

Understanding Just Transitions in China's Urban Elderly Communities: Towards A Conceptual Framework

Daze Wu

*College of Built Environments, University of Washington, Seattle, USA
dazephd2026@163.com*

Abstract. This paper firstly Introduced the dual challenges China currently faces: the climate change and the population aging. China's goal of sustainable development needs combined solutions to climate change and population aging across global, national, and local scales. This requires building an independent yet globally engaged knowledge system—one that integrates international meaningful practices with China's unique socioeconomic, cultural, and institutional contexts. A sound conceptual framework is needed that should evolve from data collection to theoretical advancement. Such conceptual framework can consider just transition processes, mechanisms and features for elderly people and their elderly communities (also old communities) in China during the climate change and transitional era. It can become the center for further research for just transitions as a whole in China and beyond. Then it reviewed the literature on just transitions in the context of urban (elderly) community. Then it developed contextually informed justice-oriented conceptual framework for China's urban elderly communities in three dimensions: Cognitive, Procedural and Distributive justice, compared with the western contexts. Finally it concluded with a general policy proposal of just-led governance advice for China's urban elderly communities during sustainability transitions.

Keywords: Climate Change, Population Aging, Urban Elderly Community, Conceptual Framework, Just Transitions

1. Introduction

Against a backdrop of escalating resource constraints, mounting environmental pressures, and accelerating climate change, China—as the world's largest carbon emitter and a global leader in energy production, consumption, and industrial output—is navigating unprecedented socio-technical transformations. These transformations have also led to emerging social challenges manifest across different scales from the national, regional to community levels, involving almost all social groups and individuals. On September 22, 2020, at the general debate of the 75th session of the United Nations General Assembly, President Xi Jinping solemnly declared: "China will increase its nationally determined contributions and adopt more forceful policies and measures to strive to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060." [1]. Population aging is a significant trend in social development, a crucial manifestation of the progress of human civilization, and a fundamental national condition for China for an extended period. The Fifth

Plenary Session of the 19th Central Committee of the Communist Party of China elevated actively addressing population aging to a national strategy, marking a new phase in national strategic work related to aging. General Secretary Xi Jinping issued important instructions at the 15th National Conference on Civil Affairs, urging focused efforts to implement the national strategy for actively addressing population aging [2].

Population aging is a major issue facing the world in the 21st century. Xi Jinping summarized the arduous task of addressing China's aging population with "three mosts." First, China has the largest elderly population. By the end of 2024, the number of people aged 60 and over in China will reach 310 million, accounting for 22.0% of the national population. Of these, 220 million will be aged 65 and over, accounting for 15.6%. The number of elderly people in China is close to the total population of the United States and exceeds the combined population of most countries in the world. Second, the pace of aging is the fastest. It took only 21 years for China to transition from an aging society in 2000 to a moderately aging society in 2021, a faster pace than previous countries entering an aging population. Driven by the second birth boom since the founding of the People's Republic of China, China will enter a period of rapid growth in its elderly population starting in 2022 and expected to continue until 2035. During this period, over 20 million people will enter elderly age each year, with a net annual increase in the elderly population projected to exceed 10 million, significantly exceeding the average annual growth rate of 8 million during the 14th Five-Year Plan period. Third, addressing population aging is the most arduous task. It is estimated that by around 2035, China's population aged 60 and above will exceed 400 million, accounting for over 30% of the population, entering a stage of severe aging. By the middle of this century, it will exceed 500 million, accounting for nearly 40% of the population, reaching its peak. Population aging will be the basic national condition of China for a long time to come [2]. China currently is undergoing the so-called people-centered urban regeneration and community renewal. In China's aging urban communities, elderly residents confront compounded socio-spatial injustices rooted in digital exclusion, deep-seated place attachment, deteriorating infrastructure, and mobility constraints—disparities acutely intensified by climate change. These structural disadvantages manifest as a triple injustice within adaptation planning: (1) procedural marginalization, whereby top-down decision-making excludes gerontological voices; (2) institutional authoritarianism, overriding localized needs in climate interventions; and (3) distributive inequity, imposing disproportionate retrofitting costs on low-income seniors. Consequently, transformative planning necessitates participatory co-design that centers elderly lived experience, prioritizes compensatory mechanisms for resilience investments, and rebalances governance power to rectify systemic vulnerabilities. In this context, the question of how to combine green technologies to the healthy elderly community successfully in China has become crucial.

China's pursuit of sustainable development necessitates integrated solutions to climate change and population aging across global, national, and local scales. This requires constructing an independent yet globally engaged knowledge system—one that synthesizes international best practices with China's distinct socioeconomic, cultural, and institutional realities. Rather than isolating itself or mechanically importing foreign models, this approach demands critical analysis of universal aging patterns alongside China's unique challenges (e.g., rapid urbanization [3], regional disparities [4], East Asian familial structures [5]). Moreover, as forementioned, China's elderly people and their urban communities (or named as urban elderly communities) differ from their counterparts in the Western context, showing unique socio-cultural characteristics, needs and political voices. This calls for more grounded in empirical observation by considering domestic conditions, age-based social needs and institutional basis [6]. A sound conceptual framework is

needed that should evolve from data collection to theoretical advancement. Such conceptual framework can reflect on just transition processes, mechanisms and features for elderly people and their elderly communities (also old communities) in China during the climate change and transitional era. It can become the core for further research for just transitions as a whole in China and beyond. Therefore, This paper thus aims to understand how green renovation integrates elderly needs in China. In doing so, in the next section (Section 2), it reviews the literature on just transitions in the context of urban (elderly) community. In Section 3, it develops a contextually informed justice-oriented conceptual framework for China's urban elderly communities. After this, Section 4 concludes with a general policy proposal of just-led governance advice for China's urban elderly communities during sustainability transitions.

2. Literature review: just transitions, urban renewal, and community planning

2.1. The concept of just transitions

Just transitions studies encompass three core conceptual dimensions: cognitive justice, which centers on recognizing and addressing people's socio-technical needs; procedural justice, emphasizing participatory planning and robust mechanisms; and distributive justice, focused on ensuring equitable cost-sharing and fair allocation of benefits. Such general framework of research in the existing literature ensures that transitions are not only environmentally sustainable but also socially inclusive and equitable.

First, justice as recognition expands the discourse of who is burdened by environmental deterioration by asking more foundational questions of who is or is not valued in a place, policy area, or program [7]. Justice as recognition considers the historical contexts that led to inequalities in the first place and result in unequal distributions [8]. Recognition in this situation is described as a "relationship, a social norm embedded in social practice" [9], so it cannot be considered under distribution simply because it is not something to be distributed. Justice as recognition pays attention to the recognition (or non-recognition) of the various needs and desires of different groups, emphasizing the prejudice and discrimination that can be caused in these areas. Without such recognition, injustices in the form of prejudice and discrimination are possible to be uprooted. Cultural and institutional processes are typically at the base of these injustices in that they directly and indirectly give related persons or groups unequal recognition [7]. Justice as recognition is considered to generate more inclusive, collaborative and democratic forms of administration to better engage and realize various needs, tasks and solutions to justice [10,11]. Since recognition is not something that can be distributed, efforts to increase recognition typically pay attention to finding and changing the social backgrounds that destroy self-respect within a particular group and prevent them from being fully empowered and valued within a community [9].

Second, procedural justice is particularly fundamental, as it concentrates on making sure engagement and participation in environmental decision-making stages [12-14] —significantly, it focuses on "fairness in procedure or process." [7]. This principle changes the attention away from only outcome-based reviews to critically see the means by which decisions are created. It asks whose voices were heard, which opinions were included or excluded, and what meaningful chances were available for all related persons to impact the final outcome. This is often operationalized through methods such as participatory planning, inclusive stakeholder forums, free prior and informed consent (FPIC), and reasonable grievance redress ways, making sure that the transition process itself is democratic, inclusive, and legitimate.

Third, even if resources and chances could be distributed equally across society, distributional policies often fail to cope with the various (and oftentimes contradicting) needs of communities [15,16]. In other words, a purely distributional concept of justice can be problematic by failing to realize the uniquely a large range of needs of marginalized public communities. Neglecting such needs is argued to not only overlook the diversity and intensity of needs, but to insufficiently consider the social, cultural and institutional stages that exclude certain persons from fully obtaining the advantages of distributed goods or resources [9].

2.2. Synergies with community development/planning (community transitions)

The discussion on just transitions has developed from its starting narrow concentration on coal-dependent communities toward a broader method to community development and planning. This shift reflects the recognition that sustainability transitions are imperative not only in fossil fuel regions but also across diverse urban and rural contexts where climate change, infrastructural decay, and socio-economic changes necessitate regeneration. Contemporary literature emphasizes the need for holistic interventions that integrate socio-ecological co-benefits through both physical transformations—such as low-carbon infrastructure and waste management—and non-material shifts in lifestyles and community values.

A growing body of research argues that meaningful synergies between just transition and community development are best achieved through a tripartite justice framework. Cognitive justice emphasizes the integration of local knowledge and lived experience into planning processes, ensuring that interventions are culturally and contextually appropriate. Procedural justice highlights the critical importance of inclusive participation through mechanisms such as co-design workshops, digital feedback tools, and formal grievance redress systems, which together foster legitimacy and local ownership. Finally, distributive justice ensures that benefits and costs are equitably allocated, thereby mitigating risks such as green gentrification while promoting inclusive benefits-sharing and capacity-building programs.

Practical implementation of these synergies involves co-creating transition plans that align physical upgrades with behavioral interventions, establishing adaptive multi-level governance structures, and leveraging community data for responsive management. Examples from initiatives in the EU and China illustrate how participatory planning and innovative governance can enhance both engagement and outcomes.

Nevertheless, significant challenges persist, including the exclusion of marginalized groups due to technical jargon, fragmented civil society, and insufficient funding. Future efforts must prioritize accessible communication, dedicated resources for inclusive engagement, and the development of comprehensive metrics that evaluate social equity alongside environmental targets. Thus, advancing just transitions requires an embedded justice approach that ensures community development is not only sustainable but also democratically governed and socially equitable.

2.3. When just transition meets urban elderly communities in China

From the perspective of elderly communities, aging, and the Chinese context, it is necessary to discuss old elderly communities in urban centers when encountering problems and challenges. There is a lack of theoretical research in this field.

China aims to transition from a carbon-intensive economy to carbon neutrality before 2060. Although climate change policies commenced in 2007, this goal remains extremely challenging. While the procedural justice notion “None of them are left behind” in western world prevails,

environmental authoritarianism describes a top-down system of governance or policy implementation that engages in minimal public participation, including senior groups [17]. There are facts that the elderly in China are often willing to live in old city centers due to a deep sense of belonging and identity in their long-familiar communities, despite the outdated facilities. This preference for "aging in place" is influenced by cultural values of family and attachment to their homes, which contribute to their desire to remain in their established neighborhoods rather than move to institutional care or new, unfamiliar environments [18]. Furthermore, Chinese elderly people are significantly concerned about their income and financial security due to declining work income, rising healthcare costs, and the decreasing reliance on family support, which has been exacerbated by China's rapidly aging population. Older Chinese face financial challenges as they stretch their life savings to meet expenses when their income declines or ends, cope with health care expenses and keep pace with China's digital revolution [19]. Community environments are vital factors impacting elderly' daily mobility and movement convenience [20].

The West focuses on leaving no one behind (absolute democracy), which is different from Chinese context. Urban justice should be studied in the Chinese context because China is different. China pays more attention to distributive justice rather than procedural and cognitive justice. Consequently, there needs to be a framework that takes into account the elderly in China particularly. If the planning distribution is unbalanced, there will be problems in future governance.

3. Towards conceptual framework: putting just transition into the Chinese context

3.1. Characteristics and group portraits of old elderly communities in Chinese cities

First, China's urban system operates within a unique political context marked by rapid socioeconomic transformation, top-down governance structures, and a semi-marketized approach to development. This environment has fostered a diversity of actors—including state-led entities, private developers, and public-private partnerships—driving urban renewal and transformation projects. However, significant power and information asymmetries exist between these dominant stakeholders and the general public, particularly residents who are often passive recipients of urban change. This imbalance can lead to inequitable outcomes in planning processes, public participation, and the distribution of benefits, underscoring the need for more inclusive and transparent governance mechanisms.

Second, urban communities in China are defined by extraordinarily rapid growth, which has resulted in pronounced challenges such as overcrowding, urban sprawl, and high population density—particularly in major metropolitan areas. Housing typologies are increasingly vertical, with high-rise residences becoming the norm. While economic expansion has been dramatic, the development of social infrastructure—including healthcare, education, and public recreational facilities—has not kept pace. This discrepancy has created tangible disparities in quality of life and access to essential services, exacerbating socio-spatial inequalities and straining the capacity of cities to accommodate their populations sustainably.

Third, China is experiencing one of the most rapid demographic aging processes globally. It is projected that by 2040, individuals aged 60 and above will constitute 28% of the total population, a shift driven by rising life expectancy and past fertility policies. This profound demographic transition presents multifaceted challenges and opportunities for public health systems and socioeconomic development. A critical priority is the establishment of an integrated care system that addresses both the health and social needs of older adults while ensuring equitable access to services across diverse geographical regions. In response, China has been actively developing age-friendly

cities and communities that enable older people to live healthy, active, and socially engaged lives. Innovative strategies include the rollout of internet-based medical information platforms and telemedicine services, aimed at improving accessibility and coordination of elderly care [21]. These efforts reflect a growing recognition of the urgency to adapt urban environments and policies to the needs of an aging society.

3.2. Adapted conceptual framework of just transition studies for Chinese urban elderly communities

Given the distinctive urban, political, and demographic contexts outlined above, the conceptual framework for a just transition in China's elderly communities must integrate three core dimensions of justice: cognitive justice, procedural justice, and distributive justice (see Figure 1). It is essential to emphasize, however, that these concepts diverge significantly from Western interpretations in their conceptualization, substance, and goals, due to China's unique semi-marketized governance, topological constraints, and socio-cultural dynamics.

3.2.1. Cognitive justice dimension

Cognitive justice here refers not only to the recognition of diverse knowledge systems and elderly needs, but more specifically to rectifying the profound information asymmetry between policymakers and residents. Within China's top-down urban governance structure, this entails legitimizing local and experiential knowledge of aging populations, while also fostering official discourse that values intergenerational reciprocity and collective welfare over individual rights. For instance, tech-centric designs often neglect the specific ergonomic needs of the elderly, creating a so-called "gray digital divide". Such divide excludes them from modern society. In a climate change era, many technologies, including complex smart thermostats, developed primarily for younger users, presenting usability issues for older adults due to age-related declines in vision, cognition, and motor skills. Moreover, in recent years, the COVID-19 pandemic, as an external shock, further exacerbated this issue, as crucial services like healthcare and payment moved online, leaving many seniors behind.

3.2.2. Procedural justice dimension

Procedural justice in the Chinese context transcends mere participation; it requires institutional mechanisms that mitigate power imbalances during urban redevelopment and health policy implementation. This involves creating deliberative channels that are sensitive to vertical housing layouts, high population density, and often fragmented community structures, ensuring that elderly residents—especially those in underserved or sprawling urban areas—have meaningful input into adaptation plans without challenging state leadership. By considering this context, the unique and Chinese-specific urban community institution for decision-making and inclusive participatory action, namely, "Three Meetings System" should be introduced into Chinese planning context. This institution involves three pillars of procedural issues within an urban community, including, hearing, coordination and meeting. While elderly representatives with relatively more time are more likely to participate in such institution, which matters significantly for the dimension of procedural justice during a community transition.

The US and Europe have complex planning procedures, including strict environmental impact assessments and participatory planning process. The Ladder of Citizen Participation, proposed by

American scholar Sherry Arnstein in 1969, is a classic framework for analyzing the relationship between the degree of public participation and power distribution. This theory divides citizen participation into three levels and eight specific forms, revealing a gradual process from government-led participation to public self-governance.

However, in the Chinese political context, the government is in charge the planning process, including the official demolition, with decisions made first and governance later. Moreover, Chinese neighborhood committees, known as Residents' Committees (RCs), have a multifaceted role that includes both coordination and direct governance on behalf of the state, especially concerning state control. Although they are officially defined as "self-governing" mass organizations, in practice, their function involves executing the directives of higher-level authorities.

Indeed, a critical and unresolved question emerges regarding the pervasive digital divide within e-participation platforms in China. This divide is not merely a technical issue but a multifaceted social and political challenge, characterized by significant inequalities in both access to digital technologies and the skills required to use them effectively. Older adults, particularly those with lower educational attainment and limited technological exposure, encounter substantial barriers to meaningful participation. These obstacles include inadequate digital infrastructure, insufficient resources—such as affordable internet access and suitable devices—and a pronounced lack of digital literacy. Moreover, the top-down nature of China's governance model further complicates this issue, as it often fosters a culture of state dependency wherein citizens traditionally expect the government to initiate and implement solutions, thereby discouraging bottom-up civic engagement. This dynamic severely limits the potential of digital tools to facilitate genuine citizen empowerment, raising urgent questions about how to reconceptualize participatory frameworks in a way that not only integrates but actively supports marginalized groups, such as the elderly, in contributing to urban and social policy processes. Thus, there is a pressing need for a new conceptual framework that can address these intersecting dimensions of exclusion and redefine digital participation within the unique socio-political context of contemporary China.

3.2.3. Distributive justice dimension

While Western scholarly and policy discourses on just transition often prioritize cognitive and procedural justice, the Chinese context—particularly within urban elderly communities—places far greater emphasis on distributive justice. This reflects not only socio-cultural expectations but also the material conditions and institutional realities of an ageing society undergoing rapid urbanisation. In Western models, justice is frequently framed around recognition and participatory parity; in China, however, the core of justice is often perceived as the fair sharing of costs and benefits within a state-steered, collective framework. The central question is not merely “who participates” or “who is recognised”, but rather “who bears the costs” and “who enjoys the benefits” of development and adaptation. Such justice involves three key aspects, namely, the cost-sharing model, equity mechanism, and benefit allocation.

First, the Cost-Sharing Model is typified by a hybrid structure: Government Subsidies + Public Maintenance Fund + Household Contributions. This multi-source approach is institutionalised through public-private partnerships (PPPs), which have been strongly promoted through national policy guidelines aimed at stimulating social capital investment while controlling local government debt. Within this model, the government acts not only as a regulator but also as a key financial actor, ensuring that projects of public value—such as age-friendly retrofitting or green energy upgrades—are fiscally viable and sustainable. The emphasis is on collective burden-sharing rather than

individual responsibility, resonating with broader principles of socialist welfare provision and intergenerational solidarity.

Second, the Equity Mechanism often incorporates the concept of sliding-scale fees based on pension income. Although not yet fully implemented in the domain of green technology or elderly-specific services, the principle is well-established in other public service areas. This model adjusts financial obligations according to one's economic capacity, thereby preventing the marginalisation of low-income elderly residents. Such a mechanism aligns with the socialist ideal of "equity rather than equality," acknowledging that fairness requires differentiated treatment based on need and ability. Its potential application in environmental and social infrastructure projects represents an innovative pathway toward contextualised distributive justice.

Third, Benefit Allocation must be understood in light of material and infrastructural constraints. For instance, while solar panel installations or elevator retrofits may provoke disagreement among elderly residents—often due to upfront cost concerns or property rights disputes—they also generate collective benefits such as lower energy costs, improved building functionality, and enhanced quality of life. In China, benefit-sharing is often channeled through reduced operating expenses, revenues from renewable energy generation, and access to government subsidies or green finance instruments. These mechanisms convert sustainability investments into tangible, monetary returns that support long-term maintenance and service delivery—a critical advantage in communities where ageing-in-place is a public policy priority.

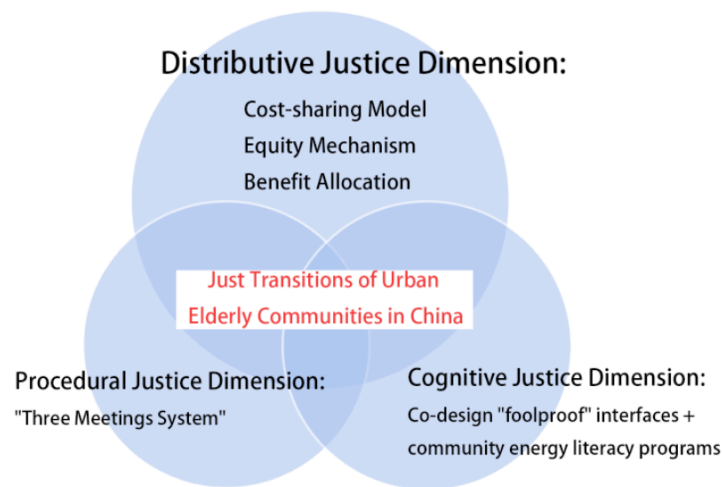


Figure 1. A conceptual framework just transitions of urban elderly communities in China

In summary, the distributive dimension of justice in China's urban elderly communities is fundamentally shaped by the state's role in orchestrating resource allocation, the cultural primacy of material fairness, and the pragmatic need to balance public and private interests. A conceptual framework for just transition in this context must, therefore, centre on distributive mechanisms—especially those that reinforce social equity and intergenerational reciprocity under conditions of rapid demographic and urban change.

4. Discussions and conclusions

In conclusion, this analysis posits that a just transition is fundamentally a place-based endeavor, necessitating institutional theories tailored to specific socio-ecological contexts rather than the

application of universal blueprints. The primary contribution of this work is the development of a conceptual framework that explicitly addresses the intersection of decarbonization and demographic aging, a dual challenge of critical significance for China's long-term sustainability. This framework moves beyond simple approaches by advocating for comprehensive, multi-scalar policies and actions that integrate global knowledge with national strategies and local implementation. It emphasizes that building an independent knowledge system to proactively address population aging is not an act of isolationism. Instead, it represents a sophisticated process of engaging with international experience while critically adapting it to local realities. The ultimate contribution lies in charting a path for China to explore a model of modern governance that is both informed by global discourse and firmly grounded in its unique economic, geographical, cultural, and institutional characteristics [22].

This research highlights the inadequacy of one-size-fits-all solutions. While the challenges of climate change and an aging population are global in scale, their manifestations and impacts are intensely local. The paper suggests that effective strategies emerge from policies that are sensitive to regional disparities, such as the varying industrial bases, fiscal capacities, and social structures across Chinese provinces. For instance, the promotion of green technology must be coupled with retraining programs that consider the demographic profile of local workforces, ensuring that the transition does not disproportionately affect older workers in traditional sectors. Our research also points to the necessity of policy models that can simultaneously foster the social-cultural contextualizations of just transition approaches on the ground and facilitate community-level institutional innovation towards justice production, distribution and process. Our suggested conceptual framework ensures that the transition is not only environmentally sustainable but also socially equitable, mitigating the risk of leaving vulnerable populations, including the elderly, behind.

To end up, this study engages directly with theoretical debates in institutional and transition studies by challenging the predominance of Western-centric models and advocating for a more pluralistic understanding of development pathways. It opens a vital dialogue on how nations in the Global South can navigate universal challenges without sacrificing their contextual specificity. The proposed agenda for future research is twofold. First, there is a need to further refine the theoretical paradigm of place-based institutionalism, exploring the mechanisms through which local knowledge is systematically translated into theoretical refinement and, ultimately, into institutional innovation. Second, this paper sets the stage for comparative studies across the Global South. The findings can be implemented as a policy model for other rapidly urbanizing nations facing similar dual pressures, inviting a fruitful exchange of practical solutions and institutional designs. The key theoretical prospect is the co-creation of a new knowledge system that learns from, but is not subservient to, existing paradigms, ultimately contributing to a more diverse and resilient global understanding of just transitions.

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