt a series of CPs at different phases and stages. Take the preparation phase as an
20 example.

- 21 • The Civil Affairs Department defines the provision of equal employment opportunity as one of the
22 strategic aims when initiating a project (CP-1). Although this CP has not been adopted, the interviewees
23 representing the government in the three main cases have recognised its importance. "The government
24 is the primary beneficiary and promoter. It should play the role of facilitator and consider developing a
25 policy system for the social sustainability of aged care PPP projects. This is valuable and meaningful.
26 However, there isn't much consideration towards this right now." (Interviewee A1).

- 1 • The Civil Affairs Department preliminarily analyses whether a project can achieve this aim in the
2 feasibility study (CP-2). The feasibility study report of the three main cases includes this CP, but it is
3 not adequately considered. The reports mainly address the signing of new contracts with existing
4 employees. The SPVs are required to accept all the existing employees when taking over. The other 17
5 parallel reference cases considered this CP less. Only one case (Project No. 43) involved this issue. This
6 CP provides direction for the follow-up industry investigation.
- 7 • When a project is feasible and an implementing agency is authorised by the government, it is
8 responsible for establishing a project management team (CP-5). This CP has not been adopted in the
9 main cases but has been widely used in the parallel reference cases. Twelve cases establish the team
10 (Project No. 20, 31, 41, 42, 43, 46, 48, 51, 54, 56, 62, 63). “This practice is common in counties,
11 economically underdeveloped areas or places with few PPP projects. We don’t have it here. The
12 government has made detailed provisions on the whole process and the responsibilities of various
13 departments. The quality of government employees is very high. So, there is no need for such an
14 institution.” (Interviewee A1). It does not directly contribute to the provision of equal employment
15 opportunity but is committed to establishing an organisation that can promote the realisation of this aim.
- 16 • The implementing agency selects appropriate advisors (CP-6). It is adopted in the main cases. The
17 interviewees in the three main cases believe that the advisors’ expertise, their understanding of the
18 project, and their willingness to provide advice should be considered when selecting appropriate
19 advisors. “The winner made great efforts in the technical bidding and in-depth research on the aged care
20 scheme of the project. By contrast, other consulting firms were more focused on the PPP process.”
21 (Interviewee C2). This CP could not be validated in the parallel reference cases because the PPP project
22 database does not provide documents relevant to the advisors’ selection. Like CP-5, this CP does not
23 directly contribute to the provision of equal employment opportunities but is committed to selecting
24 advisors who can promote the achievement of this aim.
- 25 • The implementing agency assists the advisors in conducting industry investigation (CP-7), to learn
26 about the experience and lessons of existing aged care institutions in providing equal employment

1 opportunities. This practice is adopted in all three main cases. “We surveyed existing employees in the
2 project to protect their employment opportunities and employment stability.” (Interviewee B1). This CP
3 is validated in the parallel reference cases. Five cases indicate that an investigation has been carried out
4 before the preparation of business case (Project No. 20, 35, 45, 51, 56). This CP provides the basis for
5 determining the performance requirements of project outputs in the business case.

- 6 • To have stakeholder engagement while conducting market investigation (CP-8), to understand the
7 employees’ needs for equal employment opportunity. This practice is adopted in all three main cases.
8 “We organise staff representatives to visit other PPP projects. They understand that such projects are
9 operated by big, experienced private investors, who could provide more training opportunities and more
10 development space for them.” (Interviewee B1). This CP cannot be validated in the parallel reference
11 cases because they are all newly built. This CP provides the basis for determining the performance
12 requirements of project outputs in the business case.

13 Based on the previous two CPs, the implementing agency needs to assist the advisors to prepare a business
14 case conducive to the realisation of the aim, including:

- 15 • To set the provision of equal employment opportunity as one of the performance requirements for
16 project outputs (CP-9). The main cases adopt this CP by setting regulations and standards to be followed
17 by the projects.
- 18 • To outline the payment mechanism related to the realisation of performance requirements and risk
19 sharing (CP-11), to constrain the SPV to provide equal employment opportunity. The main cases link
20 the performance evaluation results with the withdrawal of guarantee.
- 21 • To make initial consideration of contractual arrangements related to the realisation of the aim (CP-12).
22 The implementing agencies in the main cases establish a link between equal employment opportunity
23 and contractual terms, to constrain the practices of the SPVs.
- 24 • To establish a preliminary monitoring framework (CP-13), to further constrain the SPV to provide equal
25 employment opportunity. The business cases of the three main cases consider the contract
26 implementation supervision. That is, the implementing agency monitors the SPV to fulfill agreed

1 commitments and obligations according to the contract. All parallel reference cases consider the
2 monitoring of contract implementation.

- 3 • The implementing agency determines the procurement strategy to best procure the required outputs (CP-
4 14). This CP is not directly related to the provision of equal employment opportunity, but rather focuses
5 on the selection of partners who could advance the aim.

6 See Fig. A.1-A.20 for the realisation path diagrams of other social sustainability indicators.

7 The consolidated realisation path diagram of the social sustainability of aged care PPP projects is shown in
8 Fig. 7. It is a superposition of the 21 realisation paths, displaying the complete realisation process of social
9 sustainability. Compared with Fig. 6, the CPs in the normal white box have a high degree of aggregation. That
10 is, the focus of the same CP in different realisation paths might be different. For example, CP-1 refers to the
11 local civil affairs department defining social sustainability as the strategic aim when initiating a project.
12 However, social sustainability is a complex construct and the focus of CP-1 is different for different social
13 sustainability indicators. To achieve equal employment opportunity, the government must set it as a strategic
14 aim when launching a project. If the indicator is to provide a healthy and safe workplace, the content of the
15 strategic aim in CP-1 should change. CPs in the box filled with black dots are the opposite. They are consistent
16 in all the realisation paths. In other words, the CPs in the normal white box can be seen as specific behaviours
17 and decisions that contribute to the realisation of an indicator. The content of CPs may differ when they are
18 in different realisation paths. In addition, a number of Arabic numerals are added above each arrow line in
19 Fig. 7, ranging from 1 to 21. These numbers represent the realisation paths that pass through the two CPs
20 connected by the arrow line (for example, 1 for RP1.). The more numbers there are, the more realisation paths
21 that pass through the arrow line, and the more important the CPs connected at both ends of the arrow line are.

22 Fig. 7 indicates that the socially sustainable development of aged care PPP projects is a complex process.
23 Social sustainability is the outcome (or a state/state of being) of this process. The outcome itself is complex,
24 including 21 social sustainability indicators. They are the direct consequences of a series of CPs (CP-27 to
25 CP-33) adopted by the SPV in the investment, construction and operation stage of the project (i.e., stage C2),
26 and CP-41 adopted by the SPV and implementing agency in the handover stage (i.e., stage C4). These CPs

1 [are also gradually promoted by the CPs adopted by different participants in different stages before.](#)

2 [insert Fig. 7. here]

3

4 **5 Discussion**

5 The results obtained above, based on multiple case study, indicate that the two tasks proposed in the
6 Introduction, i.e., identifying critical practices that should be adopted in the project lifecycle, and establishing
7 realisation paths to achieve social sustainability, have been accomplished. They could comprehensively
8 answer the research question of this paper and are discussed in detail below.

9

10 **5.1 The CPs should be Adopted**

11 *5.1.1 CPs in Project Preparation Phase*

12 To achieve social sustainability, a series of CPs should be adopted in the lifecycle of aged care PPP projects.
13 Fourteen first-level CPs are recommended to be adopted in preparation phase (shown in Table 6).

14 First, the Civil Affairs Department should define social sustainability as the strategic aim (CP-1), and make
15 preliminary consideration of the stakeholders' well-being in the feasibility study when initiating a project
16 (stage A1). Galuppo et al. (2014) believed that social sustainability should be considered as its strategy when
17 the purpose of an organisation is to serve stakeholders by solving broad issues of common concern. [In turn,](#)
18 [an organisation obtains the thorough contribution of stakeholders to achieve value creation only when their](#)
19 [social needs are met](#) (Eskerod et al., 2013; Uribe et al., 2018). Undoubtedly, aged care PPP projects match
20 this feature. Meanwhile, the feasibility study can potentially improve the social sustainability of projects
21 (Goodman, 1988), because it can help sponsors understand the scope of stakeholder interests as early as
22 possible (Goel et al., 2020). According to Chinese National Development and Reform Commission (2019),
23 whether a project is conducive to improving people's quality of life constitutes an essential aspect of the
24 feasibility study. Neglecting feasibility studies may lead to project failure (Ke, 2014). [For aged care PPP](#)
25 [projects, employees, the elderly and their relatives, local community and society have power, legitimacy and](#)
26 [urgency](#) (Mitchell et al., 1997). [They are important stakeholders to be concerned](#) (Wang et al., 2023).

1 Second, the implementing agency authorised by the civil affairs department may consider establishing a
2 project management team (CP-5) and selecting appropriate advisors (CP-6) when it has been authorised by
3 the Civil Affairs Department (stage A2). Several international institutions regard these two practices as key
4 practices for the success of a project (European PPP Expertise Centre, 2011; World Bank, 2021).

5 Third, more critical practices are adopted in preparing the business case (stage A3). As a project planning
6 and development tool, the business case explains why a project is needed and how to promote it (Infrastructure
7 and Projects Authority, 2020). [The preparation of a business case can be viewed as a purposive process](#)
8 [involving understanding, prioritising, and engaging stakeholders](#) (Harrison et al., 2019). ~~Specifically, For~~
9 ~~implementing agency~~, industry investigation (CP-7) can provide a reference for determining project outputs
10 [for implementing agency](#) (Javed et al., 2013), and enable stakeholders to feel ownership of the scheme (Arshad
11 Ali et al., 2013). Involving stakeholder engagement (CP-8), however, is conducive to understanding their
12 social needs (Infrastructure and Projects Authority, 2020), which is a widely used social sustainability practice
13 (Kordi et al., 2021; Marete & Johnson, 2021; Petriwskyj et al., 2018). Preparing output specifications that
14 align with stakeholders' well-being (CP-9) can avoid losses in the future (Farquharson et al., 2011).
15 Considering the impact of risks on the sustainability of PPP projects (Ke et al., 2011), the identification of
16 risks associated with social sustainability and the development of response plans (CP-10) can not only restrict
17 the SPVs to deliver the outputs agreed on (Infrastructure and Projects Authority, 2020), but also encourage
18 the private investors to provide more innovative solutions (Flanagan & Nicholls, 2007). Next, to determine
19 the main source of profit and outline an initial payment mechanism (CP-11), to make initial consideration of
20 contractual arrangements relating to social sustainability (CP-12), and to establish a preliminary monitoring
21 framework (CP-13) can guide and constrain the SPVs to provide appropriate care services for the elderly
22 (Bubicz et al., 2021). Finally, it's imperative to consider the procurement strategy (CP-14) at the early stage
23 of a project (Agarchand & Laishram, 2017). It can help the implementing agency select the best solution for
24 the project and the most capable private partner to implement the solution (World Bank, 2021). The COVID-
25 19 pandemic has led to a greater emphasis on the social sustainability of suppliers in the procurement
26 (Marzouk & Sabbah, 2021; Thomas et al., 2021).

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5.1.2 CPs in Project Procurement Phase

Nine first-level CPs are recommended to be adopted in this phase (shown in Table 7).

First, the implementing agency should determine the procurement process (CP-15) and set the terms of the draft contract relating to social sustainability (CP-16) when preparing tender documents and draft contract (stage B1). A competitive, efficient and transparent procurement process can help the implementing agency select a competent private investor, and identify the most effective solution for project aims (Huang et al., 2009; World Bank, 2017).

Second, the private investors need to set their goal of participating in an aged care project (CP-17) before deciding to participate in the prequalification (stage B2). The investment preference and corporate strategy of private investors will affect their choice of projects (APMG-International, 2016). Further, goal setting can guide private investors to make socially sustainable behaviours and decisions. Profit is their ultimate goal. However, considering that aged care PPP project has just started and its welfare nature (recruiting publicly-funded elderly), as well as the public’s rejection of institutional care, profit should not be the only or primary goal. Instead, social benefits and market exploration are more important. They help private investors establish a good reputation, enhance competitiveness and occupy the market, and gain economic benefits in the long run.

Third, the private investors should conduct a detailed market investigation (CP-18), and establish person-centred planning, design and construction/renovation schemes (CP-19), overall operation schemes (CP-20), and facility maintenance schemes (CP-21) when preparing response documents (stage B3). A detailed market investigation can provide a basis for private investors to formulate competitive response documents that meet the social needs of stakeholders. The person-centred idea can make the projects more like “home” (Sjögren et al., 2015), and improve the well-being of the employees and the elderly (Guerra Santin et al., 2021). When adopting these CPs, the private investors should not only identify the stakeholders that are most important to value creation, but also determine the social needs that need to be prioritised (Harrison et al., 2019).

Forth, the implementing agency selects an appropriate partner (CP-22) and signs PPP contracts committed

1 to achieving social sustainability (CP-23) when negotiating and awarding the contract (stage B4). China's
2 aged care industry has just begun. The experience, philosophy and capability of private investors can
3 determine the future of a project to a great extent. In the meantime, a good PPP contract is a prerequisite for
4 effectively implementing a project (European PPP Expertise Centre, 2011).

5 6 *5.1.3 CPs in Project Implementation Phase*

7 Nineteen first-level CPs are recommended to be adopted in this phase (shown in Table 8). [PPP projects have](#)
8 [a long and complex implementation phase, from the date of contract effectiveness to the end of the contract](#)
9 [period \(World Bank, 2017\). A higher number of CPs need to be adopted at this phase. This result is consistent](#)
10 [with the study of Sierra et al. \(2016\). They found that the social criteria to be considered during the operation](#)
11 [of the project are the most.](#)

12 First, it is necessary to define providing quality care and improving the quality of life for the elderly as its
13 vision or mission (CP-24) when establishing the SPV (stage C1). [According to stakeholder theory, a project](#)
14 [is composed of networks of relationships between different stakeholders and its main task is to create value](#)
15 [for stakeholders \(Hörisch et al., 2020\).](#) A strong vision provides a common focus for SPV's actions (Jarvis &
16 Palmes, 2015), and enables older people to live meaningful lives (Age Cymru, 2011). In addition, social
17 sustainability is easier to achieve when the SPV's vision is aligned with the project's strategic aim.

18 Second, the SPV needs to adopt a series of CPs according to the contract in the investment, construction
19 and operation of the project (stage C2). For example, the establishment of a quality management system (CP-
20 25) and certification (CP-34) can help the SPV identify, measure, control and improve various core business
21 processes, and finally improve its performance (APMG-International, 2016). Allowing residents and
22 employees to participate in decisions that affect them (CP-26) is a prerequisite for person-centred care
23 (Infrastructure and Projects Authority, 2020; Petriwskyj et al., 2018). [There are many different methods to](#)
24 [engage stakeholders, for example, newsletters and employee work councils. The engagement should be](#)
25 [communication-oriented \(Eskerod et al., 2015\).](#) Then, the provision of person-centred planning, design, and
26 construction/renovation (CP-27), diversified services (CP-29), contingency response (CP-32), and facility

1 maintenance (CP-33) contribute to the health of residents (Douglas et al., 2017), increasing social interactions
2 (Bahador & Bavar, 2022) and improving social cohesion (Yıldız et al., 2020). Good human resource
3 management (CP-30) can reduce the employees' working pressure (European Centre for Social Welfare Policy
4 and Research, 2010), enhance the organisation's attractiveness (Carballo- Penela, 2019) and improve the
5 elderly's quality of life (British Geriatrics Society, 2021; Huang & Bowblis, 2019). Contributing to the local
6 community and society (CP-31) improves the long-term performance of the project and the quality of life of
7 the people affected by it (Valdes-Vasquez & Klotz, 2013). Finally, for existing projects, taking over the project
8 as agreed at the beginning (CP-28) is a critical practice that helps to eliminate any concerns about private
9 investors and reduce the probability of public opposition.

10 Third, a series of monitoring and evaluation practices should be undertaken in stage C3. The self-monitoring
11 of the SPV (CP-35), contract implementation monitoring (CP-36), information disclosure (CP-38), and
12 payment on a performance basis (CP-39) all help to ensure the SPV delivers outputs in accordance with
13 contractual standards (APMG-International, 2016). Further, performance and mid-term evaluation (CP-37)
14 are important sources to provide lessons learned (Farquharson et al., 2011).

15 Finally, three CPs should be adopted during the handover and ex-post evaluation (stage C4). Early
16 consideration of the options after contract expiration (CP-40) can provide the government and the SPV with
17 sufficient time to comprehensively consider arrangements for the elderly and the employees, and make a new
18 option more conducive to ensuring the achievement of the strategic aim. Conducting handover as agreed (CP-
19 41) helps to ensure that the well-being of the stakeholders is not affected (Infrastructure and Projects Authority,
20 2020). Last, ex-post evaluation can draw lessons from the implemented projects, and improve the contract
21 design in the future (European PPP Expertise Centre, 2011), and better realise social sustainability.

22 23 **5.2 The Realisation Paths to Achieve Social Sustainability**

24 Fig. 7 intuitively demonstrates that achieving the social sustainability of aged care PPP projects is a
25 backcasting process. That is, the strategic aim of the project - social sustainability is set first, and then the
26 participants take CPs step by step to achieve it (Quist, 2007; Robèrt, 2000). The preparation phase is critical

1 in the realisation paths that span the project lifecycle. Some CPs are particularly important in achieving social
2 sustainability. While each CP is critical, some are more critical than others. They appear in all the realisation
3 paths. The numbers above the arrow lines from these CPs to other CPs are "1-21". There are 21 such CPs in
4 Fig. 7, including CP-1, CP-5 to CP-9, CP-11 to CP-16, CP-22, CP23, CP-34 to CP-39, and CP-42. Among
5 them, ten are adopted in the preparation phase (i.e., stage A1-A7), seven are adopted during the
6 implementation phase (i.e., stage C1 -- C4), and four are adopted in the procurement phase (i.e., B1-B4). This
7 distribution is slightly different from the time distribution of CPs shown in Fig. 5. On the whole, the number
8 of CPs in the implementation phase is the largest, followed by the preparation and procurement phases.
9 Although the number of CPs to be adopted in the preparation phase is not as large as that in the implementation
10 phase, they are more important. They are the basis of the CPs in the subsequent procurement and
11 implementation phases.

12 Further, the behaviours and decisions of government departments are the keys in the realisation paths. [As
13 an important stakeholder of aged care PPP projects, government departments are not the objects of social
14 sustainability, but important forces to achieve it \(Wang et al., 2023\). To a large extent, they determine whether
15 a project can create shared value for stakeholders in a responsible and sustainable manner \(Freeman, 2010;
16 Székely & Knirsch, 2005\).](#)

- 17 • All ten particularly important CPs in the preparation phase of the realisation paths are adopted by
18 government departments, including CP-1, CP-5 to CP-9, and CP-11 to CP-14. These early CPs set the
19 tone for the achievement of social sustainability of a project, without which social sustainability is
20 incomplete or difficult to achieve.
- 21 • Of all the four CPs of particular importance in the procurement phase of the realisation paths, three are
22 adopted by government departments (CP-15, CP-16, and CP-22) and one is adopted jointly by
23 government departments and private investors (CP-23). These CPs can help the implementing agency
24 select private investors conducive to achieving the aim and signing good contracts.
- 25 • Of all the seven CPs of particular importance in the implementation phase of the realisation paths, five
26 (CP-36 to CP-39, and CP-42) are adopted by government departments. Although these CPs do not

1 directly contribute to the social sustainability indicators of the project, they have a constraint effect on
2 the behaviours and decisions of the SPVs, which indirectly contributes to the achievement of the aim.

3 4 **6 Conclusions and Limitations**

5 This paper attempts to establish a socially sustainable development process to achieve social sustainability of
6 China's aged care PPP projects. In previous studies, the authors of this paper have established a social
7 sustainability indicator framework for aged care projects (see Table 2). However, it is not clear how to achieve
8 it. This paper fills the gap.

9 Three main cases and 17 parallel reference cases were selected for the multiple case study. An improved
10 critical incident technique was adopted to identify the critical practices. The research findings address the
11 research question proposed.

12 First, to achieve the social sustainability of aged care PPP projects, government departments, private
13 investors and SPVs need to adopt a series of critical practices at different phases and stages in the project
14 lifecycle. A total of 42 first-level critical practices were identified. Government departments are very
15 important in the preparation phase, and all 14 critical practices are adopted by them. Private investors become
16 important in the procurement phase, and five of the nine critical practices are adopted by them. SPVs are the
17 most critical in the implementation phase, and 12 of the 19 critical practices are adopted by them.

18 Second, twenty-one realisation paths for each social sustainability indicator and a consolidated realisation
19 path were established based on analysing the enabling relationships between critical practices. The
20 consolidated realisation path indicates that the preparation phase is crucial to realising social sustainability.
21 Ten of the 21 more important critical practices (i.e., critical practices that appear in all realisation paths) are
22 adopted in this phase. In addition, the behaviours and decisions of government departments play a key and
23 decisive role in the realisation of social sustainability, as 18 of the more important critical practices are adopted
24 by them alone.

25 This study contributes knowledge to social sustainability in aged care PPP projects and stakeholder theory.
26 Realisation paths are established based on the identification and analysis of critical practices and the enabling

1 relationship between them, which provide a complete picture of realising social sustainability of aged care
2 PPP projects. The behaviours and decisions at different project stages can enable both public and private
3 sectors to calibrate their policies and contracting practices to deliver projects successfully. The empirical data
4 provided by this study indicates that stakeholder theory is suitable for social sustainability research on aged
5 care PPP projects. [Stakeholders should be considered when identifying CPs using the content analysis method,](#)
6 [including the analysis of the adopter of each CP, its purpose or intent, and its consequences or impacts.](#) Only
7 when the social needs of the stakeholders are understood and realised through methods such as stakeholder
8 engagement, can the projects' social sustainability be well achieved. In addition, while social sustainability
9 has strong context dependence, the critical practices and realisation paths applicable to China can offer insights
10 for other countries, as the social sustainability of aged care projects needs to be improved worldwide. This is
11 particularly important for countries with sizeable aged care populations needing care, and need to provide
12 institutional care through PPP model. Furthermore, the findings have implications for understanding the
13 realisation of social sustainability of other public service projects with social impact, such as health and
14 education projects.

15 The limitations of this study are mainly reflected in the following aspects: a) it regards aged care PPP
16 projects as a whole to study social sustainability, without considering the impact of relevant variables such as
17 the scale of a project or its location (Dempsey et al., 2011; Xia, Skitmore, et al., 2015). However, they might
18 affect the social sustainability indicators of a project and the corresponding critical practices that should be
19 adopted. Therefore, the conclusion of this study may be biased; b) the three main cases are all successful ones
20 and have not experienced long-term operation yet. Although successful cases could provide valuable
21 experience for this study, the importance of failed ones should not be ignored. However, given the nascency
22 of aged care PPP projects in China and the difficulty in obtaining data of failed ones, this study failed to access
23 cases with longer operational experience and failed cases; and c) this study is qualitative research. The authors
24 established realisation paths based on the project lifecycle division, case data collection, and existing
25 literature's support. Although a "constant comparison method" was adopted to validate the realisation paths,
26 the conclusion is a completely subjective judgment of the authors.

1 Therefore, the following aspects can be considered in future research: a) subdivide aged care PPP projects
2 to explore social sustainability under different circumstances such as introducing variables like scale and
3 location; and b) conduct supplementary research and more quantitative research when more projects enter the
4 handover after contract expiration stage, to supplement and validate the conclusions of this study.

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8 **Figure Caption List**

9 **Fig. 1.** Time distribution of 65 implemented aged care PPP projects

10 **Fig. 2.** Research process of this study

11 **Fig. 3.** The procedure of the improved CIT

12 **Fig. 4.** Adopters of first-level CPs

13 **Fig. 5.** Time and adopter distribution of first-level CPs

14 **Fig. 6.** The realisation path diagram of indicator 1.1.1

15 **Fig. 7.** The consolidated realisation path diagram of social sustainability of aged care PPP projects

1 **Social Sustainability of Aged Care Public-Private Partnership Projects in China: Critical Practices** 2 **and Realisation Paths**

3
4 **Abstract:** The profound changes in China's population, economy and social structure have significantly
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6 impacted traditional home-based aged care and social welfare, leading to the emergence of Aged Care Public-
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8 Private Partnership (PPP) projects for institutional care. Social sustainability is crucial for these projects as it
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10 greatly improves stakeholders' quality of life and well-being. Adoption of social sustainability practices
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12 enhances elderly and employee satisfaction, offers competitive advantages, and fosters community
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14 development. This study aimed to establish a socially sustainable development process for aged care PPP
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16 projects. A multiple case study was conducted, and an improved critical incident technique was adopted.
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18 Forty-two first-level critical practices that should be adopted by government departments, private investors
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20 and Special Purpose Vehicles (SPVs) at different stages in the lifecycle were identified from three main cases
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22 and seventeen parallel reference cases. Twenty-one realisation paths and a consolidated realisation path were
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24 established based on analysing the enabling relationships between critical practices. The preparation phase is
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26 pivotal, with ten of the 21 more important critical practices (i.e., critical practices that appear in all realisation
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28 paths) adopted at this phase. The behaviours and decisions of government departments played a key and
29
30 decisive role, with eighteen more important critical practices adopted by them alone. This study contributes
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32 to enhancing knowledge of social sustainability in aged care. The critical practices and the realisation paths
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34 provide a complete picture of realising social sustainability of aged care PPP projects. The public and private
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36 sectors can adopt corresponding behaviours and decisions at different project stages to deliver projects
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38 successfully. The empirical data shows the applicability of stakeholder theory in social sustainability research
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40 on aged care. In addition, the results provide insights into the achievement of social sustainability of aged care
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42 projects in other countries and the understanding of social sustainability of other public service projects.
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44 However, potential biases exist in the study, arising from considering aged care PPP projects as a whole,
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46 neglecting lessons from failure cases, and subjective judgments in qualitative research.
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1 **Keywords:** social sustainability, aged care, Public-Private Partnership, quality of life, China, case study

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4 4 **1 Introduction**

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5 7 Social sustainability becomes critical with the increasing number of aged care projects in China. An aged care

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6 9 project refers to a project that provides institutional care, in which an organisation is responsible for providing

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7 12 different forms of accommodation and multiple types of support and care services for the elderly in a selected

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8 14 location. The many changes in population, economy and social structure have significantly challenged China's

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9 17 traditional home-based care. Institutional care is becoming a necessity, especially for the elderly who cannot

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10 19 continue to live in their own homes due to health conditions or family reasons (Shi et al., 2020). An aged care

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11 21 project is socially sustainable when various social impacts on its stakeholders are thoroughly considered

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12 24 during its lifecycle, and their well-being is realised under a specific social, cultural and institutional context.

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13 26 In other words, the social sustainability of aged care projects can be defined as improving stakeholders' quality

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14 29 of life by understanding and satisfying their social needs (Wang et al., 2023). Stakeholders' pursuit of quality

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15 31 of life closely links social sustainability with aged care projects. High quality of life is a prerequisite for a

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16 34 project to attract elderly residents and employees, and to gain support from the local community and society

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17 36 (Hu et al., 2017; Miller et al., 2020). Therefore, social sustainability is particularly critical for developing and

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18 38 operating aged care projects. It is a foundation that enables a project to regenerate itself now and in the future

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19 41 (Boström, 2012).

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20 43 Neglect on social sustainability may lead to harmful situations (Marzouk & Sabbah, 2021). Unfortunately,

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21 46 that is happening in aged care projects. Studies in China show that the residents in aged care institutions often

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22 48 feel lonely and fearful (Lan et al., 2020), with unmet healthcare needs (Han et al., 2020), and limited autonomy

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23 51 and trampled human dignity (Li et al., 2022). Employees have a low professional image, heavy workloads and

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24 53 low salary (Shi et al., 2020). They also lack education and training (Feng et al., 2018). These negative impacts

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25 56 reduce the attractiveness of aged care projects to the elderly and employees, and even cause resistance from

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26 58 the community where a project is located. The average vacancy rate of such projects is 50 percent, and the

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1 projects are facing a survival crisis. Moreover, the elderly's care needs cannot be thoroughly satisfied, and
2 their well-being is at stake. According to the research of Nummelin (2005) and Xia, Zuo, et al. (2015), aged
3 care institutions in Western countries face the same dilemma.

4 Social sustainability issues become more critical after the Public-Private Partnership (PPP) model is
5 introduced in the projects. An aged care PPP project is a long-term contract between a public party and a
6 private party, with the private party responsible for providing accommodation and services for the elderly in
7 a selected location. One of the crucial reasons for adopting this model is that governments intend to use the
8 private sector's finance, technology and management experiences to achieve the public goal of improving care
9 services. However, the inherent profit-driven goals, culture and values of private investors often do not align
10 with the realisation of public interests in an aged care PPP project, because the main target of private investors
11 is profit-seeking (Barker et al., 2012). In short, adopting the PPP model has caused people to worry that the
12 social sustainability of aged care projects may be affected negatively.

13 Studies have approached and defined social sustainability from different standpoints and perspectives
14 (Shirazi et al., 2022). Many agree that this concept includes two dimensions, i.e., substantive dimension and
15 procedural dimension (Boström, 2012; Galuppo et al., 2014). The former has to do with what social
16 sustainability is and the themes it encompasses. The latter focuses on how to achieve the aim or what the
17 means are to realise it. Boström et al. (2015) pointed out that substantive social sustainability (“what”) needs
18 the support of procedural social sustainability (“how”), otherwise, it is difficult to be realised. However, the
19 literature review shows that there is a lack of research on the social sustainability of aged care projects
20 (Olmsted, 2021). Some literature on institutional care involves certain means to achieve social sustainability,
21 but they are scattered and for other research purposes, lacking pertinence and systematisation. Research on
22 aged care PPP projects is even more scarce.

23 This paper is part of a broad study entitled “socially sustainable development of China’s aged care Public–
24 Private Partnership projects”. The research question of this paper is proposed as: how to achieve the social
25 sustainability of aged care PPP projects in China? The aim is to establish a socially sustainable development
26 process. To achieve this aim, two tasks need to be accomplished, i.e., identifying critical practices that should

1 be adopted in the project lifecycle, and establishing realisation paths to achieve social sustainability. Critical
2 practices refer to the behaviours and decisions adopted by government departments, private investors and
3 Special Purpose Vehicles (SPVs, which are project companies created to develop and manage the projects,
4 which is a key feature of most PPPs) involved in aged care PPP projects, which are expected to have significant
5 effects directly or indirectly on social sustainability in the short run or the long run. A realisation path is a
6 collection of a series of critical practices that drive the achievement of one social sustainability indicator. The
7 remainder of this paper is organised as follows. “Literature Review” reviews the literature on aged care PPP
8 projects, social sustainability practices, and key theories involved and theoretical foundation. “Research
9 Methodology” presents the research methods. The next section presents the results. The discussions about the
10 answers to the research question are carried out in “Discussion”, followed by “Conclusions and Limitations”.

11 **2 Literature Review**

12 **2.1 Aged Care PPP Projects in China and Their Lifecycle**

13 The earliest aged care projects in China were publicly established and managed. They were invested in and
14 built by local governments at all levels and village collectives. Since 2011, the government has been reforming
15 public aged care projects, trying to cooperate with private investors in a broad sense. The government has
16 publicly supported developing aged care projects via PPP since 2015 (Ministry of Civil Affairs, 2015). As of
17 17 June 2022, there were 100 aged care PPP projects in the project management database operated by China’s
18 Ministry of Finance. Of these, 65 were in the implementation phase. See Table A.1 for the details of these
19 projects. The database (<https://www.cpppc.org:8082/inforpublic/homepage.html#/projectPublic>) is used
20 because it provides open, rich and dynamic project information (Cheng et al., 2018). However, not all aged
21 care PPP projects are included. Consequently, the analysis here only represents the overview of projects in the
22 database. Fig. 1. indicates that the earliest project in China was launched in 2015, and the number of such
23 projects peaked in 2017. Recognising the importance of good management practices after an influx of PPPs
24 from 2014 to 2017, the Chinese government issued a series of regulatory documents from 2017 (Wang et al.,
25 2019). Aged care PPP projects have been significantly impacted, and the number of projects dropped sharply.

[insert Fig. 1. here]

According to the *Public–Private Partnership Operation Guide (revised version)* issued by China’s Ministry of Finance in 2019, the lifecycle of an aged care PPP project contains three phases: preparation, procurement, and implementation. Each phase contains several stages and a series of tasks (Table 1).

[insert Table 1 here]

2.2 Social Sustainability Practices

2.2.1 The Importance of Social Sustainability Practices

According to Sellitto et al. (2020), social sustainability practices are the actions and procedures taken by organisations to promote their social responsibilities in the pursuit of sustainable development. Social sustainability practices are beneficial to both organisations and their stakeholders. It can improve organisations’ financial benefits and reputation (Marzouk & Sabbah, 2021), enhance customer and employee satisfaction (Mani et al., 2020), and thereby lead to sustainable competitive advantages. Meanwhile, it helps improve the safety and welfare of individuals and promote the development of communities (Majumdar et al., 2020). Ignoring social sustainability practices will attract wide concern from various stakeholders, cause operational pressure (Mani et al., 2018), and even affect organisations' sustainable development (Tran et al., 2021).

2.2.2 Social Sustainability Practices in Social Sustainability Studies

Some studies have analysed social sustainability practices from the lifecycle perspective. Goel et al. (2020) pointed out that social sustainability considerations should be incorporated into business decisions when conducting the project feasibility study, seeking to understand the range of stakeholder interests as early as possible. Bubicz et al. (2021) found that some organisations in the apparel supply chains have incorporated social sustainability into their corporate strategy and formulated "Codes of Conduct" and "Sustainability Actions" accordingly. This practice has also been found in the research on the construction supply chain (Marzouk & Sabbah, 2021). In addition, some researchers have pointed out that the prequalification of suppliers is a crucial step in ensuring social sustainability (Thomas et al., 2021). Further, the design and

1 construction of the built environment should not be neglected (Bahador & Bavar, 2022; Yıldız et al., 2020).
2 Finally, stakeholder engagement (Ballet et al., 2020; Kordi et al., 2021) and supervision (Bubicz et al., 2021)
3 throughout the lifecycle are critical to achieving social sustainability.

4 Other studies have analysed social sustainability practices from the substantive dimension. For example,
5 Carballo- Penela (2019) found that organisations with more responsibility towards their workforce, such as
6 stable employment, health and safety at work, and capacity development, are easier to recruit employees.
7 Valdes-Vasquez and Klotz (2013) believed that the productivity, safety, health, and security of end-users
8 should be paid attention to when conducting planning and design. In addition, a project's impact on the
9 surrounding community should also be considered (Wang et al., 2022).

11 2.2.3 Social Sustainability Practices in Aged Care Studies

12 To the best of the authors' knowledge, there is little, if any, literature devotes to the social sustainability of
13 aged care projects (Wang et al., 2023). However, some literature in aged care studies unconsciously involves
14 social sustainability practices. Although for other research purposes, they can still provide references for this
15 study.

16 Some studies involve social sustainability practices that can improve employees' quality of life. For
17 example, Naccarella et al. (2018) believed that aged care institutions should provide good working workspace
18 for employees, such as a home-like environment and access to outdoor spaces. A good psychosocial climate
19 is also crucial (Sjögren et al., 2015). It can affect employees' work efficiency, security and sense of belonging
20 (Naccarella et al., 2018). In addition, aged care institutions should provide education and training for
21 employees, including professional skill training (British Geriatrics Society, 2021) and mental health training
22 (Moyle et al., 2010). According to Surr et al. (2019), effective training is tailored to the trainees and delivered
23 face-to-face by experienced facilitators. Further, communication with employees is crucial (Wang et al., 2021).
24 Staff meetings, newsletters, supervision and informal discussions are useful tools (Age Cymru, 2011).

25 More studies involve social sustainability practices that can improve the quality of life of elderly residents.
26 In general, aged care institutions should move towards a person-centred care model (Sjögren et al., 2015) and

1 provide an integrated care (Douglas et al., 2017). Integrated care is a network of multiple professionals and
2 organisations across the health and social care system that provide comprehensive services to elderly residents.
3 To this end, aged care institutions must undertake a series of practices. For example, working with residents
4 and employees to develop a shared vision (Age Cymru, 2011); developing a project plan and design to meet
5 the needs of residents and employees (Guerra Santin et al., 2021); and providing various facilities and services
6 (Xia, Skitmore, et al., 2015). In addition, stakeholder engagement is indispensable (Petriwskyj et al., 2018).
7 Aged care institutions should empower residents to make choices to the maximum extent (Age Cymru, 2011),
8 develop a self-organised residents committee, and communicate and share information with residents (Xia,
9 Zuo, et al., 2015). The adoption of digital technology is a trend that could assist in promoting these practices
10 (British Geriatrics Society, 2021; Douglas et al., 2017).

11 **2.3 Key Theories Involved and Theoretical Foundation**

12 The study identifies three key theories commonly used in social sustainability research: a) stakeholder theory,
13 which emphasizes the importance of stakeholders in promoting an organization's socially sustainable
14 development (Bellantuono et al., 2016; Collier et al., 2014; Herazo & Lizarralde, 2016; Hussain et al., 2018);
15 b) system theory, which helps identify and assess the sustainability of social elements in individuals and
16 institutions (Broman & Robèrt, 2017; Janker et al., 2019); and c) network theory, particularly Social Network
17 Analysis (SNA), used to analyze and enhance the social sustainability of construction projects (Doloi, 2012;
18 Wang et al., 2018).

19 Stakeholder theory is the chosen theoretical foundation of this study. Galuppo et al. (2014) and Mani et al.
20 (2018) believed that it is the most commonly used theory in social sustainability research. The selection is
21 based on two considerations. First, stakeholder theory and sustainability fit well (Herazo & Lizarralde, 2016).
22 “Sustainability” is an essential element of this theory (Freeman et al., 2021), which posits that the purpose of
23 business is to create common value for all stakeholders in a sustainable manner. Second, stakeholder theory
24 can contribute to social sustainability because it focuses on the benefits and well-being of stakeholders
25 (Harrison et al., 2010). Hörisch et al. (2014) pointed out that stakeholder theory usually describes what

1 companies do to propose solutions for business problems. Based on that, this theory is used in this study to
2 identify the critical practices of project participants.

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4 4 **2.4 Gap in Knowledge**

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5 6 Accompanied by population aging, the pressure on the Chinese government to solely undertake the
6 7 responsibility of supplying aged care is increasing, and it is becoming difficult to accomplish. Aged care PPP
6 8 projects have emerged. However, as described in the Introduction, the institutional care in China is socially
7 9 unsustainable. A project may be even more unsustainable after the PPP model is introduced, for the inherent
8 10 profitability of a PPP may mean the private investors do not really care about satisfying the social needs of
9 11 stakeholders. Moreover, they do not necessarily have expertise in aged care. In short, the adoption of the PPP
10 12 model has increased people's concern that the social needs of stakeholders cannot be well met and the
11 13 improvement of their quality of life is affected (Wang et al., 2022). The social sustainability issue of aged care
12 14 PPP projects must be addressed.

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14 16 However, this issue has not received due attention. The literature review indicates that the current research
15 17 cannot answer the question of how social sustainability of aged care projects could be achieved, and even its
16 18 definition needs to be more specific. This is consistent with the conclusion of Olmsted (2021). Even if
17 19 expanding the scope to a broader field, i.e., social sustainability studies, there is little systematic research on
18 20 the practices and realisation paths. As Missimer and Mesquita (2022) pointed out, the current academic body
19 21 of knowledge about the actual implementation of social sustainability is still being determined. Furthermore,
20 22 given the long-term nature and complexity of PPP projects, consolidating the fragmented behaviours and
21 23 decisions adopted by different organisations or individuals at different stages of the project lifecycle would be
22 24 more conducive to achieving social sustainability. Unfortunately, few studies have related social sustainability
23 25 to a project lifecycle and stakeholders (Kordi et al., 2021). To achieve social sustainability in aged care PPP
24 26 projects, it is essential to identify social sustainability practices and establish realisation paths from the
25 27 stakeholders' perspective in the project lifecycle. Without this crucial step, the projects may not effectively
26 28 address social sustainability concerns.

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1 In another paper by the authors of this study, an indicator framework for the social sustainability of aged
2 care projects in China has been established (Table 2) (Wang et al., 2023). It can be regarded as the substantive
3 dimension of social sustainability of aged care PPP projects, demonstrating the social needs of the definitive
4 stakeholders. Now, the knowledge gap is how to establish a socially sustainable development process to
5 achieve the social sustainability.

6 [insert Table 2 here]

8 **3 Research Methodology**

9 According to the research aim and research question, the research process of this study is shown in Fig. 2. A
10 multiple case study is adopted to identify the critical practices and establish the realisation paths. According
11 to Yin (2017), this method is appropriate for an in-depth understanding of a complex phenomenon within its
12 specific context.

13 [insert Fig. 2. here]

15 **3.1 Case Selection**

16 The cases in this study were divided into main cases and parallel reference cases. Main cases were the main
17 objects of the multiple case study. Their primary and secondary data were thoroughly collected and analysed.
18 The two selection criteria of main cases are: the project is in operation and is unanimously considered a success
19 by practitioners; and the project has no negative news. Project success and social sustainability are not
20 interchangeable. However, considering the novelty of social sustainability, it is feasible to replace social
21 sustainability with project success when choosing cases. The main cases were recommended by experts. They
22 were the Delphi survey participants when the authors used to establish a social sustainability indicator
23 framework in another paper. Three aged care PPP projects were chosen. The number was three because the
24 data saturation point was reached when the third case was analysed. Their basic information is shown in Table
25 3.

26 [insert Table 3 here]

1 These three cases hold high representativeness for several reasons. First, being situated in Shenzhen, the
2 vanguard of China's reform and opening-up, these projects benefit from the city's commitment to building a
3 high-quality aged care service system (Central Committee of the Communist Party & State Council, 2019).
4 This strong government strategy provides a solid foundation for the development of aged care PPP projects.
5 Second, all three cases involve reform initiatives for public aged care institutions. Case A stands as Shenzhen's
6 pioneering public institution to adopt the PPP model for reform, while Case B and Case C represent the first
7 reformed projects in their respective administrative regions. Their extensive operational history before
8 adopting the PPP model sets them apart from newly built projects, offering valuable experience. Lastly, these
9 cases exhibit exemplary management and operations.

10 Meanwhile, this study selected another 17 projects in the project management database operated by China's
11 Ministry of Finance as parallel reference cases. The purpose is to supplement and triangularly verify the data
12 provided by the main cases, as social sustainability has not yet attracted adequate attention in China's aged
13 care projects. Secondary data were collected from these parallel reference cases and analysed. The selection
14 criteria for these cases include the following: the project is a national demonstration project, as national PPP
15 demonstration projects are selected by the Ministry of Finance to highlight key examples of best practice in
16 PPP implementations to further promote PPP on a larger scale (Wang & Ke, 2018); the project is in the
17 implementation phase; the project's documents are accurate and sufficient; and the project has no negative
18 news. Brief information of these cases is presented in Table 4.

[insert Table 4 here]

3. 2 Identification of the Critical Practices

19 An improved critical incident technique (CIT) was adopted to identify the critical practices. CIT is a procedure
20 to collect certain critical incidents concerning behaviours or decisions in a specific situation, proposed by
21 Flanagan (1954). The traditional CIT does not precisely match this study. Inspired by Event Sequence
22 Mapping (ESM) developed by Soomro and Zhang (2015), the traditional CIT has been improved in three
23 aspects.

1 • Information sources. The traditional CIT only collects primary data. This study has two sources: a)
2 primary data from expert interviews with government advisors (representatives of the government) and
3 senior managers of the SPVs (representatives of private investors) in main cases; b) secondary data from
4 documents of the main cases, including government publications, archival records of the SPVs, and
5 related news reports; and government publications of the parallel reference cases. In addition, a
6 reliability hierarchy is developed based on different information sources. The data provided by the
7 interviewees is placed at the top of the reliability level; the data that comes from government
8 publications comes second; the data extracted from archival records ranks third; and the data extracted
9 from news reports ranks last. Information that comes from one source is always cross-checked with
10 other sources as far as possible.

11 • The observers. The observers in traditional CIT are people who have made numerous observations on
12 persons performing the activity under study. The observer scope of this study is expanded, including the
13 interviewees and the researchers themselves.

14 • The relative timing of critical practices. The traditional CIT does not consider this issue. The improved
15 CIT focuses on the relative timing of each practice.

16 This technique is performed individually for all three main cases, and the specific procedure is shown in
17 Fig. 3.

[insert Fig. 3. here]

18 The criteria of the critical practices include: practices that make significant, direct positive or negative
19 contributions to the social sustainability of a project; practices that lead to success or failure in accomplishing
20 a main task in the project lifecycle; and practices that have positive or negative effects on practitioners'
21 personal job and/or the overall job performance in a project (Haussner et al., 2018). They are not limited to
22 the practices that have already been adopted, and the ones that an observer believes should be adopted are also
23 included.

24 The potential participants in the interview should meet four criteria: direct involvement in the main cases;
25 hold senior positions in the cases; recognise and have some consideration of social sustainability; and have

1 plenty of time for in-depth discussion. The list of potential participants is recommended by the Delphi experts
2 and expanded by using the snowball sampling technique. This method was chosen due to the limited
3 availability of experts in the specific field of social sustainability in aged care PPP projects and the absence
4 of a comprehensive expert list. The novelty of the research topic and the relatively niche area made traditional
5 random sampling impractical. By leveraging the initial participants' networks and referrals, the snowball
6 sampling method allowed us to access experts who might otherwise have been inaccessible, resulting in a
7 diverse and representative group of participants with valuable insights into the subject matter. Nine
8 experienced professionals were identified (see Table 5). They are evenly distributed in the three main cases.
9 Four are from consulting agencies representing the governments. It is common practice that such agencies are
10 hired by governments early in the project lifecycle to conduct due diligence studies and structure the project.
11 The other five are from the SPVs. Interviewees A1– A3 are from Case A, B1– B3 are from Case B, and C1–
12 C3 are from Case C. Stakeholders such as the elderly residents in the projects were not included as potential
13 participants. Their opinions were considered when the authors of this study established an indicator framework
14 for the social sustainability of aged care projects in China.

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[insert Table 5 here]

The establishment of the interview protocol is based on the lifecycle division of aged care PPP projects and
the indicator framework of social sustainability. For each stage, the participants are required to answer the
following questions: which practices were adopted; what caused these practices; what the purposes of these
practices were; what the consequences were; and which practices were critical and why. Data collection began
in May 2021 and ended in October 2021. The government publications and news reports on the main cases
were collected first to familiarise the researchers with the cases and establish interview protocols. In July 2021,
the researchers conducted one-to-one and face-to-face interviews with the participants. Each interview lasted
around two hours. The researchers then further collected the archival records of the cases provided by the
participants and relevant materials of the 17 parallel reference cases. Four interviewees (A1, A3, B2 and C2)
were conducted for a second time in October 2021 to collect supplementary information.

A content analysis was adopted to analyse the data, as it is the data analysis method used in most CIT studies

1 (Gremier & Dwayne, 2004). According to Riffe et al. (2019), content analysis could produce useful
2 generalisations with minimal information loss such as to describe institutional focus, theme, trend, etc.
3 (Downe-Wamboldt, 1992). To correctly identify critical practices conducive to social sustainability, the
4 following are defined:

- 5 • Sample selection. The transcripts and notes of the interviews, government publications, internal records,
6 and related news reports of the three main cases, as well as the government publications of the other 17
7 cases are the samples. They contain rich and reliable information relevant to the critical practices of
8 government departments, private investors and SPVs in the projects.
- 9 • Analysis unit. Full-length interviews, full-length documents, and individual news coverage are the
10 analysis unit. Graneheim and Lundman (2004) believed that they are the most appropriate analysis unit.
11 They are large enough to be considered as a whole, which is conducive to the correct identification of
12 critical practices.
- 13 • Coding and grouping. According to Bott and Tourish (2016), to be critical, the behaviour or decision
14 involved in an incident must have a clear purpose or intent, and its consequences or effects should also
15 be clear. Therefore, a behaviour or decision is coded when it meets the above requirements and is
16 adopted by the government department, private investor, or SPV. For example, during discussions on
17 practices in the project initiation stage, interviewee A1 stated that “the government should focus on
18 social sustainability. It should play the role of facilitator and consider developing a policy system for the
19 social sustainability of aged care PPP projects. This is valuable and meaningful. However, there isn’t
20 much consideration towards this right now.” “CP-1 The Civil Affairs Department defines social
21 sustainability as the strategic aim of a project” was identified based on this response. First, the practice
22 has a clear purpose, i.e., to promote the realisation of China’s major national strategy – “actively coping
23 with aging”. It is in line with the strategy to improve human capital and build a high-quality aged care
24 service system. Second, the practice has a clear consequence, i.e., positive effects on overall job
25 performance. With social sustainability as a strategic aim, all project participants are motivated to
26 strategize ways to achieve it (Quist, 2007; Robèrt, 2000). There are two grouping criteria: the stage in

1 which the practice is adopted, and its adopter.

- 2 • Reliability assessment. The coding is completed by the first two co-authors independently. The
3 identified critical practices are validated by each of them during the coding process, including self-
4 validation of an individual main case. By switching back and forth between the text and output of
5 content analysis of an individual main case, the coding and grouping are gradually refined and
6 validated. There is mutual validation of all main cases. The critical practices identified in an individual
7 main case are compared with those in other main cases to validate. In parallel reference case validation,
8 the critical practices identified in these cases are used to validate the practices in the main case.
9 Furthermore, the independent coding results of the two authors are compared. The inconsistencies are
10 discussed by all the authors to reach a consensus.

12 3. 3 Establishment of the Realisation Paths

13 After identifying critical practices, two further steps were conducted to establish the realisation paths.

- 14 • Work out the enabling relationships between critical practices. The enabling relationship refers to the
15 relationship between two critical practices, that is, the critical practice adopted earlier triggers the
16 critical practice adopted later. In other words, the presence of the former favours the presence of the
17 latter. The critical practices are distributed throughout the lifecycle of aged care PPP projects. It is found
18 that there may be multiple practices in one stage. They may occur simultaneously or successively. A
19 critical practice may trigger one or more practices closely following it, or practices with a long-time
20 interval. The enabling relationships between critical practices are determined by analysing their
21 consequences or effects, which is the last component of each critical practice.
- 22 • Establish realisation paths for each social sustainability indicator and a consolidated realisation path for
23 a project. The realisation of each social sustainability indicator is not driven by a single critical practice,
24 but by a series of practices that occur simultaneously or successively. This series is termed a realisation
25 path of social sustainability. The consolidation of all realisation paths corresponds to the realisation of
26 social sustainability of an aged care PPP project. A path diagram is used to explain the realisation path.

1 It can illustrate the enabling relationships between critical practices and indicate directly which party
2 needs to adopt what critical practices at certain stages to promote the achievement of social
3 sustainability.

4 A “constant comparison method” was adopted to validate the realisation paths. It uses existing findings,
5 data and cases to validate the hypothesised concept (Silverman, 2014). In this study, the established realisation
6 paths were decomposed into enabling relationships, and then each relationship was compared with specific
7 practices in the chosen cases.

9 **4 Results**

10 **4.1 The Identified Critical Practices**

11 An improved CIT was performed individually for all three main cases to identify the critical practices.
12 Information from 17 parallel reference cases was used to complement and triangulate the critical practices
13 identified. After discussion, the authors finally reached a consensus. A total of 42 first-level and 85 second-
14 level critical practices were identified. Each critical practice consists of five components: title; the observers,
15 either the interviewees or the researcher; adopted or not, i.e., whether a critical practice is adopted in a main
16 case or not; purpose or intent; and consequences or effects, i.e., its identification criteria. A second-level
17 critical practice is an extension of a first-level critical practice. It does not influence the subsequent
18 establishment of realisation paths, but rather helps to better understand the first-level one. When a first-level
19 critical practice contains multiple behaviours and decisions which occur simultaneously, they are set as the
20 second-level ones. This is to reduce the complexity of each first-level critical practice and clarify the logic
21 between them. Table 6, Table 7 and Table 8 demonstrate the first-level critical practices in different project
22 phases respectively. The critical practices are referred to as CPs hereinafter.

23 *[insert Table 6 here]*

24 *[insert Table 7 here]*

25 *[insert Table 8 here]*

26 All CPs are validated and supplemented by the main cases and/or parallel reference cases. 14 CPs (i.e. CP-

1 2, CP-3, CP-4, CP-7, CP-9 to CP-16, CP-20, CP-23) are adopted in all three main cases and triangulated in
2 parallel reference cases. 22 CPs (i.e. CP-6, CP-8, CP-17, CP-18, CP-21, CP-22, CP-24 to CP-26, CP-28 to
3 CP-39, CP-41) are adopted in all three main cases and not triangulated in parallel reference cases. This is
4 because the implementation information of these cases is not available in the PPP project database. 2 CPs (i.e.
5 CP-19, CP-27) are adopted in two main cases and triangulated in parallel reference cases. They are not adopted
6 in the third main case because the project does not involve new construction or renovation. 3 CPs (i.e. CP-1,
7 CP-40, CP-42) are not adopted in any of the cases, but the observers believe that they should be adopted. In
8 addition, the latter two CPs are not adopted also because there is no PPP project that has entered the project
9 handover and ex-post evaluation stage. Finally, CP-5 is not adopted in all three main cases but adopted in
10 most parallel reference cases. The interviewees confirmed it in the second supplementary interview.

11 From the perspective of time distribution, most first-level CPs are adopted in the project implementation
12 phase, followed by the preparation phase, and the least CPs are adopted in the procurement phase. From the
13 perspective of the key decision maker or adopter, CPs that need to be adopted by government departments are
14 the most common, followed by SPVs and private investors (Fig. 4). After the superposition of the above two
15 perspectives, it is found that different key decision makers need to adopt CPs at different phases to achieve
16 the social sustainability of aged care PPP projects. Specifically, government departments are most important
17 in the preparation phase, as they are the adopters of all 14 CPs. Private investors become important in the
18 procurement phase. They adopt five of the nine CPs and one in conjunction with government departments.
19 SPVs are critical in the implementation phase. They adopt 12 CPs out of 19, and one in conjunction with
20 government departments (Fig. 5).

21 [insert Fig. 4. here]

22 [insert Fig. 5. here]

23 See Appendix for the identification details of all the first-level and second-level CPs.

24 4.2 The Established Realisation Paths

25 Twenty-one realisation paths were established, corresponding to the 21 social sustainability indicators in Table

1 2 respectively.

2 Take the realisation path of indicator 1.1.1 for example. Fig. 6 visually demonstrates its realisation process.

3 1 The circle in the figure represents the indicator. The boxes represent the CPs that need to be adopted. The
4 2
5 3
6 4 arrow line between two boxes represents the enabling relationship. As described above, the determination of
7 5
8 6 enabling relationship is based on the analysis of the consequences or effects of each CP. They are the last
9 7
10 8 component of a CP and are analysed in each CP's identification process (see Appendix for details). For
11 9
12 10 example, when initiating a project, the civil affairs department needs to adopt CP-1, to define social
13 11
14 12 sustainability as the strategic aim of the project. The consequence is that "all participants will consider how
15 13
16 14 to realise it. They will plan and take wise approaches step by step." CP-2 is the "wise approach" to follow CP-
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22 20
23 21 study. Therefore, there is an enabling relationship between CP-1 and CP-2. It is represented by an arrow line
24 22
25 23 from the former to the latter in the realisation path. In addition, the top of the diagram is the timeline. The
26 24
27 25 stages represented by each character are consistent with Table 1.

28
29 [insert Fig. 6. here]
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31 To achieve indicator 1.1.1, i.e., equal employment opportunity, it is necessary for the government, private
32
33 investor and SPV to adopt a series of CPs at different phases and stages. Take the preparation phase as an
34
35 example.
36

- 37
38 • The Civil Affairs Department defines the provision of equal employment opportunity as one of the
39
40 strategic aims when initiating a project (CP-1). Although this CP has not been adopted, the interviewees
41
42 representing the government in the three main cases have recognised its importance. "The government
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44 is the primary beneficiary and promoter. It should play the role of facilitator and consider developing a
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46 policy system for the social sustainability of aged care PPP projects. This is valuable and meaningful.
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48 However, there isn't much consideration towards this right now." (Interviewee A1).
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52 • The Civil Affairs Department preliminarily analyses whether a project can achieve this aim in the
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54 feasibility study (CP-2). The feasibility study report of the three main cases includes this CP, but it is
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56 not adequately considered. The reports mainly address the signing of new contracts with existing
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1 employees. The SPVs are required to accept all the existing employees when taking over. The other 17
2 parallel reference cases considered this CP less. Only one case (Project No. 43) involved this issue. This
3 CP provides direction for the follow-up industry investigation.

4 • When a project is feasible and an implementing agency is authorised by the government, it is
5 responsible for establishing a project management team (CP-5). This CP has not been adopted in the
6 main cases but has been widely used in the parallel reference cases. Twelve cases establish the team
7 (Project No. 20, 31, 41, 42, 43, 46, 48, 51, 54, 56, 62, 63). “This practice is common in counties,
8 economically underdeveloped areas or places with few PPP projects. We don’t have it here. The
9 government has made detailed provisions on the whole process and the responsibilities of various
10 departments. The quality of government employees is very high. So, there is no need for such an
11 institution.” (Interviewee A1). It does not directly contribute to the provision of equal employment
12 opportunity but is committed to establishing an organisation that can promote the realisation of this aim.

13 • The implementing agency selects appropriate advisors (CP-6). It is adopted in the main cases. The
14 interviewees in the three main cases believe that the advisors’ expertise, their understanding of the
15 project, and their willingness to provide advice should be considered when selecting appropriate
16 advisors. “The winner made great efforts in the technical bidding and in-depth research on the aged care
17 scheme of the project. By contrast, other consulting firms were more focused on the PPP process.”
18 (Interviewee C2). This CP could not be validated in the parallel reference cases because the PPP project
19 database does not provide documents relevant to the advisors’ selection. Like CP-5, this CP does not
20 directly contribute to the provision of equal employment opportunities but is committed to selecting
21 advisors who can promote the achievement of this aim.

22 • The implementing agency assists the advisors in conducting industry investigation (CP-7), to learn
23 about the experience and lessons of existing aged care institutions in providing equal employment
24 opportunities. This practice is adopted in all three main cases. “We surveyed existing employees in the
25 project to protect their employment opportunities and employment stability.” (Interviewee B1). This CP
26 is validated in the parallel reference cases. Five cases indicate that an investigation has been carried out

1 before the preparation of business case (Project No. 20, 35, 45, 51, 56). This CP provides the basis for
2 determining the performance requirements of project outputs in the business case.

3 1 • To have stakeholder engagement while conducting market investigation (CP-8), to understand the
4 2 employees' needs for equal employment opportunity. This practice is adopted in all three main cases.
5 3
6 4 “We organise staff representatives to visit other PPP projects. They understand that such projects are
7 5 operated by big, experienced private investors, who could provide more training opportunities and more
8 6 development space for them.” (Interviewee B1). This CP cannot be validated in the parallel reference
9 7 cases because they are all newly built. This CP provides the basis for determining the performance
10 8 requirements of project outputs in the business case.
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13 11 Based on the previous two CPs, the implementing agency needs to assist the advisors to prepare a business
14 12 case conducive to the realisation of the aim, including:
15 13

- 16 14 • To set the provision of equal employment opportunity as one of the performance requirements for
17 15 project outputs (CP-9). The main cases adopt this CP by setting regulations and standards to be followed
18 16 by the projects.
19 17
- 20 18 • To outline the payment mechanism related to the realisation of performance requirements and risk
21 19 sharing (CP-11), to constrain the SPV to provide equal employment opportunity. The main cases link
22 20 the performance evaluation results with the withdrawal of guarantee.
23 21
- 24 22 • To make initial consideration of contractual arrangements related to the realisation of the aim (CP-12).
25 23 The implementing agencies in the main cases establish a link between equal employment opportunity
26 24 and contractual terms, to constrain the practices of the SPVs.
27 25
- 28 26 • To establish a preliminary monitoring framework (CP-13), to further constrain the SPV to provide equal
29 27 employment opportunity. The business cases of the three main cases consider the contract
30 28 implementation supervision. That is, the implementing agency monitors the SPV to fulfill agreed
31 29 commitments and obligations according to the contract. All parallel reference cases consider the
32 30 monitoring of contract implementation.
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1 • The implementing agency determines the procurement strategy to best procure the required outputs (CP-
2 14). This CP is not directly related to the provision of equal employment opportunity, but rather focuses
3 on the selection of partners who could advance the aim.

4 See Fig. A.1-A.20 for the realisation path diagrams of other social sustainability indicators.

5 The consolidated realisation path diagram of the social sustainability of aged care PPP projects is shown in
6 Fig. 7. It is a superposition of the 21 realisation paths, displaying the complete realisation process of social
7 sustainability. Compared with Fig. 6, the CPs in the normal white box have a high degree of aggregation. That
8 is, the focus of the same CP in different realisation paths might be different. For example, CP-1 refers to the
9 local civil affairs department defining social sustainability as the strategic aim when initiating a project.
10 However, social sustainability is a complex construct and the focus of CP-1 is different for different social
11 sustainability indicators. To achieve equal employment opportunity, the government must set it as a strategic
12 aim when launching a project. If the indicator is to provide a healthy and safe workplace, the content of the
13 strategic aim in CP-1 should change. CPs in the box filled with black dots are the opposite. They are consistent
14 in all the realisation paths. In other words, the CPs in the normal white box can be seen as specific behaviours
15 and decisions that contribute to the realisation of an indicator. The content of CPs may differ when they are
16 in different realisation paths. In addition, a number of Arabic numerals are added above each arrow line in
17 Fig. 7, ranging from 1 to 21. These numbers represent the realisation paths that pass through the two CPs
18 connected by the arrow line (for example, 1 for RP1.). The more numbers there are, the more realisation paths
19 that pass through the arrow line, and the more important the CPs connected at both ends of the arrow line are.

20 Fig. 7 indicates that the socially sustainable development of aged care PPP projects is a complex process.
21 Social sustainability is the outcome (or a state/state of being) of this process. The outcome itself is complex,
22 including 21 social sustainability indicators. They are the direct consequences of a series of CPs (CP-27 to
23 CP-33) adopted by the SPV in the investment, construction and operation stage of the project (i.e., stage C2),
24 and CP-41 adopted by the SPV and implementing agency in the handover stage (i.e., stage C4). These CPs
25 are also gradually promoted by the CPs adopted by different participants in different stages before.

[insert Fig. 7. here]

2 **5 Discussion**

3 2 The results obtained above, based on multiple case study, indicate that the two tasks proposed in the
 4 4 Introduction, i.e., identifying critical practices that should be adopted in the project lifecycle, and establishing
 5 7 realisation paths to achieve social sustainability, have been accomplished. They could comprehensively
 6 9 answer the research question of this paper and are discussed in detail below.

8 14 **5.1 The CPs should be Adopted**

9 17 *5.1.1 CPs in Project Preparation Phase*

10 19 To achieve social sustainability, a series of CPs should be adopted in the lifecycle of aged care PPP projects.
 11 22 Fourteen first-level CPs are recommended to be adopted in preparation phase (shown in Table 6).

12 24 First, the Civil Affairs Department should define social sustainability as the strategic aim (CP-1), and make
 13 26 preliminary consideration of the stakeholders' well-being in the feasibility study when initiating a project
 14 29 (stage A1). Galuppo et al. (2014) believed that social sustainability should be considered as its strategy when
 15 31 the purpose of an organisation is to serve stakeholders by solving broad issues of common concern. In turn,
 16 34 an organisation obtains the thorough contribution of stakeholders to achieve value creation only when their
 17 36 social needs are met (Eskerod et al., 2013; Uribe et al., 2018). Undoubtedly, aged care PPP projects match
 18 38 this feature. Meanwhile, the feasibility study can potentially improve the social sustainability of projects
 19 41 (Goodman, 1988), because it can help sponsors understand the scope of stakeholder interests as early as
 20 43 possible (Goel et al., 2020). According to Chinese National Development and Reform Commission (2019),
 21 46 whether a project is conducive to improving people's quality of life constitutes an essential aspect of the
 22 48 feasibility study. Neglecting feasibility studies may lead to project failure (Ke, 2014). For aged care PPP
 23 51 projects, employees, the elderly and their relatives, local community and society have power, legitimacy and
 24 53 urgency (Mitchell et al., 1997). They are important stakeholders to be concerned (Wang et al., 2023).

25 56 Second, the implementing agency authorised by the civil affairs department may consider establishing a
 26 58 project management team (CP-5) and selecting appropriate advisors (CP-6) when it has been authorised by

1 the Civil Affairs Department (stage A2). Several international institutions regard these two practices as key
2 practices for the success of a project (European PPP Expertise Centre, 2011; World Bank, 2021).

3 1 Third, more critical practices are adopted in preparing the business case (stage A3). As a project planning
4 2 and development tool, the business case explains why a project is needed and how to promote it (Infrastructure
5 3 and Projects Authority, 2020). The preparation of a business case can be viewed as a purposive process
6 4 involving understanding, prioritising, and engaging stakeholders (Harrison et al., 2019). Specifically, industry
7 5 investigation (CP-7) can provide a reference for determining project outputs for implementing agency (Javed
8 6 et al., 2013), and enable stakeholders to feel ownership of the scheme (Arshad Ali et al., 2013). Involving
9 7 stakeholder engagement (CP-8), however, is conducive to understanding their social needs (Infrastructure and
10 8 Projects Authority, 2020), which is a widely used social sustainability practice (Kordi et al., 2021; Marete &
11 9 Johnson, 2021; Petriwskyj et al., 2018). Preparing output specifications that align with stakeholders' well-
12 10 being (CP-9) can avoid losses in the future (Farquharson et al., 2011). Considering the impact of risks on the
13 11 sustainability of PPP projects (Ke et al., 2011), the identification of risks associated with social sustainability
14 12 and the development of response plans (CP-10) can not only restrict the SPVs to deliver the outputs agreed
15 13 on (Infrastructure and Projects Authority, 2020), but also encourage the private investors to provide more
16 14 innovative solutions (Flanagan & Nicholls, 2007). Next, to determine the main source of profit and outline an
17 15 initial payment mechanism (CP-11), to make initial consideration of contractual arrangements relating to
18 16 social sustainability (CP-12), and to establish a preliminary monitoring framework (CP-13) can guide and
19 17 constrain the SPVs to provide appropriate care services for the elderly (Bubicz et al., 2021). Finally, it's
20 18 imperative to consider the procurement strategy (CP-14) at the early stage of a project (Agarchand & Laishram,
21 19 2017). It can help the implementing agency select the best solution for the project and the most capable private
22 20 partner to implement the solution (World Bank, 2021). The COVID-19 pandemic has led to a greater emphasis
23 21 on the social sustainability of suppliers in the procurement (Marzouk & Sabbah, 2021; Thomas et al., 2021).

24 22
25 23 *5.1.2 CPs in Project Procurement Phase*

26 24 Nine first-level CPs are recommended to be adopted in this phase (shown in Table 7).

1 First, the implementing agency should determine the procurement process (CP-15) and set the terms of the
2 draft contract relating to social sustainability (CP-16) when preparing tender documents and draft contract
3 (stage B1). A competitive, efficient and transparent procurement process can help the implementing agency
4 select a competent private investor, and identify the most effective solution for project aims (Huang et al.,
5 2009; World Bank, 2017).

6 Second, the private investors need to set their goal of participating in an aged care project (CP-17) before
7 deciding to participate in the prequalification (stage B2). The investment preference and corporate strategy of
8 private investors will affect their choice of projects (APMG-International, 2016). Further, goal setting can
9 guide private investors to make socially sustainable behaviours and decisions. Profit is their ultimate goal.
10 However, considering that aged care PPP project has just started and its welfare nature (recruiting publicly-
11 funded elderly), as well as the public's rejection of institutional care, profit should not be the only or primary
12 goal. Instead, social benefits and market exploration are more important. They help private investors establish
13 a good reputation, enhance competitiveness and occupy the market, and gain economic benefits in the long
14 run.

15 Third, the private investors should conduct a detailed market investigation (CP-18), and establish person-
16 centred planning, design and construction/renovation schemes (CP-19), overall operation schemes (CP-20),
17 and facility maintenance schemes (CP-21) when preparing response documents (stage B3). A detailed market
18 investigation can provide a basis for private investors to formulate competitive response documents that meet
19 the social needs of stakeholders. The person-centred idea can make the projects more like "home" (Sjögren et
20 al., 2015), and improve the well-being of the employees and the elderly (Guerra Santin et al., 2021). When
21 adopting these CPs, the private investors should not only identify the stakeholders that are most important to
22 value creation, but also determine the social needs that need to be prioritised (Harrison et al., 2019).

23 Forth, the implementing agency selects an appropriate partner (CP-22) and signs PPP contracts committed
24 to achieving social sustainability (CP-23) when negotiating and awarding the contract (stage B4). China's
25 aged care industry has just begun. The experience, philosophy and capability of private investors can
26 determine the future of a project to a great extent. In the meantime, a good PPP contract is a prerequisite for

1 effectively implementing a project (European PPP Expertise Centre, 2011).

2

3 ¹ 2 *5.1.3 CPs in Project Implementation Phase* 3

4 ⁴ Nineteen first-level CPs are recommended to be adopted in this phase (shown in Table 8). PPP projects have
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6 ⁶ a long and complex implementation phase, from the date of contract effectiveness to the end of the contract
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8
9 ⁸ period (World Bank, 2017). A higher number of CPs need to be adopted at this phase. This result is consistent
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11 ¹¹ with the study of Sierra et al. (2016). They found that the social criteria to be considered during the operation
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13
14 ¹⁴ of the project are the most.

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16 ¹⁶ First, it is necessary to define providing quality care and improving the quality of life for the elderly as its
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18
19 ¹⁹ vision or mission (CP-24) when establishing the SPV (stage C1). According to stakeholder theory, a project
20
21 ²¹ is composed of networks of relationships between different stakeholders and its main task is to create value
22
23
24 ²³ for stakeholders (Hörisch et al., 2020). A strong vision provides a common focus for SPV's actions (Jarvis &
25
26 ²⁶ Palmes, 2015), and enables older people to live meaningful lives (Age Cymru, 2011). In addition, social
27
28
29 ²⁸ sustainability is easier to achieve when the SPV's vision is aligned with the project's strategic aim.

30
31 ³¹ Second, the SPV needs to adopt a series of CPs according to the contract in the investment, construction
32
33
34 ³³ and operation of the project (stage C2). For example, the establishment of a quality management system (CP-
35
36 ³⁶ 25) and certification (CP-34) can help the SPV identify, measure, control and improve various core business
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39 ³⁸ processes, and finally improve its performance (APMG-International, 2016). Allowing residents and
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41
42 ⁴¹ employees to participate in decisions that affect them (CP-26) is a prerequisite for person-centred care
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45 ⁴³ (Infrastructure and Projects Authority, 2020; Petriwskyj et al., 2018). There are many different methods to
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48 ⁴⁵ engage stakeholders, for example, newsletters and employee work councils. The engagement should be
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51 ⁴⁸ communication-oriented (Eskerod et al., 2015). Then, the provision of person-centred planning, design, and
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54 ⁵⁰ construction/renovation (CP-27), diversified services (CP-29), contingency response (CP-32), and facility
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57 ⁵³ maintenance (CP-33) contribute to the health of residents (Douglas et al., 2017), increasing social interactions
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60 ⁵⁵ (Bahador & Bavar, 2022) and improving social cohesion (Yıldız et al., 2020). Good human resource
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62
63 ⁵⁷ management (CP-30) can reduce the employees' working pressure (European Centre for Social Welfare Policy
64
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1 and Research, 2010), enhance the organisation's attractiveness (Carballo- Penela, 2019) and improve the
2 elderly's quality of life (British Geriatrics Society, 2021; Huang & Bowblis, 2019). Contributing to the local
3 community and society (CP-31) improves the long-term performance of the project and the quality of life of
4 the people affected by it (Valdes-Vasquez & Klotz, 2013). Finally, for existing projects, taking over the project
5 as agreed at the beginning (CP-28) is a critical practice that helps to eliminate any concerns about private
6 investors and reduce the probability of public opposition.

7 Third, a series of monitoring and evaluation practices should be undertaken in stage C3. The self-monitoring
8 of the SPV (CP-35), contract implementation monitoring (CP-36), information disclosure (CP-38), and
9 payment on a performance basis (CP-39) all help to ensure the SPV delivers outputs in accordance with
10 contractual standards (APMG-International, 2016). Further, performance and mid-term evaluation (CP-37)
11 are important sources to provide lessons learned (Farquharson et al., 2011).

12 Finally, three CPs should be adopted during the handover and ex-post evaluation (stage C4). Early
13 consideration of the options after contract expiration (CP-40) can provide the government and the SPV with
14 sufficient time to comprehensively consider arrangements for the elderly and the employees, and make a new
15 option more conducive to ensuring the achievement of the strategic aim. Conducting handover as agreed (CP-
16 41) helps to ensure that the well-being of the stakeholders is not affected (Infrastructure and Projects Authority,
17 2020). Last, ex-post evaluation can draw lessons from the implemented projects, and improve the contract
18 design in the future (European PPP Expertise Centre, 2011), and better realise social sustainability.

19 **5.2 The Realisation Paths to Achieve Social Sustainability**

20 Fig. 7 intuitively demonstrates that achieving the social sustainability of aged care PPP projects is a
21 backcasting process. That is, the strategic aim of the project - social sustainability is set first, and then the
22 participants take CPs step by step to achieve it (Quist, 2007; Robèrt, 2000). The preparation phase is critical
23 in the realisation paths that span the project lifecycle. Some CPs are particularly important in achieving social
24 sustainability. While each CP is critical, some are more critical than others. They appear in all the realisation
25 paths. The numbers above the arrow lines from these CPs to other CPs are "1-21". There are 21 such CPs in

1 Fig. 7, including CP-1, CP-5 to CP-9, CP-11 to CP-16, CP-22, CP23, CP-34 to CP-39, and CP-42. Among
2 them, ten are adopted in the preparation phase (i.e., stage A1-A7), seven are adopted during the
3 implementation phase (i.e., stage C1 -- C4), and four are adopted in the procurement phase (i.e., B1-B4). This
4 distribution is slightly different from the time distribution of CPs shown in Fig. 5. On the whole, the number
5 of CPs in the implementation phase is the largest, followed by the preparation and procurement phases.
6 Although the number of CPs to be adopted in the preparation phase is not as large as that in the implementation
7 phase, they are more important. They are the basis of the CPs in the subsequent procurement and
8 implementation phases.

9 Further, the behaviours and decisions of government departments are the keys in the realisation paths. As
10 an important stakeholder of aged care PPP projects, government departments are not the objects of social
11 sustainability, but important forces to achieve it (Wang et al., 2023). To a large extent, they determine whether
12 a project can create shared value for stakeholders in a responsible and sustainable manner (Freeman, 2010;
13 Székely & Knirsch, 2005).

- 14 • All ten particularly important CPs in the preparation phase of the realisation paths are adopted by
15 government departments, including CP-1, CP-5 to CP-9, and CP-11 to CP-14. These early CPs set the
16 tone for the achievement of social sustainability of a project, without which social sustainability is
17 incomplete or difficult to achieve.
- 18 • Of all the four CPs of particular importance in the procurement phase of the realisation paths, three are
19 adopted by government departments (CP-15, CP-16, and CP-22) and one is adopted jointly by
20 government departments and private investors (CP-23). These CPs can help the implementing agency
21 select private investors conducive to achieving the aim and signing good contracts.
- 22 • Of all the seven CPs of particular importance in the implementation phase of the realisation paths, five
23 (CP-36 to CP-39, and CP-42) are adopted by government departments. Although these CPs do not
24 directly contribute to the social sustainability indicators of the project, they have a constraint effect on
25 the behaviours and decisions of the SPVs, which indirectly contributes to the achievement of the aim.

1 **6 Conclusions and Limitations**

2 This paper attempts to establish a socially sustainable development process to achieve social sustainability of
3 1 China's aged care PPP projects. In previous studies, the authors of this paper have established a social
3 2 sustainability indicator framework for aged care projects (see Table 2). However, it is not clear how to achieve
4 4 it. This paper fills the gap.
5 7

6 9 Three main cases and 17 parallel reference cases were selected for the multiple case study. An improved
7 10 critical incident technique was adopted to identify the critical practices. The research findings address the
7 11 research question proposed.
8 14

9 16 First, to achieve the social sustainability of aged care PPP projects, government departments, private
9 17 investors and SPVs need to adopt a series of critical practices at different phases and stages in the project
10 19 lifecycle. A total of 42 first-level critical practices were identified. Government departments are very
11 21 important in the preparation phase, and all 14 critical practices are adopted by them. Private investors become
12 24 important in the procurement phase, and five of the nine critical practices are adopted by them. SPVs are the
13 26 most critical in the implementation phase, and 12 of the 19 critical practices are adopted by them.
14 29

15 31 Second, twenty-one realisation paths for each social sustainability indicator and a consolidated realisation
16 32 path were established based on analysing the enabling relationships between critical practices. The
16 34 consolidated realisation path indicates that the preparation phase is crucial to realising social sustainability.
17 36 Ten of the 21 more important critical practices (i.e., critical practices that appear in all realisation paths) are
18 38 adopted in this phase. In addition, the behaviours and decisions of government departments play a key and
19 41 decisive role in the realisation of social sustainability, as 18 of the more important critical practices are adopted
20 43 by them alone.
21 46

22 48 This study contributes knowledge to social sustainability in aged care PPP projects and stakeholder theory.
23 49 Realisation paths are established based on the identification and analysis of critical practices and the enabling
24 51 relationship between them, which provide a complete picture of realising social sustainability of aged care
25 53 PPP projects. The behaviours and decisions at different project stages can enable both public and private
26 55 sectors to calibrate their policies and contracting practices to deliver projects successfully. The empirical data
27 58

1 provided by this study indicates that stakeholder theory is suitable for social sustainability research on aged
2 care PPP projects. Stakeholders should be considered when identifying CPs using the content analysis method,
3 including the analysis of the adopter of each CP, its purpose or intent, and its consequences or impacts. Only
4 when the social needs of the stakeholders are understood and realised through methods such as stakeholder
5 engagement, can the projects' social sustainability be well achieved. In addition, while social sustainability
6 has strong context dependence, the critical practices and realisation paths applicable to China can offer insights
7 for other countries, as the social sustainability of aged care projects needs to be improved worldwide. This is
8 particularly important for countries with sizeable aged care populations needing care, and need to provide
9 institutional care through PPP model. Furthermore, the findings have implications for understanding the
10 realisation of social sustainability of other public service projects with social impact, such as health and
11 education projects.

12 The limitations of this study are mainly reflected in the following aspects: a) it regards aged care PPP
13 projects as a whole to study social sustainability, without considering the impact of relevant variables such as
14 the scale of a project or its location (Dempsey et al., 2011; Xia, Skitmore, et al., 2015). However, they might
15 affect the social sustainability indicators of a project and the corresponding critical practices that should be
16 adopted. Therefore, the conclusion of this study may be biased; b) the three main cases are all successful ones
17 and have not experienced long-term operation yet. Although successful cases could provide valuable
18 experience for this study, the importance of failed ones should not be ignored. However, given the nascency
19 of aged care PPP projects in China and the difficulty in obtaining data of failed ones, this study failed to access
20 cases with longer operational experience and failed cases; and c) this study is qualitative research. The authors
21 established realisation paths based on the project lifecycle division, case data collection, and existing
22 literature's support. Although a "constant comparison method" was adopted to validate the realisation paths,
23 the conclusion is a completely subjective judgment of the authors.

24 Therefore, the following aspects can be considered in future research: a) subdivide aged care PPP projects
25 to explore social sustainability under different circumstances such as introducing variables like scale and
26 location; and b) conduct supplementary research and more quantitative research when more projects enter the

1 handover after contract expiration stage, to supplement and validate the conclusions of this study.

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1 Figure Caption List

2 **Fig. 1.** Time distribution of 65 implemented aged care PPP projects

3 **Fig. 2.** Research process of this study

4 **Fig. 3.** The procedure of the improved CIT

5 **Fig. 4.** Adopters of first-level CPs

6 **Fig. 5.** Time and adopter distribution of first-level CPs

7 **Fig. 6.** The realisation path diagram of indicator 1.1.1

8 **Fig. 7.** The consolidated realisation path diagram of social sustainability of aged care PPP projects

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Table 1. The lifecycle of an aged care PPP project

Phases	Stages	Main tasks
A. Project Preparation	A1. Project Initiation	<ul style="list-style-type: none"> To initiate an aged care PPP project To carry out a feasibility study
	A2. Implementing Agency Authorisation	<ul style="list-style-type: none"> To authorise implementing agency To select professional advisors
	A3. Business Case Preparation	<ul style="list-style-type: none"> To prepare business case
	A4. Market Sounding	<ul style="list-style-type: none"> To conduct market sounding
	A5. Value for Money Assessment	<ul style="list-style-type: none"> To conduct Value for Money assessment
	A6. Fiscal Affordability Assessment	<ul style="list-style-type: none"> To conduct fiscal affordability assessment
	A7. Project Approval	<ul style="list-style-type: none"> To complete project approval
B. Project Procurement	B1. Tender and Draft Contract Preparation	<ul style="list-style-type: none"> To prepare full tender documents and draft PPP contracts
	B2. Prequalification	<ul style="list-style-type: none"> To conduct prequalification
	B3. Response Documents Preparation and Evaluation	<ul style="list-style-type: none"> To prepare and submit response documents To evaluate response documents
	B4. Negotiation and Contract Award	<ul style="list-style-type: none"> To conduct pre-contract confirmation negotiation To sign the contract
C. Project Implementation	C1. SPV Establishment	<ul style="list-style-type: none"> To establish a SPV
	C2. Investment, Construction and Operation	<ul style="list-style-type: none"> To invest, construct and operate the aged care PPP project in accordance with the contract
	C3. Performance Monitoring and Mid-term Evaluation	<ul style="list-style-type: none"> To conduct performance monitoring and pay for performance To conduct mid-term evaluation
	C4. Project Handover and Ex-post Evaluation	<ul style="list-style-type: none"> To handover the project To conduct ex-post evaluation

Table 2. A social sustainability indicator framework of aged care projects in China

Stakeholders	Social impacts	Indicators
1. Employees	1.1 Equity and fairness	1.1.1 Equal employment opportunity 1.1.2 Fair employment contract and rational compensation system
	1.2 Health and safety	1.2.1 Healthy and safe workplace 1.2.2 Policies and procedures conducive to health and safety
	1.3 Education and training	1.3.1 The mastering of professional skills 1.3.2 Improved sustainability awareness
2. Elderly and their relatives	2.1 Equity	2.1.1 Equal access to a project 2.1.2 Equal access to services, facilities, etc.
	2.2 Health and comfort	2.2.1 Satisfied basic needs 2.2.2 Satisfied health and physical comfort 2.2.3 Satisfied psychological comfort
	2.3 Accessibility	2.3.1 Good accessibility of a project 2.3.2 Good accessibility of facilities 2.3.3 Easy access to the elderly
3. Local community and society	3.1 Local economic welfare	3.1.1 Job creation 3.1.2 Induced business opportunities 3.1.3 Local actors' involvement
	3.2 Health	3.2.1 Improved local health level
	3.3 Local identity	3.3.1 Protected/Established local culture
	3.4 Social inclusion and social cohesion	3.4.1 The promotion of social mixing 3.4.2 Enhanced community vitality

Table 3. Summary of the three main cases

No.	Case	Scale	Contract Signing Date	Concession Period (Years)	Location	Modalities	Payment Mechanism	Procurement Method
1	A	420 beds	December 2016	15	Shenzhen, Guangdong Province	ROT	User Pay	Open Tender
2	B	791 beds	July 2019	15	Shenzhen, Guangdong Province	OM	User Pay	Competitive Consultation
3	C	397 beds	October 2020	15	Shenzhen, Guangdong Province	ROT	User Pay	Open Tender

Notes: ROT means Renovate-Operate-Transfer; and OM means Operations & Maintenance.

Table 4. The 17 parallel reference cases

No.	Case
63	Jiuding Mountain Aged Care Service and Ecological Comprehensive Treatment Project in Jiaxiang county, Jining city
42	Ziyun Valley Aged Care Demonstration Project in Xiangcheng county, Xuchang city
43	Xinfeng Senior Apartment & Nanshan Ecological Aged Care Centre in Kezuo county
28	Zhongdu Yiyangyuan Integrated Care for the Elderly Project in Wenshang county, Jining city
51	Senior Services Centre, Tongchuan city
31	Huaiyang Ankang Hospital (Aged Care Centre) PPP project in Huaiyang county, Zhoukou city
33	Aged Care Service Centre in Huating county, Pingliang city
54	Smart Aged Care PPP Project, Penglai city
35	Henan Longyao Health City PPP Project in Xiangcheng county, Xuchang city
56	Minsheng Nursing Home, Kaifeng city
44	Second Nursing Home, Hami city
46	Nursing Home in Yintai district, Tongchuan city
62	Fengyezhenghong Integrated Care for the Elderly Project in Mudan district, Heze city
45	Yikang Comprehensive Integrated Care Centre & Second Social Welfare Home, Baishan city
41	Comprehensive Aged Care Project, Changchun city
20	Social Welfare Home in Jiaocheng county, Lvliang city
48	Senior Apartment in Yunnan, Kunming city

Notes: To maintain consistency and avoid confusion, the No. of a case in this table is the No. in Table A1. See Table A1 for details of these projects.

Table 5. Demographic information of the interviewees

Interviewees	Work Unit	Position in the main cases	Years of experience in aged care industry	Number of aged care PPP projects have participated in
A1	consulting agency	Senior project manager	2–5	2–3
A2	consulting agency	Project manager	2–5	2–3
A3	SPV	Head of the aged care project	2–5	2–3
B1	consulting agency	Senior project manager	2–5	2–3
B2	SPV	Head of the aged care project	2–5	2–3
B3	SPV	Vice head of the aged care project	2–5	2–3
C1	consulting agency	Senior project manager	2–5	2–3
C2	SPV	Head of the aged care project	≥10	≥4
C3	SPV	Vice head of the aged care project	≥10	2–3

Table 6. First-level CPs in project preparation phase

Stage A1. Project Initiation	
CP-1	The Civil Affairs Department defines social sustainability as the strategic aim of a project
CP-2	The Civil Affairs Department makes preliminary consideration of the employees' well-being
CP-3	The Civil Affairs Department makes preliminary consideration of the elderly and their relatives' well-being
CP-4	The Civil Affairs Department makes preliminary consideration of local community and society's well-being
Stage A2. Implementing Agency Authorisation	
CP-5	The implementing agency takes the lead in establishing a project management team dedicated to achieving social sustainability
CP-6	The implementing agency selects appropriate advisors to assist in achieving social sustainability
Stage A3. Business Case Preparation	
CP-7	The implementing agency assists the advisors in conducting industry investigation to provide a reference for the preparation of a business case conducive to social sustainability
CP-8	The implementing agency involves stakeholder engagement to understand their social needs and jointly determine the project outputs
CP-9	The implementing agency prepares output specifications that are in line with stakeholders' well-being
CP-10	The implementing agency identifies risks associated with social sustainability and develops response plans
CP-11	The implementing agency determines the main source of profit, and outlines an initial payment mechanism
CP-12	The implementing agency makes initial consideration of contractual arrangements relating to social sustainability
CP-13	The implementing agency establishes a preliminary monitoring framework to constrain the SPV's behaviours
CP-14	The implementing agency determines the procurement strategy to best procure the required outputs

Table 7. First-level CPs in project procurement phase

Stage B1. Tender and Draft Contract Preparation	
CP-15	The implementing agency determines the procurement process to select the partners and solutions that best serve the realisation of social sustainability
CP-16	The implementing agency sets the terms of the draft contract relating to social sustainability
Stage B2. Prequalification	
CP-17	The private investors set the goal of participating in a project – mainly to achieve social benefits and market exploration, supplemented by gaining economic benefits
Stage B3. Response Documents Preparation and Evaluation	
CP-18	The private investors conduct detailed market investigation to understand market supply and the social needs of stakeholders
CP-19	The private investors establish person-centred planning, design and construction/renovation schemes
CP-20	The private investors establish person-centred overall operation schemes
CP-21	The private investors establish facility maintenance scheme to ensure that the facilities are serviced in optimum conditions
Stage B4. Negotiation and Contract Award	
CP-22	The implementing agency selects appropriate partner
CP-23	The implementing agency signs PPP contracts committed to achieving social sustainability with the winning private investor

Table 8. First-level CPs in project implementation phase

Stage C1. SPV Establishment	
CP-24	The SPV defines its vision or mission as providing quality care and improving the quality of life for the elderly
Stage C2. Investment, Construction and Operation	
CP-25	The SPV drafts related documents for quality management system
CP-26	The SPV involves stakeholder engagement to further understand their social needs and opinions and to improve services
CP-27	The SPV conducts person-centred planning, design, and construction/renovation
CP-28	The SPV takes over the project as agreed at the beginning (exclusive to existing projects)
CP-29	The SPV provides diversified services for all groups of elderly as agreed
CP-30	The SPV provides good human resource management for the employees as agreed
CP-31	The SPV contributes to the local community and society
CP-32	The SPV provides contingency response for emergencies that affect the safety of the stakeholders
CP-33	The SPV performs facility maintenance as agreed
CP-34	The SPV implements quality management system certification
Stage C3. Performance Monitoring and Mid-term Evaluation	
CP-35	The SPV self-monitors the outputs to ensure compliance with the standards agreed in the contract
CP-36	The implementing agency and other government departments conduct contract implementation monitoring
CP-37	The implementing agency conducts performance evaluation and mid-term evaluation
CP-38	The implementing agency makes information public
CP-39	The implementing agency pays the SPV on a performance basis
Stage C4. Project Handover and Ex-post Evaluation	
CP-40	The government examines its options after contract expiration to reduce the adverse impacts on the stakeholders
CP-41	The implementing agency and the SPV conduct handover upon contract expiration as agreed
CP-42	The civil affairs department conducts ex-post evaluation

Note: The identification of CPs in this phase depends entirely on the three main cases. The parallel reference cases are no longer used because their implementation information is not available in the PPP project database.

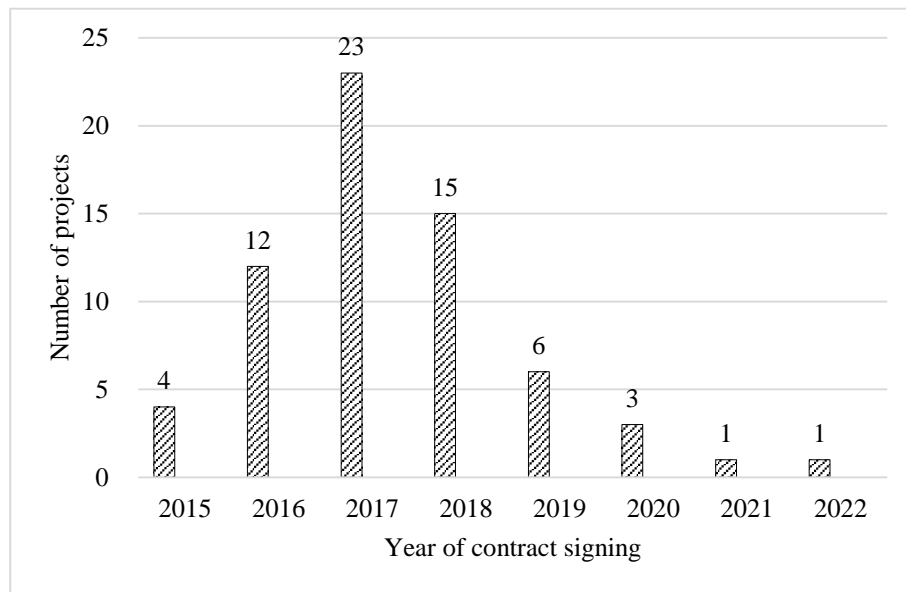


Fig. 1. Time distribution of 65 implemented aged care PPP projects

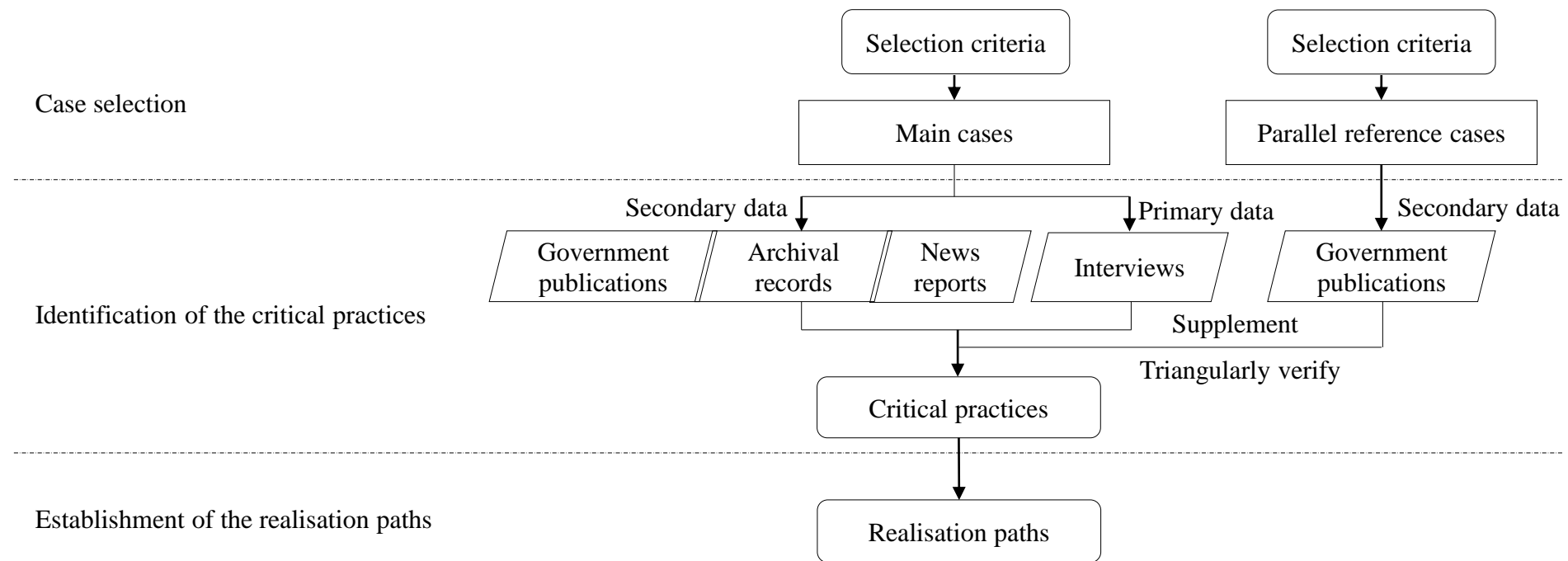


Fig. 2. Research process of this study

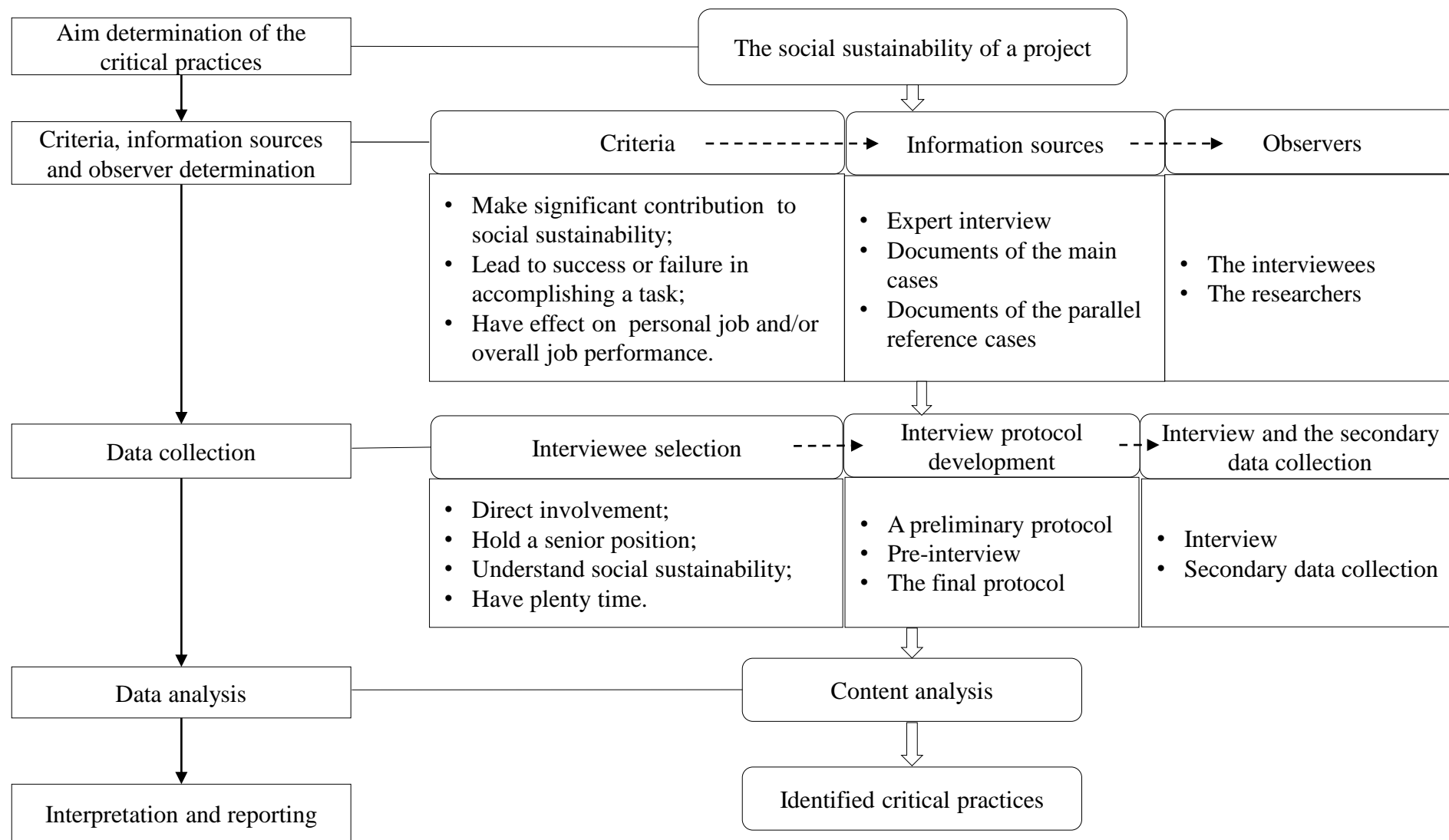


Fig. 3. The procedure of the improved CIT

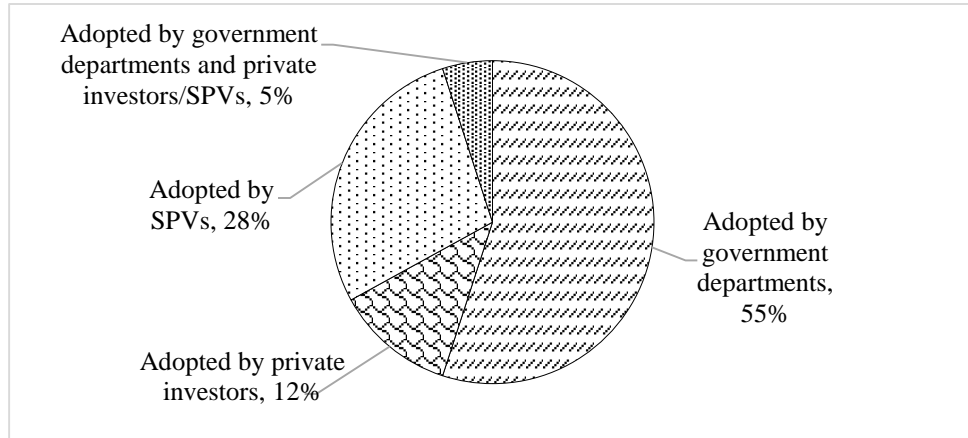


Fig. 4. Adopters of first-level CPs

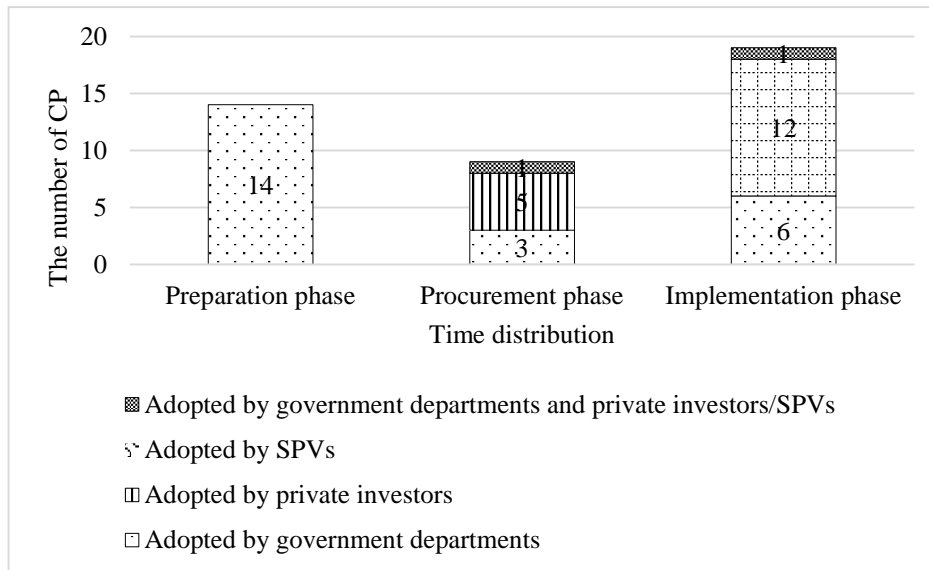


Fig. 5. Time and adopter distribution of first-level CPs

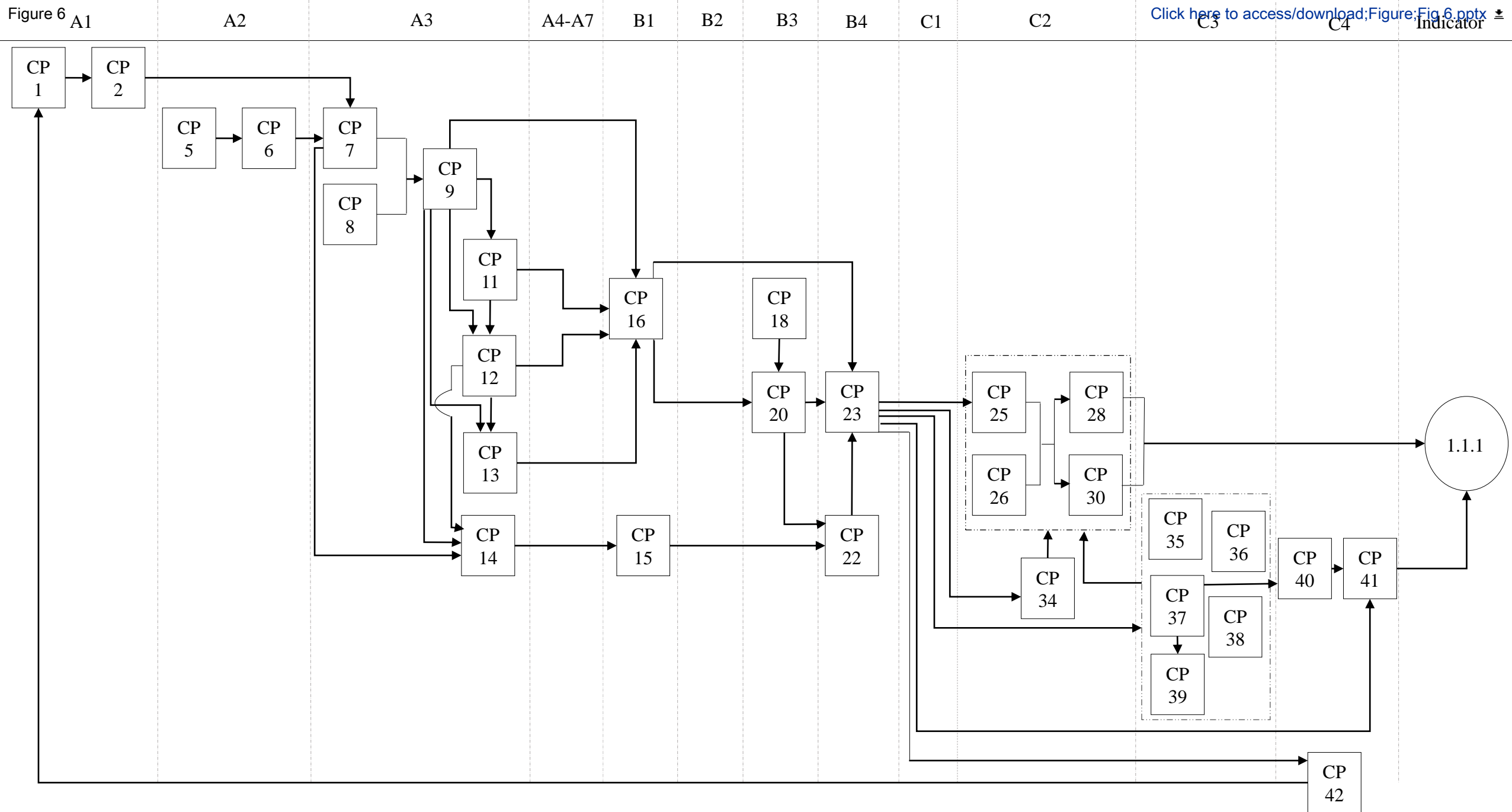


Fig. 6. The realisation path diagram of indicator 1.1.1

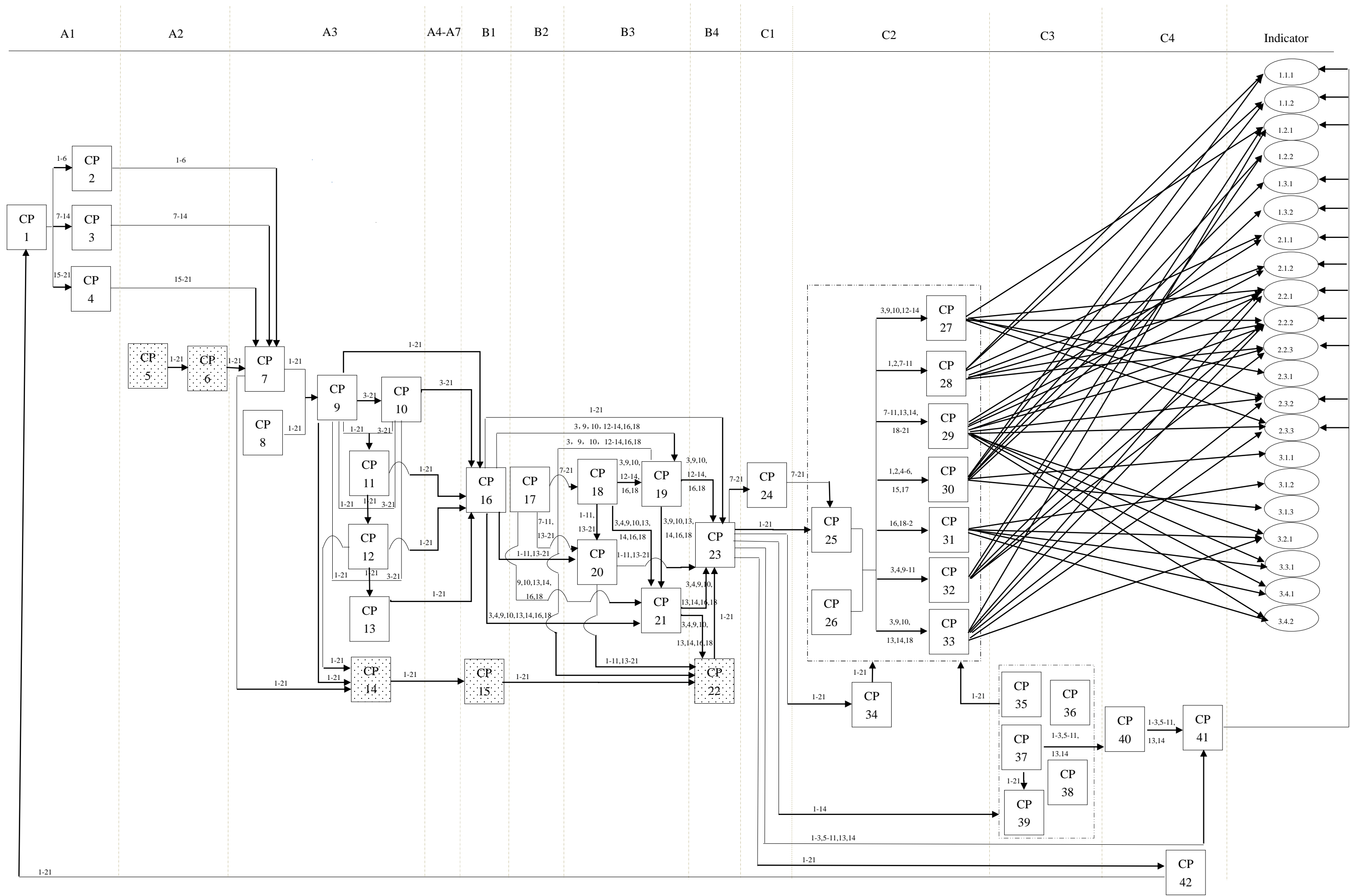


Fig. 7. The consolidated realisation path diagram of social sustainability of aged care PPP projects



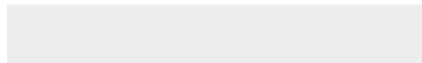
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Table A.1.docx



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Fig. A.1-A.20.docx





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Kun Wang: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Writing - original draft.

Yongjian Ke: Methodology, Resources, Validation.

Shankar Sankaran: Supervision, Writing - review & editing.

Declaration of interests

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

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: