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Ageing Well in Times of Climate Change: Integrating Sustainability and the Oldest Old

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Abstract

Climate change poses substantial challenges to ageing societies in Europe, particularly affecting the well-being and health of the oldest old. The concept of “ageing well”, maintaining autonomy, health, and social integration despite age-related and environmental stressors, is increasingly compromised. However, existing gerontological and environmental research often overlooks the heterogeneity of advanced age, resulting in adaptation strategies and sustainability discourses that fail to address their specific needs.

This article examines the intersection of gerontology and environmental research, highlighting gaps in literature regarding adaptation strategies and sustainable behaviors among the oldest old. We introduce the model of “ageing well in times of climate change”, which integrates environmentally conscious and sustainable actions in the concept of ageing well. The model posits that ageing well is not only a desired outcome but also a prerequisite for environmental conscious and sustainable behavior, while social inclusion fosters broader societal support for climate protection measures. Finally, we derive implications for research, policy, and practice, emphasizing the need for tailored approaches that recognize the diversity and agency of the oldest old in times of climate change.

1. Climate change and population ageing: an overlooked intersection

Year for year global temperature records are broken, a trend expected to continue. Global warming poses one of the greatest challenges to health and societal cohesion today (Romanello et al. 2023). Europe’s warming rate of more than double the global average exacerbates the occurrence and intensity of climate-related hazards (van Daalen et al. 2024). Among its most visible manifestations are extreme weather events such as heatwaves particularly in Southern and Western Europe, droughts, wildfires as well as storms, heavy rainfall and extreme cold particularly in Eastern Europe (Kendrovski and Schmoll 2019; Klemens et al. 2025). Against this backdrop, it is not surprising that roughly half of the 27,000 respondents across 27 EU Member States in the 2025 “Living and Working in the EU” e-survey reported being very concerned or quite concerned about extreme heat and wildfires disrupting future daily life and well-being (European Environment Agency 2026). At the same time, populations age around the globe, with a rapidly growing proportion of older people and rising numbers of so called “oldest old” (often defined as age 80+/85+), with Europe at the forefront: By 1 January 2025, the EU population was estimated at 450.6 million people and more than one-fifth of it was aged 65 years and over (Eurostat 2025).

These developments intersect and have profound implications for well-being and health across Europe: More and more older and very old individuals are more frequently exposed to heatwaves (and other natural disasters) than previous cohorts. As many of them live with age-associated conditions such as dementia, cardiovascular disease or respiratory disease, functional limitations may further restrict the ability to adapt to environmental stressors and increase reliance on family support or formal care. In 2023, Europe’s second-warmest summer since weather records began resulted in an estimated 47,690 heat-related deaths (Gallo et al. 2024). In Germany, for example, the summers of 2023 and 2024 each saw an estimated 3,000 heat-related excess deaths – predominantly among older people in urban areas (an der Heiden 2025). In Spain, the toll was even higher: Between 2021 and 2024, 11,684 excess deaths were attributed to extreme heat, with over 75% of those affected aged 75 and older (Barba-Sánchez et al. 2026). A recent study by Masselot et al. (2025) predicts that the proportion of expected heat-related deaths will further continue to rise across large parts of Europe in the future.

Increased morbidity and mortality risks have not only been demonstrated for people with pre-existing conditions, but also in low-income strata (e.g. an der Heiden 2025; Hajat et al. 2007; Wanka et al. 2014; Winklmayr et al. 2023). In line with that, climate change also contributes to social polarization and intergenerational tensions, for example when

responsibilities for the developments as well as mitigation and adaptation are framed along generational lines (Lumer 2009; Werkmann and Frieß 2023).

Under these circumstances, “ageing well” (Fernández-Ballesteros et al. 2013; Waddell et al. 2025) – understood as the ability to lead a self-determined, healthy and socially integrated life in the face of age-related limitations and environmental stressors – is severely challenged. Climate change undermines the ability of older people and especially the oldest old to age well. As adaptive capacity depends not only on individual strategies, but also on socio-structural characteristics such as age, gender, socioeconomic status, and region, this is especially true where preventive healthcare, care infrastructure and social cohesion are lacking. Moreover, (intersecting) inequalities even widen, when older people are only seen as victims, and not as conscious and capable actors vis-a-vis current challenges.

To date, however, the heterogeneity of advanced age and especially the oldest old remain largely invisible in gerontological and especially in environmental research. Adaptation strategies and sustainability discourses rarely account for the variability and specificities of the (oldest) old age – a critical gap this article addresses.

We explore the current state of research in the fields of gerontology as well as environmental and sustainability research, as well as their intersection where applicable – and explore research gaps concerning ageing well, i.e. the adaptation strategies of the oldest old and their opportunities for environmental action. We bring possible courses of action for the oldest old together in the model of “ageing well in times of climate change”, which encompasses both environmentally conscious and sustainable behavior and opportunities for social inclusion. Our model challenges traditional sustainability discourses, which often overlook the oldest old. We argue that “ageing well” is not just an outcome and a goal in itself – it is also a prerequisite for environmentally conscious and sustainable behavior. The oldest old can only engage in climate-friendly actions if their basic needs – health, safety and social inclusion – are met. At the same time, social inclusion helps to ensure that climate protection measures are supported by society as a whole. Finally, we derive implications from our “ageing well in times of climate change” model – for research, policy and practice.

2. The oldest old in climate change research: key blind spots

Research on the impact of climate change on older people has grown significantly in recent years, with studies increasingly focusing on environmental stressors and extreme weather events. However, as a scoping review of the last fifteen years of European and Anglo-American literature reveals, one group remains systematically overlooked: the oldest old (Brandt and Höppner 2024; Höppner and Brandt 2026) – even though they are disproportionately affected by the consequences of climate change. In the following we argue that age and ageing are important dimensions of inequality (Höppner and Wanka 2021; Wanka and Brandt 2025), a fact which has not yet been considered in literature on climate change. This strand of the literature mostly refers to the so-called “young old” who should be “active”, “productive” and “successful” (for a critical discussion of this, see, for example, Pichler 2010).

2.1 The oldest old as an underrepresented group in (survey) research

Despite current climate-related events, the oldest old are largely invisible in climate change research. This neglect unfolds and manifests in three dimensions:

Methodological challenges

General population surveys struggle to include the oldest old, resulting in small sample sizes and high selectivity of samples (e.g., exclusion of care home residents). The collection of representative information on the oldest old would require increased use of costly interview techniques (proxy interviews, sampling in institutions, etc.) (Brandt et al. 2018). As a result, the specific needs, experiences, resources, and living conditions of the oldest old remain understudied.

Lack of age differentiation in analyses: Environmental and sustainability studies often group together all older people into broad categories (e.g., "55+", "60+", "65+"). In environmental and sustainability research, advanced age and its links to dimensions of inequality such as gender, socio-economic status and cultural background have not yet been systematically examined in the context of climate change. For example, in the study "Representative Survey on Environmental Awareness and Environmental Behaviour in 2020" by the German Federal Environment Agency (Stieß et al. 2020), people in the second half of life are categorized into the clusters "60 to 69 years" and "70 years and over", whilst initial publications from the German Environmental Panel (GLEN) differentiate results by age into the groups 50–59 and 60+ (Auspurg et al. 2025). This pattern continues at European level: in the "Special Eurobarometer 459" study (European Commission 2017), people in the second half of life are grouped as "55+", and in the "EIB Climate Survey" (European Investment Bank 2021) as "65 years old and over". Another categorization is used in analyses based on the German Socio-Economic Panel (SOEP). Older people are subsumed as one of several groups under the umbrella term "vulnerable households" to research the relationship between income and vulnerability to heat (e.g. Osberghaus and Abeling 2022). Even in studies that utilize the concept of environmental and climate justice to shed light on the significance of the interplay between various dimensions of inequality from an intersectional perspective, and which do not view climate protection measures in isolation from issues of social justice (Amorim-Maia et al. 2022), the oldest old are not explicitly addressed (see the overview in Bolte et al. 2023). The specific potential, needs and risks of the oldest old are naturally masked by such broad classifications. Moreover, the interplay with other inequality dimensions (gender, socio-economic status, cultural background) is not analyzed and the heterogeneity of the group(s) is not addressed.

Knowledge gaps: While gerontological research does examine climate-related challenges, the oldest old are rarely focused. When it comes to strategies for adapting to extreme weather events and to environmentally conscious and sustainable behavior – which are examined below – a homogeneous image of advanced age is presented and later life stages neglect a nuanced analysis. Analyses of attitudes toward climate change based on the "English Longitudinal Study of Ageing" (ELSA) reveal that mainly people in their 70s and 80s, while aware of climate change's adverse effects, believe it is too late to act and that worrying about distant future impacts is futile. Consequently, they often feel a lack of agency or time to contribute through personal actions or policy support (Di Gessa and Zaninotto 2026). Experiences, needs and action options of the oldest old in the context of climate change are not specifically explored. Admittedly, the study "Advanced Age in Germany" (D80+; Kaspar et al. 2023) provides representative data of the living situations and quality of life of the oldest old across Germany and thus goes beyond studies on ageing such as the "German Ageing Survey" (DEAS) or the "Survey of Health, Ageing and Retirement in Europe" (SHARE). However, the questions relating to climate change are limited to the individual value systems of the oldest old: 83% of D80 + respondents considered caring for nature and the environment important. Furthermore, they expressed wishes for effective climate and environmental protection, which are directed primarily at policymakers (Korlat et al. 2026; Reissmann and Wagner 2023). Other representative studies on the oldest old in Europe, such as Sweden's "Living Conditions of the Oldest Old" (SWEOLD) (Fritzell et al. 2020) have not (yet) included questions relating to climate change. The next sections will explore how this neglect manifests in discourses on adaptation strategies (2.2) and sustainable behavior (2.3).

2.2 The lack of addressing intersectional inequalities in adaptation strategies

Studies on adaptation strategies primarily focus on extreme heat and examine three dimensions of adaption: daily routines, social networks, and environmental conditions (Brandt and Höppner 2024). Yet, we will argue in the following, these strategies often fail to account for the specific living conditions and capacities of the oldest old, particularly those with care needs or low income.

Daily routines

Regarding short-term coping strategies, international studies show that healthy older people possess high adaptability to extreme weather events as they can flexibility adjust daily habits (Malmquist et al. 2022). These include changes to individual daily routines, such as rescheduling weekly shopping trips (Wanka 2020), using air conditioning or seeking out air-conditioned rooms (Nunes 2018), darkening living spaces, wearing light clothing and adjusting one's diet (Bittner and Stossel 2012). The few available studies in this field reveal a more complex picture for the oldest old. Conrad and Penger (2019) surveyed 211 people aged between 65 and 92, with on average relatively high levels of resources (socio-economic, psychosocial and health-related), on the relationship between heat and subjective health experiences, as well as adaptation strategies. They show that not all participants are equally at risk. However, people who are vulnerable to heat are aware of its effects; they adapted their mobility behavior in hot weather and avoided physical exertion. However, Pfaffenbach and Siuda (2012), who conducted a survey with 2,181 people aged 50 and over (including 190 people 80+), show that under 30% of the oldest old perceived heat stress as a (very) severe burden, compared to 20% of respondents under the age of 80 who reported the same. The authors conclude that the oldest old consult doctors more often for heat-related issues and are thus better informed about risks, they nevertheless adapt their behavior less frequently than younger participants. They found that on hot summer days the oldest old only alter their behavior in few instances (resting more, staying at home more often) or do not alter their behavior at all (they drink less than younger respondents during heatwaves).

A particularly under-represented group in survey research are care-dependent or bedridden individuals, who lack the capacity to adopt coping strategies independently (Gupta et al. 2016; Malmquist et al. 2022; Olfermann et al. 2023). Another gap in research concerns the potential of general medical care in dealing with extreme weather events. Against the backdrop of the guidelines currently being developed on climate-sensitive health advice for geriatric care in the EU (Lozano-Montoya et al. 2026) there has so far been insufficient research on the effects such advice can have, particularly for the oldest old.

Social contacts and networks

On the one hand, studies highlight the importance of social support for older people during heatwaves, particularly against the backdrop of increased social isolation during periods of heat stress (Nunes 2018). On the other hand, socially active people often seem to underestimate their own susceptibility to heat when they have social contacts they perceive as being more vulnerable than themselves (Bittner and Stossel 2012; Erens et al. 2021; Wolf et al. 2010).

Environmental conditions

Gerontological studies examine spatial and contextual factors that strengthen older people's resilience and help to protect them from the consequences of extreme weather events in the longer term. In urban areas with generally greater heat stress, these include structural alterations to cool living spaces, avoiding living in attics, and access to

green spaces. However, limited financial resources can pose obstacles to implementation (Molinsky and Forsyth 2022; Sandholz et al. 2021). The EU Strategy on Adaptation to Climate Change encourages member states to integrate climate risks into public health planning, including the development of heat-health action plans and strategies for preventive measures regarding construction projects in public spaces (Lozano-Montoya et al. 2026). Countries such as Spain, France, and Germany have introduced alert systems and targeted measures for the oldest old, particularly in urban areas and in residential care settings (Matzarakis et al. 2020; Molinsky and Forsyth 2022; Oberai et al. 2025; Paavola 2017; Sandholz et al. 2021).

As can be seen, adaptive capacity depends not only on individual coping strategies, but also on age, gender, socio-economic status, and region – factors that intersect to shape the risk of climate-related morbidity and mortality. At the same time, social inequalities are evident in terms of people's vulnerability to climate change and their ability to cope: The oldest old with limited socio-economic resources who are in residential care suffer disproportionately from the negative effects of climate change, which further exacerbates social inequalities (Islam and Winkel 2017; Zahnow et al. 2025). Depending on their individual constitution and living circumstances, the oldest old have specific capacities to cope with climate-related extreme weather events and to maintain their health and well-being. This also applies to cold spells (which have been rarely studied to date): here too, individual resources (including income), social networks and housing conditions influence the adaptive capacities (Tod et al. 2012), particularly in view of rising energy costs when financial resources are limited (Nunes 2018). Regarding resilience it can be argued that although the oldest old are (on average) particularly at risk, their experiences and needs with regard to climate-related weather events such as extreme heat, cold, droughts, heavy rainfall and storms have not yet been systematically examined across different European regions. It remains unclear what short- and long-term adaptation strategies women and men aged 80 and over, with and without care needs, from different socio-economic status and cultural background, living in different housing situations and in different regions, have developed, and what resources and capacities are available to them to cope with climate-related extreme weather events. Despite Europe's rapid ageing, these intersectional disparities in exposure and adaptation remain largely unexplored – a major gap in gerontological and environmental research.

2.3 The lack of addressing intersectional inequalities in environmentally conscious and sustainable behavior

The studies presented on climate change and extreme weather events focus on the consequences for old and oldest old people examine how they respond to climatic changes. The opposite perspective – opportunities for action to actively influence climate change through environmentally conscious and weak or strong sustainable behavior and thus as an active actor of sustainable change – is much less discussed (Brandt and Höppner 2024; Ni et al. 2025). To date, older people are often framed as part of the problem – rather blamed for climate change than recognized as part of the solution (Pillemer et al. 2021).

However, in studies on the potential actions older people can take, they are, in contrast, "constructed" as part of the solution to environmental crises, with a distinction being drawn between "weak" and/or "strong" sustainability (Grunwald and Kopfmüller 2012; Ott and Döring 2004). In this context, "weak sustainability" refers to everyday consume practices such as adopting vegetarian or locally sourced food options (Grasso et al. 2019; Wendt et al. 2019) and using public transport (Luiu et al. 2018), whilst "strongly sustainability" refers to a shift towards an environment-friendly mindset and attitude that permeates everyday behavior, making an active contribution through voluntary, civil society engagement in the field of environmental protection. Research emphasizes that such meaningful and collaborative action can promote social inclusion, support community building, and facilitate

participation and networking with stakeholders from civil society, public administration and politics (Bubolz-Lutz et al. 2022; Pillemer and Filiberto 2017; Steinfort-Diedenhofen 2022).

Environmental and sustainability research identifies environmental attitudes as key drivers of behavior – e.g., reducing carbon footprints through food, energy, or transport choices (Kuckartz and Rheingans-Heintze 2006). Most studies show that socio-demographic characteristics such as age, education and gender influence environmental awareness, acceptance of climate policy measures and sustainable behavior (see, for example, Geiger and Holzhauer 2020; Grothmann et al. 2023; Wang et al. 2021).

While studies confirm that older people often show strong environmental awareness (e.g., Rückert-John et al. 2012; Wells and Laquatra 2010), political sustainability programs rarely target them – and almost never the oldest old. Thus, their potential for sustainable action remains largely untapped (Haq 2017). Critical open questions include: To what extent do the oldest old already engage in sustainable behavior? What barriers (e.g., mobility, health, resources) prevent them from acting more sustainably? And how can programs be designed to include and empower the oldest old? Closing these knowledge gaps is crucial for the oldest old regarding overcoming barriers on sustainable ageing and ageing well.

3. The model of “ageing well in times of climate change”

We have shown that current research on climate change and ageing suffers from three critical blind spots: 1) homogenisation of advanced age, that is older people and the oldest old are grouped together (e.g., as ‘65+’) or excluded from analysis, 2) neglect of the oldest old and their specific living conditions and needs, and 3) the lack of integrating social inequalities (e.g., gender, income, health, region) that shape adaptive capacities and sustainable actions. To address these research gaps, theoretical models must be adapted and expanded, particularly with regard to the heterogeneity and inequalities of advanced age, in order to provide a theoretical basis for the methodological requirements of research into intersecting inequalities in the context of climate change across different regions in Europe, to develop and refine measurement tools for future studies, and to interpret empirical findings appropriately (see also Wahl and Budnick 2025).

Therefore, we propose a model of “ageing well in times of climate change” (further development of Brandt and Höppner 2024) that bridges the gap between gerontological research and research on environment and sustainability, centers the oldest old as a distinct, heterogeneous group and accounts for intersectional inequalities. Our model (Fig. 1) shows that conceptions of (advanced) age describe age and ageing as socially constructed phenomena beyond biological realities. These conceptions are, and must become, more diverse in the context of climate change than literature with its focus on health consequences implies, both regarding social inequalities and levels of action. The model therefore encompasses both different dimensions of inequality and a spectrum of actions, with the left-hand pole marking responses to climate change and the right-hand pole marking actions resulting from climate change. The oldest old are not just vulnerably affected by climate change – they are also active actors who can adapt, cope, and contribute to sustainability. “Ageing well” plays a dual role in this context: on the one hand, the ability to lead a self-determined, healthy and socially integrated life helps adapt to climate-related changes and act in an environmentally conscious and sustainable way. At the same time, “ageing well” can be a result of successful adaption strategies as well as environmentally conscious and sustainable behavior. By contributing their expertise (e.g. in agriculture or ecological conservation) the oldest old can gain societal recognition and self-efficacy, thereby enhancing well-being through active engagement (Ayalon et al. 2023; Katey and Zanu 2024). Connecting with the natural environment in general and in advanced age in particular has benefits for health and well-being (Korlat et al.

2026), Taken together, “ageing well” and “sustainable ageing” are interdependent – advancing one can inherently support the other.

“Learning to live with climate change” and “living in an environmentally conscious way” refers to ideas of geragogy (e.g., Steinfort-Diedenhofen 2022) and comprises adaption and coping strategies. They go hand in hand with the implementation of structural health measures and the willingness to use this infrastructure. Health measures might comprise greening and flood protection in public spaces, barrier-free cool communal areas in care homes and providing information about the risks of heat-related illness, for example through general practitioners (including simple language, e.g. using pictograms). These measures can increase the feeling of security and reduce mortality among older people. The use of such spaces can also help to cope with isolation during extreme weather events and promote social inclusion through exchange of experiences. Living in a (weak or strong) sustainable way can promote health by adapting everyday practices such as consuming regional products and joint decision-making processes in care homes or in support of environmental organizations. These practices can help to connect people of different ages with a common attitude. Such an (inter)generational dialogue helps to overcome ageist stereotypes and generational blame and to promote resilience, the feeling of learning from each other, solidarity and social inclusion. These actions can create a feedback loop: Sustainable behavior can inspire further structural adaptations (e.g., more cooling centers, better suited policies).

Our model links the individual level (e.g., health, resilience) with the structural level (e.g., barrier-free infrastructure, accessible information) and the policy level (e.g., targeted programs) and thus uses an intersectional approach to examine climate change, ageing and social inequalities. It shows that the oldest old live in a variety of circumstances and have different opportunities for social inclusion; (advanced) age, health, socio-economic status, cultural background, region and gender can influence sustainable ageing. For example, studies from sustainability research show that women are more environmentally conscious than men and that this attitude is partly reflected in their environmental behavior (Wendt and Görgen 2017). Older people, however, are usually portrayed as gender-neutral in the context of sustainability – which is surprising, given that it is older women in particular who are visibly involved in climate movements (“Omas for Future”, “KlimaSeniorinnen”, “Raging Grannies International”). Furthermore, gender can shape sustainable ageing when it comes to care responsibilities and limited time for activism as well as the pension gap that financially affects the capacity for sustainable actions (Terry 2009). Thus, our model explicitly includes gender as one of the key factors in ageing well in times of climate change.

In sum, our model reframes the narrative on the oldest old and climate change:

- From vulnerability to agency: The oldest old are not just at risk – they can adapt, cope, and act.
- From homogeneity to heterogeneity: Ageing is not a monolith – it is shaped by and intersected with (advanced) age, health, gender, socio-economic status, cultural background and region.
- From theory to action: The model provides a roadmap for research, policy, and practice to empower the oldest old in times of climate change.

4. Implications for research, policy and practice

Research measurements

“Ageing well” in times of climate change is interconnected to “sustainable ageing”. To better capture their links and to close the knowledge gaps, research infrastructures must be further developed, connected and expanded. We need a better empirical foundation both for the group of the oldest old in general and for various (often particularly difficult to reach and survey) groups, such as the oldest old in need of care or those from different cultural backgrounds – a

priority, particularly for (representative) quantitative studies. Initial steps in this direction have been taken with the establishment of a study on the oldest old in several European countries – however, their expansion and continuation, as well as a closer integration of the fields of gerontology and environment research, remain tasks for the future.

Furthermore, the voice of the oldest old in the discourse of climate change is still under-represented. We still know little about the subjective scope for agency among the oldest old, and in particular among those groups in specific life situations (the people in care homes, with health limitations, with cultural background, living in poverty, etc.) – a task primarily for in-depth qualitative analyses. Ultimately, the development of targeted, evidence-based measures to improve the living conditions of the oldest old requires studies employing a mix of methodologies that capture their needs and resources both for adapting to the challenges of climate change and for actively shaping responses to climate change.

In this perspective, we outline the contours of an emerging research field at the intersection of ageing and climate change. We propose a research agenda based on mixed-method approaches that enable theoretically grounded empirical investigations into how the oldest old - living under different social and environmental conditions and across diverse European regions - experience and respond to climate-related risks. Such an agenda should also generate insights into everyday practices of adaptation and environmental behavior in advanced age. Examples of central research questions include:

- How do the oldest old experience climate-related risks such as heat waves, wildfires, droughts, extreme cold, storms and heavy rainfall?
- Which adaptation strategies do they develop in everyday life?
- Which sustainable strategies do they develop in everyday life?
- How do social inequalities shape their experiences and responses?
- What role do local infrastructures, communities, and health care systems play in shaping their adaption and sustainable strategies?

Future studies could benefit from mixed-methods designs combining survey data with ethnographic approaches, regional and international comparative research, the inclusion of the oldest old across different living arrangements, including different care settings and longitudinal data to capture long-term environmental and health dynamics as well as the effectiveness of targeted climate-related adaption intervention for the oldest old. Research with the oldest old also involves specific challenges, including access to participants with care needs or health limitations and ethical considerations regarding participation and burden.

Developing this new emerging research field has important implications for both gerontological and environmental research. It can advance environmental gerontological theory, provide conceptual tools for analyzing intersecting inequalities in advanced age and contextualize empirical findings on ageing in a changing climate.

Policy development and practical implications

Applying the Paris Agreement's climate action framework and the Sustainable Development Goals (SDGs) inherently requires society-wide engagement, as their success hinges on shared responsibilities and contributions across governmental, institutional, intergenerational and individual levels. However, knowledge gaps limit the development of targeted policies and interventions for the oldest old as an age group with specific capabilities to adapt to extreme weather events through preventive measures, with specific resources to cope with isolation following extreme weather events and with specific needs to social inclusion.

The oldest old live in diverse living arrangements, including different care settings, which are contextualized in country specific health and long-term care (LTC) systems. Europe-wide, evidence-based clinical guidelines should integrate climate-related health risks into geriatric assessment and LTC planning, while systematically incorporating adaptation measures into routine practice. Effective climate adaptation in geriatric care requires coordinated action across the health and care system, supported by policies addressing the needs of the oldest old. Health system climate adaptation planning should include geriatrics at all stages; from risk assessment to response, ensuring early warning systems trigger targeted measures (e.g., heat-health alerts, proactive home visits, telephone check-ins) as already implemented in some countries. Standardized training for health professionals is essential to enhance preparedness (Lozano-Montoya et al. 2026).

Integrating the needs of the oldest old into climate adaptation policies is crucial. This has practical implication: Given that nature connectedness in advanced age benefits “ageing well” – health, well-being and, while fostering care for nature and the future, communication and social inclusion – climate-related opportunities include:

- climate-adapted housing (e.g., age-friendly green spaces inside and outside with cooling effects),
- an inclusive environment that supports participation in climate action (e.g., community education on climate change, intergenerational dialogue projects to overcame ageism and intergenerational blame and foster behavioral changes),
- incorporating nature-based activities (e.g., park visits, responsible household management, plant sponsorships) and enabling individuals to take meaningful action to reduce emissions (e.g., public transport, light gardening).

To ensure “person-environment fit” (Oswald et al. 2005) barriers such as mobility limitations and sensory impairments must be addressed through both adaptive event planning (e.g., tailored nature-based activities) and inclusive urban design (e.g., barrier-free paths, benches), to provide accessibility to natural environments and foster emotional engagement to nature (Carman 2011; Korlat et al. 2026). Research demonstrates that emotional engagement can shift individuals from ambivalence toward active climate concern by making climate impacts personally relatable, particularly through emphasizing their short- and long-term consequences for individuals and communities (Di Gessa and Zaninotto 2026). This engagement, in turn, may increase adaption strategies, environmental conscious and sustainable actions and ageing well. In sum, evidence-based climate policies must address the oldest old’s specific needs to bolster adaptive capacities and recognize their agency as active contributors to climate action – not merely as passive and vulnerable recipients of protection.

Declarations

Author Contribution

M.B. and G.H. designed the study, prepared the material and wrote the main manuscript text. Both authors read and approved the final manuscript.

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Figures

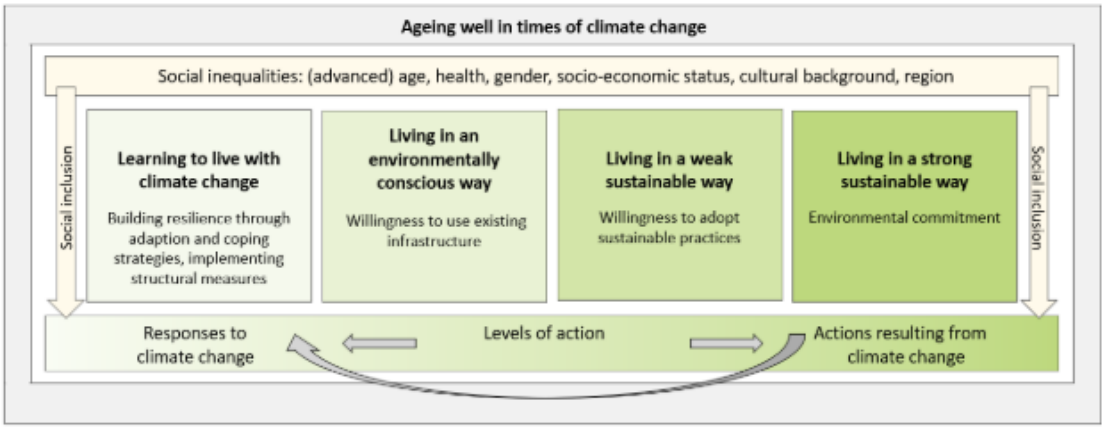


Figure 1

Model of “Ageing well in times of climate change” with emphasis on sustainability and (advanced) age (further development of Brandt and Höppner 2024)