

Exceliving

Mapping **Study**

“The habitat value chain towards healthy,
age-friendly and sustainable living environments”





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PROJECT ACRONYM	EXCELIVING
PROJECT TITLE	Excellent Living Environments – EXCELIVING
GRANT AGREEMENT NO.	101037887
DOCUMENT TITLE	Strategic Mapping Study
DISSEMINATION LEVEL	Public
MAIN AUTHOR	Competinov, Lda., Negócios com Inovação

ABSTRACT

The purpose of this Strategic Mapping Study of the Habitat value chain is to allow the partners of the "EXCELIVING - Excellent Living Environments" project to acquire a real picture of the Habitat value chain in the different regions and participating countries (Denmark, Portugal, Romania and Spain), simultaneously analysing the needs and challenges of Clusters to become key drivers of the digital and sustainable transformation of this value chain in Europe.



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INTRODUCTION

This **Strategic Mapping Study of the Healthy Living Habitat** is a comprehensive effort to understand the current state of the Habitat value chain across four different countries (Denmark, Portugal, Romania and Spain) and identify key trends and challenges that need to be addressed. This study is part of the EXCELIVING project, which aims to develop excellent living environments.

The **Mapping Study** analyses the existing Habitat value chain in each involved country, looking at factors such as quality of life and assistance in healthy, age-friendly and sustainable spaces and buildings. This analysis will help to identify gaps and opportunities for improvement, and identify the best strategies for developing excellent living environments.

In addition to the analysis of the existing habitat value chain, the Strategic Mapping Study will also map out the public actors related to the value chain from a cross-cutting perspective. This will include the identification of the key regional, national and European policies and strategies related to Habitat, such as regional smart specialisation strategies (RIS3) of the referred countries.

The Strategic Mapping Study will also look at the current business ecosystem of the Habitat value chain and identify potential areas of collaboration between private and public actors. This will help to ensure that the EXCELIVING project is able to develop excellent living environments that are both economically viable and socially responsible.

Finally, this Strategic Mapping Study will provide the project partners with the necessary data and insights to develop the best strategies for developing excellent living environments. It will help to create an environment that promotes healthy living and ensures that all stakeholders involved in the Habitat value chain are able to benefit from it.

HABITAT VALUE CHAIN ANALYSIS

The objective of this chapter is to carry out an analysis of the Habitat value chain in the countries covered by the project (Denmark, Portugal, Romania and Spain) to identify key trends and challenges in the current business ecosystem in the framework of quality of life and assistance in healthy, age-friendly and sustainable spaces and buildings.

This part also includes a mapping of public actors and relevant private resources related to this chain from a cross-cutting perspective, as well as the identification of key regional, national and European policies and strategies directly related to Habitat, including regional smart specialisation strategies (RIS3).

1. Online questionnaire to stakeholders

1.1 Collected data

An “Stakeholder inquiry” was developed under the project to know, measure and understand the profile of the Habitat value chain main actors and the way they interact within this chain with the focus on the Healthy Living Spaces. The identification of the stakeholders used in this inquiry was done by all the clusters of the EXCELIVING partnership and are listed in the partnership database. This group involve 105 SMEs, 28 Big Companies, 13 Technological centres, 16 Clusters outside the partnership and 13 other actors.

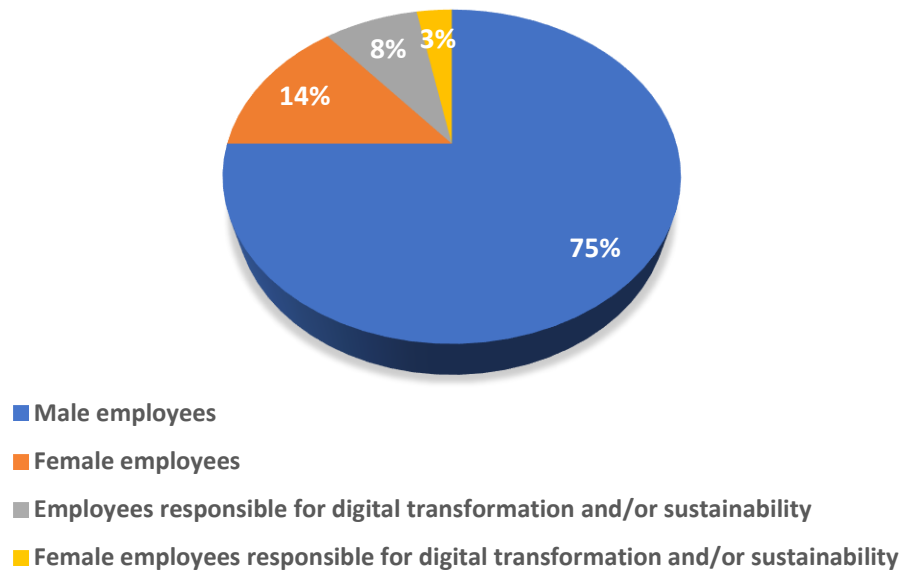
From this group, a total of 32 stakeholders were selected by the EXCELIVING project partners to perform the “Stakeholder inquiry”.

In this online questionnaire, stakeholders provided information about the organisations they work for, grouped into the following sections:

- General Agent Identification;
- Agent Dimension;
- Agent Description and Location;
- Agent Challenges;
- Agent Needs;
- Agent Constraints;
- Cluster related information.

Some interesting data related to the agent dimension are presented on the next page in graph format.

Mean Numbers



1.2 Analysis and Interpretation

From a systemic perspective of the elements interacting themselves and between the two identified groups (Cluster and Stakeholders), and with the objective to amplify the synergic interaction, we can take the following steps based on the statistics data:

1 - *Identify the organisations with higher number of employees responsible for digital transformation and/or sustainability:* We can identify the organisations with a higher number of employees responsible for digital transformation and/or sustainability and encourage them to share their best practices and insights with the other organisations in the Cluster group and the Stakeholders group. This can help to improve the overall performance of the group and foster collaboration.

2 - *Encourage participation in partnership programmes:* We can encourage the organisations to participate in partnership programmes with institutions to share resources and expertise. This can help to build stronger relationships and networks within the Cluster group and Stakeholders group.

3 - *Promote diversity and inclusion:* We can promote diversity and inclusion by encouraging organisations to increase their number of female employees responsible for digital transformation and/or sustainability. This can help to bring different perspectives and ideas to the table and create a more inclusive and innovative environment.

4 - *Foster customer/member engagement*: We can foster customer/member engagement by encouraging the organisations to involve their customers/members in the decision-making process. This can help to create a customer-centric approach and improve the overall satisfaction of the customers/members.

5 - *Enhance communication and information sharing*: We can enhance communication and information sharing by creating a platform or forum where the organisations can share their experiences, challenges, and best practices related to digital transformation and sustainability. This can help to build trust and foster collaboration within the Cluster group and Stakeholders group.

2. Direct interviews with stakeholders

With the aim of gathering information from key actors of the Habitat value chain in Denmark, Portugal, Spain and Romania to analyse the needs, challenges, expectations and constraints that they are facing up to boost the digital and sustainable transformation of this Habitat value chain, a series of interviews with selected stakeholders took place.

A two-part questionnaire was created as a way of helping to conduct the interviews and obtaining the necessary information and a total of 13 stakeholders and 5 clusters were interviewed in this phase.

2.1. Questionnaire on Cooperation, Interactions and Constraints faced by Stakeholders and the Project Partner Clusters

The purpose of the first part of the questionnaire is to know “how” the different actors or system components of the EXCELIVING business ecosystem are interacting with different systemic approaches and to know “what” to do to accelerate the frequency, pace and quality of productive and innovative interactions between the involved actors in the Health Living Habitat value chain.

Different approaches or levels of “habitat value chain analysis” are essential to solve the key constraints and explore the challenges between the different project partners and the Healthy Living Habitat businesses value chain.

Throughout this first part, focused on the identification of possible constraints among partners or customers, the interviewed stakeholders had to indicate the level of difficulty or threat in relation to the following topics:

1. Incompatibility in management philosophies;
2. Cultural differences;



3. Establishment of agreements under forced conditions;
4. Undefined cooperation strategy and structure;
5. Unconditional defence of too-narrow positions;
6. Abuse of power and loss of autonomy of one company over the others;
7. Inadequate supervision of the operation of the cooperation;
8. Ineffective control of the actions and functioning of the structures;
9. High levels of individualism and mistrust among cooperative members;
10. Low levels of commitment and involvement of the partners;
11. Weak perception by the entrepreneurs involved that cooperation is strategic and essential;
12. Superficial involvement, unwillingness to invest or allocate resources;
13. Abandonment or rotation of partners;
14. Low complementarity (or overlapping competencies) of the partners involved;
15. Imbalance between the size of the partners and the demands of the projects;
16. Projects of a reactive nature - to solve problems of one or more partners;
17. Technical support that is not sufficiently focused on the fundamental objectives of the project;
18. Economic and financial degradation of one or more of the partners involved.

Summary of Results

About this questionnaire, it was possible to conclude that the level of difficulty **was lower** in:

- Establishment of agreements under forced conditions;
- Unconditional defence of too narrow positions;
- Abuse of power and loss of autonomy of one company over the others;
- Low complementarity (or overlapping competencies) of the partners involved.

The level of difficulty **was medium** in:

- Incompatibility in management philosophies;
- Cultural differences;
- High levels of individualism and mistrust among cooperative members;
- Abandonment or rotation of partners;
- Projects of a reactive nature - to solve problems of one or more partners;
- Technical support that is not sufficiently focused on the fundamental objectives of the project;
- Economic and financial degradation of one or more of the partners involved.



The level of difficulty **was higher** in:

- Undefined cooperation strategy and structure;
- Inadequate supervision of the operation of the cooperation;
- Ineffective control of the actions and functioning of the structures;
- Low levels of commitment and involvement of the partners;
- Weak perception by the entrepreneurs involved that cooperation is strategic and essential;
- Superficial involvement, unwillingness to invest or allocate resources;
- Imbalance between the size of the partners and the demands of the projects.

2.1.1 Systemic Analysis and Interpretation Approach

In this project, different partners or members are involved and the success of the project depends on their cooperation and collaboration. To ensure the success of the EXCELIVING project, it is essential to analyse the value chain and identify the key constraints and challenges between partners. Based on the collected data, the value chain cooperation difficulty can be classified into three levels: *lower, medium and higher*.

Lower Level of Value Chain Cooperation Difficulty:

The **lower level** of value chain cooperation difficulty includes the following:

1 - *Establishment of agreements under forced conditions*: This means that one partner is forced to agree to the terms and conditions of another partner, which can lead to conflicts and a lack of trust between the partners.

2 - *Unconditional defence of too-narrow positions*: When a partner is not willing to compromise and is only concerned with their own interests, it can lead to a lack of cooperation and hinder the success of the project.

3 - *Abuse of power and loss of autonomy of one company over the others*: When one partner has more power and control over the others, it can lead to a lack of trust and cooperation between the partners.

4 - *Low complementarity (or overlapping competencies) of the partners involved*: If the partners have overlapping competencies or skills, it can lead to duplication of efforts and a lack of cooperation between the partners.

Medium Level of Value Chain Cooperation Difficulty:

The **medium level** of value chain cooperation difficulty includes the following:

- 1 - *Incompatibility in management philosophies*: When the partners have different management styles or philosophies, it can lead to conflicts and a lack of cooperation.
- 2 - *Cultural differences*: Cultural differences can lead to misunderstandings and a lack of cooperation between the partners.
- 3 - *High levels of individualism and mistrust among cooperative members*: When the partners are more focused on their individual interests and do not trust each other, it can hinder the success of the project.
- 4 - *Abandonment or rotation of partners*: If partners abandon or rotate frequently, it can lead to a lack of trust and cooperation between the partners.
- 5 - *Projects of a reactive nature to solve problems of one or more partners*: If the partners are only focused on solving their own problems, it can lead to a lack of cooperation and hinder the success of the project.
- 6 - *Technical support that is not sufficiently focused on the fundamental objectives of the project*: If the technical support is not aligned with the project's objectives, it can lead to a lack of cooperation and hinder the success of the project.
- 7 - *Economic and financial degradation of one or more of the partners involved*: If one or more partners are facing financial difficulties, it can lead to a lack of cooperation and hinder the success of the project.

Higher Level of Value Chain Cooperation Difficulty:

The **higher level** of value chain cooperation difficulty includes the following:

- 1 - *Undefined cooperation strategy and structure*: If the cooperation strategy and structure are not well-defined, it can lead to confusion and a lack of cooperation between the partners.
- 2 - *Inadequate supervision of the operation of the cooperation*: If the cooperation is not supervised properly, it can lead to a lack of trust and cooperation between the partners.
- 3 - *Ineffective control of the actions and functioning of the structures*: If the control is not effective, it can lead to conflicts and a lack of cooperation between the partners.
- 4 - *Low levels of commitment and involvement of the partners*: If the partners are not committed or involved in the project, it can hinder the success of the project.

5 - *Weak perception by the entrepreneurs involved that cooperation is strategic and essential:* If the partners do not understand the importance of cooperation, it can hinder the success of the project.

6 - *Superficial involvement, unwillingness to invest or allocate resources:* If the partners are not willing to invest or allocate resources, it can lead to a lack of cooperation and hinder the success of the project.

7 - *Imbalance between the size of the partners and the demands of the projects:* If there is an imbalance between the size of the partners and the demands of the project, it can lead to conflicts and a lack of cooperation between the partners.

In order to solve the key constraints and challenges between the partners, it is essential to take a systemic approach and address the issues at different levels of value chain cooperation difficulty. For instance, to address the lower level of cooperation difficulty, it is important to establish clear and fair agreements, promote collaboration, and ensure a balance of power between the partners. To address the higher level, it is important to define a clear cooperation strategy and structure, provide effective supervision and control, and promote the importance of cooperation to all partners involved.

The Habitat value chain analysis is a valuable tool to identify the key constraints and challenges between the partners in a consortium project such as EXCELIVING by addressing these constraints and challenges at different levels of the value chain cooperation difficulty, the partners could improve their collaboration and cooperation, and ultimately ensure the success of the project.

2.1.2 Theory of Constraints Analysis and Interpretation Approach

To know where to focus the attention and know what to do with the detected constraints, it can be useful to use the Theory of Constraints.

The Theory of Constraints (TOC) can be applied to the Habitat Value Chain Analysis for EXCELIVING project to identify and address the bottlenecks and constraints that are hindering the success of the project. TOC is a management philosophy that focuses on identifying and resolving the constraints that limit an organisation's ability to achieve its goals.

Actions that can be taken based on TOC principles:

1 - *Identify the system's constraints:* The first step is to identify the constraints that are limiting the success of the project. This can be done by analysing the value chain and identifying the critical bottlenecks that are affecting the project's performance.

2 - *Exploit the constraints*: Once the constraints have been identified, the next step is to exploit them to their fullest potential. This means finding ways to optimise the performance of the constraints and ensure that they are not underutilised.

3 - *Subordinate everything else to the constraints*: In order to maximise the performance of the constraints, it is important to subordinate all other activities to them. This means focusing on the activities that directly contribute to the constraints and reducing or eliminating activities that do not.

4 - *Elevate the constraints*: If the constraints cannot be fully exploited, the next step is to elevate them. This means investing in resources and capabilities to overcome the constraints and remove them as a bottleneck.

5 - *Repeat the process*: Once the constraints have been addressed, the process of identifying and resolving constraints should be repeated to ensure that new bottlenecks do not arise.

2.1.3 Systems Thinking Archetypes Analysis and Interpretation Approach

The systems thinking archetypes provide a useful framework to understand the underlying dynamics and feedback loops that contribute to the different levels of value chain cooperation difficulty identified in the EXCELIVING Project. With this methodology, we should be able to identify the following different situation and act accordingly to prevent and break repeating problem patterns. With the results of the first part of the questionnaire, we find the following situations:

1 - *Escalation*: The first archetype is escalation, which can occur when partners are forced to agree to the terms and conditions of another partner, leading to conflicts and a lack of trust between the partners. This archetype is present in the lower level of value chain cooperation difficulty. To address this archetype, it is important to establish clear and fair agreements, promote collaboration, and ensure a balance of power between the partners.

2 - *Fixes that fail*: The second archetype is fixes that fail, which occurs when partners only focus on solving their own problems, leading to a lack of cooperation and hindering the success of the project. This archetype is present in the medium level of value chain cooperation difficulty. To address this archetype, it is important to promote a shared vision and common goals, and encourage partners to work together to achieve them.

3 - *Shifting the burden*: The third archetype is shifting the burden, which occurs when partners abandon or rotate frequently, leading to a lack of trust and cooperation between the partners. This archetype is present in the medium level of value chain cooperation difficulty. To address

this archetype, it is important to ensure that partners are committed and involved in the project, and to promote a sense of ownership and responsibility for the project's success.

4 - *Limits to growth*: The fourth archetype is limits to growth, which occurs when there is an imbalance between the size of the partners and the demands of the project, leading to conflicts and a lack of cooperation between the partners. This archetype is present in the higher level of value chain cooperation difficulty. To address this archetype, it is important to ensure that partners have the necessary resources and capabilities to meet the demands of the project, and to promote a sense of equity and fairness among the partners.

By understanding these archetypes and their underlying dynamics, the *EXCELIVING – Excellent Living Environments* project can take a systemic approach to address the key constraints and challenges between the partners at different levels of value chain cooperation difficulty. This can help improve collaboration and cooperation, ultimately ensuring the success of the project.

In terms of **specific actions** that could be taken to address the main constraints and challenges identified in the Habitat value chain analysis, we recommend the following based on the different situations:

Lower Level of Value Chain Cooperation Difficulty:

- 1 - Establish clear and fair agreements that are mutually beneficial for all partners and ensure that each partner's interests are taken into account.
- 2 - Promote collaboration and encourage all partners to work together towards a common goal, rather than focusing only on their own interests.
- 3 - Ensure a balance of power between the partners and avoid any abuse of power that could lead to conflicts and a lack of trust.
- 4 - Identify and leverage the complementary competencies and skills of the partners to avoid duplication of efforts.

Medium Level of Value Chain Cooperation Difficulty:

- 1 - Encourage open communication and dialogue between the partners to address any misunderstandings or cultural differences.
- 2 - Develop a shared management philosophy that all partners can agree on and work towards.
- 3 - Foster a sense of trust and cooperation among the partners by encouraging transparency and mutual respect.

4 - Establish clear criteria for partner selection and ensure that partners are committed and willing to invest in the project.

5 - Ensure that technical support is aligned with the project's objectives and that all partners understand the role and importance of technical support.

6 - Provide financial and economic support to partners who may be facing difficulties to ensure that the project remains on track.

Higher Level of Value Chain Cooperation Difficulty:

1 - Define a clear cooperation strategy and structure that outlines each partner's responsibilities and expectations.

2 - Provide effective supervision and control of the cooperation and establish mechanisms for resolving conflicts.

3 - Foster a sense of commitment and involvement among the partners by ensuring that each partner understands the importance of their role in the project.

4 - Promote the importance of cooperation among all partners and develop incentives to encourage participation and investment.

5 - Ensure that the size of the partners is aligned with the demands of the project and establish mechanisms to address any imbalances that may arise.

These are just a few examples of specific actions that could be taken to address the key constraints and challenges identified in the Healthy Living Habitat value chain analysis. It is important to remember that every project is unique and may require different actions to address its specific challenges. Therefore, it is important to continuously assess and adapt the approach based on the project's needs and progress.

2.2. Questionnaire on Critical Health Living Habitat Product/Services

To increase the focus in the critical sectors and activities of the Healthy Living Habitat, that actually interact or should be present and interacting in the value chain in the future, we must know and understand the absence and presence of specific products and services that stakeholders and clusters offer in this field. For the same propose, we must also know if stakeholders and clusters pretend to include these products/services and their perceptions of relevance for them in the Healthy Living Habitat context. With this in mind, the second part of the questionnaire was created to evaluate the situation.

Both Stakeholders and Clusters were asked about specific products/services that are important for the creation of Healthy Environments for the habitat (homes, offices, and other Building) in relation with the following questions:

- “Does your organisation have competencies or solutions applicable or related to the areas defined in the first column? *(if yes, please write an "x" in the corresponding row)*”;
- “In your network of clients/partners/members, are there companies or other institutions working in these areas? *(if yes, please, write the number in the corresponding row)*”;
- “From your network of clients/partners/members, please indicate how many companies/institutions normally have innovation or internationalisation projects (in co-promotion)”;
- “Please rate your strategic interest in having clients/partners/members working in these areas *(on a scale of 0 to 5)*”.

Summary of Results

The areas where the most of the organisations **have no applicable competencies or solutions** are:

- Air quality;
- Manufacturing, marketing, or services for the application of construction materials;
- Water quality;
- EMF protection systems;
- Lighting that does not harm or contribute positively to human health;
- Materials/services applied to Bathrooms;
- Materials/services applied to Kitchens;
- Systems for the use or organisation of waste produced in the habitat.

But most of these organisations **are interested in having associates or clients working in these areas**. About the Ergonomic furniture, the organisations are very interested in having in associates working in this area.

The area in which half of the organisations have applicable competencies or solutions is Ergonomic furniture.

The area where most of the organisations have applicable competencies or solutions is Communication systems (internet, multimedia, voice, etc.).

At least half of the organisations have at least one **company with innovation projects in the areas defined**. But in the area Materials/services applied to Kitchens and Materials/services applied to Bathrooms, the organisations do not have.

Analysis and interpretation

The second part of the questionnaire aims to understand the competencies and interest of organisations in creating healthy living environments (homes, offices, and other buildings). It covers six different areas related to the creation of healthy living environments, including air quality, water quality, lighting, and renewable energy production.

The results indicate that most organisations do not have competencies or solutions related to air quality, manufacturing, marketing, or services for the application of construction materials, water quality, EMF protection systems, lighting, materials/services applied to bathrooms and kitchens, and systems for the use or organisation of waste produced in the habitat. However, most of the organisations are interested in having members or clients working in these areas, especially in ergonomic furniture.

To include these main healthy living sectors that have products/services and correspondents value chains that EXCELIVING partners don't have, it can be pertinent to check the private and public actors and establish some kind of partnership or network with them.

The area in which most of the organisations have competencies or solutions is communication systems. At least half of the organisations have at least one company with innovation projects in the areas defined, except for the areas of materials/services applied to kitchens and bathrooms.

The questionnaire provides useful insights into organisations' competencies and interests related to creating healthy environments in buildings. Based on the results, organisations can consider collaborating with others to enhance their competencies and solutions in areas where they have little or no experience. Additionally, organisations can explore opportunities to participate in innovation projects and expand their services to meet clients' needs in creating healthy environments.

3. Analysis of the trends and challenges of habitat value chain from a European Healthy Living Habitat comparative perspective

3.1 European Challenges and trends

General relevant Healthy Living Habitat Trends and Challenges to the Habitat value chain:

Speaking about trends and challenges is to answer the question about how to Create Healthy, Age-Friendly and Sustainable Living Environments. As we live longer and healthier lives, it is becoming increasingly important to create healthy, age-friendly, and sustainable living environments. We all want to live in a place that is safe, secure, and comfortable for our ageing bodies.

It is important to create living environments that are both environmentally and economically sustainable, while also providing the necessary support and care for older adults. Creating healthy, age-friendly, and sustainable living environments is an ongoing process that requires thoughtful planning, collaboration, and commitment. By understanding the needs of an ageing population, implementing current best practices, and staying abreast of new technologies and resources, we can create an environment that provides the highest quality of life for our elderly and disabled citizens. But in this context, the question is: what is happening in European Union political orientations and market trends that are relevant for the healthy living habitat? Here are some patterns about trends and challenges about:

General Trends and Challenges:

- There is a growing demand for healthy living environments in Europe, driven by increasing awareness of the health impacts of indoor air pollution, poor water quality, and hazardous materials in buildings;
- The market for healthy living habitats is expected to grow steadily, with a CAGR of around 6% from 2021 to 2026;
- The use of eco-friendly and non-toxic materials in building construction and renovation is on the rise, and there is a growing interest in using natural building materials, such as wood and bamboo, as alternatives to traditional building materials;
- The market for healthy living habitats is also being driven by the growing ageing population in Europe, with a focus on age-friendly design and accessibility.

Accessibility and Age-friendly Environments Trends and Challenges:

As we age, we may experience a decline in our mobility and independence, which can make certain parts of the home difficult to access. Ageing in place, or remaining in one's home as long as possible, can be an important factor for many older adults. Making the home more accessible can help to increase the number of seniors who are able to age in place. Some changes that can assist in ageing in place include removing steps from the front entry, installing grab bars in the bathroom, widening doorways, and adding railings to the porch or balcony. When designing the interior of a house for an ageing population, designers may want to keep these considerations in mind. They can also make use of a variety of assistive technologies for elderly people, who are increasingly reliant on digital devices as they age. The trend in this area is towards creating living spaces that are accessible to people of all ages and abilities. The focus is on developing age-friendly and inclusive environments that enable older people to lead an active and independent life. The challenge is to design and build living environments that meet the diverse needs of different groups of people, including people with disabilities and older people.

The European Union (EU) is addressing this challenge by implementing policies that support the development of accessible and age-friendly environments.

- Accessibility and age-friendly design is becoming increasingly important in Europe, with a growing ageing population and increasing awareness of the needs of people with disabilities;
- The European Union has set a goal of making all new buildings accessible by 2025, and there is a focus on retrofitting existing buildings to improve accessibility;
- The market for age-friendly products and services, including home modifications, assistive technologies, and health and wellness services, is expected to grow significantly in the coming years;
- There is also a growing trend towards universal design, which seeks to create products and environments that are accessible and usable by everyone, regardless of age or ability;
- In the European Union, the percentage of the population aged 65 and over is projected to increase from 19.4% in 2020 to 28.7% in 2100 (*Eurostat*);
- Around 17% of the European population has some form of disability, and this is expected to increase as the population ages (*European Disability Forum*).

Ecological and Sustainable Raw Materials and Components Trends and Challenges:

Ecological and sustainable choices in materials and components, including the design of products, will go a long way in reducing the carbon footprint of our living environments. The trend towards a more sustainable lifestyle is taking hold among the general population, especially millennials and generation Z, who are driving the shift towards more sustainable choices. The private sector has also taken notice, with a number of companies offering products that use sustainable materials, such as recycled and reclaimed materials. We can also expect this trend to continue as countries around the world develop their own sustainability standards and regulations, such as the recent rule in California requiring solar panels on new construction. Along with the rise of green building certification systems and government building codes with sustainability requirements, sustainable design and materials have become a mainstream part of the architecture and construction industry. The trend in this area is towards using sustainable and environmentally friendly raw materials and components in the construction of living spaces. The focus is on reducing the carbon footprint of the habitat value chain and promoting the use of renewable resources. The challenge is to ensure that the raw materials and components used are of high quality and meet the required standards.

The EU is addressing this challenge by promoting the use of sustainable materials and developing certification schemes that help to identify sustainable products.

- There is a growing demand for sustainable and eco-friendly building materials in Europe, driven by increasing awareness of the environmental impact of construction and the need to reduce carbon emissions;
- The use of recycled and renewable materials, such as reclaimed wood, recycled plastic, and bamboo, is on the rise;
- There is also a growing interest in using natural materials, such as clay, straw, and hemp, as alternatives to traditional building materials;
- The market for sustainable building materials is expected to grow significantly in the coming years, with a CAGR of around 10% from 2021 to 2026;
- The European Union is the world's largest producer of construction minerals, with an annual production of around 3 billion tonnes (*Eurostat*);
- In 2020, renewable energy accounted for 20.8% of the total energy consumption in the European Union (*Eurostat*).

Sustainable and Healthy Furniture Trends and Challenges:

Sustainable and healthy furniture is an important consideration for designers and architects, as furniture can account for up to 30% of indoor air pollution. Selecting furniture made with sustainable materials can help to reduce indoor pollution and improve the indoor air quality of the living environment. Selecting furniture made from sustainable materials can also reduce the overall cost of a project, as some sustainable materials, such as certain types of wood and bamboo, can be less expensive than traditional materials. Sustainable furniture can also come in a variety of styles and designs, making it easy to incorporate into almost any type of design. The trend in this area is towards using sustainable and healthy materials in the production of furniture. The focus is on reducing the environmental impact of furniture production and promoting the use of materials that are safe for human health. The challenge is to ensure that the furniture produced is of high quality and meets the required standards.

The EU is addressing this challenge by promoting the use of sustainable and healthy materials and developing certification schemes that help to identify sustainable and healthy products.

- There is a growing demand for sustainable and healthy furniture in Europe, driven by increasing awareness of the health impacts of indoor air pollution and hazardous chemicals in furniture;
- The use of eco-friendly and non-toxic materials in furniture design and manufacturing is on the rise, with a focus on materials such as natural wood, bamboo, and organic cotton;
- The market for sustainable and healthy furniture is expected to grow steadily, with a CAGR of around 5% from 2021 to 2026;

- The global market for sustainable furniture is expected to grow at a compound annual growth rate (CAGR) of 6.5% between 2020 and 2027 (*Grand View Research*);
- In 2020, the European Union exported €12.3 billion worth of furniture and imported €23.9 billion worth of furniture (*Eurostat*).

Digital Health and Assisted Living Trends and Challenges:

As people age, they often experience a number of health issues, such as reduced eyesight, hearing, and mobility. As more seniors live alone, it is important to make sure that they have access to medical and social support. It is also important to make their home environment as safe and comfortable as possible. By having access to technology, such as video doorbells, medical alert devices, and smart home technology, seniors can feel more secure and connected. Additionally, designers and architects can consider the needs of an ageing population when designing the interior of a house or the layout of a communal space. For example, wider hallways and walkways can make it easier for seniors to navigate around the house without assistance.

The trend in this area is towards using digital technologies to support the health and well-being of people living in habitats. The focus is on using technologies such as sensors and wearables to monitor the health status of individuals and provide timely interventions. The challenge is to ensure that the technologies used are reliable and secure, and that they protect the privacy of individuals.

The EU is addressing this challenge by implementing policies that promote the use of digital health technologies and by developing regulations that ensure the protection of personal data.

- There is a growing interest in digital health and assisted living technologies in Europe, driven by the ageing population and the need to provide better care and support for people with disabilities and chronic conditions;
- The market for digital health and assisted living technologies is expected to grow significantly in the coming years, with a CAGR of around 20% from 2021 to 2026;
- There is a focus on developing new technologies, such as smart home systems, wearable devices, and telehealth services, to support independent living and improve quality of life;
- In 2020, the global digital health market was valued at \$106.4 billion and is projected to reach \$639.4 billion by 2026, growing at a CAGR of 29.4% between 2021 and 2026. (*Mordor Intelligence*);
- In the European Union, 82% of people aged 16 to 74 used the internet daily or almost daily in 2020. (*Eurostat*).

Sustainable and Healthy Construction Materials Trends and Challenges:

Construction materials can have an impact on the health of residents and the environment. When selecting materials, designers and architects should consider the health implications of each choice. Some common construction materials that can be more sustainable include bamboo, recycled materials, low-emission materials, and materials with low VOC emissions. Additionally, designers and architects can use emerging technologies and new products for sustainable design and construction. Examples of emerging technologies include 3D printing and robotics that can be used for construction.

The trend in this area is towards using sustainable and healthy materials in the construction of living spaces. The focus is on reducing the environmental impact of construction and promoting the use of materials that are safe for human health. The challenge is to ensure that the materials used are of high quality and meet the required standards.

The EU is addressing this challenge by promoting the use of sustainable and healthy materials and developing certification schemes that help to identify sustainable and healthy products.

- The use of sustainable and healthy construction materials is becoming increasingly important in Europe, driven by increasing awareness of the health and environmental impacts of construction;
- The market for sustainable and healthy construction materials is expected to grow significantly in the coming years, with a CAGR of around 8% from 2021 to 2026;
- There is a focus on developing new materials, such as bio-based composites, recycled plastics, and low-carbon concrete, to reduce the environmental impact of construction and improve indoor air quality;
- The global market for green building materials is expected to reach \$364.6 billion by 2022, growing at a CAGR of 11.9% between 2017 and 2022. (Research and Markets);
- In 2020, the European Union produced around 2.2 billion tonnes of construction and demolition waste. (Eurostat);
- The use of sustainable building materials can reduce the environmental impact of construction by up to 50%. (UN Environment);
- In 2019, the European Parliament approved the EU Single-Use Plastics Directive, which bans certain single-use plastic products and requires member states to reduce the use of others. (European Parliament).

Efficient and Sustainable Construction and Design of Living Environments Trends and Challenges:

Efficient and sustainable construction and design of living environments have become increasingly important trends in recent years, as people have become more aware of the impact that their lifestyles have on the environment.

The trend in this area is towards designing and building living environments that are energy-efficient and sustainable. The focus is on reducing the energy consumption and carbon footprint of habitats and promoting the use of renewable energy sources. The challenge is to ensure that the design and construction of living environments meet the diverse needs of different groups of people, including people with disabilities and older people.

The EU is addressing this challenge by implementing policies that promote the use of renewable energy sources and by developing guidelines for the design and construction of energy-efficient living environments. There are several challenges and trends associated with this movement, including the following:

- Habitat EMF protection systems: Electromagnetic radiation is a growing concern in the housing industry, with the increase in smart devices and wireless technologies. As such, there is a growing demand for products that can provide EMF protection in the home. Companies are developing new products such as shielding paint, curtains, and bed canopies to reduce exposure to EMF radiation;
- Habitat Lighting: The lighting industry is also evolving rapidly, with a focus on more sustainable and energy-efficient lighting solutions. LED lighting has become increasingly popular due to its energy efficiency and long lifespan. The market is also seeing the development of smart lighting systems that can be controlled through smartphones or voice commands, allowing for greater customization and energy savings;
- Waste produced in the habitat: The circular economy is becoming more prevalent in the housing industry, with a growing focus on reducing waste and promoting recycling. Companies are developing new materials and products made from recycled materials, such as carpets made from recycled plastic bottles or furniture made from recycled wood. There is also a push towards designing homes with waste reduction in mind, such as incorporating composting systems and designing for easy recycling. The market for green building construction in Europe is projected to grow at a CAGR of 11.7% between 2020 and 2025. (Mordor Intelligence);
- In 2020, the European Union produced 4,050 thousand tonnes of greenhouse gas emissions, of which around 36% came from the building sector. (European Environment Agency).

Guarantee efficient and sustainable construction and design of the living environments, Trends and Challenges:

Efficient and sustainable construction and design of living environments is essential for ensuring that our buildings are environmentally responsible, resource-efficient, and healthy for occupants. Here are some strategies and best practices for guaranteeing efficient and sustainable construction and design of living environments, divided in the main sub-areas:

Energy Efficiency:

- Buildings account for around 40% of energy consumption and 36% of CO2 emissions in the European Union. (European Commission);
- In 2019, the European Union approved the revised Energy Performance of Buildings Directive, which aims to increase the energy efficiency of buildings by 32.5% by 2030. (European Commission);
- In 2018, the EU's Energy Performance of Buildings Directive was recast to align with the EU's 2030 climate and energy targets. (European Parliament).

Smart Building Technologies:

- The smart building market in Europe is projected to grow at a CAGR of 28.3% between 2020 and 2025. (Mordor Intelligence);
- In 2020, the European Commission launched the Renovation Wave initiative, which aims to double the renovation rate of buildings in the European Union by 2030. (European Commission);
- The European smart building market is projected to grow from \$8.5 billion in 2018 to \$23.3 billion by 2023. (Markets and Markets);
- The EU has launched a number of initiatives to promote smart cities and smart buildings, including the Smart Cities and Communities European Innovation Partnership (EIP) and the European Innovation Partnership on Smart Cities and Communities (EIP-SCC). (European Commission).

Sustainable Transportation:

- Sustainable transportation can reduce the environmental impact of buildings by reducing the need for car travel and associated emissions. (European Environment Agency);
- The European Green Deal aims to make 100 cities in the EU carbon-neutral by 2030. (European Commission);

- The EU has set a target of reducing greenhouse gas emissions from transport by 60% by 2050. (European Commission);
- The EU is promoting sustainable urban mobility through initiatives such as the Urban Mobility Package and the CIVITAS Initiative. (European Commission).

These trends and challenges highlight the importance of healthy living habitat and their value chains in Europe.

4. Mapping of public actors

There are several public institutions and organisations in Europe that could potentially be relevant partners or collaborators for the EXCELIVING project, based on their expertise and focus areas. Some examples are:

- **European Commission:** As the executive branch of the European Union, the European Commission is responsible for developing and implementing policies and programmes related to a wide range of areas, including sustainable development, health, and innovation.
- **European Investment Bank (EIB):** The EIB is the European Union's long-term lending institution and supports sustainable growth and development by providing financing for projects that promote environmental sustainability, social cohesion, and economic development.
- **European Environmental Agency (EEA):** The EEA is an EU agency that provides information and expertise on environmental issues, including sustainable materials and construction, to support decision-making at the EU and national levels.
- **European Innovation Partnership on Active and Healthy Ageing (EIP on AHA):** The EIP on AHA is a European Commission-led initiative that aims to promote innovation in the field of active and healthy ageing by bringing together stakeholders from different sectors, including industry, research, and public authorities.
- **Eurocities:** Eurocities is a network of major European cities that work together to address common challenges and share best practices in areas such as urban planning, sustainability, and social inclusion.
- **European Network for Accessible Tourism (ENAT):** ENAT is a non-profit association that promotes accessible tourism for people with disabilities and seniors by providing information, training, and advocacy.
- **European Sustainable Energy Week (EUSEW):** EUSEW is an annual event organised by the European Commission that brings together policymakers, business leaders, and other stakeholders to discuss and promote sustainable energy solutions.

- **European Council for an Energy Efficient Economy (ECEEE):** ECEEE is a non-profit organisation that promotes energy efficiency and sustainable energy policies in Europe through research, advocacy, and networking.
- **European Federation of Furniture Manufacturers (EFM):** EFM is an organisation that represents the interests of the European furniture industry and promotes sustainable and innovative practices in furniture manufacturing.

These are just a few examples of public institutions and organisations in Europe that could be relevant partners or collaborators for the EXCELIVING project, depending on its specific goals and focus areas.

4.1 Relevant public institutions and organisations from Spain, Denmark, Portugal, and Romania that could potentially be EXCELIVING partners or interact with the project and its value chains

Denmark:

- Ministry of Housing, Urban and Rural Affairs.
- Ministry of Climate, Energy and Utilities.
- Danish Building Research Institute (SBI).
- National Board of Social Services (Socialstyrelsen).
- Danish Technological Institute.

Portugal:

- Ministry of Environment and Climate Action.
- Ministry of Infrastructure and Ministry of Housing.
- Portuguese Agency for Environment (APA).
- National Association of Portuguese Municipalities (ANMP).

Romania:

- Ministry of Environment, Waters and Forests.
- Ministry of Regional Development and Public Administration.
- National Research and Development Institute for Environmental Protection (ICIM).
- Romanian Association for Building Services Engineers (AIR).
- National Association of Construction Entrepreneurs (ANCE).

Spain:

- Ministry of Transport, Mobility and Urban Agenda.

- Ministry for Ecological Transition and the Demographic Challenge.
- Spanish Institute for Energy Diversification and Saving (IDAE).
- Institute for the Elderly and Social Services (IMSERSO).
- National Institute of Physical Education of Catalonia (INEFC).

From the questionnaire results about the non-existence of some priority healthy living habitat related competencies that could enrich the EXCELIVING values chains, we have detected the existence of other public and private organisations that could be considered as relevant and contacted for future consultation by the EXCELIVING partnership clusters and its members.

4.2 University specific departments that are researching in the main and critical areas identified in the questionnaires results, that could be relevant partners for the EXCELIVING project and the healthy living value chains:

- Departments of Architecture: Universities with strong architecture departments could have faculty members and researchers who are knowledgeable about sustainable and healthy construction practices, as well as innovative designs for accessible and age-friendly environments.
- Departments of Environmental Science: Environmental science departments could provide expertise in areas such as air and water quality, as well as in the development of sustainable and eco-friendly materials.
- Departments of Public Health: Public health departments could offer knowledge and resources related to digital health and assisted living technologies, as well as insights into how living environments can be designed to promote health and well-being.
- Departments of Industrial Design: Industrial design departments could provide expertise in the development of innovative and ergonomic furniture and appliances for healthy living environments.
- Departments of Civil Engineering: Civil engineering departments could offer knowledge and resources related to sustainable construction practices and materials, as well as in the design and engineering of waste management systems.
- Departments of Electrical Engineering: Electrical engineering departments could provide expertise in the development of EMF protection systems and in the design and implementation of lighting systems that promote health and well-being.

Overall, it is important to identify specific R&D departments that are aligned with the goals and objectives of the EXCELIVING project, and to establish partnerships and collaborations with faculty members and researchers who have relevant expertise in these areas.

5. Relevant resources that private companies may have access related to the Healthy Living Habitat Value Chain from a cross-cutting perspective

The objective of this section is to show relevant resources that private companies working in some of the healthy living business critical areas (products/services/competencies) identified in the interview questionnaire as non-present or a minority, may have access to the healthy living Habitat value chain from a cross-cutting perspective.

- ✓ *Resources related to ecological and sustainable raw materials and components:* These companies may have access to sustainable sources of raw materials, innovative methods for processing and manufacturing these materials, and expertise in selecting the most environmentally friendly options.
- ✓ *Resources related to sustainable and healthy furniture:* These companies may have expertise in designing furniture that is both aesthetically pleasing and promotes healthy living, such as ergonomic chairs or adjustable standing desks. They may also have access to sustainable materials and production methods.
- ✓ *Resources related to digital health and assisted living:* These companies may have expertise in developing software and hardware that helps people monitor and manage their health, such as mobile apps or wearable devices. They may also have partnerships with healthcare providers or access to health data.
- ✓ *Resources related to sustainable and healthy construction materials:* These companies may have access to innovative materials that are both sustainable and provide health benefits, such as insulation that improves indoor air quality. They may also have expertise in construction methods that minimise waste and energy consumption.
- ✓ *Resources related to efficient and sustainable construction and design of living environments:* These companies may have expertise in designing and constructing buildings that are both energy-efficient and healthy to live in, such as using natural ventilation or passive solar design. They may also have access to the latest technologies for monitoring and optimizing building performance.
- ✓ *Resources related to air quality:* These companies may have expertise in developing and deploying air quality sensors or air purification systems, or in designing HVAC systems that promote healthy indoor air quality.
- ✓ *Resources related to water quality:* These companies may have expertise in developing water filtration or purification systems, or in designing plumbing systems that minimise the risk of water contamination.

- ✓ *Resources related to EMF protection systems:* These companies may have expertise in developing and deploying EMF shielding or mitigation systems, or in designing buildings that minimise exposure to electromagnetic radiation.
- ✓ *Resources related to lighting:* These companies may have expertise in developing and deploying lighting systems that promote healthy circadian rhythms and minimise exposure to blue light, or in designing buildings that maximise natural light.
- ✓ *Resources related to materials/services applied to bathrooms or kitchens:* These companies may have expertise in designing and manufacturing fixtures or appliances that are both sustainable and promote healthy living, such as low-flow faucets or air-purifying range hoods.
- ✓ *Resources related to systems for the use or organisation of waste produced in the habitat:* These companies may have expertise in designing and manufacturing waste management systems that minimise waste and promote recycling or composting, or in developing software or hardware that helps people track and manage their waste production.

6. SWOT Analysis of the EXCELIVING Habitat value chain

In this section, the *Strengths, Weaknesses, Opportunities and Threats* of the Habitat value chain to generate new business and investments opportunities and to lead the creation of sustainable, age-friendly and healthy environments at European and international level will be identified.

This SWOT analysis will contribute to map the reality of the Habitat value chain and to define realistic strategies to address these gaps and challenges in order to promote a more competitive and innovative European Habitat industry. It is based on the information collected and analysed from the questionnaires, as well as on the identification of the main regional, national and European policies and strategies relevant and directly related to Habitat, including regional strategies of intelligent specialisation (RIS3).

EXCELIVING is a forward-thinking project that endeavours to conduct a comprehensive analysis of the Habitat Value Chain of European countries with the aim of generating new business and investment opportunities and creating sustainable, age-friendly, and healthy living environments. The project seeks to undertake a SWOT analysis of the existing Habitat value chain, which will include a detailed investigation into the regional, national, and European policies and strategies related to Habitat, such as the regional strategies of intelligent specialisation (RIS3).

By conducting extensive SWOT research and analysis, we will be able to identify any gaps and challenges within the existing Habitat value chain and create effective strategies to address them.

With the findings of the SWOT analysis, we will be able to develop a comprehensive strategy that promotes a more competitive and innovative European Habitat industry. Based in SWOT analysis, we also be able to develop a strategy for the five next years, including the identification and implementation of the best practices and innovative technologies, as well as developing new products and services that can be used to improve the quality of life in European countries.

Strategic Mapping SWOT analysis is focused on the Habitat Value Chain and how it can lead to healthier, age-friendly, and more sustainable living environments. To effectively analyse the reality of the Habitat Value Chain and to create strategies to ensure a competitive and innovative European Habitat industry, it was essential to consider the complementarities between the different PESTLE (*Political, Economic, Social, Technological, Legal and Environment*) countries contexts. In order to do this, we have done different SWOT analysis, gathering and analysing not only the main regional, national, and European policies and strategies relevant and directly related to Habitat, that includes regional strategies of intelligent specialisation (RIS3), but also other different SWOT useful perspectives. By examining the strengths, weaknesses, opportunities, and threats in each of these contexts, the EXCELIVING partners can better understand the complementarities between the different countries and how the Habitat value chain can be improved. For example, by examining the strengths and weaknesses of each context, the project team can identify where there are gaps and challenges that can be addressed in order to create a more unified and successful European Habitat industry. By examining the opportunities and threats in each of the contexts, the partners can identify potential areas for growth and areas of risk. This will help to create strategies that will lead to a healthier, age-friendly, and more sustainable living environment. By looking at the strengths, weaknesses, opportunities, and threats of each developed SWOT context, the EXCELIVING project can identify the gaps and challenges that must be addressed in order to create a more unified, successful, and sustainable environment.

Finally, with this different SWOT observation levels approaches and contexts, the EXCELIVING partners will be able to use the research and analysis conducted during this Mapping Study to create a set of recommendations for policymakers, industry leaders, and governments. These recommendations can be useful to create an effective and sustainable Habitat value chain, and to ensure that Europe remains a leader in the field.

6.1 SWOT Analysis focused on the European context

This SWOT analysis is pertinent to understand the healthy living habitat value chain business environment and includes information about main regional, national and European policies and

strategies directly related to Habitat, including regional strategies of intelligent specialisation (RIS3).

Strengths:

- ✓ Growing demand for healthy living habitat and age-friendly environments in Europe due to an ageing population and increased awareness of the importance of health and wellness. In 2020, the European population aged 65 and over was estimated to be 95 million, and it is projected to reach 150 million by 2050. (Eurostat);
- ✓ Growing interest in ecological and sustainable raw materials and components in the construction industry. The global green building materials market is projected to reach \$609.5 billion by 2027, growing at a CAGR of 11.2% from 2020 to 2027. (Allied Market Research.);
- ✓ Increasing adoption of digital health and assisted living technologies in Europe, particularly in response to the COVID-19 pandemic. The European digital health market is expected to grow at a CAGR of 14.7% from 2020 to 2027. (Mordor Intelligence);
- ✓ Availability of sustainable and healthy construction materials and furniture, with many companies in Europe offering products that are certified by third-party organisations such as Cradle to Cradle and Forest Stewardship Council. (Cradle to Cradle Products Innovation Institute, Forest Stewardship Council);
- ✓ Stringent regulations and standards for construction and design in Europe, driving the adoption of efficient and sustainable practices in the industry. For example, the EU Energy Performance of Buildings Directive requires all new buildings to be nearly zero-energy by the end of 2020. (European Commission);
- ✓ Growing demand for healthy and sustainable living environments due to increasing awareness of the health and environmental impact of living spaces;
- ✓ The availability of eco-friendly and sustainable materials and technologies that can be used to design and construct healthy living habitats;
- ✓ Growing interest in accessibility and age-friendly environments, especially with an ageing population in Europe;
- ✓ Increasing use of digital health and assisted living technologies to improve the quality of life for residents in living environments;
- ✓ Growing awareness of the importance of health and well-being for a healthy life;
- ✓ Strong network of research and development institutions in the healthcare sector;
- ✓ Availability of funding for health and well-being related projects;
- ✓ Wide range of healthcare technologies including mobile applications, wearable devices, telemedicine solutions, among others.

Weaknesses:

- Lack of standardisation and coordination among different actors in the value chains of healthy living habitat, resulting in inefficiencies and missed opportunities for collaboration. (European Cluster Collaboration Platform);
- Limited availability of age-friendly housing options in many European countries, with a significant proportion of older adults living in homes that are not suitable for their needs. In the EU, only 3.3% of homes are adapted for people with reduced mobility. (European Commission);
- Limited awareness among consumers and industry professionals about the benefits and availability of ecological and sustainable materials and components, leading to a slower uptake of these products. (European Environment Agency);
- High costs associated with the adoption of digital health and assisted living technologies, particularly for small and medium-sized enterprises. (European Commission);
- Limited availability and accessibility of some sustainable and healthy construction materials, particularly in rural areas where there may be limited supply chains. (European Cluster Collaboration Platform);
- Lack of standardisation and regulations in the industry, leading to inconsistencies in quality and safety of living environments;
- High costs associated with implementing sustainable and healthy design and construction practices;
- Limited adoption and awareness of new and innovative products and technologies in the market;
- Limited availability of qualified professionals with knowledge and skills in designing and constructing healthy living habitats;
- Lack of coordination among the different sectors that make up the healthcare industry;
- Lack of investment in infrastructure and human resources for implementing health and well-being solutions;
- Resistance from some healthcare professionals towards adopting new technologies;
- Lack of awareness and education among the population about the importance of preventive health and well-being.

Opportunities:

- ✓ Increasing demand for healthy living and age-friendly environments in Europe, particularly in response to the COVID-19 pandemic, presenting opportunities for

companies in the value chains to innovate and meet the growing demand. (European Commission);

- ✓ Growing interest in ecological and sustainable materials and components, providing opportunities for companies in the value chains to differentiate themselves and gain a competitive edge. (Allied Market Research);
- ✓ According to Euromonitor International, the market for accessibility and age-friendly environments is expected to grow significantly in the coming years, driven by the ageing population worldwide. Euromonitor estimates that the global market for elderly products and services is set to grow to \$29.9 billion in 2024, with a focus on mobility devices and assistive technology;
- ✓ Regarding ecological and sustainable materials, Euromonitor predicts an increase in demand for eco-friendly and sustainable products across all sectors, including construction materials and furniture. The company also forecasts growth in the use of recycled and renewable-sourced materials, as well as a greater concern for waste reduction and energy efficiency;
- ✓ In the sustainable furniture sector, Euromonitor highlights an increase in demand for furniture made from recycled and sustainable materials, as well as a growing interest in products that are manufactured responsibly and environmentally friendly;
- ✓ According to Statista, the global digital health and assistive technology market is expected to continue to grow in the coming years, driven by the adoption of mobile devices and wearables, as well as increased access to telemedicine services. The company estimates that the global digital health market is set to grow to \$408 billion in 2025;
- ✓ In the sustainable construction materials sector, Statista highlights an increase in demand for construction materials that are energy efficient and produced responsibly. The company also highlights a growing demand for smart construction technologies and solutions, such as sensors and energy monitoring systems;
- ✓ Increasing adoption of digital health and assisted living technologies in Europe, presenting opportunities for companies to develop new products and services that meet the evolving needs of consumers and healthcare professionals. (Mordor Intelligence);
- ✓ Development of new business models that promote sustainable and efficient construction and design, such as circular economy models and building information modelling (BIM). (European Commission);
- ✓ Growing interest in green building materials and technologies among investors and financial institutions, providing opportunities for companies to access funding and investment. (European Investment Bank);
- ✓ Growing market demand for healthy and sustainable living spaces, providing opportunities for companies to expand their products and services;

- ✓ Increasing government support and initiatives for sustainable living environments and eco-friendly technologies;
- ✓ Technological advancements and innovation in the industry, creating new opportunities for companies to develop and introduce new products and services;
- ✓ Opportunities for companies to collaborate and form partnerships to tackle common challenges and improve the industry as a whole;
- ✓ Growing demand for health and well-being solutions, particularly due to the ageing population;
- ✓ Possibility of implementing health and well-being solutions that can improve patients' quality of life and reduce healthcare system costs;
- ✓ Collaboration with technology companies and start-ups in the healthcare industry;
- ✓ Possibility of implementing research and development projects in collaboration with other national and international research and development institutions.

Threats:

- Increasing competition in the value chains of healthy living habitat, particularly from companies in emerging markets such as Asia and South America. (European Cluster Collaboration Platform);
- Uncertainty around regulatory frameworks and standards, particularly with the UK's exit from the EU and potential changes to EU regulations. (European Commission);
- Rising costs of raw materials and transportation, particularly in the context of climate change and increasing energy costs. (European Environment Agency);
- Economic uncertainties and market volatility affecting the demand for healthy living habitats;
- Intense competition in the industry, making it challenging for smaller companies to establish themselves in the market;
- Rapid technological advancements and changes in consumer preferences, leading to the potential for outdated products and services;
- Regulatory and policy changes impacting the industry, leading to additional costs and compliance challenges for companies;
- Competition from other regions and countries investing in health and well-being solutions;
- Possibility of lack of funding or government support for health and well-being projects;
- Possibility of resistance or lack of adoption by the population to health and well-being solutions;

- Possibility of rigorous regulation that could limit innovation in the health and well-being sector.

The RIS3 documents and latest national strategies from Denmark, Portugal, Romania and Spain (Catalonia region) show variations in emphasis and strategic priorities for the healthcare and well-being sector. However, there is a clear convergence in the need to invest in research and development, as well as implementing preventive health and well-being solutions to address the ageing population and reduce healthcare system costs.

6.2. SWOT Analysis focused on Cooperation, Synergies and Complementarities

Strengths:

- ✓ The cooperation between different clusters allows for a diverse range of expertise and resources, which can be leveraged for innovation and growth;
- ✓ The project focuses on healthy living habitats, a growing market with increasing demand from an ageing population;
- ✓ The consortium includes institutions from different European countries, providing access to a wide market and diverse perspectives;
- ✓ The project aligns with regional, national, and European policies and strategies, which can provide support and funding opportunities;
- ✓ Strong consortium of partners with expertise in different areas related to healthy living habitats;
- ✓ Complementary skills and knowledge of the partner institutions;
- ✓ The project focuses on a growing market with a high potential for innovation and economic growth;
- ✓ The consortium has access to national and international policies and strategies related to Habitat, including regional strategies of intelligent specialisation (RIS3);
- ✓ The project brings together clusters from different countries and regions with diverse expertise and experience in the furniture and interior design industry;
- ✓ The Transylvanian Furniture Cluster has a strong presence in the European furniture market and is known for its quality products;
- ✓ Smartech Cluster has expertise in innovative technologies and solutions for the furniture industry, which can bring added value to the project;
- ✓ Danish Life Science Cluster has expertise in sustainability and environmental issues, which can contribute to the project's goal of promoting sustainable furniture production and consumption;

- ✓ CENFIM Furnishing Cluster has experience in promoting resource efficiency and circular economy practices in the furniture industry, which can be beneficial for the project;
- ✓ Cluster Habitat Sustentável has a focus on sustainable housing and construction, which can provide complementary knowledge to the project.

Weaknesses:

- The institutions have different priorities, cultures, and languages, which could lead to communication challenges and conflicts;
- The project may face challenges in terms of coordinating activities across different countries and legal systems;
- The project may require significant investment, and there may be differences in financial capabilities among the participating institutions;
- Lack of clear and measurable objectives and outcomes for the project;
- Limited financial resources available for the project;
- Coordination and communication challenges due to the diverse cultural and linguistic backgrounds of the partner institutions;
- The clusters are from different regions and countries, which can present challenges in terms of coordination, communication, and cultural differences;
- The project may face difficulties in aligning the different clusters' priorities and goals, which may affect the project's success;
- The project may require a significant investment of time and resources from each cluster, which may be a challenge for some clusters.

Based in the questionnaire responses - Strengths of Habitat Value Chain:

Based in the questionnaires results, Stakeholders and Clusters value chains cooperation interactions, the level of difficulty being lower in the establishment of agreements under forced conditions, unconditional defence of too-narrow positions, and avoiding abuse of power and loss of autonomy of one company over the others correspond to the following strengths:

- Effective communication: Clear and open communication channels between stakeholders and clusters can help in avoiding misunderstandings and conflicts, making it easier to establish agreements and avoid abuse of power
- Shared values and objectives: When stakeholders and clusters share common values and objectives, it is easier to negotiate and find common ground for cooperation, avoiding the need for forced conditions or narrow positions;

- Collaborative culture: A collaborative culture that values cooperation and teamwork can make it easier to establish partnerships and avoid the abuse of power by any one company over the others. Collaboration and cooperation between partners can lead to the creation of sustainable, age-friendly, and healthy environments;
- Trust and mutual respect: When stakeholders and clusters trust and respect each other, it is easier to work together and establish agreements that benefit all parties involved;
- Partners with complementary competencies can bring diverse expertise to the project and lead to more innovative solutions;
- Effective management philosophies and cultural compatibility that can lead to smoother cooperation between partners;
- Defined cooperation strategies and structures that can ensure clear goals and objectives for the project.

Based in the questionnaire responses - Weaknesses of Habitat Value Chain:

Based in questionnaires and interviews results, we have the following weaknesses corresponding to these difficulties in value chains cooperation:

- Weakness in Strategy: Undefined cooperation strategy and structure, which indicates a lack of direction and clarity in the cooperation process;
- Ineffective Management: Inadequate supervision of the operation of the cooperation, as well as ineffective control of the actions and functioning of the structures, which indicates a lack of proper management practices;
- Perception: Weak perception by the entrepreneurs involved that cooperation is strategic and essential, which indicates a lack of understanding of the importance of cooperation in value chains;
- Low Levels of Commitment: Low levels of commitment and involvement of the partners, which suggests that the partners are not fully invested in the cooperation process. Low levels of commitment and involvement of partners, and a weak perception that cooperation is strategic and essential can lead to a lack of cooperation;
- Superficial Involvement: Superficial involvement, unwillingness to invest or allocate resources, which suggests a lack of dedication and commitment to the cooperation process;
- Imbalance: Imbalance between the size of the partners and the demands of the projects, which suggests that there may be disparities in resources, capacity, and influence among the partners that could hinder effective cooperation;

- Reactive projects and technical support that are not focused on fundamental objectives can lead to wasted resources and ineffective solutions;
- Difficulty in establishing agreements and defending positions can hinder progress and lead to conflicts;
- Power imbalances and loss of autonomy can lead to distrust and lack of commitment;
- Incompatibility in management philosophies and cultural differences can lead to misunderstandings and communication barriers.

Opportunities:

- ✓ The project can tap into the growing market for healthy living habitats and position itself as a leader in the industry;
- ✓ The project can leverage the diverse expertise and resources of the participating institutions to develop innovative and sustainable solutions;
- ✓ The project can benefit from the support of regional, national, and European policies and strategies, which can provide funding, networking, and visibility opportunities;
- ✓ The project can attract new investors and partners interested in the growing healthy living habitat market;
- ✓ Growing demand for healthy living habitats due to the ageing population and increased awareness of the importance of sustainable living environments;
- ✓ Potential for the creation of new business and investment opportunities;
- ✓ Possibility of expanding the project beyond the European market to other regions with similar needs;
- ✓ The project can lead to the development of innovative and sustainable furniture products and services that can benefit the European furniture industry and consumers;
- ✓ The collaboration between different clusters can create potential synergies and opportunities for knowledge exchange, learning, and networking;
- ✓ The project can contribute to the development of a European network of furniture clusters, promoting the sharing of best practices and collaboration between different regions and countries.

Threats:

- The healthy living habitat market may be impacted by economic downturns or changes in consumer behaviour, leading to a decrease in demand;
- The project may face competition from established players or emerging start-ups in the industry;

- The project may face regulatory or legal barriers in different countries or regions, leading to delays or increased costs;
- The project may face challenges in securing funding or investment in a competitive environment;
- Competition from established companies and institutions in the Habitat industry;
- The potential for changes in government policies and regulations related to Habitat that may affect the project;
- The risk of project failure due to the complexity and challenges of developing innovative solutions for healthy living habitats;
- The COVID-19 pandemic can affect the project's implementation and coordination, as travel restrictions and social distancing measures can limit face-to-face meetings and events;
- The project may face competition from other initiatives and projects in the furniture and interior design industry;
- The project may encounter legal and regulatory barriers in different countries, which can affect the project's success and implementation.

With this different SWOT observation levels, we can conclude that EXELIVING project and its cooperation/consortium with the participating institutions have the potential to generate new business and investment opportunities in the growing market for healthy living habitats. However, there are also challenges that need to be addressed in terms of communication, coordination, and financial capabilities. By leveraging the strengths of the consortium and aligning with relevant policies and strategies, the project can position itself as a leader in the industry and drive the creation of sustainable, age-friendly, and healthy environments at the European and international level. We can also conclude that EXELIVING project has a strong consortium of partners with complementary skills and knowledge, focusing on a growing market with high potential for innovation and economic growth. However, the project faces challenges related to limited financial resources, coordination and communication, and the potential for changes in government policies and regulations. To address these challenges, the project can benefit from clear and measurable objectives, effective communication and coordination strategies, and partnerships with other relevant organisations in the Habitat industry.

GUIDELINES FOR THE DEFINITION OF A COMMON STRATEGY

Based on the SWOT analysis carried out, as well the questionnaires results, the objective of this mapping study was to provide information for the definition of the EXCELIVING Partnership Common Strategy, as well as for the elaboration of a common plan for its operationalisation in the next five years. The analysis of complementarities between strategies and nature of partner clusters helped to identify: synergies, common resources and new opportunities for collaboration, including possibilities for improvement for excellent cluster management and service delivery digital and virtual networks of excellence for its members.

One of the main objectives of this study was to look at the current business ecosystem of the Habitat value chain and identify potential areas of collaboration between private and public actors, including the EXCELIVING cluster partners. With this objective, some actions were proposed to the EXCELIVING clusters to work on their common strategy. This will ensure that the EXCELIVING project is able to promote excellent living environments that are both economically viable and socially responsible. Finally, this Strategic Mapping Study may also provide the project partners with the necessary data and insights to develop the best strategies for developing excellent living environments.

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- Well+Good. <https://www.wellandgood.com/>
- The Healthy Home Economist. <https://www.thehealthyhomeeconomist.com/>
- Architectural Digest. <https://www.architecturaldigest.com/>
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