



Certified smart and integrated living environments for ageing well

D3.4: Homes4Life Functional brief

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Executive Summary

European countries have witnessed the rising issue of ageing population and thus the level of awareness globally grows. Our living environments have a key role in enabling older citizens to stay active and participate in society and to have a full role in the community.

According to the World Health Organisation (WHO, 2017¹), housing is one of the three pillars composing age-friendly environments, along with accessible outdoor environments, transport and mobility. The impact that our homes can have on our health and wellbeing is also something well acknowledged.

Considering this context Homes4Life project has the objective to overcome those barriers by the development of a European certification scheme for age-friendly buildings and neighbourhoods ready for wide-spread adoption by a dedicated community of lead users.

This functional brief is the document that formalizes the need of the Homes4Life certification scheme around Age Friendly Housing, and it details the expected functionalities of the certification scheme as well as the constraints (technical, regulatory, ...) it will have to face.

It also synthesizes the work done in T2.4(Working Taxonomy) and complements it with the results from the analysis conducted in Task 3.1 (Analytical KPI Framework) and Task 3.2 (Analysis certification schemes). This document settles the basis for the development of the Homes4Life Certification Scheme in Work Package 4: Certification Scheme of Homes4Life model.

The functional brief includes the approach to the Certification Scheme, considering the benefits for the end-user, the context where it will be developed, and the limits found in the existing schemes.

It also establishes the scope and the principles of the future H4L certification scheme, detailing its future clients, the kind of building typologies that will be certified, the phases of the building where it will be evaluated, the indicators that will be analysed and finally a first approach to the assessment system and to the scoring method that will be used.

The process to follow to achieve the development of the Homes4Life Certification Scheme and the phasing of the process are sketched giving a first idea of the future definition of the Homes4Life Certification Scheme that will be totally defined, tested and developed during the next twelve months of the project.

¹ http://www.euro.who.int/__data/assets/pdf_file/0011/359543/AFEE-handbook.PDF
Public



Acronyms and abbreviations

EC	European Commission
EU	European Union
WHO	World Health Organisation
H4L	Homes4Life
ICT	Information and Communication Technologies
CS	Certification Scheme
RoI	Return of Investment
ECTP	European Construction, built environment and energy efficient building Technology Platform
EPC	Energy Performance Certificates
EPBD	Energy Performance of Buildings Directive
KPI	Key Performance Indicators

1 Introduction

1.1 Aims and objectives

A functional brief is a document formalizing a need: it details the expected functionalities of a product or a service as well as the constraints (technical, regulatory, budgetary ...) to which it is subjected. The specifications clarify the conditions, rules and requirements of the work to be done. The objective of this functional brief is to be the base on which to build the Homes4Life Certification Scheme, and in later stages it will be used to conduct a feasibility study.

This document will cover

- The major functional aspects of the certification scheme.
- The benefits for the end users
- The scope of the Certification Scheme
- The Process and Phasing of the Certification Scheme.

1.2 Relations to other activities in the project

This task will synthesize the work done in Task 2.4 (Working Taxonomy) and will complement it with the results from the analysis conducted in Task 3.1 (Analytical KPI Framework) and Task 3.2 (Analysis certification schemes). This document will settle the basis for the development of the Homes4Life Certification Scheme in Work Package 4: Certification Scheme of Homes4Life model.

1.3 Contribution of partners

This deliverable is the result of Task 3.4. As this task synthesizes the work done in Task 2.4 and the results from the analysis conducted in Tasks 3.1, 3.2 and 3.3, the partners that have contributed are:

- Tecnalia as Task leader and responsible for the Deliverable 3.4 Homes4Life Functional Brief. Tecnalia has led the documents building process and through the leading of Task 3.2 and the involvement in Task 2.4 and Task 3.1 has developed different parts of the document.
- TNO as responsible for Task 2.4 and Task 3.1, has contributed in the main objectives' definition, based on the Working Taxonomy work, and in the assessment methodology, based on the KPI Framework for Smart Age Friendly Living Environments.
- UNIVPM as responsible for the Task 2.3 and Task 3.3 has contributed to the General Context definition, the identification of future clients and the validity of the scheme based on their own knowledge and experience.
- Although not supposed to be involved in this task, CERTIVEA has resulted in being a key contributor. CERTIVEA as a company that develops and works with CSs knows exactly the needs and requirements in order to develop the Homes4Life Certification Scheme. They have given guidance for the



development of the Functional Brief and have contributed in Project Process and Phasing definition.

2 Context and objectives

According to the World Health Organisation (WHO, 2017²), housing is one of the three pillars composing age-friendly environments, along with accessible outdoor environments, transport and mobility. Our accommodation goes beyond simply the dwelling where we reside; it is often also the place to which we go back, with which we identify and emotionally belong to, and where we hopefully feel safe. Because it is one of the places where we spend most time, especially after people retire, our homes can have a tremendous impact on our health and wellbeing, our social interactions, and our capacity to participate in community life.

At the present time though, a large part of homes and housing options in Europe are not fit for a wide range of users with specific needs and preferences.

Homes4Life wants to establish a shared understanding of the benefits of age-friendly housing. A “Housing in All Policies” approach to ensure that housing is fully integrated into health, social and urban policies at all levels from EU to local, and all key actors are fully aware and understand the benefits and contribution age-friendly housing can make to people and societies.

The three main barriers to foster age-friendly housing are:

- A lack of a clear vision and definition to empower relevant actors for concerted actions;
- a lack of clarity about the relevant dimensions of age-friendly living environments,
- a need of evidence/security about improvements in quality of life and financial Return on Investment (RoI).

Considering this context Homes4Life has the objective to overcome those barriers by the development of a European certification scheme for age-friendly buildings and neighbourhoods ready for wide-spread adoption.

2.1 General context

Age-friendly housing is an integral part of our future society. The process of developing age-friendly housing has to anticipate several likely socioeconomic, demographic, technological and environmental trends and/or disruptive innovations, which will substantially impact upon peoples' lives across Europe in the

² http://www.euro.who.int/_data/assets/pdf_file/0011/359543/AFEE-handbook.PDF

next decades leading up to 2040. Figure 1 lists the future trends that influence the age-friendly housing process and these trends are described below:

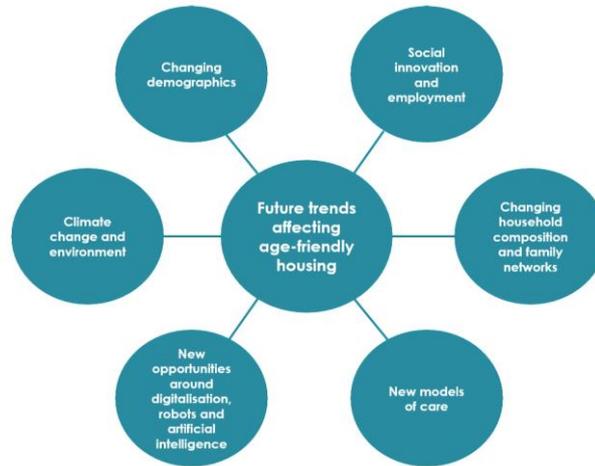


FIGURE 1 FUTURE TRENDS FOR THE AGE-FRIENDLY HOUSING DEVELOPMENT PROCESS

Changing demographics

Europe's older population will peak, in 2040, with 27,1% of EU citizens over 65 and 9,2% over 80. A woman turning 65 in 2040 can expect to live on average another 24 years (20,7 years for men). In addition, by 2040, there will be about two persons younger than 65 for each person older than 65. In comparison, in 1950, there were more than seven people of working age for every person of pension age.

Social innovation and employment

The demographic changes will trigger the need for policies to promote longer working lives considering a more flexible employment policy. Flexible working arrangements, access to care leave, temporary reduce working hours, gradual transitions from working life to retirement and other measures will all need to be brought into play. This will help people with caring duties to stay in the labour market and continue to accumulate pension rights, thus also combating social exclusion and poverty. Older people not anymore active on the labour market, but who wish to contribute and participate in society, should be able to do so through other models such as volunteering or unpaid work. Homes, probably enriched with opportunities from ICT, are an important environment that can support or constrain such new employment models.

Changing household composition and family networks

The average household size is shrinking. People across Europe are having fewer children, and they are having them later in life. Fewer people are getting married, and a larger proportion of marriages ends in divorce. Mobility of EU citizens is increasing, as is social and economic polarisation both within and between EU Member States. As a result of these combined developments, more people are

single as they enter old age, and traditional intrafamilial support networks become disjointed. These phenomena will change both the nature (more single household flats) and volume of demand for age-friendly housing, especially in urban areas.

New models of care

Due to demographic ageing, there will be an increasing number of citizens living with disabilities, such as functional limitations, but also a greater prevalence of chronic, non-communicable diseases in the population with a shift from hospital-based to increasingly community-based and home-based care. This will also entail a shift in the balance of care, requiring a partnership model between health professionals, empowering patients and their carers to take an active role in managing their health and care. The focus on health and care services will shift from acute treatment to health promotion, prevention and rehabilitation, with a strong emphasis on healthy lifestyle promotion and early identification and management of risk factors.

New opportunities around digitalisation, robots and artificial intelligence

New digital technologies provide the potential to make our homes “smarter”. Digitally enriched homes become more responsive to the needs of the dwellers and serve as a resource to maintain health, social connectedness, fun, and wellbeing across the life course. This entails a shift away from simplistic, instrumental views on technology to more comprehensive models of ICT development that provide opportunities for older people to maintain comfort, convenience, security and entertainment, and allow for monitoring of health risks, where this is needed.

Climate change and environment

Climate change means the population will need to deal with rising sea levels, more frequent and extreme weather events, hotter and drier summers and warmer and wetter winters. Given that older people are generally more vulnerable to extreme weather events, an age-friendly design of buildings also needs to consider issues such as how indoor air temperature is managed and how buildings will be weathered against more extreme climatic conditions. At the same time, housing represents a significant environmental burden, associated with high operational energy (according to ECTP³ 97% of the housing stock is energy inefficient and buildings are responsible for 40% of Europe's energy consumption contributing to 36% greenhouse gas emissions). In short, there is a case for age-friendly housing to also integrate environmental sustainability and energy saving issues, that are recognized as cross-cutting policy priorities.

³ ECTP (2019). Innovative built environment. Strategic Research & Innovation Agenda 2021-2027
Public

2.2 Main objectives

The certification scheme is based on the Homes4Life taxonomy and KPI-framework. For a full description of both, readers are referred to the combined report on D2.4 and D3.1. A brief summary is presented here.

Rationale for a taxonomy

Age-friendly housing, age-friendly homes, age-friendly living environments, sheltered housing, extra care homes, inclusive dwellings, intergenerational living, senior homes... The profusion of terms encountered when reconnoitring the field of age-friendly homes (the primary term we'll adopt in this report) indicates that such a basic descriptive language is currently lacking. Without a usable descriptive framework it is very hard to understand what it means for a home to be age-friendly, which elements in and around the home contribute to age-friendliness (or not) and in what way, nor what the effects (in material and/or immaterial terms) may be if a home can be termed age-friendly. This in turn hinders efforts to improve the age-friendliness of the European stock of homes: without a usable framework it is very hard to identify which problems to tackle, which intervention strategies are likely to work, and/or how to incentivize improvements appropriately. The lack of and need for a common language has been highlighted by Peine and Arentshorst (2017)⁴ in their final report on the Age-friendly housing roadshow.

Given the previous, the utility for Homes4Life of a taxonomy of age-friendly homes is evident. To establish conceptual connections between long-term vision and short-term reality, to engage and connect stakeholders, and to create verifiable sets of criteria that capture the full breadth and value of age-friendly homes, a workable descriptive framework is an indispensable asset.

Objectives of the taxonomy

The taxonomy has an agenda-setting, a conceptual and a practical set of objectives.

- Agenda-setting: contribute to the redefinition of the terms "smart" and "integrated" in socio-psychological, socio-cultural and socio-economic terms, to facilitate understanding and stimulating of age-friendly homes
- Conceptual: address gaps and shortcomings in current approaches and definitions of age-friendly homes to create a balanced, broad, inclusive reference framework
- Practical objective: to develop a reference framework that works to support and tie together the Homes4Life project objectives and activities. For this

⁴<https://ec.europa.eu/digital-single-market/en/news/final-report-recommendations-european-reference-framework-age-friendly-housing>



reason, a pragmatic approach to its development is used and the taxonomy is referred to as a “working taxonomy”

Structure

Using a mixture of theoretical and policy-based approaches as starting points, the Homes4Life taxonomy uses a matrix structure, with stakeholder Perspectives on one axes and home Functions on the other. Perspectives are divided into Groups, Functions into Cluster. Within both, further structural breakdowns have been applied.

Overview of Perspectives

The taxonomy uses the following breakdown of Perspectives

- Users
 - Anticipatory
 - Visual impairments
 - Early stage dementia
 - Minor cognitive impairment
 - Mobility restrictions
 - Respiratory problems
 - Hearing impairments
- Relatives and carers
 - Co-habiting
 - Partner
 - Other
 - Non co-habiting
 - Partner
 - Other
- Organisations
 - Not-for-profit organisations
 - National government
 - Local or regional government
 - Health and social care providers
 - Social and public housing providers
 - For-profit organisations
 - Project developers and investment companies
 - Construction and installations
 - Service providers
 - Private health insurance companies
 - Private insurance companies and other innovative services

Overview of Functions

The taxonomy uses the following breakdown of Functions. The breakdown is listed down to the level of Sub-categories. In some of the Sub-categories, deeper levels of granularity have been defined (Items and Sub-items).

- Physical cluster
 - Personal safety
 - Accidents and calamities
 - Safe use of amenities and facilities



- Safety around the home
 - Safety from outside threats
 - Comfort
 - Temperature regulation
 - Air quality
 - Lighting
 - Acoustics
 - Home management systems
 - Accessibility and orientation
 - Getting in and out of the house
 - Getting around the house
 - Performing daily in-house activities
 - Getting in and out of bed
 - Personal hygiene
 - Using communication and entertainment features
 - Doing work or hobbies
 - Controlling home functions
 - Orientating oneself in space and time
 - Health and social care
 - Proximity to services
 - Options and facilities for eHealth and remote medicine
 - Facilities for care provision in the home
 - Smart readiness
 - Wireless and wired connectivity
 - Network infrastructure and interoperability
 - IT infrastructure APIs
 - Digital security and data protection
- Outdoor access cluster
 - Home and building
 - Outdoor spaces
 - Views
 - Immediate environment
 - Accessibility
 - Attractiveness
 - Social safety
 - Neighbourhood or village
 - Accessibility
 - Attractiveness
 - Social safety
- Personal cluster
 - Identity and emotional connectivity
 - Home
 - Apartment / building complex
 - Neighbourhood or village
 - Privacy and dignity
 - Control over social interaction
 - Control over access
 - Control over data collection and management
 - Control over look and feel / furnishings
 - Availability of private spaces and times
 - Seclusion for health and ADL-care provision

- Secure future prospects
- Self-determination / autonomy of movement
- Social cluster
 - Social activity
 - Ability to have social contacts in the home
 - Proximity to activities and facilities
 - Ability to have social contacts outside the home
 - Online connectivity
 - Employment
 - Suitability of the home as a place of work
 - Connection to place of employment
- Economic cluster
 - Affordability
 - Objective affordability
 - Willingness to pay
 - Choice
 - Dwelling type
 - Living environment type
 - Living arrangement type
 - Neighbours / co-occupants
 - Solutions
 - Decision-making authority
 - Choice information

2.3 Benefits expected for end users

European countries have witnessed the rising issue of ageing population and thus the level of awareness globally grows. Our living environments have a key role in enabling older adults/citizens to stay active, participate in society and to have a full role in the community. The impact that our homes can have on our health and wellbeing is also something well acknowledged.

However, the existing stock in Europe is not fit for a wide range of users with specific needs and preferences. Besides, currently, the housing market and social services tend to be disconnected, even if it has been already stated the need of an integral approach to age friendly housing issue to guarantee a built environment really adapted to the needs of the final users.

Within this context the Homes4Life Certification Scheme will cover the following principles which will result in direct benefits for the end users:

- the adaptability of the homes to the changing situations by previewing the spaces and preinstallations for future needs will enable them to stay in their home for all their life course if that is their desire, without resorting to institutionalization when more care and support are needed.
- the accessibility to meet the needs related to the different phases of people's lives, and, in particular, those related to older age (reduced mobility, dexterity and visual ability) increase the possibility to age in place, independently or

with the help of caregivers. It also enables people to remain socially active and to engage in meaningful and life-affirming activities.

- the foresight of future technological developments by the updating of the ICT infrastructures, will allow people to have access to future products and services around eHealth, smart monitoring, medical and AAL-support technologies, social technologies and other that will promote their health and wellbeing.
- the affordability to ensure that strategies for home improvement use sensible budget parameters and that strategies are in place to cover all segments of the housing market, giving the opportunity to all the end users to improve their home or to have access to new built age-friendly homes.

3 Scope of the future scheme

3.1 Limits of existing schemes

In the framework of Homes4life project an analysis of a selection of 15 existing European certification and labelling schemes for age-friendly environments was carried out in August 2019. Through this analysis, gaps and barriers of these existing schemes were identified as well as uncovered fields considered fundamental for the Homes4Life Certification Scheme (CS).

Out of the 15 analysed CS, 8 of them are marketed in France and therefore they are built around French specific regulations, but as the rest of CS all of them can be easily transposed to an international regulatory framework.

The analysis was based upon a taxonomy framework (developed in T2.4), comprising five broad clusters: physical, outdoor access, personal, social and economic. These clusters have been divided in categories and sub-categories for a deeper approach.

Most of the material analysed deals with the physical aspects and/or outdoor accessibility of an age-friendly environment at different level of detail. Although some certification schemes go further and have addressed specific topics such as services adapted to the older inhabitants or interconnectivity of IT systems, most of them lack criteria within their scope in relation with the personal and social issues, as well as the economic dimension.

Therefore, next steps were focused on defining relevant requirements and indicators that the different users' profiles have for a Homes4Life home in all the identified clusters. Some of them have been collected from the already existing CSs, other ones are specific new indicators, developed in Task 3.1, and cover the personal, social and economic fields. These last ones are essential in order to define the Homes4Life certification scheme, to achieve certified smart and integrated living environments for ageing well.

3.2 Principles of the H4L certification scheme

3.2.1 Future clients

Previous tasks of Home4life have shown the potential benefits related to the adoption and implementation of the Certification Scheme. In this section we aim at identifying what could be the potential market related to the Certification Scheme and which the concerned stakeholders and future early-adopters.

During the stakeholders' workshop held in Brussels in June 2019 (see D2.2), future clients of the H4L certification scheme for Age-friendly living environments have been consulted. Results show that the most relevant stakeholders' category for the future Certification scheme is the one formed by housing stock owners, which might be public, private, profit or not-for-profit-oriented.

Public sector could be considered as the primary client. They should be regarded as the facilitators for the uptake of technologies and standards adopted in H4L CS and would provide good examples to further disseminate it. Public authorities have the capacity through the adoption of certain political trends on issues raised in the H4L CS such as accessibility, rehabilitation of buildings, sustainability, etc. and their imposition by regulations to promote H4L CS and increase the awareness on the benefits of age-friendly housing.

Public sector must be addressed across Europe at different levels (national, regional, local...) depending on the competences at each level in terms of social housing provision, but also health and social care provision.

As mentioned in the workshop discussion, public authorities can play a driving role in the funding of H4L CS. They can promote age-friendly housing by providing funds to support investments in age-friendly homes in exchange of tax breaks (e.g. reduction in corporate tax or rent reductions) and incentivize property owners to certify their property using the H4L-scheme.

Public sector can as well team up with non-profit stakeholders.

In the **private sector**, construction companies and real-estate companies are the ones in contact with the end users and will be the ones investing in projects that stimulate age-friendly housing. Insurance companies, banks and developers might be interested in the implementation of the certification scheme in order to get an age friendliness assessment for the projects they are involved in. Private sector though will require an ad-hoc business model with a proven RoI (Return of Investment) in order to invest in the H4L CS.

Furthermore, private dwelling owners can be future clients of the H4L CS. However, these dwelling owners could find more difficulties in bearing the costs of H4L CS. Even though the cost of certification will be recovered more than proportionally since certified homes will increase their market value, low-income owners could

experience difficult in accessing the market of certification. This situation can be avoided by using appropriate fiscal tools able to minimize the cost of certification for disadvantaged categories. Another option can be to take this profile of private client into account to develop, in further versions, a kind of light version of the Certification Scheme in order to make it more accessible for the consumer market.

3.2.2 Building certified

H4L Certification Scheme intends to cover the biggest number of built typologies and those that will be built in the future across Europe.

With that purpose it will be tailored on the basis of different elementary categories. This tailoring process will be enclosed by a management phase, where different factors, such as the different requirements in play, involvement of the client, analysis of the site, ability and willingness to pay for certification services..., that may vary from typology to typology, will be taken into account before going through the certification process.

Homes4Life Certification Scheme will apply to 6 typologies proposed as a result of the intersecting of the following categories showed in the table below.

- 6 basic typologies proposed

	Individual dwelling	Flat (in a multi-storey building: ground level apartment, other levels)	Dwelling in a residential complex
New building (design, operational)	NEW INDIVIDUAL DWELLING BUILT	FLAT IN A NEW BUILT MULTI STOREY BUILDING	DWELLING IN A NEW BUILT RESIDENTIAL COMPLEX
Existing (including retrofitting, renovation)	EXISTING INDIVIDUAL DWELLING	FLAT IN AN EXISTING MULTI STOREY BUILDING	DWELLING IN AN EXISTING RESIDENTIAL COMPLEX

TABLE 1 – PROPOSED TYPOLOGIES

Each of these categories can be defined as follows:

- **Individual dwelling:** A single or semi-detached house contains only one dwelling unit and is separated by open space on two sides at least from any other structure.
- **Flat (in a multi-storey building: ground level apartment, other levels):** Housing units in a multi storey building.
- **Dwelling in a residential complex:** Dwelling in residential developments which contains private drives, roadways or streets and common facilities.

- **New building** (design, operational): The building is in design phase or under construction but not in use yet.
 - **Existing** (including retrofitting, renovation): The building exists and has been officially authorized to be occupied.
- Operational criteria

H4L CS will be applied on a three-scale level: the home, its immediate environment and its neighbourhood.

- **Home:** described as the place where one lives permanently, especially as a member of a family or household.
- **Immediate environment:** The immediate environment is the direct surroundings of the building where the home is located. It can be the surroundings of the house in the case of individual dwelling or the buildings and what is directly around it in the case of a flat.
- **Neighbourhood:** The neighbourhood of a place and/or person is the area or the people around them where daily life occurs (shops, services, leisure, ...).

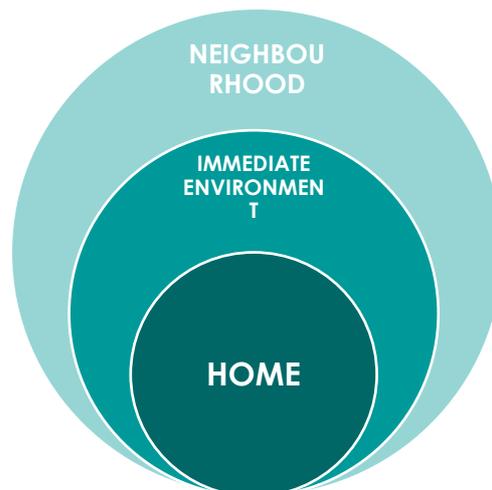


FIGURE 2: SCALE LEVELS

3.2.3 Phases

The phases refer to the point of the development of the construction process when the certification scheme is going to be implemented. This means if the certification scheme will evaluate from the design phase, during the construction phase, or in the operational phase. In the case of Homes4Life Certification Scheme only two phases seem relevant:

- **Design phase:** for most residential developments, a single evaluation (at an early stage of the design process) will be enough. Periodic reappraisals during design and construction phases are excessive for residential properties.
- **Operational phase:** for newly delivered buildings and appraisal of existing properties, one or more evaluations will be possible, depending on the client's



needs and duration of commitment. For example, a promotor will certainly stop his commitment just after the delivery of the building, instead of a social housing company which could be interested to have a commitment for several years after the delivery.

3.2.4 Indicators

In general terms, we can say that evaluation is the process of identifying and collecting data about services or specific activities, establishing criteria to assess its success and determining the degree to which the service or activity meets its goals and objectives established.

The evaluation process requires as a starting point to consider which are the real ends that are pursued.

To evaluate, it is necessary to have a reference to compare. The evaluation is usually based on the collection of data on the results obtained, that will allow to reach conclusions to improve the product or service we are evaluating.

Evaluation methods can be subjective and objective:

- Subjective evaluation is based on user opinions, tells us what the people think of a service or product. The most common methods to proceed to a subjective evaluation are interviews, surveys, discussion groups.
- Objective evaluation seeks to improve a service and for this it is not enough based on personal opinions. It is an analytical and diagnostic evaluation.

The use of objective criteria raises the advantage that their results can be quantifiable.

For objective evaluation measurement is necessary, the key concepts of measurement are the identification and definition of indicators of what is going to be measured.

In Task 3.1 an analytical KPI framework for Smart Age Friendly Living Environments has been developed.

The indicators identified in Task 3.1 and that will be measured in the evaluation process in the Homes4Life Certification Scheme have these characteristics:

- They cover at least all the categories (and, if possible, subcategories) identified in the taxonomy, and if necessary other categories (management for example)
- They are relevant for the expected certification objectives
- Where possible, they are based on findings from academic research
- They are verifiable by feasible modes of proof (available documentation, self-evaluation, questionnaires and interviews, ...) and at reasonable cost

A proposed list of Key Performance Indicators (KPIs), based on the clusters, categories and sub-categories of the taxonomy, can be found in the Appendix 1.

3.2.5 Assessment system

The assessment system is not totally defined yet but taking into account the work done in previous task (T3.1) the system will be divided into different categories based on the Physical, Outdoor Access, Personal, Social and Economic clusters. There is an additional category, the Management phase, that will cover the need for general requirements prior to those specific for clusters. In next tasks of the project (in WP4) the weighting and calculation system will be exactly defined and further developed.

To start with a hypothesis for a “context neutral” weighting it can be based on the following considerations:

- conceptual: the main aim of the H4L CS is to cover those home functions not well served by existing CSs
- practical: the number of KPIs in each cluster.

Based on both, the following distribution could apply:

* Top level weighting:

Physical/Outdoor	Personal, Social and Economic
30%	70%

TABLE 2 – TOP LEVEL WEIGHTING

A weighting would also need to be assigned within the two “superclusters” (Physical/Outdoor and Personal/Social/Economic). Based on the literature analysis for the KPI-framework:

Contribution to Physical/Outdoor “Supercluster” score	
Physical	Outdoor
80%	20%

TABLE 3 – PHYSICAL/OUTDOOR “SUPERCLUSTER” SCORE

Contribution to Personal/Social/Economic “Supercluster” score		
Personal	Social	Economic
45%	35%	20%

TABLE 4 – PERSONAL/SOCIAL/ECONOMIC “SUPERCLUSTER” SCORE

Going one step further, different weights will be assigned to the Categories within each Cluster.

Physical Cluster



Accidents and calamities	Comfort	Accessibility and orientation	Health and Social care	Smart readiness
20%	20%	20%	20%	20%

TABLE 5 – PHYSICAL CLUSTER

Outdoor Access Cluster		
Home	Environment	Neighbourhood
33,3%	33,3%	33,3%

TABLE 6 – OUTDOOR ACCESS CLUSTER

Personal Cluster	
Identity and emotional connectivity	Privacy and dignity
50%	50%

TABLE 7 – PERSONAL CLUSTER

Social Cluster	
Social activity	Employment
75%	25%

TABLE 8 – SOCIAL CLUSTER

Economic Cluster	
Affordability	Choice
75%	25%

TABLE 9 – ECONOMIC CLUSTER

The Homes4Life Certification Scheme will also consider the three levels from the operational point of view: home, immediate environment and neighborhood.

The different requirements developed will be organized along the following logic:

- At all three levels, criteria seem to fall into three broad groups
 - Design specifications (functional and technical)
 - Design features
 - Design quality
- Each group looks to be associated with a dominant "typology of evaluation"
 - Design aspects: quantitative (measurements, performance levels, etc.)
 - Design features: qualitative (yes/no, a/b/c/d criteria)

- Design quality: evaluative (expert opinion, panel review, participatory methodologies)
- At the neighbourhood level, the “typologies of evaluation” would be slightly different: Design aspects and design features would be assessed using some form of neighbourhood scan (presumably using GIS and municipal data); design quality would be done using some form of neighbourhood appraisal, using evaluative methodologies
- Economic criteria would primarily be evaluated using financial analysis

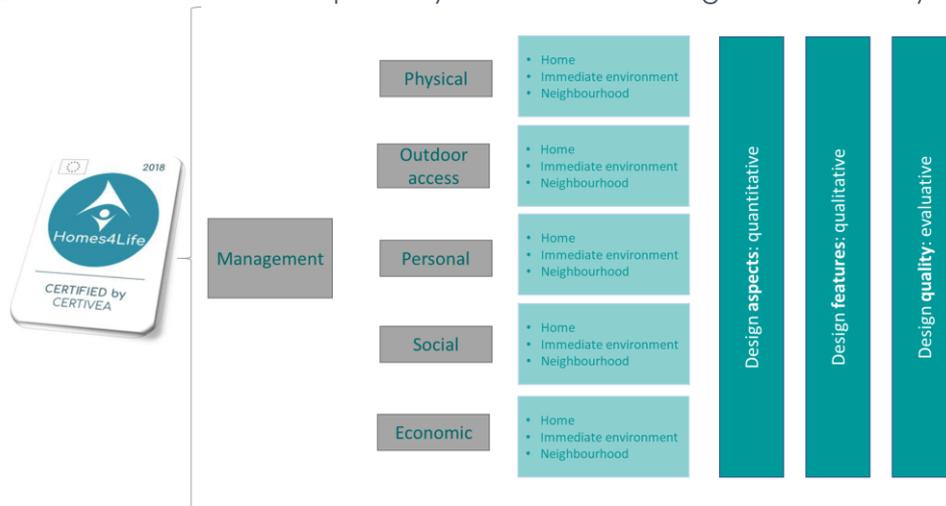


FIGURE 3: ASSESSMENT SYSTEM

3.2.6 Scoring

In order to use the more appropriate scoring system a survey has been launched among the partners and also among the experts of the expert's board. The intention is, taking into account the different expertise of the experts of the expert's board, and the partners, to identify the more proper scoring system for Homes4Life certification scheme.

Two different questions have been launched, the first one refers to the levels needed in the scoring system:

- single -level



FIGURE 4: SINGLE LEVEL EXAMPLE

- multiple level



FIGURE 5: MULTIPLE LEVEL EXAMPLE

The second one refers to the system used to represent the compliance with the certification scheme. Several options from already existing schemes were proposed:

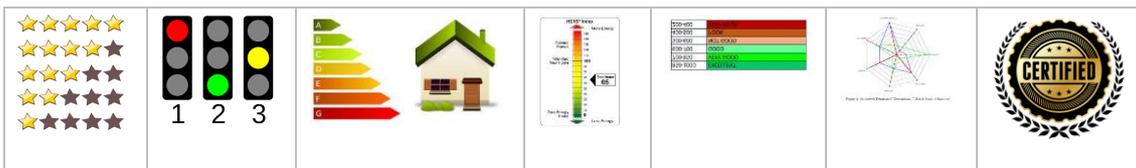


FIGURE 6: DIFFERENT SCORING SYSTEMS EXAMPLE

After receiving the inputs from the different experts and partners consulted the selected options have been:

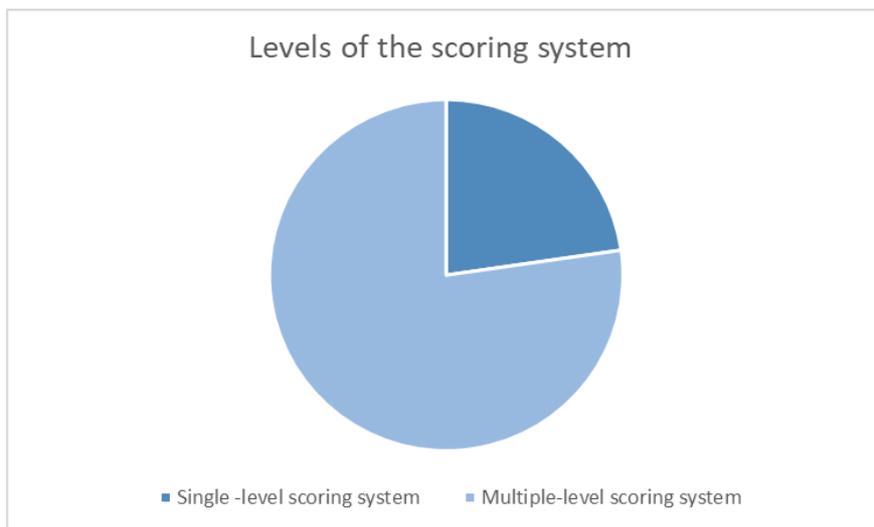


FIGURE 7: LEVEL OF SCORING SYSTEM SELECTED

The reasons to select the single scoring system have been to find a simple, easy to understand option, taking into account that requirement could change during the time, there is no need to be too descriptive.

The reasons to select the multiple level scoring system are:

- These systems provide some granularity to address the multi-dimensional aspects of age-friendly environments (spatial/environmental, societal/community, technical/services).
- They also enable a better control on which components drive change the performance of the indicator.
- The systems are useful both for the specialists and the community which utilize the indicator.
- The multiple system scoring would better identify the area of improvement for the housing providers.

Regarding the system used to represent the compliance with the certification scheme the experts and partners consulted were given the option to select two different systems. From this survey the results have been as follows:

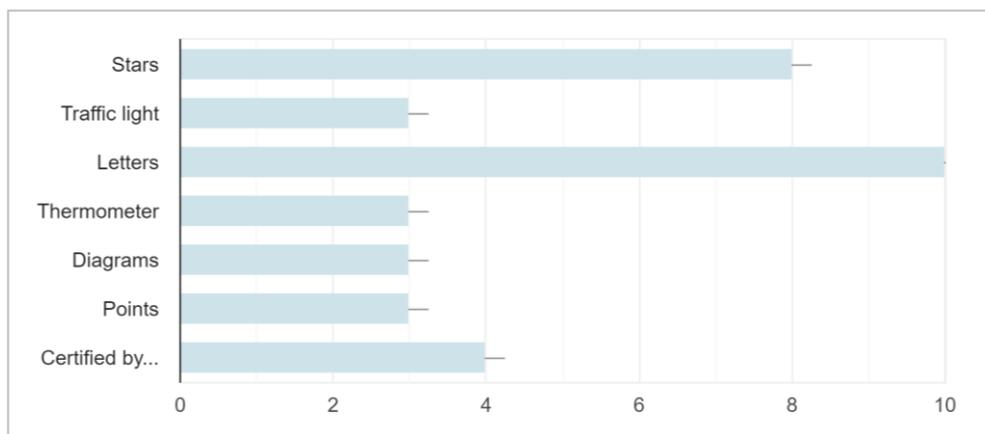


FIGURE 8: HOW TO REPRESENT THE SCORING SYSTEM

- The most selected options have been: Letters: the main reason to select this option is that the scoring by letters has been, and is, used by several Certification Schemes and it is a system people are familiar with, so easy to understand even for people with less skills or literacy. And also, because it has a multicriteria approach.
- Stars: intuitively easy to understand, simple, accessible.

Based on the results of the survey, the scoring of the Homes4Life Certification Scheme will be:

- Multiple scoring system: adapting the multiple scoring system to our Certification Scheme it appears that the two main necessary levels of scoring are:
 - One score per cluster
 - Plus one final score
 These scores will be obtained by a sum of points, or a percentage of points. The design and definition of the pointing system and the different weighting to assign to the clusters of the Certification Scheme will be defined in WP4's (Certification Scheme) next steps.

- System used to represent the compliance with the certification scheme: letters or stars, it will be decided in the certification scheme design process.

3.2.7 Validity of the scheme

In many cases, the CS for age-friendly environment could take inspiration from the European Energy Efficiency and Performance Certification. Considering some EU recommendations⁵ to provide a good quality of the certification, that is fundamental to accelerate the cost-effective renovation of existing building and to promote smart technologies in buildings, some aspects need to be considered:

- Consider a pilot phase for initial launch,
- Cover the public and private sector,
- Develop one single version to cover both new and existing buildings,
- The CS should be low cost
- Adopt a comparative label design: in the case of energy efficiency this allows for comparison of energy efficient building stock and provides an incentive for scheme users/ building owners to improve their performance beyond what is required.

Regarding the energy efficiency certification scheme, energy standards and labels enable better communication and transparency for investors and customers and enhance innovation and completion for companies. For example, it is demonstrated that the Energy Performance Certificates (EPCs), an application of energy labels for buildings, have a positive effect on energy efficiency improvements and to contribute to higher sale or rental prices (up to 6%). However, there is no universal measure of building's energy efficiency. The common metric used across EU member states is the EPC, which was first mandated by the Energy Performance of Buildings Directive (EPBD) 2002/91/EC (amended in 2010 and 2018). Due to this issue, an analysis of the impact on the improvements of the energy efficiency CS is not easy to do.

Once delivered, the certification will stay valid for a period of time to be defined according to the needs of each category of potential clients.

For instance, the developer shall propose different options depending on the different projects to certify:

- until there is considerable change in a critical mass of functions,
- once every 5 or 3 years, with an annual documentary verification or audit,
- twice every 5 years
- ...

The validity of Homes4Life certification scheme will be defined in next tasks in WP4.

⁵<https://ec.europa.eu/energy/sites/ener/files/documents/Final%20report%20-%20Building%20Certification%20Schemes%20-%20FINAL%2026112014.pdf>

4 Project process and phasing

4.1 Technical reference framework and implementation on digital platform

4.1.1 Contents of technical reference framework

According to all previous paragraphs, a technical reference framework is necessary for implementing the certification scheme on a digital platform. It shall contain:

The general structure of the certification scheme, for example:

- General level
 - Clusters
 - Categories
 - Sub-categories
 - Requirements

The “requirement level” is the most detailed one. In order to have the general content of the certification scheme, all the requirements must be defined as below, with their assessment method:

- Requirements
 - Title of the requirement
 - Description of the requirement
 - Indicator(s) to assess the requirement. These indicators can be different for design phase and for operation phase.
 - Modes of proof necessary to show the achievement of the requirement for each phase assessed (design and operation)
- Assessment method
 - Number of performance levels for each requirement (this number can be different from a requirement to another)
 - Number of points for each level of performance of the requirement
 - Assessment method to aggregate the points at the upper level, and especially for the 2 main levels of the structure (clusters and general level). So, if necessary, some weightings can be included in each requirement, either directly by the number of points for each requirement, or by a weight coefficient.

4.1.2 Main characteristics of the digital platform

The certification scheme will only be available on digital platform. This platform (I.S.I.A.: “Innovative, Sustainable, Interactive Application”) is currently used by CER to host and centralise its whole portfolio of certification, benchmarking and evaluation services.

This digital platform allows to carry out assessments based on the certification scheme, to justify these assessments by linking the proofs of the achievement of the requirements, to carry out benchmarks between buildings of the same category, and to publish reports.



The platform is also used by auditors to verify that the requirements are validated and allows them to report their audit.

4.2 Quality and validation process

The quality and applicability of the certification scheme must be ensured. For this it is necessary to:

- Validate the certification scheme with experts and stakeholders involved in age friendly housing.
- Test the certification scheme on a panel of pilot buildings representing most of the different possible contexts, in terms of typologies of buildings, countries, types of owners.

A series of tests will be conducted on a set of 10 demo buildings / living environments, recruited in different EU countries: they will be conducted all along the second year of the project and will be used as experimental buildings to test the different versions of the H4L certification scheme through the “Innovative, Sustainable, Interactive Application” ISIA platform currently used by CER to host and centralise its whole portfolio of certification, benchmarking and evaluation services. In parallel with some of these tests on pilot buildings, this first v0 version of the certification scheme will also be presented to expert board, in order to have their feedbacks on requirements and assessment method.

This feedback round will lead to a v1 and the final version of the certification scheme.

A wide-spread call for comments on v1 of the certification scheme will then be published at month 20 and disseminated to all Col members, organizations and contact points identified during the earlier phases of the project, all Homes4Life supporting organizations and to members of relevant European associations, including those represented in the Homes4Life consortium (AGE, EUCA, ECTP). Based on received feedback, the v1 of the scheme will be adapted where required before its formal endorsement and implementation in a final version. The expected feedback from stakeholders concerns all parts of the certification scheme: requirements, assessment method, scoring, auditing process, duration of the certification, etc.

Finally, a commercial sales pitch for the certification scheme (which will include the comprehensive list of benefits for home and building owners, for investors, etc.) will be developed. The pitch will be tested again a group of relevant stakeholders from the Homes4Life Col who will be invited to sign a memorandum of understanding/commitment to invest in Homes4Life-certified age-friendly homes.

This task will deliver a professional-quality promotional toolkit consisting of an official 1-page certificate to be displayed in certified buildings / homes, a certification logo, a poster, digital material, etc. This promotional package as well as the signed MoU / commitment letters will be a part of the wider Homes4Life exploitation and supporting investment strategy.



4.3 Auditing process

A proposal will be submitted for the auditing process. This proposal must deal with:

- How to audit: self-assessment, documentary verifications, on-site audits, ...
- Duration of each audit or verification
- Necessary skills of auditors

An audit (or a documentary verification) must be proposed for each phase of the certification (design and operation), in order to deliver the certification at each one of these 2 phases.

In addition of the auditing process, a training course must be defined for auditors, and in option for design teams and/or construction companies.

4.4 Provisional cost

According to the final content of the certification scheme, of the auditing process, and of the potential clients of the certification, it is necessary to determine the costs for certification. This will be defined in further steps, in the Certification scheme development.

5 Appendix 1 : proposed set of KPIs

Clusters and categories	# KPIs
2_PHYSICAL	84
2.1_Personal Safety	15
2.2_Comfort	24
2.3_Accessibility and orientation	34
2.4_Health and social care	4
2.5_Smart readiness	7
3_OUTDOOR ACCESS	12
3.1_Home and building	3
3.2_Immediate environment	2
3.3_Neighbourhood or village	7
4_PERSONAL	91
4.1_Identity and emotional connectivity	40
4.2_Privacy and dignity	51
5_SOCIAL	66
5.1_Social activity	59
5.2_Employment	7
6_ECONOMIC	30
6.1_Affordability	16
6.2_Choice	14
total	283

Cluster	Category	Sub-category	KPIs
2_PHYSICAL	2.1_Personal Safety	2.1.1_Accidents and calamities	21-001 Identifiable handrail
			21-002 Non-slip stair covering
			21-003 Adapted lighting/lighting controls
			21-004 Non-slip flooring
			21-005 Presence of a shower with handrails
			21-006 Fire protection
		2.1.2_Safe use of amenities and facilities	21-007 Presence of thermostatic mixer in the shower
			21-008 Presence of raised toilet
			21-009 Arrangements
			21-010 Safety requirement in the toilets
		2.1.3_Safety around the home	21-011 Lighting
			21-012 Floor covering for outside circulation
		2.1.4_Safety from outside threats	21-013 Burglary protection
			21-014 Direct sightline from street
	21-015 Social safety requirements for access doors		
2.2_Comfort	2.2.1_Temperature regulation	22-001 Proper layout to ensure satisfactory thermal comfort conditions for tenants	

Cluster	Category	Sub-category	KPIs	
			22-002	Design conditions related to thermal comfort, both in summer and winter
			22-003	Operability and control of HVAC (heating, ventilation and air conditioning) systems
			22-004	Assessment on thermal comfort
			22-005	Occupant's perception and satisfaction on thermal comfort
			22-006	Outdoor air quality of the environment around the building
		22-007	Identification and treatment of pollution sources on the site	
		22-008	Indoor air quality - materials	
		22-009	Indoor air quality - ventilation	
		22-010	Operability and control of HVAC (heating, ventilation and air conditioning) systems	
		22-011	Indoor air quality - assessment	
		22-012	Occupant's perception and satisfaction on IAQ	
		22-013	Proper layout to ensure satisfactory lighting conditions for tenants	
		22-014	Daylighting and access to natural light, especially in winter	
		22-015	Visual comfort: surface design and color quality	
		22-016	Lighting systems	
		22-017	Operability and control of natural and artificial lighting systems	
		22-018	Assessment on lighting conditions	
		22-019	Occupant's perception and satisfaction on lighting comfort	
		22-020	Proper layout to ensure satisfactory acoustic conditions for tenants: insulation from the outside of the building	
		22-021	Acoustic comfort: insulation between dwellings and with common spaces	
		22-022	Acoustic comfort: insulation inside dwelling	
		22-023	Assessment on acoustics performance	
		22-024	Occupant's perception and satisfaction on acoustic comfort	
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Cluster	Category	Sub-category	KPIs	
			23-012	Signage around the building
			23-013	Signage and visual cues in the corridors
			23-014	Lighting in the corridor
			23-015	Motorization of the garage door
		2.3.2_Getting around the house	23-016	Access and circulation in the toilets
			23-017	Entry thresholds
			23-018	Physical accesibility inside the home
			23-019	Accessibility and visibility of controls
			23-020	Accessibility
			23-021	Minimum dimensions of the different home rooms
		2.3.3_Performing daily in_house activities	23-022	Manoeuvrability of the annex room door
			23-023	Accessibility of mailboxes
			23-024	Lighting in the kitchen
			23-025	Height of power outlets
			23-026	Sliding doors on closets
			23-027	Adaptability requirements bathroom
		2.3.4_Getting in and out of bed	23-028	Spatial requirements second bedroom
		2.3.5_Personal hygiene	23-029	Equipment in cabins and sanitary spaces adapted for disabled people
			23-030	Sliding door or opening on the outside (bathroom / toilet)
		2.3.6_Using communication and entertainment features	23-031	Communication and access control devices usable by all
		23-032	Intercom / videophone system (private entrance)	
	2.3.7_Doing work or hobbies	23-033	Office at home	
	2.3.8_Controlling home functions			
	2.3.9_Orientating oneself in space and time	23-034	Presence of a signal in flight of descending stairs.	
	2.4 Health and social care	2.4.1_Proximity to services	24-001	Access to Medical care
			24-002	Physical Activity Spaces
			24-003	Fitness Equipment
		2.4.2_Options and facilities for eHealth and remote medicine	24-004	Health and Wellness awareness
		2.4.3_Facilities for care provision in the home		
	2.5 Smart readiness	2.5.1_Wireless and wired connectivity	25-001	Predisposition of cabling of the building and common spaces
			25-002	Predisposition of cabling of the dwelling
			25-003	Minimal connected devices
2.5.2_Network infrastructure and interoperability				



Cluster	Category	Sub-category	KPIs	
		2.5.3_IT infrastructure_APLs	25-004	Interoperability - Interfaces
		2.5.4_Digital security and data protection	25-005	Digital Security - Security and protection of personal data
			25-006	Digital Security - Security in case of cyber attack or hacking
		2.5.x	25-007	Occupant's perception and satisfaction on digital equipment and services
3_OUTDOOR ACCESS	3.1_Home and building	3.1.1_Outdoor spaces	31-001	Access to outdoor areas
			31-002	Conditions outdoor spaces
		3.1.2_Views	31-003	View quality
	3.2_Immediate environment	3.2.1_Accessibility	31-004	Easy accessibility
		3.2.2_Attractiveness		
		3.2.3_Social safety	31-005	Vacancy rate
	3.3_Neighbourhood or village	3.3.1_Accessibility	31-006	Options for transportation
			31-007	Frequency and proximity of public transport
			31-008	Safe pedestrian routes
			31-009	Alternative ways of transport (bikes)
		3.3.2_Attractiveness	31-010	Parks and open spaces
			31-011	Shopping
	3.3.3_Social safety	31-012	Basic services	
4_PERSONAL	4.1_Identity and emotional connectivity	4.1.1_Home	41-001	Adequate maintenance for affective ties to home environment financially viable
			41-002	Home environment must allow keeping pets
			41-003	home environments for older women living alone must offer private outdoor spaces
			41-004	Home environment promotes creation of informal support networks e.g neighbours, and sense of safety and security is reassured
			41-005	Space for deployment of personal history objects
			41-006	Daylight access for positive connection with home environment
			41-007	Home environment allows older people to pursue activities independently
			41-008	Spaces and features for views and interaction with nature
			41-009	Availability of places and features for personalization of home environment
			41-010	Personalization of kitchen spaces
			41-011	Opportunities for meaningful social activity
			41-012	Easy and affordable access to specific "carer" support needs
			41-013	Home offers dedicated space for pursuing activities for self-fulfilment and social engagement.
			41-014	Opportunity for deployment of items and furnishings with special meaning
			41-015	Assistive technologies in the dwelling take account of heirloom status



Cluster	Category	Sub-category	KPIs	
		4.1.2_Apartment building_complex	41-016	Opportunities for social activities and networks continuity
			41-017	Home environment promotes creation of informal support networks e.g neighbours, and sense of safety and security is reassured
			41-018	Home environment and neighbourhood contain 'third place thresholds'
			41-019	Home has quality private outdoor spaces
			41-020	Home environment allows views of and interaction with nature
			41-021	Assistive technologies take account of occupant activity patterns and rituals
		4.1.3_Neighbourhood or village	41-022	Access to general/indirect "carer" needs such as home care/home support services (primary target: care recipient)
			41-023	Home is situated in a neighbourhood that scores above average on security and solidarity items.
			41-024	Home environment facilitates recognition and training of informal carer skills
			41-025	Home within range of neighbourhood 'third places'
			41-026	Access to personalised tailored support services or tools informal carers
			41-027	Self-organization of social interaction
			41-028	Emotional attachment and alignment
			41-029	Dwelling is situated in proximity to likeminded others
			41-030	Social living environment is sensitive to specific socio-cultural needs
			41-031	Home environment within reach of community activities and engagement
			41-032	Home environment within reach of shops and services
			41-033	Emergency Preparedness
			41-034	Availability, accessibility and affordability of healthy food suppliers
			41-035	The home should be situated in an area that facilitates establishment of reciprocal social relationships with e.g. neighbours
	41-036	Dwelling has meaningful destinations within walking distance		
	41-037	Availability of places with spiritual significance		
	41-038	Mobility		
	41-039	The neighbourhood around the dwelling satisfies walkability requirements		
	41-040	Public spaces and buildings in the home's neighbourhood satisfy accessibility criteria		
	4.2_Privacy and dignity	4.2.1_Control over social interaction	42-001	Home environment must allow keeping pets
			42-002	Housing options for single older women must enable occupants to live alone (as opposed to sharing accommodation with other tenants)
			42-003	Elected co-habitation
			42-004	Home environment has multiple 'third place thresholds'



Cluster	Category	Sub-category	KPIs		
			42-005	Home plus environment offer opportunity for pleasurable and meaningful activities	
			42-006	Home and environment offer free choice in social activity participation	
			42-007	Home environment social and physical infrastructure supports social participation/ preventing social exclusion	
			42-008	Control over level of social interaction while in the home	
		4.2.2_Control over access	42-009	Secured housing, including perceived safety at home	
			42-010	Occupant has discriminatory control over access to (parts of) dwelling	
			42-011	Home occupants have access to housing programmes and resources	
		4.2.3_Control over data collection and management	42-012	Monitoring systems assume and accommodate occupant agency	
			42-013	ICT solutions such as remote sensor and monitoring systems can support caregiving by carers and independent living of care-recipient.	
			42-014	Monitoring systems situationally adjustable according to wishes of and through actions of occupants.	
			42-015	Principles / data flows monitoring systems transparent to occupants.	
			42-016	Adjustments to home (systems) offer sense of autonomy and control	
			42-017	Technologies and interfaces designed for use by occupants	
			42-018	Home and home systems accommodate variety of short term and long term occupant routines	
			42-019	Surveillance devices and systems in the home adjustable to occupant needs and preferences by occupants themselves	
			42-020	Monitoring and care platforms deployed in the home environment of people living with dementia should incorporate in their design the five key concern areas / themes	
			42-021	Information and support needs of carers are easily accessible and understandable	
			42-022	Assistive technologies take account of occupant activity patterns and rituals	
			4.2.4_Control over look and feel and furnishings	42-023	Space and facilities for personal history and sense of self
				42-024	Home maintenance controlled and engaged in by older people
				42-025	Adjustments to the home respect long-term familiarity with and emotional attachment to dwelling
		42-026		Occupant can customize living environment according to personal history and identity	
		42-027		Occupants can reorder use and furnishing of space to suit (changing) personal preferences	
		42-028		Personalisation of kitchen spaces	



Cluster	Category	Sub-category	KPIs			
			42-029	Physical cluster features in specialist housing types have unobtrusive, non-institutionalized design		
			42-030	Home functions, elements and furnishings can be rearranged without (major) constructive or technical adaptations		
		4.2.5_Availability of private spaces and times	42-031	Separate extra bedroom for carer		
			42-032	The home environment for older women living alone must offer adequate privacy and private spaces		
			42-033	home environments for older women living alone must offer private outdoor spaces		
			42-034	Adequate protection from noise pollution		
			42-035	Home offers opportunity to create personal, "safe" spaces for occupants with MCI/early-stage dementia		
			42-036	Private space for each occupant		
			42-037	Spaces and design features contribute to autonomy and space for transition		
			42-038	In-home technologies / systems should be equipped with privacy awareness systems tailored to the concerns and tech awareness level of users		
			42-039	Opportunity for claiming and crafting personal territory		
			4.2.6_Seclusion for health and ADL care provision	42-040	Palliative care/ End-of-life	
		42-041		Information and support needs of carers are easily accessible and understandable		
		42-042		Formal and personalised social and health services are available, accessible and affordable in the home's neighbourhood		
		4.2.7_Secure future prospects	42-043	Flexible home tenureship rules		
			42-044	Affordable housing		
			42-045	Long-term security affordable housing arrangements		
			42-046	Financing mechanisms for age-friendly housing should enable as many people as possible to remain or become home owners		
			42-047	Home environment must provide spaces and design features that contribute to autonomy and space for transition.		
		4.2.8_Self-determination autonomy of movement	42-048	Home environment promotes sense of autonomy and purpose for informal carers		
			42-049	Occupants as co-creators of home environments		
			42-050	Progressive privacy approaches in complexes/configurations of homes		
			42-051	Home component settings controllable by occupants		
		5_SOCIAL	5.1_Social activity	5.1.1_Ability to have social contacts in the home	51-001	Home environment offers opportunities for active engagement in social spaces
					51-002	Availability of space in the home to receive visitors, including overnight visitors
					51-003	The home environment allows free choice in manner and level of social engagement
					51-004	The home environment enables occupants to access those in their social group



Cluster	Category	Sub-category	KPIs
			51-005 Home offers sufficient personal space in co-habitation situations
			51-006 Home must offer opportunity to co-habit with self-selected others
			51-007 The home's immediate environment has multiple 'third place thresholds'
			51-008 Home enables social dignity by providing access to seven essential conditions
			51-009 Home environment has spaces and design features that contribute to autonomy and space for transition
			51-010 Home environment has spaces and design features that allow expression of family history
			51-011 Homes environment provides spaces and design features conducive to spontaneous, proposed and organized interaction
			51-012 Home environment offers adequate spatial provisions for pets, hobbies, socialising and storage
			51-013 Home environment promotes informal carers' sense of autonomy and purpose
			51-014 The home and its immediate environment offer opportunities to engage in meaningful social activity
			51-015 Home offers dedicated space for pursuing activities for self-fulfilment and social engagement.
			51-016 Occupants have control over access to home
			51-017 Spatial lay-out of the home environment allows control over level of social interaction.
		5.1.2_Proximity to activities and facilities	51-018 The home should be situated in a neighbourhood that is perceived as safe by the home's occupants.
		5.1.2_Proximity to activities and facilities	51-019 The immediate environment of the home and the neighbourhood offer accessible opportunities for engagement with others in meaningful activity and social contacts
		5.1.2_Proximity to activities and facilities	51-020 The direct environment of the home offers suitable spaces for engagement in organized social and learning activities.
		5.1.2_Proximity to activities and facilities	51-021 The home environment and immediate neighbourhood support social participation/ preventing social exclusion.
		5.1.2_Proximity to activities and facilities	51-022 Home environment within short and accessible reach of shops and services
		5.1.2_Proximity to activities and facilities	51-023 Home environment supports sense of autonomy and purpose of informal carers
		5.1.2_Proximity to activities and facilities	51-024 Housing programmes and resources
		5.1.2_Proximity to activities and facilities	51-025 Home environment provides easy and affordable access to specific "carer" support needs
		5.1.2_Proximity to activities and facilities	51-026 Meaningful destinations within walking distance
		5.1.2_Proximity to activities and facilities	51-027 Home within easy reach of accessible and affordable public and individualizes transport services



Cluster	Category	Sub-category	KPIs
			51-028 Home's neighbourhood offers opportunities for engagement in socio-cultural-religious and/or life-long learning activities
			51-029 Meaningful destinations within walking distance
		5.1.3_Ability to find social contacts outside the home	51-030 Home's immediate environment supports continuation of existing social activities, networks and contexts
		5.1.3_Ability to find social contacts outside the home	51-031 The home should be situated in a neighbourhood that is perceived as safe by the home's occupants.
		5.1.3_Ability to find social contacts outside the home	51-032 The neighbourhood offers opportunities for social interaction, within range of the home and by accessible routes.
		5.1.3_Ability to find social contacts outside the home	51-033 The home environment allows free choice in manner and level of social engagement
		5.1.3_Ability to find social contacts outside the home	51-034 Home enables social dignity by providing access to seven essential conditions
		5.1.3_Ability to find social contacts outside the home	51-035 The home's immediate environment offers opportunities for engagement in (organized) social activities
		5.1.3_Ability to find social contacts outside the home	51-036 Green spaces present in home environment
		5.1.3_Ability to find social contacts outside the home	51-037 Home is close to established social networks
		5.1.3_Ability to find social contacts outside the home	51-038 Home is situated in direct proximity to and easy reach of likeminded others
		5.1.3_Ability to find social contacts outside the home	51-039 Dwelling's immediate environment offers opportunities for informal social interaction
		5.1.3_Ability to find social contacts outside the home	51-040 Home's neighbourhood supports self-organization of social interaction
		5.1.3_Ability to find social contacts outside the home	51-041 Home environment and neighbourhood support social participation/ help prevent social exclusion
		5.1.3_Ability to find social contacts outside the home	51-042 Home environment provides spaces and design features conducive to spontaneous, proposed and organized interaction
		5.1.3_Ability to find social contacts outside the home	51-043 The social living environment of older people from migrant communities, is sensitive to their specific socio-cultural needs and preferences, and supports trust building and development of social capital
		5.1.3_Ability to find social contacts outside the home	51-044 The home and its environment (up to neighbourhood/village level) offer accessible opportunities for engagement in meaningful activity and social contacts.
		5.1.3_Ability to find social contacts outside the home	51-045 Appropriate social contact opportunities and services available within reachable distance of the home
		5.1.3_Ability to find social contacts outside the home	51-046 Home is situated in an area that facilitates establishment of reciprocal social relationships with e.g. neighbours
		5.1.3_Ability to find social contacts outside the home	51-047 Home accommodates gendered differences in activity preferences
		5.1.3_Ability to find social contacts outside the home	51-048 Availability of places with spiritual significance within accessible walking distance
		5.1.3_Ability to find social contacts outside the home	51-049 Home's neighbourhood offers variety of spaces for socializing with other community dwellers



Cluster	Category	Sub-category	KPIs		
		5.1.4_Online connectivity	51-050	Home's immediate environment has sitting spaces to enable social interaction.	
			51-051	Home is situated in a walkable neighbourhood with accessible public spaces and buildings	
			51-052	The home environment gives occupants virtual access to those in their social group	
			51-053	Home offers physical and/or virtual opportunities for social engagement	
			51-054	The home and any assistive devices and monitoring systems deployed in it, are designed to allow occupants the opportunity to shape and alter their daily routines both in the short term and as regards longer term changes	
			51-055	Home environment supports sense of autonomy and purpose of informal carers	
			51-056	Monitoring and care platforms deployed in the home environment of people living with dementia incorporate in their design the five key concern areas /	
			51-057	Information and support needs of carers are easily accessible and understandable, and include personalised tailored support services or tools	
			51-058	The home environment enables the use of social technology software and systems to support occupants in fulfilling their social needs.	
			51-059	The home provides affordable internet access	
	5.2_Employment	5.2.1_Suitability of the home as a place of work	52-001	Home employment workers can easily and legally be accessed	
			52-002	The home supports informal carers' work-life-care balance	
			52-003	The home environment offers opportunities for engagement in volunteer activity	
			52-004	Housing is affordable for informal carers	
		5.2.2_Connection to place of employment	52-005	The home supports informal carers' work-life-care balance	
			52-006	Home environment offers opportunities for paid employment	
			52-007	Availability of accessible transportation options	
			61-001	Acceptable earn-back time for investments in age-friendly housing	
	6_ECONOMIC	6.1_Affordability	6.1.1_Objective affordability	61-002	Adequate maintenance must be possible within reasonable limits for housing cost expenditure
				61-003	Housing must be affordable for informal carers
61-004				Age-friendly homes must be affordable to all.	
61-005				The home environment must allow tailoring of adjustments and features to suit individual needs and preferences	
61-006				Occupants must have long-term security on costs of housing	
61-007				Housing programmes and resources	



Cluster	Category	Sub-category	KPIs	
			61-008	Availability of a choice of affordable housing, supported by programmes and resources
			61-009	Financial instruments in place for home ownership among less affluent older adults.
			61-010	Private and public sector operatives should have long-term security on market conditions. Proved demand of this profile of homes
			61-011	Affordable internet access
		6.1.2_ Willingness to pay	61-012	Viable public sector business case
			61-013	The home environment must allow tailoring of adjustments and features to suit individual needs and preferences
			61-014	ROI between +/- 10% of non- age friendly homes, for both ownership and tenancy markets
			61-015	Viable business case in terms of nursing home and other healthcare cost savings
			61-016	Proved demand of need of specific materials for age-friendly homes
			6.2_ Choice	6.2.1_ Dwelling type
	62-002	Availability of affordable housing is guaranteed in cases of upgrading/gentrification		
	6.2.2_ Living environment type	62-003		Affordable rental accommodation needs to be situated within reach of social and healthcare services
		62-004		The home and its environment enable economic activity for its occupants, through access to transport
	6.2.3_ Living arrangement type	62-005		Access to general/indirect "carer" needs such as home care/home support services (primary target: care recipient)
		62-006		Home employment workers can easily and legally be accessed
	6.2.4_ Neighbours _co_occupants	62-007		Home must offer opportunity to co-habit with self-selected others
		62-008		Positive attitude towards older people (or more widely: society cohesion)
	6.2.5_ Solutions			
	6.2.6_ Decision_ making authority	62-009		Age-friendly housing projects contribute to market leadership and a positive brand image
		62-010		housing support awareness
		62-011		Tenancy contracts must allow modifications to homes on the initiative of tenants.
		62-012		Cooperate Social responsibility
	6.2.7_ Choice information	62-013	Availability of information about home adaptation options (?)	
62-014		Housing programmes and resources must be widely available		