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COMMISSION STAFF WORKING DOCUMENT

EVALUATION

Accompanying the document

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

**Final evaluation of the Active and Assisted Living Research and Development
Programme**

{COM(2022) 708 final}

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Glossary

<i>Term or acronym</i>	<i>Meaning or definition</i>
AAL1	Ambient Assisted Living Joint Programme
AAL2	Active and Assisted Living Research and Development Programme
AALA	Ambient Assisted Living Association
AISBL	Association Internationale Sans But Lucratif
AHA	Active Healthy Ageing
AWP	Annual Work Programme
CMU	Central Management Unit
DG	Directorate-General
EB	Executive Board
EC	European Commission
EDCTP2	European and Developing Countries Clinical Trials Partnership under Horizon 2020
EIP AHA	European Innovation Partnership on Active and Healthy Ageing
EU	European Union
GA	General Assembly
ICT	Information and Communications Technology
ISSG	Inter-Service Steering Group
JPI MYBL	Joint Programming Initiative 'More Years Better Lives'
KPIs	Key Performance Indicators
MTR	Mid-Term Review
NCP	National Contact Point
OO	Operational Objective
PRIMA	Partnership for Research and Innovation in the Mediterranean Area
RIE	Recommendation of the Interim Evaluation

R&D	Research and Development
R&I	Research and Innovation
SCPs	Small Collaborative Projects
SMEs	Small and Medium-sized Enterprises
TFEU	Treaty on the Functioning of the European Union
UN	United Nations
UK	United Kingdom

3. 1.INTRODUCTION

1.1 1.1 Purpose and scope of the evaluation

The purpose of this evaluation is to assess the ‘Active and Assisted Living Research and Development Programme’ (hereinafter ‘the AAL2 Programme’), under Horizon 2020. Decision¹ No 554/2014/EU of the European Parliament and the Council on the Union’s participation in the Programme, sets out a pre-established framework for the interim and final evaluation, in line with other initiatives under Horizon 2020 based on Articles 185 and 187 of the Treaty on the Functioning of the European Union (TFEU).

The AAL2 Programme is based on Article 185 of the TFEU, which foresees that the Union may make provision for the participation of the European Union (EU) in research and development (R&D) programmes undertaken by several Member States, including participation in the structures created for the execution of those programmes.

This final evaluation covers the seven-years of operation of the Programme, from June 2014 to June 2021 and is based on the five evaluation criteria of the Better Regulation Guidelines complemented with two additional partnership-specific criteria of additionality and ‘transparency & openness’ of the Partnership. The final evaluation covers the AAL Association’s Participating States. The full list of AAL2 Participating States for the period 2014-21 can be found in Annex VI, Table 4.

Following the **impact assessment** conducted in 2013 and the **Interim Evaluation**² of the AAL2 Programme carried out in 2017, the final evaluation assesses progress made towards the Programme's objectives and on fulfilling the recommendations set out in the Interim Evaluation. In addition it develops both concrete conclusions and lessons learned covering policy aspects, strategy and operational levels.

The findings of this final evaluation draw largely³ on a supporting evaluation study³ (hereinafter ‘the study’), conducted by external contractors, which is part of the Research and Innovation Framework Programme Impact Monitoring, Analysis and Evaluation strategy⁴ for the period 2019-2024 covering the overall ex-post evaluation of Horizon 2020 and the interim evaluation of Horizon Europe, including partnerships. More particular the AAL2

¹ Decision No 554/2014/EU of the European Parliament and of the Council of 15 May 2014, Article 12 – The Commission shall send a report of the evaluation to the European Parliament and to the Council no later than 31 December 2022.

² European Commission, Directorate-General for Communications Networks, Content and Technology, Uusikylä, P., Mollenkopf, H., Ciesla, A., et al., *Interim evaluation of the active & assisted living programme : final report*, Publications Office, 2017, <https://data.europa.eu/doi/10.2759/785852>

³ Independent Expert Report (September 2022). *Active and Assisted Living Research and Development Programme (AAL2) final evaluation - Study in support of the ex-post evaluation of the European Framework Programme for Research and Innovation Horizon 2020*, Prognos, PPMI, Publications Office, 2022, <https://data.europa.eu/doi/10.2777/068757>

⁴ https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/evaluation-impact-assessment-and-monitoring_en

Programme final evaluation was covered under the evaluation study entitled “Evaluation study on Resilient Europe”.

The evaluation is based on the findings of the study, incorporating 2 case studies, using data collected through surveys and approximately 30 interviews with Programme participants and a wider variety of stakeholders, complemented with statistical information about the AAL2 Programme provided by the dedicated implementation structure, managing the Programme.

More information on the methodology and process to carry out this evaluation is available in Annex II.

The present evaluation Staff Working Document accompanies a Commission report on the final evaluation of the AAL2 Programme and will feed into the wider debate on how to maximise the benefits of Information and Communications Technology (ICT)/digital solutions for active and healthy ageing through research and deployment coordination, and cooperation with public health and digital health initiatives.

3. 2.WHAT WAS THE EXPECTED OUTCOME OF THE INTERVENTION?

2.1 Description of the intervention and its objectives

The combined challenge of demographic change and digital transformation

By 2070, over 30% of Europeans are projected to be 65 years of age or over, compared to just over 20% in 2019⁵. The share of people aged 80 years and older is expected to double from 5.8% to 13.2% over the same period. Within the EU, the impact of ageing varies widely between regions, as well as between urban and rural areas, and gains in healthy life expectancy are unevenly distributed⁶. At the same time there are social and economic opportunities associated with the concept of healthy ageing. Older citizens are increasingly shaping economies and the demand for services and products in the ‘silver economy’ is increasing rapidly⁷. There is now a substantial number of technologies and digital solutions to support people at any stage in their lives, to support ageing in place, enhance the home environment and support social connectedness⁸. In using these technologies to their full potential, there is potential for economic growth and social development in demographic

⁵ European Commission (2021). [The 2021 Ageing Report. Economic & Budgetary Projects for the EU Member States \(2019-2070\)](#)

⁶ World Health Organization (2021). [Decade of Healthy Ageing. Baseline Report](#)

⁷ European Commission, Directorate-General for Communications Networks, Content and Technology, Worthington, H., Simmonds, P., Farla, K., et al., *The silver economy : final report*, Publications Office, 2018, <https://data.europa.eu/doi/10.2759/685036>

⁸ SAPEA, Science Advice for Policy by European Academies (2019). Transforming the Future of Ageing. Berlin: SAPEA. Available at: <https://sapea.info/wp-content/uploads/tfa-report.pdf>, pp. 190-196

change that can balance some of its impacts on health and (social) care systems and improve the quality of life of the ageing population and their carers.

Demographic ageing is set to bring about an imminent and significant change in society and the economy for which the EU is not yet well prepared. Spiralling ageing-related costs for governments are being compounded by missed or underexploited opportunities on the growing markets for ICT-enabled products and services for active and healthy ageing.

There are **three main problems** with these markets. The first is low availability of innovative ICT products and services, caused by EU market fragmentation. Secondly, there is fragmentation of R&D and innovation at European level, with high participation barriers for Small and Medium-sized Enterprises (SMEs). The third problem stems from limited adoption of innovation, related to a lack of evidence building and sharing.

The EU added value is evident given these problems: fragmentation of the market and of research efforts, a lack of focus on trans-EU deployment and a lack of a shared European vision on the markets for ICT/digital products and services to assist active and healthy ageing and living.

It is in this context that the Commission provides its support through funding and actions that promote policy cooperation, research and exchange of good practice but also stimulates cooperation structures such as public-public partnerships which aim to develop closer synergies, increase coordination and avoid unnecessary duplication with Union, international, national and regional research programmes.

Programme Strategy, objectives and intervention logic

The AAL2 Programme, focussing on digital innovation in active and healthy ageing, was initiated with the overarching goal to help address the ageing challenge and turn it into an opportunity for Europe. Following **strategic programme objectives** were agreed among the founding countries:

- Enhance the availability of ICT-based products and services for active and healthy ageing, to improve the quality of life of older people and their carers, and help increase the sustainability of care systems.
- Create/maintain a critical mass of trans-European applied research, development and innovation for ICT-based products and services for ageing well, in particular involving SMEs and users.
- Leverage/maintain private investments and improve conditions for industrial exploitation by providing a coherent framework for developing European approaches and solutions including common minimum standards that meet varying national and regional social preferences and regulatory aspects.

The 2013 **impact assessment** set-out the following **operational objectives** [OO] to meet the above AAL2 strategic programme objectives:

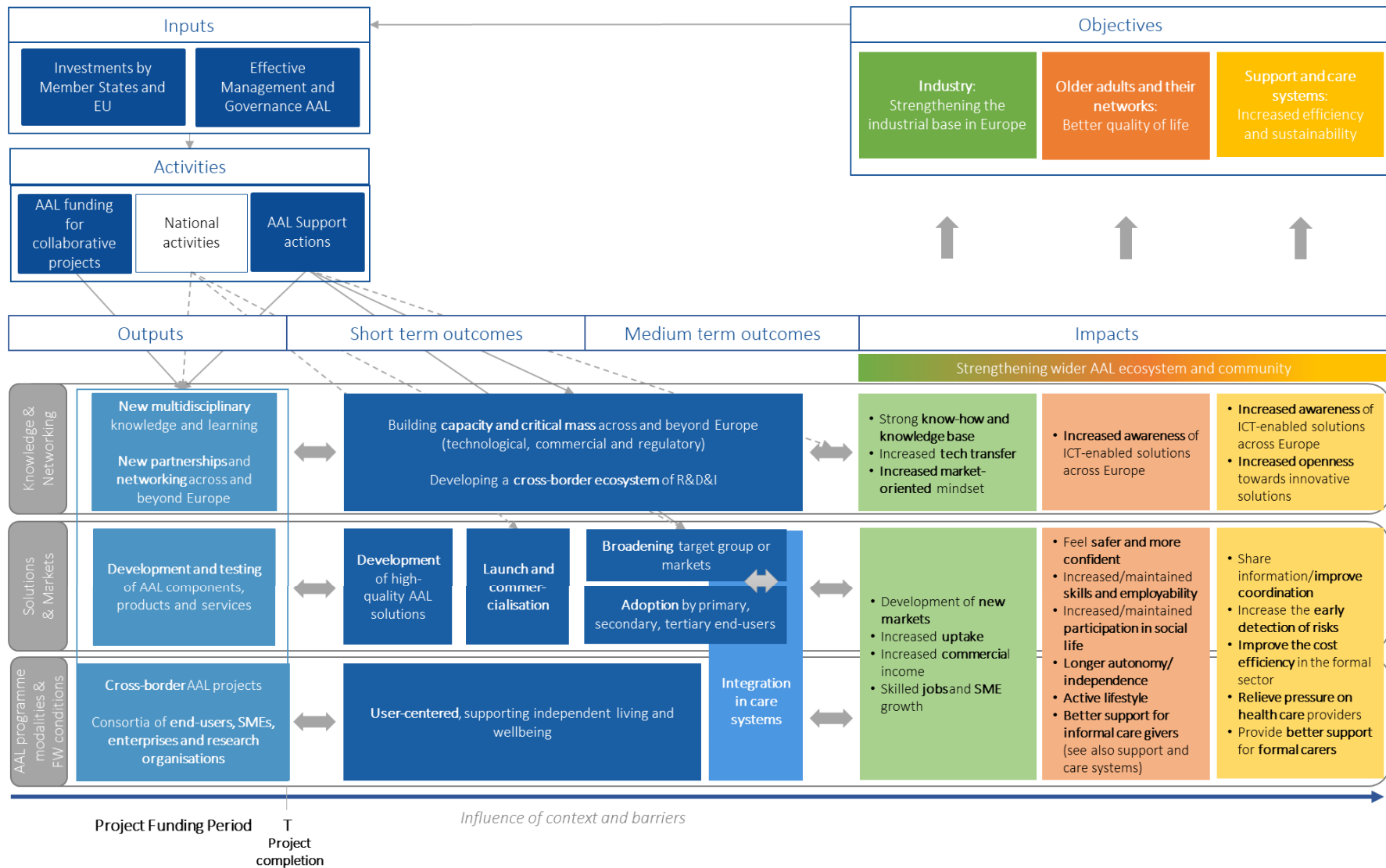
- Further improve operational excellence and accountability for the Programme [OO1];
- Reduce time to market, by facilitating user and industry-driven research [OO2];

- Facilitate participation for all actors in the innovation chain, in particular SME, end-users and service providers, from the start and in all stages of the projects (e.g. through iterative and design and development approaches) [OO3];
- To increase the number of Participating States and to leverage private and national co-financing [OO4];
- To ensure complementarity with national programmes and EU level initiatives such as Horizon 2020, and align with the Strategic Implementation Plan of the European Innovation Partnership on Active and Healthy Ageing (EIP AHA) [OO5].

The intervention logic underpinning the implementation of the AAL2 Programme was updated as part of the 2021 Programme Impact Assessment⁹ and is represented in Figure 1. It sets out the relationships between the objectives, inputs and activities, and defines outputs, short- and medium-term outcomes and impacts.

⁹ Third edition of the AAL Programme impact assessment, Analytical report final, IDEA Consult, December 2021 <http://www.aal-europe.eu/wp-content/uploads/2022/02/IA-AAL-Final-summary-report-FINAL.pdf>

Figure 1: Updated AAL2 intervention logic and evaluation scope (source: third edition of the AAL Programme Impact Assessment, IDEA Consult, 2021, p. 6)



Programme governance and management

The AAL2 Programme is set-up and governed by the Participating States via a dedicated implementation structure, the Ambient Assisted Living Association (AALA) set-up as an international not-for-profit association under Belgian law (AISBL). The highest decision-making body of the AALA is the General Assembly (GA), which comprises representatives from all Participating States who enjoy the same voting rights. Members of the GA are typically national funding authorities (ministries and/or funding agencies). If more than one agency for the same country is present in the GA, a representative (bearing the country vote) must be designated. In total 21 countries participated throughout the AAL2 Programme's lifecycle, 16 EU Member States, 3 Horizon 2020 associated countries and 2 third countries^{10,11}. The Commission has observer role in the GA. Nevertheless, the Commission is a party to the delegation agreement with the AALA as regards the EU's financial contribution and has a veto right over the Annual Work Programme (AWP) approval.

Programme activities

The AAL2 Programme addresses applied research and innovation (R&I) in the areas of active and healthy ageing systems and applications with a short to medium term time horizon and a time-to-market of 2-3 years. The Programme is designed to complement longer-term research in ICT for Healthy and Active Ageing under Horizon 2020, which focuses on advanced R&I with a time-to-market of 5-10 years.

The main activity of the AAL2 Programme is launching **annual transnational project calls**, selecting and supporting promising transnational R&I projects that contribute to the fulfilment of the Programme's objectives. Participation in calls is generally possible for applicants from Participating States providing financial contributions to AAL2 calls. Actual participation in AAL2 projects depends on the application success in the selection process based on excellence criteria and the national contributions available to fund participants from the respective country.

In addition to call management and implementation, the AAL2 Programme established a **portfolio of Support Actions** (Figure 11: AAL Support Actions portfolio in Annex VI) aimed at strengthening the capacity of Programme beneficiaries and the wider AAL community. Support Actions were largely targeted at specific shared needs and responded to the challenges experienced by beneficiaries in implementing their projects, especially difficulties in bringing their products or services to the market and community building support.

¹⁰ Austria, Belgium (2 regions), Canada, Cyprus, Denmark, Hungary, Ireland, Israel, Italy (3 regions), Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain (3 regions), Sweden, Switzerland, Taiwan and the United Kingdom.

¹¹ The full list of countries and corresponding agencies who participated at some point in AAL2 can be found in Annex VI.

2.2 Point(s) of comparison

The 2014 decision stipulates that AAL2 should build on the achievements of the previous programme, the Ambient Assisted Living Joint Programme (AAL1) and address its shortcomings by encouraging stronger user participation in projects and by a more agile programme implementation.

Additionally, the AAL2 Interim Evaluation, carried out in 2017, covering the first three years of operations of AAL2 (2014-16) resulted in some recommendations for the second term of the AAL2 Programme [RIE]:

- Enhance the strategic leadership of the AALA through appropriate appointments [R1IE];
- Further intensify support for business planning and market research to strengthen commercialisation and build engagement with the community supporting active and healthy ageing [R2IE];
- Provide focused support on key framework conditions shaping the development of the market for innovative solutions, support the integration of solutions in existing systems and encourage testing on the demand-side [R3IE];
- Intensify communication and outreach to increase the visibility of the Programme [R4IE];
- Secure the sustainability of the Programme for the remainder of the term, including through stabilising the number of Participating States [R5IE].

The present evaluation includes an assessment of the progress made in this respect and is following up on the points of comparison used for the interim-evaluation, broadened with additional indicators where relevant. A more detailed discussion and underpinning evidence is provided in Section 4 of this document where the different evaluation criteria are analysed.

The present evaluation was informed by the above intervention logic (Figure 1) and focuses primarily on the outputs, and outcomes levels (blue-coloured parts of the framework). Data on the long-term impacts (green, red and orange parts in Figure 1) of the AAL2 Programme are still emerging. For a definitive assessment of impacts it is too early because they include both direct and indirect macro-level results enabled by the Programme and depend on the research projects' outcomes and the uptake of the results ideally 2-3 years after project implementation. It should be recalled that AAL2 projects deliver prototypes of digital solutions which typically cannot immediately be brought to market without further product-development efforts. This combined with the fact that a significant share of the AAL2 research projects are still ongoing explains why it is at this moment in time too early to make an overall assessment of the long-term (+5 years after project completion) Programme impacts of AAL2.

3. 3.HOW HAS THE SITUATION EVOLVED OVER THE EVALUATION PERIOD?

3.1 Current state of play

The AAL2 Programme built on the structures and activities developed during AAL1. It has continued and expanded its portfolio of activities. An **Interim Evaluation** of AAL2,

conducted in 2017, concluded that the Programme successfully transitioned from AAL1 to AAL2. It made good progress towards its objectives and remained highly relevant because of the growing importance of demographic change in Europe. In 2017 the Central Management Unit (CMU) went through a major restructuring after the Interim Evaluation, to align with the increasingly complexity of the Partnership and its stronger innovation drive requiring different managing and coordinating skills and competences. The Programme further expanded its activities, especially with regard to the Support Action portfolio and increased Programme visibility. The final transnational project call was launched in December 2020 and from mid-2021, the AAL2 Programme is gradually being phased out. Activities will stop completely once ongoing projects¹² have ended. The Programme is expected to close by end 2027 at the latest. While the Final Evaluation is aimed to assess the achievements of the Programme towards its objectives during AAL2 only, in a few instances it is necessary to include information from the predecessor programme, AAL1 that ran from 2008-2013 under Framework Programme 7.

Between 2014 and 2021 the Programme issued eight calls for proposals. It should be noted that the 2021 call was not initially planned but made possible following a decision by the GA. However, due to national budget limitations, not all countries were able to contribute financially to this additional call. The calls were organised according to priority themes:

- 2014: Care for the future
- 2015: Living actively and independently at home
- 2016: Living well with dementia
- 2017: Integrated packages of solutions
- 2018: Smart solutions for ageing well
- 2019: Sustainable smart solutions for ageing well
- 2020: Healthy ageing with support of digital solutions
- 2021: Advancing inclusive health and care solutions for ageing well in the new decade

Over time, the portfolio of Support Actions increasingly moved to addressing the needs of the wider community involved in active and assisted living, for example, through addressing regulatory issues of relevance to the market, as well as issues concerning the ethical implication of novel solutions and concerns about ensuring data privacy. At a later stage, the Programme also developed and implemented Support Actions aimed at strengthening the wider ecosystem required for integrating novel technologies in existing health and care system in a successfully and sustainably way.

During the second period of implementation of the AAL2 Programme a number of changes and improvements were introduced to further increase the relevance, efficiency and effectiveness of the Programme, optimise the organisation of calls and support successful applicants in bringing their solution to the market. They include, for example:

¹² Status 151 AAL2 projects end 2021: 78 finished; 59 ongoing; end date last projects expected mid-2025.

- The introduction of impact assessment and key performance indicators (KPIs) to help the Programme focus on delivering outcomes and impacts;
- The expansion of call themes from narrower topics to broader challenges to give more space to innovative proposals;
- The possibility to apply for Small Collaborative Projects (SCPs) to explore new approaches, or target new business sectors or stakeholder groups through smaller scale projects of shorter duration;
- Following the onset of the COVID-19 pandemic, the application window for calls was extended to 8 months to allow applicants, especially user organisations, more time to prepare;
- The reconfiguration criteria were further optimised for projects in which applicants needed to be replaced because of insufficient budget available at national level. The maximum share of uncovered budget (in terms of person months) for a proposed project to be eligible for reconfiguration was increased from 20% to 25%;
- Programme beneficiaries were required to develop a business plan for their project and were given feedback on it at their mid-term review (MTR);
- Support Actions portfolio was widened, synergies and closer collaboration with other programmes were realised.

3.2 Key Programme statistics

During the period 2014-21 the AAL2 Programme funded **151 projects** with a total of **705 beneficiaries** and **1078 participations**¹³. The total **contracted project funding volume** amounts to **EUR 186.1 million public funding**, of which EUR 98.3 million (52.8%) were national grants, the remaining EUR 87.8 million (47.2%) were European Commission (EC) contributions¹⁴. The sum of beneficiaries' **own (i.e. private) contributions** amounted to **EUR 77.7 million**. The average contracted budget per project (including own contributions) is EUR 1.7 million; the average contracted public funding volume per project is EUR 1.2 million. Next to co-funding projects, EC contributions also cover administrative costs for a total of EUR 6.5 million and Support Actions for EUR 6.4 million over the period 2014 to 2021.

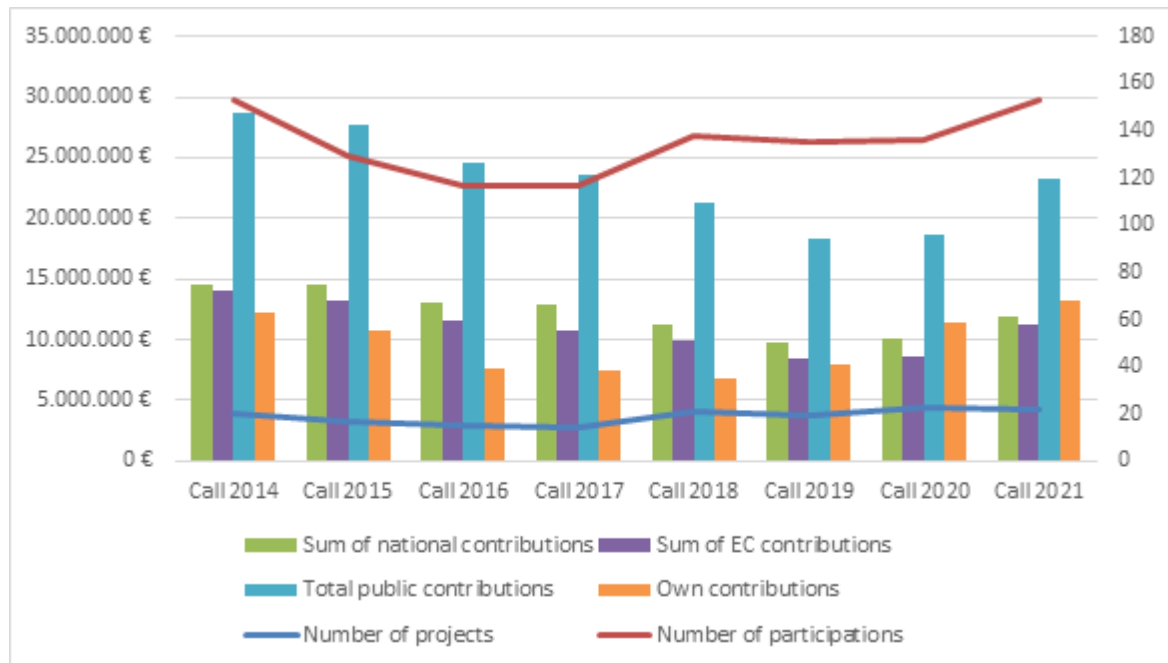
Figure 2 gives an overview of six key funding indicators throughout the AAL2 Programme cycle. The total number of individual participations in projects peaked at the beginning and at the end (153 participations) of the AAL2 Programme, steadily decreasing until 2017, where a low of 117 participations was reached. However, a similar trend, with a delay of 2 years, can be observed for the different funding contribution levels, which decreased from EUR 40.9

¹³ The term 'participations' refers to the sum of all beneficiaries in all projects, including multiple counting of beneficiaries that participated several times.

¹⁴ The Partnership's financing is based on the principle of a 50-50 share between Union contributions and national contributions on Programme level. Contributions to the administrative costs of the Programme shall not exceed 6% of the Union financial contribution (Decision No 554/2014/EU, Article 2). This explains why the Union contributions to project funding are slightly lower than the national project contributions.

million in 2014 to EUR 26.3 million in 2019, but then rose again to EUR 36.8 million in 2021. In these data, it is not obvious whether the COVID-19 pandemic has had an impact on project participations and funding in 2020 and 2021.

Figure 2: Projects, individual project participations and funding, per year



More Programme data can be found in Annex VI ‘Set-up of the Programme and Additional Programme Statistics’.

3. 4.EVALUATION FINDINGS (ANALYTICAL PART)

4.1 To what extent was the intervention successful and why?

4.1.1 Effectiveness

The effectiveness of the Programme is presented in terms of the progress made towards each of the three strategic Programme objectives and assessed against the linked operational objectives.

Objective 1: Enhance the availability of ICT based products and services for active and healthy ageing, to improve the quality of life for older people and their carers, and help increase the sustainability of care systems

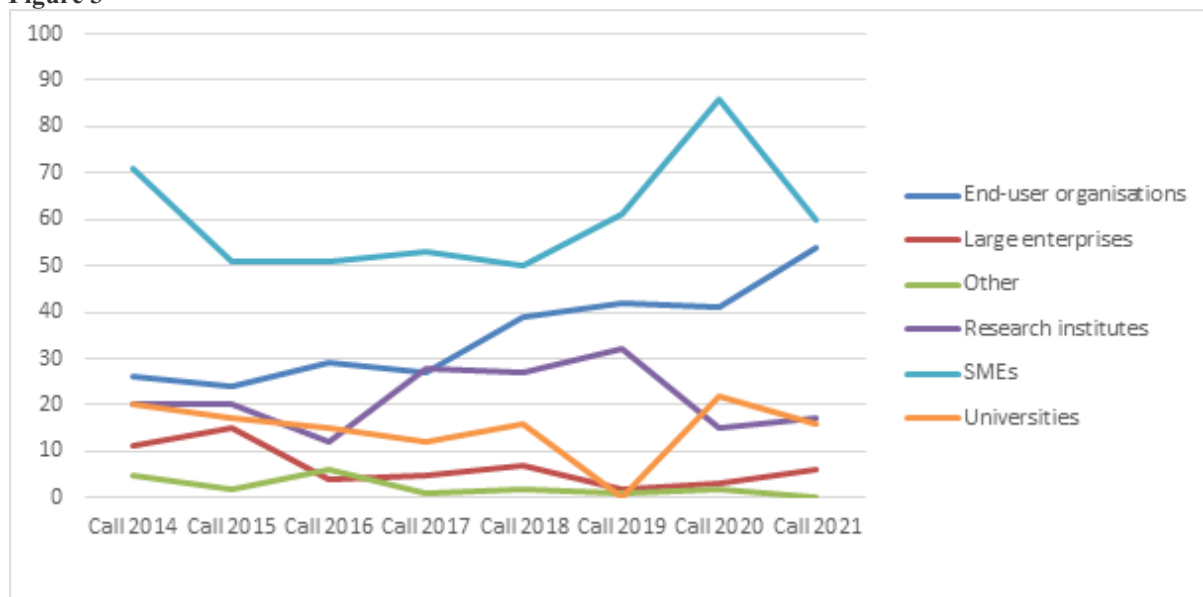
The assessment of progress towards Objective 1 starts by examining how the involvement of end-users in funded projects has developed during AAL2 and presents information on output, outcome and impact, including the development and deployment of solutions and their impact on the quality of life of the older people, their families and carers.

User involvement and profile

User participation and user-centric development is essential to design innovative ICT-enabled solutions to the needs of the elderly people, carers and intermediaries, including the settings in which the technology is to be used. The AAL2 Interim Evaluation assessed the degree of involvement of end-users in funded projects. It found that 18% of project participants had been users, a figure that had remained unchanged compared to AAL1. The category ‘users or end-user organisations’ covers three specific classifications of users – primary, secondary and tertiary – although the three classes are not broken down (see Annex VI for definitions). The Interim Evaluation stated that, while users are well represented, their engagement was still deficient in terms of (1) breadth, i.e. stakeholders not been representative of all types of users and (2) many of them are proxy users rather than end-users themselves (e.g. associations, charities).

The involvement of user or end-user organisations in new projects increased significantly since the publication of the Interim Evaluation (see Figure 3). Their number more than doubled from 26 in 2017 to 54 in 2021. Over the whole Programme period of AAL2, end-user organisations constituted approximately one quarter of all project participants (see Annex VI).

Figure 3



: Number of project participations per type of organisation, per year

End-user organisations can be further disaggregated by type of organisation (Figure 4). Around 20.8% of all end-user organisations are foundations (including charities). About 15% are care organisations such as care facilities and care services. User-involvement clearly has a central role in the development of solutions for active and healthy ageing and is a key modality of the Programme aiming at improving the adoption and relevance of the developed solutions.

We conclude that the share of end-user organisations' participations increased significantly (from 18% in AAL1 to 26% in AAL2) and that the breath of types of end-users diversified and included more actors from the health and (social) care demand-side over the second half of the AAL2 programming period. [linked to OO3 and R3IE]

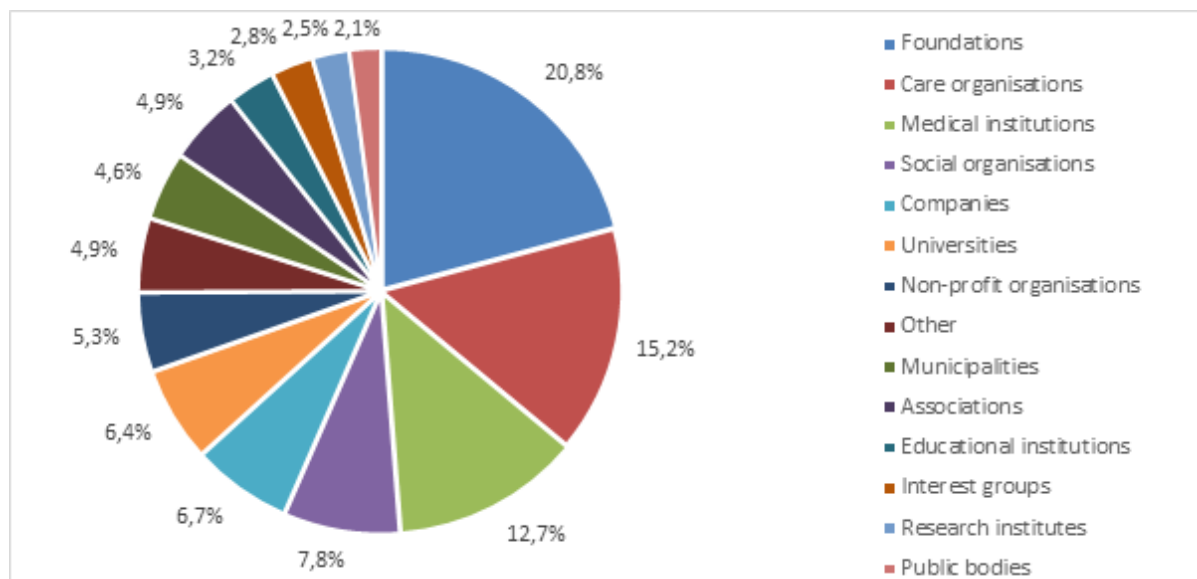


Figure 4: Shares of different types of end-user organisations

Development and deployment of solutions

The 8 calls for transnational projects and resulting 151 funded projects directly contribute to developing and enhancing the availability of ICT based products and services for active and healthy ageing. Measuring the actual deployment and impact of such solutions is more difficult as already explained earlier.

The 2021 Programme Impact Study stated that 23 of the 38¹⁵ (61%) AAL2 projects brought at least one solution or component to the market. Considering that most solutions require 2-3 years to mature after the end of a project before they can be launched, this is a positive result. Numbers provided by the 2019 and 2020 Programme Impact studies¹⁶ also demonstrate a steep increase in solutions in the market, with 24 of 85 projects launching a solution or component¹⁷. The 2013 Commission Impact Assessment proposed a target of 25% of all running projects that should reach the market by 2020. The above collected evidence exceeds this target and shows that AAL2 developed solutions have increased chances for

¹⁵ 2021 Programme Impact Study reports findings from a survey of AAL2 beneficiaries linked to projects that had been completed by December 2019. Total of 38 projects have been included.

¹⁶ Learnings from the 2019 and 2020 AAL Impact Assessment, September 2020.

¹⁷ These numbers include projects supported under AAL1.

market success with shorter time to market cycles although it is still too early to generalise this conclusion.

Once the products and services are on the market, they are adopted by end-users. The number of users could thus be seen as an indicator for deployment and use of the AAL solutions. The revenues generated by the launched products/services represent an increased commercial income for the industrial base in Europe and give an indication on the impact of the programme at the level of markets and solutions. The 2021 Programme Impact Study presents information about the revenue generated by digital solutions developed in the projects, the number of individual end-users using the solution after one year and the number of paying customers. The average total revenue for projects with positive revenue was EUR 243 875 per year for products or services, and about EUR 50 000 for components¹⁸. These figures were slightly higher for projects included in the survey presented in the Programme Impact Study reports published in 2019 and 2020. However, these two surveys largely related to projects that had been launched under AAL1 and their solutions had more time to mature. The average total number of individual end-users per solution in one year was 1 855, an increase of around 30% compared to the numbers reported in the 2019 and 2020 Programme Impact Studies. The average total number of paying customers per solution in one year was 771, compared to approximately 1 000 paying customers using solutions developed by the projects included in the survey in the two previous years (including AAL1 solutions which had more time to mature). Reaching a market of paying customers can be seen as an important condition to increased availability of digital products and services (strategic objective 1), both on the side of industry as well as on the side of the users of the products and services (older adults, informal carers, care organisations, insurers, public authorities).

It is not useful to compare these outcomes against the outcomes of other public-public partnerships, given that the AAL2 Programme is special in addressing an immature, fragmented and highly regulated market. However, compared with the internal benchmark of AAL1 (using the 2019 and 2020 Programme Impact Studies) numbers of solutions commercialised across (and beyond) Europe, numbers and type of customers and end-users reached per year show a positive trend and tend to outperform the 25% target set in the 2013 Impact Assessment. [OO2 & RI3]

Impact on quality of life of older people and carers

The 2021 Programme Impact Study also presents initial findings on the impact of the developed and deployed solutions on the quality of life of older people. Only beneficiaries participating in the 38 finished projects with a full product or service already launched on the market were asked to respond to this question. Of these respondents: 9/13 agree that AAL solutions helped older people to live independently in their own homes; 8/13 think they

¹⁸ Numbers are based on 12 respondents who replied to that question (only respondents who actually launched a solution on the market could answer this question).

helped them remain in better mental condition; and 6/12 agree that they help them succeed in independently interacting with their network. Conversely, 5/12 thought that AAL solutions helped the older people to feel less dependent on others for daily tasks and 4/12 continue participating in common activities with their network.

The 2021 Programme Impact Study also asked beneficiaries about the impact on carers. Of the 13 respondents, the following numbers agree with the following statements: 9/13: care visits are more relevant thanks to automated risk detection tools; 8/13: carers have more time for qualitative interaction with the older adult; 8/13: carers feel the effect of being less burdened; 7/13: carers in the formal sector feel they save at least 5% of costs overall thanks to better planning and coordination; 5/12: carers spend at least 15 minutes less on looking for information or coordinating with other carers.

Given the sample size of completed research projects (n=38/151) at the time of the survey and consequently the lower number of respondents to this question (n=13), it is difficult to provide a judgement. Nevertheless, these first findings, confirm the potential of the developed AAL2 digital solutions in support of active and assisted living.

The 2021 Programme Impact Study also provides insight into the impact of AAL2 on raising awareness for solutions in the field of active and assisted living. 85% of formal carers and 91% of older people responding to the survey agree with the statement that the AAL Programme helped raise awareness of the needs of older people and the opportunities associated with solutions for healthy living and well-being among formal carers as well as older people and their networks.

In the interviews of the supporting study, representatives of user organisations explained that the organisation and (local) financing of care as well as expectations from older people and their families strongly shape the demand-side of the innovation market. Circumstances vary substantially between and within countries. In some countries, end-users are largely expected to be individual older people or families while in other countries formal care organisations play a more substantial role in shaping the demand-side. This implies that supporting solutions might be paid out of pocket by individuals while in another contexts they are purchased by care organisations. The demand-side may also involve public funders and is shaped by different degrees of regulation. These national differences in health and care ‘market models’ explain to some extent the difficulties faced by innovators during market launch and afterwards when trying to keep their product or service on the market.

However, interviewees also stated that expectations and thus markets have been changing and are continuously evolving, with technology becoming more familiar and acceptable, and most people wanting to live at home as long as possible. This was also noted in countries that had a tradition of older people moving into residential care, which was understood as not being sustainable in the future. Stakeholders and beneficiaries also noted that while there are still obstacles to marketisation due to the structure of the market, there is significant potential in developing and promoting innovative solutions for active and healthy living. [linked to R3IE]

It is clear from these assessments that outcomes and impacts are yet difficult to measure. The consecutive Programme impact studies have made progress in providing better data, but available data are still limited in scope and detail. However, the limited data currently available shows an upward trend in AAL solutions brought to market and demonstrate some impact on end-users while qualitative findings suggest that the market conditions are evolving and that the full potential for impact has not yet been fully realised.

Objective 2: Create/maintain a critical mass of trans-European applied research, development and innovation for ICT-based products and services for ageing well, in particular involving SMEs and users

To measure progress made towards Objective 2, the Interim Evaluation examined KPIs such as the number of countries involved in AAL2, national commitments made, budget utilisation, the number of organisations participating in each call and the number of projects funded. This approach was also used in the Final Evaluation of AAL1, which had referred to ‘the presence of a sufficient number of actors, sufficient cooperation, and sufficient total R&D and innovation activity to initiate a self-sustaining, productive and viable research environment’¹⁹.

The AAL2 Interim Evaluation concluded that ‘indicators for these elements were mostly moving in an undesirable direction’ and that ‘both large countries and key innovators have been lost from the Programme’, ‘too few projects start[ed] from validated user insights or had identified customers for the solutions proposed’²⁰.

The assessment of progress towards Objective 2 builds on the above KPIs updated and complemented with other output and outcome-related indicators. [linked to OO1 & R5IE]

Number of proposals and projects

As shown in Annex VI (Figure 14: Number of proposals and individual applicants per year) the first years of AAL2 showed a more than 50% decline of proposals from 97 in 2014 to 42 in 2017, the period assessed by the Interim Evaluation. From 2017, the number of proposals increased again to 106 in 2020, outperforming the 2014 figure. In 2021 (limited additional call), the number of proposals was 85. Therefore, the negative trend during the first half of AAL2 did not continue during the second half of the Programme and was reversed.

The same observation applies to the number of projects starting during AAL2 (Annex VI Figure 13: Number of projects per application area, per year). Between 2014 and 2017 the

¹⁹ European Commission, Directorate-General for the Information Society and Media, *Final evaluation of the Ambient Assisted Living Joint Programme*, Publications Office, 2014, <https://data.europa.eu/doi/10.2759/361>, p11.

²⁰ European Commission, Directorate-General for Communications Networks, Content and Technology, Uusikylä, P., Mollenkopf, H., Ciesla, A., et al., *Interim evaluation of the active & assisted living programme : final report*, Publications Office, 2017, <https://data.europa.eu/doi/10.2759/785852>, pp. 15-16.

number of newly started projects decreased from 20 to 14 per year. Yet in 2018 this number increased to 21 and remained at a high level until the end of the Programme. The decrease observed during the Interim Evaluation was thus reversed in the second half of AAL2 [linked to OO1 and R5IE].

Proposals and projects per type of organisation

Objective 2 makes explicit reference to SMEs and end-users as priority target groups of the Programme. Over the entire period of AAL2, 42.1% of applicants were SMEs and 24.9% were end-users (Figure 18: Share of individual participations in proposals by type of organisation)²¹. While the number of SMEs among applicants fell from approximately 330 in 2014 to 152 in 2017, the number recovered and stabilised at about 250 towards the end of AAL2. There was a strong increase in the number of end-user organisations among applicants since 2017, which rose from 69 in 2017 to 226 in 2021 (Figure 3: Number of project participations per type of organisation, per year).

In terms of participation of SMEs and end-user organisations in projects, the respective shares were 40.3% for SMEs and 26.3% for end-user organisations (see Annex VI Figure 19: Share of individual participations in projects by type of organisation). In summary, it can be stated that the priority target groups of the Programme, SME's and end-users were well represented in the number of applications received, as well as in the projects selected for funding. [linked to OO3, OO4 & R5IE]

Geographical distribution of applicants and project participants

The geographical spread of individual participations in proposals was uneven, with some countries participating significantly more strongly in proposals than others. These can be grouped as follows:

- Group 1 – Countries with ≥ 500 individual participations in proposals:
 - Netherlands (731), Switzerland (599), Austria (591)
- Group 2 – Countries with 201-500 individual participations in proposals:
 - Romania (414), Italy (396), Portugal (282)
- Group 3 – Countries with 101-200 individual participations in proposals:
 - Belgium (200), Spain (192), Slovenia (169), Poland (143), Hungary (135), Denmark (134), Norway (122), Cyprus (116)
- Group 4 – Countries with ≤ 100 individual participations in proposals:
 - UK (72), Luxembourg (40), Canada (39), Sweden (17), Ireland (12), Taiwan (9), Israel (6)

With few exceptions (notably Spain and the UK, with the latter not participating in calls after 2015), the difference in the distribution of applications between countries did not change substantially during AAL2.

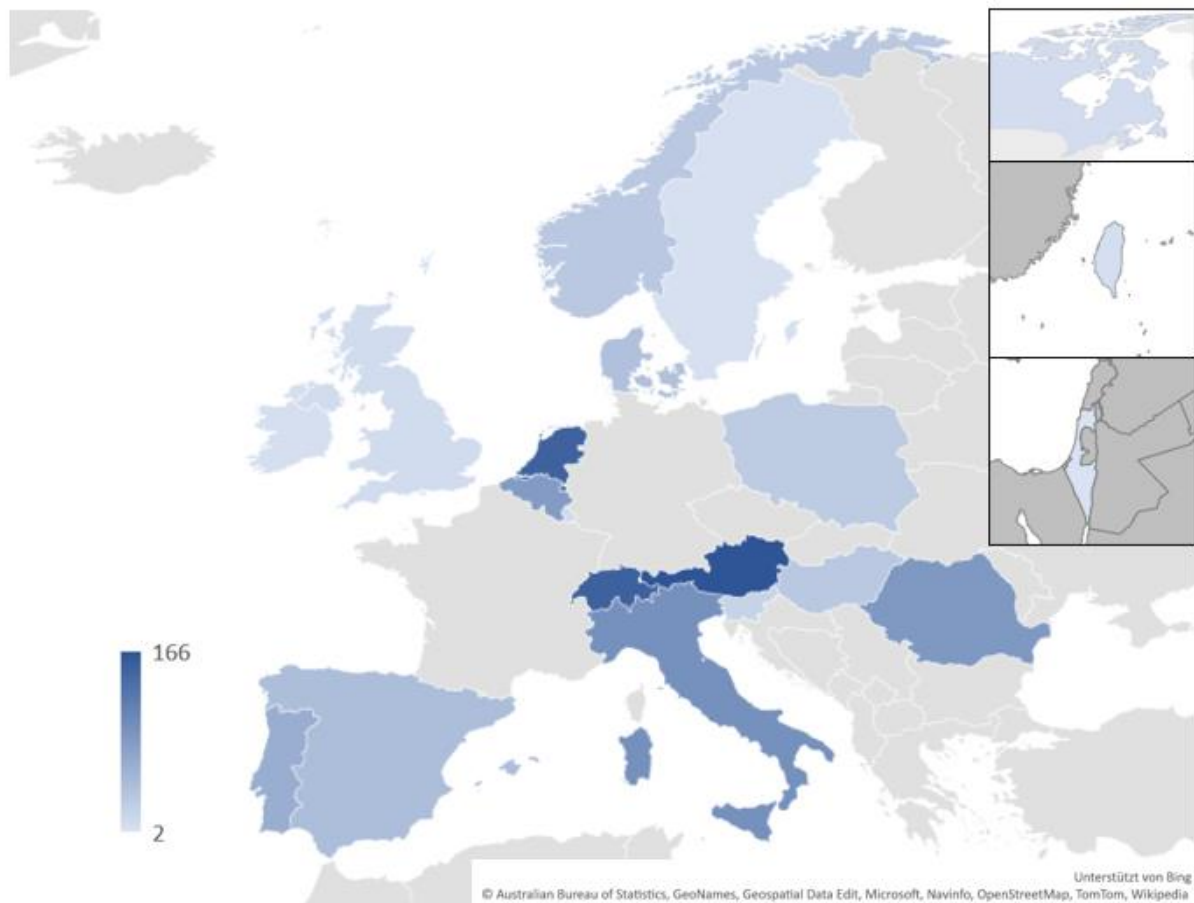
²¹ Numbers include multiple counting of organisations that participated in several applications.

Individual participations in projects show a similar pattern of distribution between countries:

- Group 1 – Countries with ≥ 150 individual project participations:
 - Austria (166), Switzerland (152), Netherlands (166)
- Group 2 – Countries with 51-100 individual project participations:
 - Italy (97), Romania (88), Belgium (84), Portugal (63)
- Group 3 – Countries with 11-50 individual project participations:
 - Spain (45), Denmark (42), Hungary (33), Norway (33), Poland (30), Cyprus (22), Slovenia (21), Luxembourg (11)
- Group 4 – Countries with ≤ 10 individual project participations:
 - United Kingdom (10), Taiwan (10), Ireland (7), Sweden (6), Canada (5), Israel (2)

The map below (Figure 5: Geographical distribution of project participations per country) illustrates the distribution of project participations across the participating countries.

Figure 5: Geographical distribution of project participations per country



Source: Combination of AAL administrative monitoring data with Bing Maps.

Key learnings identified by participants

Whereas the above statistics mostly relate to the activities supported by the AAL2 Programme, an analysis of effectiveness also needs to consider the outputs and outcomes of

those activities. A key indicator in this respect are the learnings that have been identified by participants. The 2021 Programme Impact Study provides relevant data on four dimensions of learning relating to: (1) user needs; (2) operational knowledge; (3) markets; (4) investors. For each of these dimensions, a survey asked beneficiaries whether they felt their knowledge had increased (a) as a result of participating in AAL2 (targeting all 91 respondents) and (b) as a result of participating in the AAL2Business Support Action (with 33 survey participants responding to this question).

With regard to (1) user needs, 82% of 91 respondents indicated that their knowledge had increased as a result of collaborating with users and adapting to user needs; 47% agreed that this had resulted in an increase in user acceptance. Out of 33 respondents who participated in the AAL2Business Support Action, 76% confirmed that their ability to identify user needs and develop user profiles had improved to a moderate or great extent as a result of participating in AAL2Business. 73% stated that participating in AAL2Business had improved their ability to involve users in developing a product or service to a moderate or great extent.

In terms of (2) operational knowledge, 66% of 91 respondents agreed that their knowledge had increased on technological aspects. Moreover, 32% and 30% acquired new knowledge on aspects of marketing and regulatory aspects, respectively. While gains in knowledge on marketing and regulation were lower than on technological aspects, these were not central to the calls. However, 42% of 33 respondents stated that participating in Support Actions improved their knowledge on intellectual property rights to a moderate extent.

In relation to knowledge gained on (3), the market for active and assisted living through regular calls: 35% of 91 respondents confirmed that they had gained new insights into the consumer market relevant to AAL solutions; 30% agreed they had learned about the adaptation to geographically different markets; 28% agreed that participation had strengthened their ability to assess commercial viability; 14% agreed they had gained credibility and improved their ability to provide evidence to convince investors. Strengthening the marketisation skills of beneficiaries had been identified as a key area for support and thus became the focus of the AAL2Business Support Action. This has had an effect: of the 33 respondents who had participated in the Support Action, 61% agreed that their participation had improved their ability to develop a commercialisation strategy; 75% agreed that participating had improved their ability to develop a business model. [linked to R2IE, R3IE and OO2]

Network creation

Another indicator for measuring progress towards Objective 2 is the degree to which AAL2 has helped to develop networks among relevant actors in the Participating States. The survey conducted for the 2021 Programme Impact Study shows that for the 91 respondents, 68% stated that they benefited from the collaboration networks established during the project. Of the 56 who had participated in the yearly organised networking event, the AAL Forum, 89% stated that the Forum helped them to broaden their network in relevant fields.

In interviews as part of the supporting study, beneficiaries noted that participating in networks and having the opportunity to find new partners for collaboration was a key reason for their participation in AAL2. They specifically welcomed the opportunity to collaborate across borders and within European networks and highlighted the benefits from those collaborations for inspiration, learning and improvement. This was confirmed by National Contact Points (NCPs) and stakeholders who also suggested that these opportunities may have been especially relevant for beneficiaries from smaller countries, or from countries where the market for AAL2 was still underdeveloped compared with other national/regional markets and systems. Opportunities for collaboration were also fostered by the introduction of SCPs as a new instrument that allowed beneficiaries to explore new ideas at a small scale over a shorter period of time within a participatory, collaborative framework. [linked to OO1, OO3, R4IE]

Objective 3: Leverage/maintain private investments and improve industrial conditions for industrial exploitation by providing a coherent framework for developing European approaches and solutions including common minimum standards that meet varying national and regional social preferences and regulatory aspects

The market for active and healthy ageing solutions is fragmented, highly regulated and facing a complex demand-side. There are many obstacles to new solutions being launched and performing successfully on the market. In a similar vein as the Interim Evaluation, the assessment of progress towards Objective 3 focuses on support for business planning and commercialisation, the involvement of large industry partners, and the level of private investment leveraged by the Programme. The Interim Evaluation suggested that more involvement of large industry partners is needed to scale-up solutions and create significant impact on both the market and end-users. It also concluded that many beneficiaries were insufficiently prepared for marketisation, that business planning was insufficient and that the AAL2 as a whole lacked an integrating framework for individual project results.

Support to business planning and commercialisation

Previous evaluations emphasised the importance of improving participants' business orientation, market knowledge and commercialisation skills, particularly for strengthening their capacity to develop a business plan, find investors and bring solutions to the market. Already during AAL1 the programme invested in developing a portfolio of Support Actions, next to the project calls. This comprehensive programme-driven approach was strengthened and expanded significantly during AAL2, with a dedicated set of Support Actions specifically addressing the above mentioned needs. Especially AAL2Business and the Market Observatory actions provided project beneficiaries with the skills and knowledge required to bring their product or service to the market. This was seconded by improvements to the project call procedures, requiring applicants to include a business strategy as part of their proposals.

Interviews and the available data from the beneficiary survey demonstrate that the Support Actions were highly valued by participants and contributed to feeling more confident and

becoming more successful in navigating the market, engaging with the demand-side, exploring and integrating user expectations, and developing business and commercialisation strategies. Beneficiaries, NCPs and other stakeholders interviewed were highly appreciative of the Support Actions, which were rated as exemplary and good practices to follow.

This finding is further confirmed in the 2021 Programme Impact Study; 61% of respondents who participated in Support Actions (n=33) stated that their participation had improved their ability to develop a commercialisation strategy and 75% agreed that the Support Actions had improved their ability to develop a business model.

Beneficiaries' own contributions and private investments into the Programme

Over the entire AAL2 Programme period, own funding contributed by participants in AAL projects amounted to EUR 77.7 million, which equalled 41.7% of the combined EC and national funding (sum of public programme contributions). Hence, this sum can be seen as the amount of private investments being directly triggered by the Programme.

The study supporting this final evaluation also assessed private follow-up investments attracted by the Programme beneficiaries by using the platform Dealroom²². Dealroom provides data on investments into companies by various business organisations such as banks, investors or business angels. While it is not possible to link this investment data directly to specific AAL2 projects, they may provide interesting contextual information. From a dataset that contained the URLs (Uniform Resource Locators) of 703 AAL2 participants²³, we could match 205 participants (approximately 30%) to data entries included in the Dealroom database. Dealroom identified investments being made in 35 out of those 205 organisations (approximately 17%) between 2014 and 2020. In total, these investments amounted to around EUR 374 million²⁴, with one single company, MindMaze²⁵ from Lausanne, receiving EUR 307.7 million. Ten more companies received investments of more than EUR 1 million. The remaining 24 companies stayed below the EUR 1 million threshold.

The 2020 edition of the Programme Impact Study looked at the investor events that had been organised by the AALA in 2017 and 2018. In total, these five events attracted 27 investors and an equal amount of companies, pitching 26 different solutions (with some of the solutions being pitched multiple times, bringing the total number of pitches to 37). While no direct investment being secured as a result of the event could be identified, the authors of the study supporting the final evaluation passed the list of pitching companies through the

²² www.dealroom.co

²³ The dataset was generated using information available on the AAL Programme website (<http://www.aal-europe.eu/>)

²⁴ Due to some exchange rate variation between USD and EUR, this is to be seen as an approximate figure.

²⁵ MindMaze is a Swiss based unicorn founded in 2012 working on brain technology. They raised Series A1 and A2 funding and are active in several countries such as United States, UK, Germany and China.

Pitchbook²⁶ database. Out of the list of 27, Pitchbook contained records on 13 of these. Out of those 13, the database had information on investments, mergers and acquisitions for 7 companies, with mostly undisclosed amounts. However, the authors noted that none of the investments made, suggest a direct link with the AAL investors' events.

Involvement of large industry

Although large enterprises were not defined as a core target group to be addressed by the Programme, the Interim Evaluation noted that the development of a new market requires not only agile and innovative SMEs with a strong focus on the user perspective, but also large industry partners that can contribute the expertise and market power to launch and establish new solutions in the market. When looking at Figure 15: Share of project participations by type of organisation, per year, Annex VI), it becomes clear that the involvement of large industry players remained relatively low and did not change over the entire duration of the Programme.

Overall, the AAL2 Programme has achieved positive results at the output and outcome levels within its remit. While it supports beneficiaries in overcoming market barriers, it is not in a position to remove these barriers entirely. Data on long-term / macro-level impacts are limited mostly as it is still too early to conduct a full impact analysis of the Programme. A key issue that needs to be taken into account when considering the effectiveness of AAL2 is that it operates in a fragmented and still immature market and that many of the barriers to successful deployment and commercialisation of digital solutions for active and healthy ageing lie outside the scope of the Programme. Compared with AAL1 (as an internal benchmark) there was a positive trend in the numbers of solutions launched, and individual end-users reached. A beneficiary survey and stakeholder interviews confirmed the potential for positive impacts of solutions on the quality of life of older people and their carers.

A strong feature of AAL2 is its portfolio of Support Actions that have proved to be an effective accompanying measure to the annual calls for transnational projects. By supporting beneficiaries to learn from each other, understand the market, and develop business models and commercialisation strategies, Support Actions provide high additional value to the Programme and towards achieving its objectives. [linked OO3, OO4, R2IE & R3IE]

4.1.2 Efficiency

The efficient implementation of the Programme, includes the governance structure of AAL2, the performance of the CMU, the administrative burden at Programme and project level, and its budget utilisation. In addition the flexibility of the Partnership towards adjusting its objectives, activities and resources to changing circumstances has been assessed.

Implementation and governance structure

²⁶ The Pitchbook data provides data similar to those offered by Dealroom, referred to further above.

The voluntary nature of the Article 185 initiative and the possibility of having varying levels of commitment (in terms of financial contributions and/or content-related engagement) was seen as helpful to kick-start the Partnership. It was a way of getting the initiative started in a field that was still largely underdeveloped and to which countries gave uneven priority. By building an ‘alliance of early movers’ the Programme was tapping into the energy and enthusiasm of those dedicated to promoting digital solutions for ageing well. The fact that countries were not obliged to commit a specific financial contribution or other types of engagement for the entire Programme duration, lowered the threshold for them to join. However, this in-built flexibility proved to be challenging in the longer term. The decrease in funding commitments which occurred during the first half of the AAL2 Programme (Annex IV, Table 5: Budget committed per country, per year) challenged the financial sustainability of the Programme at mid-term²⁷.

Interviewees indicated that the possibility and/or willingness of NCPs to engage in developing a joint strategic agenda varied. A few funding agencies may have seen their role primarily in following due process in managing project funding, with less attention given to providing strategic direction. Some of them noted that they had tried to align national strategy, but they had not been able to convince their political masters to support AAL as strongly as they wished. This meant that the CMU had to play a strong role in driving strategy development while encouraging NCPs to engage in the process.

It has also been noted that the EC has a different role in the governance structure of the Programme compared to the Participating States. While the Programme is largely governed by the Participating States who form the main decision-making body, it is also a Partnership between the Participating States and the EC as per Decision No 554/2014/EU. The EC contributes 50% of public funding, yet in the GA the EC has observer status only. The only effective mechanism for the EC to influence the strategic direction of AAL2 is during the approval process of the AWP. Some interviewees therefore suggested that the governance structure is weighed against the EC.

However, in general, the assessment of NCPs and other stakeholders about the functioning of the governance structure of the Programme was positive. A modus operandi was found that appeared to work well for the various decision-making processes in place and almost all NCPs were satisfied with the strategic direction and processes of engagement during AAL2 Programme execution. [linked OO1 & R1IE].

Performance of the CMU

The findings of the study supporting the final evaluation confirm the assessment of the Interim Evaluation that the CMU operates effectively and at a high level of competence. Based on the insights from interviews and desk research, the concerns about the lack of strategic capacity expressed in the Interim Evaluation, is not confirmed. The CMU went through a major restructuring after the Interim Evaluation, to align with the increasingly

²⁷ While this risk was detected in the Interim Evaluation, it did not materialise.

complexity of the Partnership and its stronger innovation drive requiring different managing and coordinating skills and competences. The vast majority of individuals interviewed lauded the leadership, commitment and energy of the CMU and saw its performance as a key strength of AAL2. NCPs and other stakeholders provided highly positive feedback with respect to the performance and role of the CMU in developing the Programme, especially during the second phase of AAL2 after a change in leadership. It was also stated that the level of dedication to its mission distinguishes AAL2 from the other R&D programmes. This positive assessment was also reflected in the MTR satisfaction survey conducted by the AAL CMU in 2020²⁸.

The CMU implemented a number of changes to the management of the Programme as outlined in ‘Section 3.1 Current state of play’. These have improved its efficiency and focused the Programme on maximising the outputs, outcomes and impacts. Stakeholders described the management approach as proactive, flexible and inspirational and noted that this approach was specific to AAL2 and contrasted to their experience of other (Horizon 2020) programmes. In this respect, the Partnership seems to have enjoyed an unusual degree of managerial freedom that was used to its advantage and appreciated by its members. [linked to 001 & R1IE]

Administrative burden

The public consultation on the Article 185 initiatives conducted in 2017²⁹ concluded that the administrative burden on applicants was higher compared to projects that were funded by one country only. Yet it also concluded that projects funded by Article 185 partnerships were less administratively burdensome than Horizon 2020 projects insofar as applicants were already familiar with national funding rules. Beneficiaries interviewed noted that the use of national funding rules simplified the process for them, which was especially relevant to SMEs, although national funding rules and procedures varied significantly in complexity. More critically, interviewees stated that they needed to report separately to the EC and their respective NCP, often in two different formats, which was consistently felt to be an added burden.

Financial matching and budget utilisation

As an Article 185 initiative, the AAL Programme combines national project (co-)funding with a centrally organised selection process based on three core criteria. This constellation requires a complicated matching process to make the best use of the available funding and minimise the risk of underspending. Irrespective of its excellence, an application can only be funded if all Participating States involved as national funders still have sufficient budget

²⁸ AALA (2020). Projects Mid-Term Review Satisfaction Survey.

²⁹ European Commission, Directorate-General for Research and Innovation, Participation of the EU in research and development programmes undertaken by several Member States based on Article 185 of the TFEU, Publications Office, 2017, <https://data.europa.eu/doi/10.2777/749071>

available. If not, applicants whose country has run out of national budget, can be replaced by other participants from countries that still have budget available³⁰.

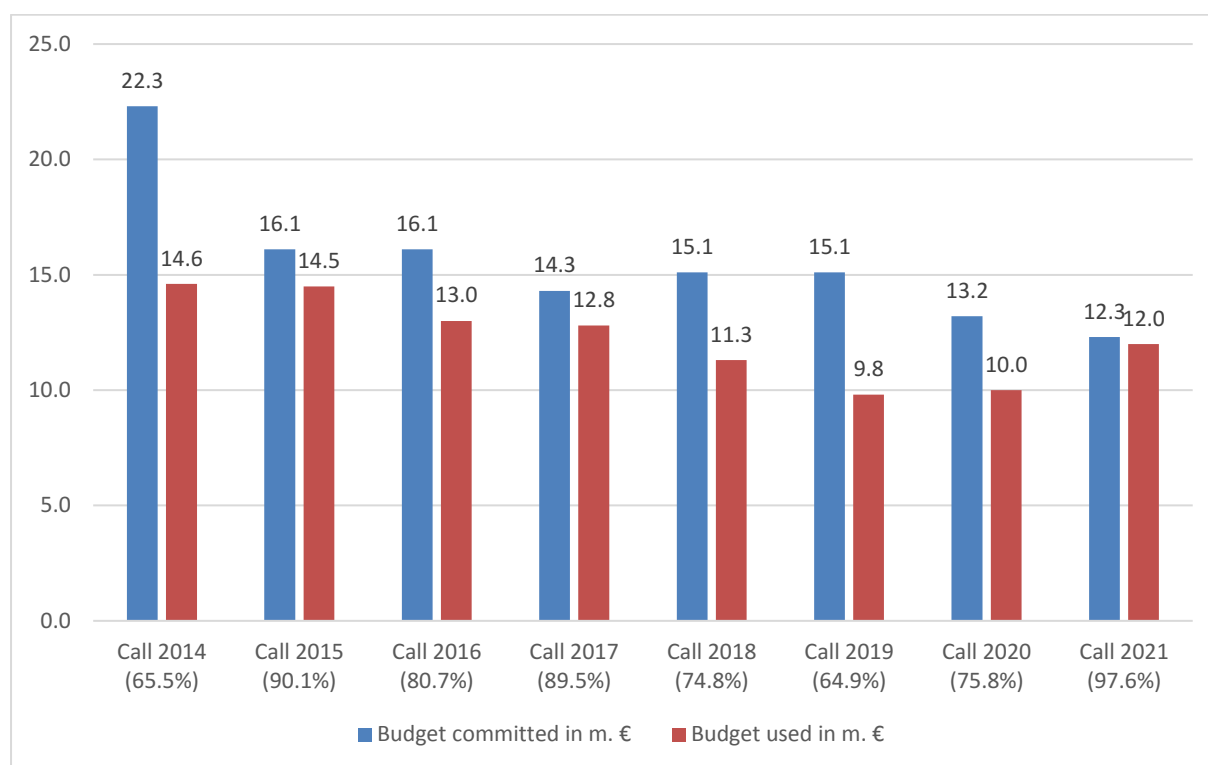
This matching process was introduced to address problems in budget utilisation resulting from the combination of applying national funding rules together with a central evaluation process. All projects invited for reconfiguration during AAL2 (47 in total) succeeded in reconfiguring their proposals and signed grant agreements, with the exception of one project in Call 2020. Though, the matching process requires substantial additional administration and thus introduces new challenges. In the interviews, NCPs and beneficiaries reported difficulties in reconfiguring projects as this required them to redistribute tasks within the consortium or identify new beneficiaries that could execute specific work packages. Interviewees agreed that the process was manageable but created additional challenges. The MTR satisfaction survey confirmed that the majority of beneficiaries involved in project reconfiguration were satisfied with the outcome.

In total, the budget utilisation under AAL2, defined as the ratio between total budget committed by Participating States and annual budget contracted over the Programme period was 79.4%³¹. Budget utilisation varied between years, with the utilisation rate being as low as 65.1% in 2019 and as high as 97.2% in the last call in 2021 (see Figure 6).

³⁰ Subject to the condition that not more than 20% (25% from 2018) needs to be replaced.

³¹ This figure relates to the national contributions only. If EC contribution is included in the calculation, the rate is 81.9%.

Figure 6: Call Budget (in M€) committed VS budget used per year (national contributions only)

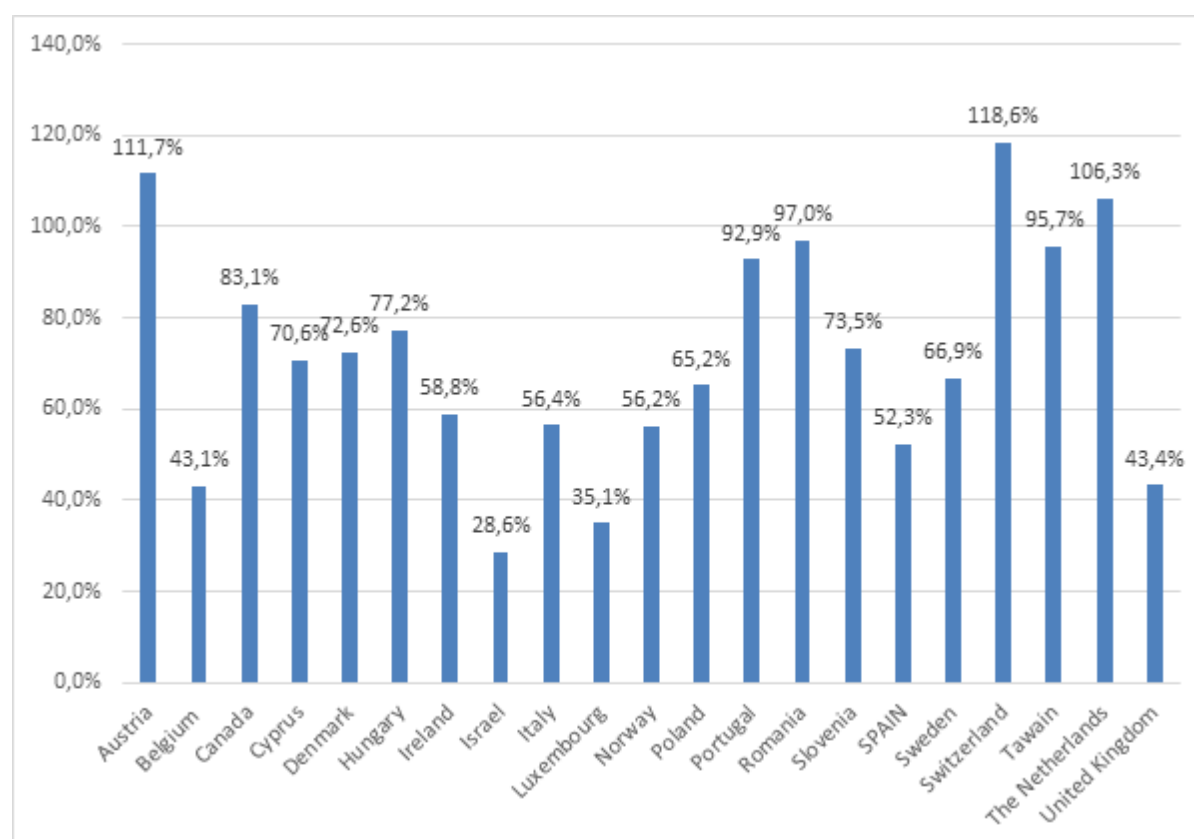


The variation of the project budget utilisation rate was even larger when comparing different countries (see Figure 7). While Switzerland, Austria and the Netherlands contracted more funding than originally committed, Israel, Luxembourg, Belgium and the UK contracted significantly less than 50% of what they had originally committed.

There are a number of reasons that can explain the under-utilisation of the committed budget. First, there was a lack of absorption capacity in some countries illustrated by a low number of proposals submitted and/or a low number of highly ranked proposals in those countries³². This led to 28.7% of the committed budget not being used. Second, some proposals could not be funded because at least one country had already depleted its committed budget. This accounted for 8.2% of the budget underspend. However, thanks to the possibility of reconfiguring projects and some national budgets being increased, an additional 18.8% of the originally committed budget could still be contracted. [linked to OO1, OO4 & R5IE]

³² This may be due to a variety of different factors, including a low number of relevant actors in the respective country or a lack of awareness of the Programme.

Figure 7: Budget committed VS budget used per country



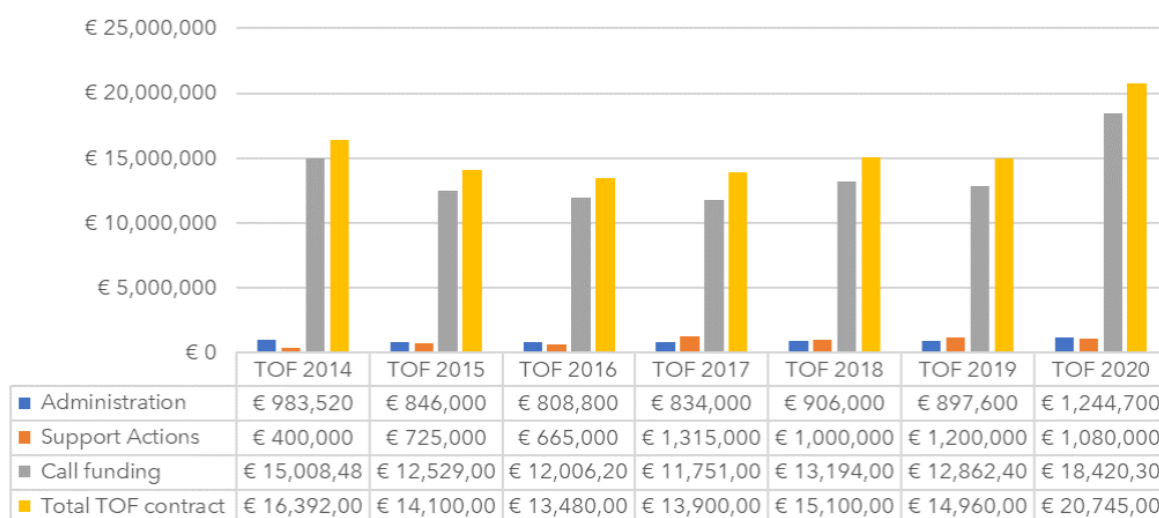
Cost-effectiveness and administrative overhead

Figure 8 shows that the overall EU AAL2 Programme commitment amounts to EUR 108,6 million, which is significantly lower than the initial, maximum estimated Union’s financial contribution of EUR 175 million at set-up of the Programme. Article 2 of legal base (Decision No 554/2014/EU) stipulates that the annual financial commitment of the Union to the AAL2 Programme shall not exceed the annual financial commitment to the AAL2 Programme by Participating States. The decreasing national funding commitments was an element of attention raised at the AAL2 MTR. It resulted partly from fewer countries being involved then initially planned and partly due to decreasing contributions from those that remain. In addition, some countries that have signed participation agreements don’t always actively contributing to yearly transnational calls e.g. only 16 countries contributed to call 2016 (see also Annex VI Table 5). However, this negative trend was reversed in 2018 with increasing national funding commitments peaking at almost EUR 21 million commitments for the final Programme year 2020.

The administrative costs for the Programme are fixed at maximum 6% of the EC contribution. In absolute terms, this means that between EUR 0.8 million and EUR 1.2 million was used per year on administrative overhead resulting in EUR 6.5 million in total between 2014 and 2021. While it is difficult to compare the percentage of administrative

overhead of AAL2 to that of other Article 185 partnerships such as ECDTP2 or Eurostars³³, for example, it is important to note that in absolute terms, it is significantly smaller than those of other Article 185 partnership programmes. In view of the strong performance of the CMU during the final years of AAL2, this means that the budget has been used highly efficiently³⁴.

Figure 8: Annual estimated EC contribution and breakdown between types of costs (TOF = Transfer of Funds).



Spending on Support Actions under AAL2 was also very moderate, constituting 5.9% of the total EC contributions over this period. Support Actions were considered effective in supporting the Programme objectives and cost-effective in terms of spending. [linked to OO1].

Flexibility in adjusting objectives, activities and resources to changing market and policy needs

There are numerous examples of adjustments and improvements made to the AAL2 Programme that demonstrate the flexible and forward-thinking approach taken when dealing with challenges and responding to stakeholder feedback. In terms of its strategic direction, the CMU and AALA have positioned themselves as a ‘learning organisation’ giving emphasis to monitoring, assessing and improving the implementation of the Programme. To this end, three Programme impact studies were commissioned that made a strong and convincing effort to inform improvements to AAL2. As part of this evidence-informed learning process, the definition of the objectives and the intervention logic were sharpened

³³ This is due, among others, to the fact that other Article 185 partnerships have a high proportion of in-kind contributions and that the ratio between EC and Participating States contributions is different.

³⁴ In the case of EDCTP2 and Eurostars, admin costs amounted to EUR 29.9 million and EUR 10.6 million, respectively, for the period 2014-2020.

and changes were made to many dimensions of the Programme. Interviewed stakeholders consistently stated that the CMU was highly adept at listening to and using feedback from stakeholders and the wider community to improve the Programme.

This agility was also demonstrated during the COVID-19 pandemic with adjustments made to call procedures to encourage participation and the AAL Forum moving to an online format.

In terms of responsiveness to policy needs, the challenges faced by AAL2 and by innovators in the more widely field of active and assisted living, were explored by introducing an Ecosystem Support Action. This approach was developed by involving a large number of stakeholders and by systematically exploring the many factors that determine the success of novel solutions in the market.

While the Programme has not been able to influence its market environment to an extent that would bring about significant improvements in the swift uptake of novel solutions, the challenge of integrating innovations into existing, complex and highly variable health and care systems is now much better understood. This way, AAL2 has laid some of the groundwork for future action and initiatives that aim to address demographic change and to improve the sustainability of European health and care systems.

4.1.3 Coherence

Coherence with Horizon 2020 and other EU and national policies (programme level)

AAL2 continues to occupy a unique position within the European policy landscape. It is well aligned with general EU policy objectives and acts as a bridge between research and market-oriented programmes. Its three objectives are well aligned with the overall objective of Horizon 2020 to ‘contribute to building a society and an economy based on knowledge and innovation across the Union by leveraging additional R&D&I funding’³⁵. This applies in particular to Societal Challenge 1 on ‘Health, demographic change and well-being’, which includes ‘active ageing and self-managing disease’ as one of its broad lines of activities. Under this Societal Challenge, a number of calls and topics were launched to support the development of technologies for active and healthy ageing. Most notably, Work Programme 2018-2020 included a call on ‘Digital transformation in Health and Care’, consisting of 21 individual topics and a funding volume of approximately EUR 100 million in each of the three years.

While there is a thematic correspondence between AAL2 and some of the activities funded under Horizon 2020 Societal Challenge 1, a detailed analysis shows that the respective calls and topics are complementary and synergetic to AAL2. By way of example, the topic ‘SC1

³⁵ Proposal for a Regulation of the European Parliament and the Council establishing Horizon 2020 – The Framework Programme for Research and Innovation (2014-2020) of 30 November 2011, COM(2011) 809 final, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0809:FIN:en:PDF>

HCC-08-2020: Scaling up innovation for active and healthy ageing’ makes explicit reference to AAL2 and encourages the involvement of AAL2 partners³⁶.

Also more generally, AAL2 is distinct from most research funded under Horizon 2020 due to its specific focus on innovation and SMEs, and its market orientation³⁷. This complementarity was already raised by the public consultation on Article 185 initiatives conducted in 2017, in which 64% of AAL2 respondents consider the Programme to be coherent with other EU initiatives³⁸.

The collaboration and communication with other programmes, such as the EIP AHA and Joint Programming Initiative ‘More Years Better Lives’ (JPI MYBL), have been deepened during the second phase of AAL2, implementing the recommendations of the Interim Evaluation. The joint organisation of the one-week-long AAL Forum Online Event in 2020, with almost 1.000 international participants, is a tangible result of this collaboration³⁹. The Programme has also extended its outreach and collaboration with other EU institutions. These have been mainly in an advisory role, such as supporting informal working groups within the EU Parliament and deepening ties with different Commission Directorates-General (DGs).

To further strengthen its external coherence and policy alignment, the Programme has expanded its advocacy role within Europe and vis-à-vis Participating States in raising awareness for the potential of innovative solutions and the need for transformative change and has contributed to setting the agenda in this policy field.

At national level, the AAL2 Programme demonstrated complementarity in those participating countries, in which AAL2 provided the only opportunity to engage in this particular field (as noted by NCPs during interviews). The possibility to contribute to Programme activities in line with national capacities and needs, enabled the Participating States to work together constructively. This potentially helped those countries in which markets were small to shape the Programme according to their needs (here referred to as ‘smaller’ countries). NPCs interviewed for this evaluation noted that the AAL2 Programme was particularly valued by a number of smaller countries. For those countries, this was an opportunity to establish and develop the agenda for active and healthy ageing both domestically and within the EU.

³⁶ Horizon 2020, Work Programme 2018-2020, part ‘8. Health, demographic change and wellbeing’.

³⁷ While the European Innovation Council pilot also focuses on innovation and market orientation, it very much focuses on breakthrough, disruptive innovations, which is not the key objective of AAL2.

³⁸ European Commission, Directorate-General for Research and Innovation, Participation of the EU in research and development programmes undertaken by several Member States based on Article 185 of the TFEU, Publications Office, 2017, <https://data.europa.eu/doi/10.2777/749071>, p. 10.

³⁹ <http://www.aal-europe.eu/community-building/aal-forum-intro/>

Finally, it should be stated that the AAL2 strategy is aligned with the United Nations (UN) Sustainable Development Goal 3 to ‘ensure healthy lives and promote well-being for all at all ages’⁴⁰.

Coherence with Horizon 2020 (participant level)

To assess the degree of involvement of AAL2 participants in Horizon 2020 the study supporting the final evaluation analysed the Horizon 2020 centrality score of 699 AAL2 participants⁴¹. A centrality score refers to the degree of involvement in Horizon 2020 (based on number of participations), compared to all other Horizon 2020 participants. It is measured in percentiles. As can be seen in Table 1, 5.6% of AAL2 participants were among the top 1% Horizon 2020 participants during the same period of time. This number is particularly high for universities and higher education institutes with 22% of them belonging in the top 1% of Horizon 2020 participants. To a lesser degree, this applies to research institutes, with 8% of them falling into this category. In contrast, among private companies and other types of organisations, this share is 0%; for public bodies, it is 1.1%. 56.2% of AAL2 participants have never participated in Horizon 2020, with that number being as high as 62.8% for private companies and 82.8% for public bodies.

These centrality scores show that AAL2 manages to bring together top research performing bodies in Europe with private companies (mostly SMEs) and end-user organisations that do not typically participate in Horizon 2020. This also means that there is a strong complementarity between the AAL2 Programme and other activities under Horizon 2020. [linked to OO5 & R2IE].

⁴⁰ United Nations (2015). Transforming our World: The 2030 Agenda for Sustainable Development. Online available at: <https://sdgs.un.org/sites/default/files/publications/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>.

⁴¹ Using organisation name and website, the study matched the AAL2 participant data to CORDA Participant Identification Code numbers. A small number of records had to be removed because of data issues. The statistic therefore refers to 699 out of 705 AAL2 participants.

Table 1: H2020 centrality score of AAL2 participants

Centrality within H2020	All AAL2 participants		Universities & higher education institutes		Private companies (including SMEs and large enterprises)		Public bodies		Research institutes		Other	
	Number	Share within category of AAL participants	Number	Share within category of AAL participants	Number	Share within category of AAL participants	Number	Share within category of AAL participants	Number	Share within category of AAL participants	Number	Share within category of AAL participants
Top 1 %	39	5.6 %	31	22.0 %	0	0.0 %	1	1.1 %	7	8.0 %	0	0.0 %
Top 10 %	127	18.2 %	64	45.4 %	24	8.2 %	4	4.3 %	29	33.3 %	6	7.1 %
Top 50 %	235	33.6 %	84	59.6 %	72	24.6 %	13	14.0 %	45	51.7 %	21	24.7 %
Bottom 50 %	71	10.2 %	8	5.7 %	35	11.9 %	3	3.2 %	11	12.6 %	14	16.5 %
No H2020 participation so far	393	56.2 %	49	34.8 %	184	62.8 %	77	82.8 %	31	35.6 %	50	58.8 %
Total	699		141		293		93		87		85	

Internal Programme coherence

In terms of internal coherence, the AAL2 has made good progress in clarifying and conceptually developing the role of each of the Programme components and creating synergies at many levels. This relates to the refinement of the Programme calls as well as the Support Actions that are well integrated and designed to support the three objectives of the Programme. Support Actions were developed to run alongside the R&I projects funded by the Programme. They were based on insights gained from analysis and progress monitoring that helped identify challenges and opportunities. Some Support Actions were already present in AAL1 and were intensified during AAL2, while others have been added in response to analysis and changing policy needs (Figure 11: AAL Support Actions portfolio in Annex VI).

Support Actions expanded from primarily offering opportunities for networking and exchange to developing targeted interventions aimed at specific skill and knowledge gaps. Stakeholders interviewed for this evaluation noted that there was significant learning involved in developing and adjusting Support Actions, as well as a willingness to listen to beneficiaries and expert advice, and to embrace novel ideas for improvement. Opportunities were used to apply the management tools of the project funding to identify challenges and offer tailored support, for example by using projects' MTRs to identify weaknesses in the projects' approaches to marketisation and provide targeted coaching to develop project beneficiaries' business skills (AAL2Business).

AAL2 also broadened the target audience from providing support to individual project teams to serving and developing the wider AAL community. Project funding was most successful in relation to achieving the first two objectives associated with bringing about innovative solutions and creating a critical mass of R&D&I. However, the third objective of shaping the market conditions for such innovations was correctly understood as being much harder to achieve and thus benefiting from specific support. During AAL2 this increasingly involved activities aimed at shaping the market, by building and engaging with its demand-side (e.g. by involving regions as purchasers and providers of health and care). It included promoting an understanding of the need for a wider approach to ecosystem building for European societies to capitalise on the potential of innovation in this sector.

On the basis of the above, it can be stated that the programme design of AAL2 has created synergies between its various activities and between individual projects.

4.1.4 Transparency and openness

Overall, AAL2 has demonstrated that it is open to new members participating in the AAL2 Programme and to new project beneficiaries. AAL2 has developed transparent processes for consulting stakeholders and identifying priorities in each of its core activities. This includes the preparation of calls for proposals, the development of Support Actions and the organisation of networking and outreach activities. The decentralised management of the

Partnership, more specifically using national funding rules and providing NCPs, also contributes to the accessibility for SMEs. [linked to OO3 & R5IE].

Openness towards new participants and mechanism to involve new members and a broader set of stakeholders

The underlying Article 185 initiative procedures allow countries to join and leave the Programme at any time. Throughout the AAL2 Programme lifecycle interested countries could apply to become member of the AALA. The AAL2 Partnership provides the possibility for flexible membership ('variable geometry') for those countries interested and also allows for varying degrees of financial commitment to the Partnership. In addition, participation is possible for non-EU countries and for countries not associated with Horizon 2020⁴². Currently Canada and Taiwan participate in AAL2 as non-EU Member States, while Switzerland, Norway and Israel were associated countries during Horizon 2020.

As a specific feature, AAL2 also engages with a number of subnational regions. During AAL2, four regions participated as members and provided NCPs: Friuli-Venezia Giulia in Italy, Basque Country in Spain, as well as Flanders and Brussels in Belgium. The possibility for regions to become a member and be more actively involved in steering the Programme was seen as an important step by NCPs and other stakeholders interviewed. Interviewees acknowledged that in many countries, regions are responsible for governing health and care systems, and involving them was therefore key to unlock the potential of novel solutions for active and healthy ageing.

AAL2 reached out to engage a broad set of stakeholders across Europe. The calls under AAL2 are open to international project teams with participants from science and research organisations, companies and end-user organisations. Participation in AAL2 projects is generally possible for applicants from Participating States providing financial contributions to AAL2 calls. Actual participation in AAL2 projects varied between participating countries depending on the application success in the selection process and the national financial contributions available to fund participants from the respective country.

Before the COVID-19 pandemic, the annual AAL Forum was held at different locations across Europe to allow for regional spread and invite participation from a broad range of stakeholders (not limited to AAL2 beneficiaries). Also, the challenge prize as another Support Action was open to all entries in the field and not limited to Programme beneficiaries. There were also increasing efforts to provide services to the wider AAL community including the development of guidelines and regulatory information.

Processes for consulting stakeholders and identifying priorities

National stakeholders are consistently consulted as members of the AALA. GA meetings provide the opportunity to all Participating States to participate in key decisions and put

⁴² Non-EU and non H2020 associated countries are not eligible for EU co-funding and participate with national contributions only.

forward their opinions, priorities and concerns. The funding authorities serving as NCPs are represented in the GA. As these institutions are in close contact with the project participants and other stakeholders in their country, they can bring in the perspectives and needs from different national backgrounds. Decision-making in the GA follows a democratic approach ('one country – one vote') so that all participating countries are involved in the setting of priorities for the AAL2 Programme.

This particularly concerns the selection of the thematic priorities for the yearly calls which are developed in a working group drafting the AWP. This working group is open to all interested members. Stakeholders interviewed mentioned that in practice the opportunities to engage in the setting of priorities were taken up by the different participating countries to varying degrees, also depending on the individual financial and staff capacities.

Accessibility for the enterprise sector and SMEs

The AAL2 Programme is accessible for different types of stakeholders across Europe. The calls under AAL2 target cross-sector international project teams. Data on the types of participants in AAL2 projects show that about 45% of participants are from the enterprise sector. The share of SMEs among the participants of AAL2 projects between 2014 and 2021 was 35.7%. This high level of participation of enterprises and especially SMEs is reconfirming the observation from the 2017 public consultation on Article 185 initiatives. It concluded that 82% of AAL2 respondents consider the Programme to be accessible for its target group, in particular SMEs⁴³.

In addition, the strong national embedding of the project funding, represented by a network of NCPs as main contact points for beneficiaries as well as the use of national funding rules, lowers the barriers to participation especially for SMEs as several interviewed stakeholders noted. Nevertheless, the market still poses considerable barriers for SMEs to scale up e.g. because of the often demanding requirements from end-users such as hospitals. Therefore, high participation of SMEs in AAL2 R&D projects does not yet directly translate into short-term economic success of SMEs in the market.

4.2 How did the EU intervention make a difference?

This approach has helped to develop a new narrative of demographic change that emphasised the opportunities associated with ageing societies. It has also increased awareness of the potential of ICT-based solutions to address the challenge of demographic change among many stakeholders, including national funding agencies, SMEs and end-user organisations.

The Programme proves to be particularly useful to beneficiaries from smaller and mid-sized countries and regions, as it enables them to engage with new partners and other stakeholders, and to access markets in other countries. In some countries, the Programme has inspired new

⁴³ European Commission, Directorate-General for Research and Innovation, *Participation of the EU in research and development programmes undertaken by several Member States based on Article 185 of the TFEU*, Publications Office, 2017, <https://data.europa.eu/doi/10.2777/749071>, p. 11.

initiatives, complementing and reinforcing the effects and achievements at national or regional level. [linked to OO5]

Additionality in terms of thematic focus and programme design

The AAL Programme is novel and unique in the sense that it brings together several topics and policy areas which had previously been separate, at least at EU level, including technology and digitalisation, demographic change, and the future of health and care systems. This approach has helped to develop a new narrative of demographic change that emphasised the opportunities associated with ageing societies. It has also increased awareness of the potential of ICT-based solutions to address the challenge of demographic change among many stakeholders, including national funding agencies, SMEs and end-user organisations.

By doing so, the Programme has also managed to bring together various stakeholder groups that previously had little or no interaction with each other. While some of these interactions have taken place at national level, there is considerable added value in supporting this interaction at transnational and subnational level. SMEs particularly benefited from opportunities to explore and understand markets other than their own domestic markets. More generally, the exchange of knowledge and good practices organised through the Programme was useful for all stakeholders involved.

In terms of its design, the Programme differs from Horizon 2020 not only because of its market-orientation, but also because of its integrated, holistic approach to developing the field of digital solutions for active and assisted living. The portfolio of Support Actions was a useful instrument for helping beneficiaries to go beyond the development of solutions and to launch their products or services on the market.

It is unlikely that the activities resulting from AAL2, especially the transnational interactions and collaborations, would have happened without the Programme being in place. In interviews, beneficiaries noted that a key reason for participating in the Programme was the possibility of collaboration with other beneficiaries across national borders and working within European networks. As yet, there is no alternative Programme with the same focus or scope that would allow international consortia to apply for funding for their collaboration in the field of solutions for active and healthy living. Therefore, in terms of its activities and corresponding outputs, the additionality of the Programme is high. In the survey of beneficiaries, reported in the 2021 Programme Impact Study, beneficiaries stated that 12 out of 13 AAL products or services and 7 out of 10 AAL components launched would not have been brought to the market or would have generated lower revenues without the support through the Programme.

Contribution towards international positioning and visibility

An additional partnership evaluation criteria was assessed in the study supporting the final evaluation namely the extent to which partnerships have helped foster the international positioning and visibility of the European R&I system, as well as the level of international cooperation at partnership and project level. Five non-EU countries (Switzerland, Norway,

Canada, Taiwan, Israel)⁴⁴ participate in the Programme, three of which are non-European, demonstrating the Programme's reputation beyond the boundaries of the EU. These five countries accounted for 27.8% of total national funding, led by Switzerland contributing 24.3% of national funding. The same countries also constituted about one fifth of the 1 077 participations in project calls (202 participations). Again, most of the non-EU participations were from Switzerland (152). Non-European countries in contrast contributed only 1.3% of national funding and 1.6% of participations (17 out of 1 077).

Among European non-EU partners, the Programme helped to raise awareness for the potential of assistive technologies. An impact study from Switzerland, published in 2019, concluded that the Programme has led to increased awareness of the potential, and challenges, of assistive technologies for older people among project beneficiaries and experts⁴⁵. Moreover, interviewees suggested that various regions were able to learn from the Programme and its international perspective. The Swiss impact study demonstrated that Switzerland's participation in the Programme has reached most of its objectives and contributed to improved cooperation and increased research activity in the field. This is reflected by the continuous commitment of Switzerland to the Programme: across all funding calls, Switzerland has the second highest number of project participations.

In terms of support to the international positioning and visibility of the European R&I system, AAL2 has made a significant contribution to strengthening the R&I collaboration with Switzerland and, to a lesser extent, with Norway and also with Canada, Taiwan and Israel.

Moreover, at international level, AAL2 was able to create a network of partnerships in the field of ICT-based solutions for active and healthy ageing, which included collaborations with the World Health Organization (unit on assistive technologies), the AGE Platform in Europe and the Canadian Institutes of Health Research. Interviews with non-European partners demonstrated that AAL2 was visible among the relevant stakeholders. A NCP noted that being involved in AAL2 increased the appetite among researchers to collaborate with European colleagues. Although there was only a limited number of participations from non-European countries, participants valued that the Programme allowed for learning from experiences in other countries. This aspect is especially relevant to countries in which the AAL sector is less developed. Moreover, as highlighted during one interview, as ageing will become increasingly problematic in regions other than Europe, the AAL2 Programme provided helpful experience and guidance for future national responses to the challenge of ageing societies outside Europe.

⁴⁴ The UK is counted as an EU Member State.

⁴⁵ SBFI (2019). Impact Studie zur Teilnahme der Schweiz am Active and Assisted Living AAL Programme. Bern, Staatssekretariat für Bildung, Forschung und Innovation.

4.3 Is the intervention still relevant?

The key challenges addressed by the AAL2 Programme, as described in Section 2.1 Description of the intervention and its objectives, remain valid and their relevance will further increase in the future. In 2021, 20.8% of the EU population was aged 65 and over; this share is expected to increase to 31.3% by 2100. For people aged 80 and over, the share is expected to increase 2.5-fold from 6.0% in 2021 to 14.6% in 2100⁴⁶. The ratio between working age people and older people has already been shifting, with fewer younger people supporting an increasing number of older people. This has implications for delivering and financing formal and informal care and other forms of social support for older people. The impact of these developments on European societies has also been emphasised by various recent reports published by the EC, such as the EC Report on the Impact of Demographic Change⁴⁷ and the 2021 Ageing Report⁴⁸. It is therefore essential that people are enabled to live more independently, stay active for longer and that society uses available opportunities to support active and healthy living.

There is no doubt that ICT-based solutions have substantial potential to support active and healthy living, despite challenges experienced in implementation and public trust. Stakeholder interviews also observed that the market for innovative solutions is growing and is attracting an increasingly large number of investors from the ICT field as well as from service and care providers (including examples of utility providers). Given the breadth of applications for such innovations (e.g. in the workplace, the health and care sector and in society more widely) there are plenty of opportunities to engage in the AAL market⁴⁹.

This potential is recognised in several EU initiatives directed at enhancing the capacity of ICT solutions for ageing well⁵⁰. The European Blueprint on Digital Transformation of Health and Care for the Ageing Society⁵¹ promotes a shared vision of a broad range of stakeholders on how ageing well should look in the digital age. It stresses the role of technology and digital innovations for providing sustainable and integrated healthcare. The 2019 Science

⁴⁶ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing

⁴⁷ European Commission (2020). Report on the Impact of Demographic Change, available online at https://ec.europa.eu/info/sites/default/files/demography_report_2020_n.pdf

⁴⁸ European Commission (2021). The 2021 Ageing Report: Economic & Budgetary Projections for the EU Member States (2019-2070), available online at https://ec.europa.eu/info/sites/default/files/economy-finance/ip148_en.pdf

⁴⁹ Kurt Salmon/IDC (2014). Final Report. A Study concerning a Market Observatory in the Ambient Assisted Living field. Online available at: <http://www.aal-europe.eu/wp-content/uploads/2016/03/Final-report-SA-Market-observatory.pdf>

⁵⁰ Silver Economy Report, Publications Office, 2018, <https://data.europa.eu/doi/10.2759/685036>

⁵¹ European Commission (2017). Blueprint on Digital Transformation of Health and Care for the Ageing Society. Online available at: <https://digital-strategy.ec.europa.eu/en/library/blueprint-digital-transformation-health-and-care-ageing-society>

Advice for Policy by European Academies report ‘Transforming the Future of Ageing’ highlighted the use of technology as a key area of interest for healthy ageing⁵². The importance of technology and digital innovation for Europe’s resilience was also emphasised in the 2030 Digital Compass⁵³, setting out a vision and targets for a successful digital transformation of Europe by 2030. These include the resilience and sustainability of health and care systems. Last but not least, the EC’s 2021 Green Paper on Ageing highlights that any European policy response to demographic change also needs to address the twin challenges of achieving the green and digital transformation of society.

The AAL2 Programme is also well aligned with several of the EU2020 flagship initiatives, such as the Innovation Union, the Digital Agenda for Europe and the Agenda for New Skills and Jobs. It is also fully in line with the most recent New European Innovation Agenda⁵⁴, which focuses on the development of new technologies to address the most pressing societal challenges, and to bring them on the market. Finally, it also aligns with the UN Decade for Healthy Ageing⁵⁵ and the UN 2030 Agenda for Sustainable Development⁵⁶.

The AAL2 Programme has been unique in this space as it brought together a focus on improving active and healthy ageing and the use of innovative ICT-based solutions. Stakeholders and NCPs noted that this unique focus has been highly productive both in raising awareness for the potential of digital technologies and in strategically developing the emerging landscape and markets. As mentioned above, AAL2 has already collaborated with other European initiatives in the field of health and ageing to create synergies and ensure the sustainability of its impacts. With the various improvements to the Programme (see Section 3.1 Current state of play), AAL2 has shown flexibility in adapting to a changing policy landscape, improving Programme effectiveness and efficiency and responding to the COVID-19 pandemic, for example.

However, many of the barriers for market development referred to in Section 2.1 Description of the intervention and its objectives remain and much of the potential of ICT-based solutions for active and healthy living is yet to be realised. Several of these barriers lie outside the

⁵² SAPEA, Science Advice for Policy by European Academies (2019). Transforming the Future of Ageing. Berlin: SAPEA, <https://www.sapea.info/wp-content/uploads/tfa-report.pdf>

⁵³ https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

⁵⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A New European Innovation Agenda. Online available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0332>

⁵⁵ <https://www.who.int/initiatives/decade-of-healthy-ageing>

⁵⁶ United Nations (2015). Transforming our World: The 2030 Agenda for Sustainable Development. Online available at: <https://sdgs.un.org/sites/default/files/publications/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>

scope of the Programme and require larger societal interventions. These include substantial political willingness to transform health and care systems and create the environment for innovative solutions to thrive and make a more substantive contribution to active and healthy living.

3. 5.WHAT ARE THE CONCLUSIONS AND LESSONS LEARNED?

5.1 Conclusions

The Programme continues to occupy a unique position in the field of digital solutions for active and healthy ageing, with strong relevance, EU added value and additionality

As the only European funding Programme focusing on digital solutions for active and healthy ageing, the AAL2 Programme continues to occupy a unique position in the European R&I funding landscape. By mobilising technological innovation and entrepreneurship to address the consequences of demographic change and strengthen the sustainability of health and care systems, it had a pioneering role in creating and seizing the many opportunities of active and healthy ageing. AAL2 actively contributed to developing a positive perspective on ageing instead of considering ageing as a social and economic problem. In doing so, it has opened a space to bring together stakeholder groups that previously had little or no interaction, and that worked productively together to develop novel solutions and foster social innovation.

AAL2 differs from most other actions within the Horizon 2020 programme because of its strong market orientation and its integrated, holistic approach towards involving end-users in both the design and implementation of transnational project calls and in the portfolio of Support Actions. It has developed a portfolio of accompanying activities that can be seen as exemplary also for other programmes.

The Article 185 Partnership has enabled a group of committed countries to pioneer this initiative and launch what could be called an ‘alliance of early movers’ to promote digital solutions for ageing well, without relying on the commitment of all Member States. This has allowed more than 700 beneficiaries from 21 different countries (including five non-EU and three non-European countries) to collaborate on developing solutions that help improve the well-being and quality of life of older people. This includes their families and carers, making support and care systems more efficient and sustainable, creating business opportunities and thus strengthening the industrial base in Europe, in particular the active and healthy ageing sector.

AAL2 brings together a highly relevant combination of beneficiaries, including SMEs and end-user organisations that do not typically participate in Horizon 2020

The Programme succeeded in reaching its two main target groups: SMEs constitute 40.3%, and end-user organisations 26.3% of beneficiaries. Universities and research institutes constitute another 25% of Programme beneficiaries. Analysis shows that these universities and research organisations are significantly involved in Horizon 2020, which can be seen as a

marker of research excellence. The Programme therefore brings together some of the top research performing bodies in Europe with private companies (mostly SMEs) and end-user organisations that do not typically participate in Horizon 2020. In particular SMEs benefit from the strong national embedding (local contact points and funding rules) which lowers the barriers for them to participate in the Programme. In addition, the number of user organisations among beneficiaries of new projects has increased steeply during AAL2.

However, as stated by the Interim Evaluation of AAL2 and the Final Evaluation of AAL1, scale is important. The Programme aimed to make a sizeable difference to the development of the market, and the lives and well-being of its target audiences. Large enterprises typically have the market power, expertise and production capacity to introduce new products at scale and pace, and therefore should be encouraged to engage in this market. Yet large enterprises, initially not defined as a core target group of the Programme, only represent 5% of Programme beneficiaries.

The Programme is well managed thanks to flexible implementation methods and a strong leadership role by the CMU

The Article 185 Partnership that underpins AAL2 has implications for the governance and implementation of the Programme. In terms of its implementation, the possibility of having varying levels of commitment of Participating States has proved to be an advantage in launching the initiative and pioneering its objectives. However, it also involves risks, for example if too many countries choose to opt out or reduce their financial commitments.

A key strength of the AAL2 Partnership is that it allows the Programme tapping into the energy and enthusiasm of Participating States. This allowed for the development of the landscape for digital solutions and established the agenda for active and healthy ageing. It has also provided the CMU with a degree of managerial flexibility in adapting the Programme, implementing improvements and inspiring change. In contrast to the concerns expressed in the Interim Evaluation, the restructured CMU was able to provide strategic leadership during the second phase of the AAL2 Programme. Stakeholders noted that because of this proactive leadership, the Programme has been able to adjust swiftly to new insights and demands and implement a number of improvements. Both the leadership style and the governance arrangements have been judged as inclusive and transparent.

A characteristic of the AAL2 Partnership is the combination of a centrally organised project selection process based on excellence criteria with a decentralised mechanism of project funding. In this, the success of each application depends on both its excellence and the availability of national funding. This mechanism adds complexity in cases where proposals have received high quality scores and funding is available for some partners involved, but not for all (if respective national budgets have been exhausted). This leads to a budget utilisation

rate of just under 80%⁵⁷, which is sub-optimal from Union's budget consumption perspective. However, the central project selection process can be seen as an advantage as it helps national funders to focus on projects that are competitive at European level.

The Programme has made progress towards its objectives, but the complex nature of the market constrains the swift uptake of solutions

AAL2 has made substantial efforts to improve the supply side of the market through the development of digital solutions and supporting their marketisation and commercialisation. The Programme has also increasingly addressed barriers on the demand-side of the markets. However, many challenges to the uptake of solutions lie outside the scope of the Programme. The market for digital solutions for active and healthy ageing is still fragmented and immature, especially on the demand-side. The demand for digital solutions is shaped by a host of factors such as cultural expectations towards older age and care, the acceptance of technology, the digital literacy of its users, cross-sectorial collaboration and the organisation of care delivery and funding within health and care systems. The demand-side is also shaped by a number of intermediaries, such as insurers and public funders. These factors in combination determine whether digital solutions are seen as acceptable and whether they will be taken up. It is therefore necessary to understand that a wider approach to system transformation and far-reaching integration is needed to fully use the potential of digital solutions for active and healthy ageing.

Compared with AAL1, there was a positive trend in the number of solutions launched and individual end-users reached under AAL2. The potential of the solutions to impact positively on the quality of life of older people and their carers has been demonstrated by the survey conducted as part of the 2021 Programme Impact Study. However, these preliminary finding is based on a small number of completed projects⁵⁸ at this point in time.

In addition, beneficiaries gained substantial knowledge beyond the technological R&I expertise. Substantial gains in knowledge were achieved in relation to an increased understanding of user needs and developing business and commercialisation strategies. Beneficiaries also confirmed the positive effects of the Programme on networking and mutual learning. These effects were strengthened by deploying a coherent portfolio of Support Actions that have been widely judged as effective and supportive by beneficiaries, NCPs and other stakeholders.

Overall, it can be concluded that the AAL2 Programme has achieved positive results at the output and outcome levels within its remit. However, while it has supported beneficiaries in overcoming market barriers, the Programme was not able to remove these barriers entirely.

⁵⁷ A large share of the underspend is due to a lack of selected proposals in some countries. This may be due to a variety of different factors, including a low number of relevant actors in the respective country or a lack of awareness of the Programme.

⁵⁸ Third edition of the AAL Programme impact assessment, Analytical report final, <http://www.aal-europe.eu/wp-content/uploads/2022/02/IA-AAL-Final-summary-report-FINAL.pdf>, p. 40

As a consequence, the impact of the Programme is limited by the difficult market environment in which it operates with challenges remaining, particularly on the demand-side. Addressing the fragmentation of the supply side was a key motivation for the initiating the Programme. However, AAL2 has also shown how the fragmentation of the demand-side creates barriers to uptake and market success of digital innovation.

5.2 Lessons learned

The following section presents key lessons learned on governance and implementation relevant to policy, strategy and operational levels.

Policy level

There is continued need for actions at the intersection of digital innovation and demographic change to support active and healthy living, and secure the future of health and care systems.

By mobilising technological innovation and entrepreneurship to address the consequences of demographic change and strengthen the sustainability of health and care systems, the AAL2 Programme addressed many opportunities of active and healthy ageing and actively contributed to developing a positive perspective on ageing. In doing so, it has opened a space to bring together stakeholder groups that previously had little or no interaction and that worked productively together to develop novel solutions.

A wider approach to system transformation is needed to develop the market and overcome the barriers to market impact.

The AAL2 Programme evidenced that the demand for digital solutions is shaped by a host of factors, such as cultural expectations towards older age and care, acceptance of technology, the organisation of care delivery and financing within health and care systems. The demand-side is also shaped by a number of intermediaries, such as insurers and public funders. These factors determine whether digital solutions are seen as acceptable and whether they present a likelihood of being taken up.

There is an opportunity to tap into the energy of an ‘alliance of early movers’ to promote technological and social innovation for ageing well in Europe.

The AAL2 Programme brought countries together in an ‘alliance of early movers’ that were willing to promote innovative solutions for active and healthy ageing and develop the research communities and market in Europe and beyond. By tapping into the energy and enthusiasm of those wanting to participate, the Programme has managed to set the agenda for active and healthy ageing and establish the role of digital innovation in the field.

Strategy level

Strategies for deploying and scaling up innovation for ageing well require all actors along the value chain to be involved.

The AAL2 Programme succeeded in bringing together a highly relevant combination of stakeholders, including SMEs, end-user organisations, and research organisations. The ongoing digital transformation of the health and care systems should be based on strategies for deploying and scaling up innovation, involving the entire value chain including innovative SMEs but also large enterprises, who typically have the market power, expertise and production capacity to commercialise products and services at scale. An ecosystem perspective applied to the value chain also requires strategic involvement of state and sub-state stakeholders such as regions and social insurance organisations that structure the demand-side.

Continuous learning and providing focused support are vital for adapting to challenges and changing expectations.

The AAL2 Programme has nurtured a culture of continuous learning and improvement and established supporting processes to implement this culture. In addition to regular monitoring and auditing practices linked to the transnational calls and projects, the Programme developed a portfolio of Support Actions for capacity building and community development. This approach to continuous learning, trial and error and improvement is highly productive and a demonstration of good practice.

Operational level

Support Actions are cost-effective add-ons to call funding, strengthening an initiative in view of reaching its objectives.

The AAL2 Programme has developed a portfolio of accompanying activities that have been successful and cost-effective in supporting beneficiaries to meet and learn from each other. It has also helped them to understand the market, develop viable commercialisation strategies, and consider the wider ecosystem of digital solutions for active and healthy living, including health and care systems.

Support Actions are particularly effective if they are tailored to the needs of their target groups and provided at a suitable time in the lifecycle of projects. They must be responsive to the development of policy, technology and markets, and based on a good understanding of the challenges experienced during the implementation. They are particularly useful for building networks, supporting commercialisation expertise, developing an ecosystem perspective to social innovation and for strengthening the visibility of the Programme.

The combination of a centrally organised project selection process and a decentralised funding mechanism has benefits but also comes with challenges.

Future partnerships should allow for a mix of structural and creative approaches to finding solutions for difficulties resulting from decentralisation. This could include the development of shared mechanisms and standardised tools that help simplify the scientific, managerial and financial coordination of the Partnership.

Lead DG

The EC's DG for Communications Networks, Content and Technology (CNECT) is the lead DG for this evaluation (PLAN/2022/520).

Organisation and timing

The Commission published a **call for evidence** on the final evaluation of the 'Active and assisted living joint research and development programme' on 22 July 2022 that was open for feedback until 2 September 2022.

Three partnerships based on Article 185 TFEU (AAL2, Eurostars-2 and the Partnership for Research and Innovation in the Mediterranean Area (PRIMA)) have evaluations due by the end of 2022. In this context, DG Research and Innovation set up one inter-service steering group (ISSG) to guide the three evaluations.

The ISSG was established on 4 July 2022 involving representatives from the Secretariat-General, DG for Research and Innovation, DG for Communications Networks, Content and Technology, DG for Agriculture and Rural Development, DG for Informatics, DG for Budget, DG for Competition, DG for Education, Youth, Sport and Culture, DG for Environment, DG for Migration and Home Affairs, DG for Maritime Affairs and Fisheries, DG for Structural Reform Support, the Joint Research Centre and the Executive Agency for Small and Medium-sized Enterprises. The ISSG contributed to the evaluation and ensured that it met the necessary standards for quality. Two meetings were held between July and October 2022. A third one took place to present Eurostars-2 draft Commission report and draft Staff Working Document.

Evidence, sources and quality

This evaluation report drew on the following sources of evidence:

- Independent expert report on the final evaluation of AAL2, 2022⁵⁹
- Third edition of the AAL Programme Impact assessment, 2021⁶⁰
- Learnings from the 2019 and 2020 AAL Impact assessment⁶¹

⁵⁹ Independent Expert Report (September 2022). *Active and Assisted Living Research and Development Programme (AAL2) final evaluation - Study in support of the ex-post evaluation of the European Framework Programme for Research and Innovation Horizon 2020*, Prognos, PPMI, Publications Office, 2022, <https://data.europa.eu/doi/10.2777/068757>

⁶⁰ <http://www.aal-europe.eu/wp-content/uploads/2022/02/IA-AAL-Final-summary-report-FINAL.pdf>

⁶¹ <http://www.aal-europe.eu/wp-content/uploads/2020/12/AAL-IA-2020-Final-report-.pdf>

- 2019 Impact assessment report⁶²
- 2016 Impact assessment report⁶³
- AAL Market and Investment Report, 2018⁶⁴
- Market Observatory study in the Ambient Assisted Living field, 2018⁶⁵
- AAL report on the Medical devices Regulation implication for technologies targeting Active and Healthy Ageing, 2021⁶⁶
- Action Aimed at Promoting Standards and Interoperability in the Field of AAL, 2015⁶⁷
- AAL2 project Call results and annual statistical reports⁶⁸ (calls 2014 to 2020)
- Interim Evaluation of the Active and Assisted Living programme, 2017⁶⁹
- Meta-evaluation of Article 185 initiatives, 2017⁷⁰
- Impact assessment on the EU's participation in the AAL research and development programme jointly undertaken by several Member States, 2013 (SWD(2013) 252 final)⁷¹
- Annual AAL Programme Reviews (Commission supported by external experts)

External expertise

Expert advice has been widely used to prepare the Commission Staff Working Document. It mainly includes the study commissioned by the EC. The contractor was PPMI together with Prognos. The study has been published as Independent Expert Report⁷².

⁶² <http://www.aal-europe.eu/wp-content/uploads/2020/03/aal-impact-assesment-1.pdf>

⁶³ http://www.aal-europe.eu/wp-content/uploads/2017/06/First-AAL-Impact-Assessment-Results_Technopolis-Group_Final-Report-2016.pdf

⁶⁴ <http://www.aal-europe.eu/wp-content/uploads/2018/11/AAL-Market-report-Technopolis-180604.pdf>

⁶⁵ <http://www.aal-europe.eu/wp-content/uploads/2016/03/Final-report-SA-Market-observatory.pdf>

⁶⁶ <http://www.aal-europe.eu/wp-content/uploads/2021/04/AAL-and-the-new-EC-Medical-Devices-regulation-final.pdf>

⁶⁷ <http://www.aal-europe.eu/promoting-standards-and-interoperability-in-aal/>

⁶⁸ <http://www.aal-europe.eu/projects-main/call-report-and-statistics/>

⁶⁹ <https://op.europa.eu/en/publication-detail/-/publication/6a22bc32-ad66-11e7-837e-01aa75ed71a1>

⁷⁰ <https://op.europa.eu/en/publication-detail/-/publication/3966c4a7-b47c-11e7-837e-01aa75ed71a1/language-en>

⁷¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013SC0252&from=en>

⁷² See footnote 59

ANNEX II. METHODOLOGY AND ANALYTICAL MODELS USED

The final evaluation addresses the seven years of operation of the AAL2 programme, from June 2014 to June 2021, in line with the five evaluation criteria of the Commission's Better Regulation Guidelines, complemented with two additional partnership-specific criteria on 'additionality' and the 'transparency & openness' of the partnership.

Methodology, sources of information and data analysis

The evaluation methodology built on different analysis methods and data sources. The evaluation is mainly informed by the support study⁷³, incorporating 2 case studies, using the wealth of evidence already collected by previous studies, such as prior evaluations, programme impact assessments, self-assessment reports, annual reviews (Commission supported by external experts) and other reports (full list see Annex I. Procedural Information). The evaluation also encompassed statistical information about the AAL2 programme and the '2021 Programme Impact Study'⁷⁴, provided by the dedicated implementation structure (CMU) managing the programme.

Support study: Design and used methods

Prognos, as part of a consortium led by PPMI, carried out a support study to provide input for this evaluation. The study was delivered over a period of nine months. The study team used triangulation of data from the different data collection activities as a method to arrive at robust and evidence-based results that could be confirmed by more than one source.

The methodology for the support study was based on:

- Desk-based research;
- Interviews;
- Case studies;
- Analysis of funding and administrative data;
- Other quantitative methods.

The data and information collected through the above methods were mapped against the different evaluation criteria and individual sub-questions. The study team then performed individual assessments. These individual assessments were discussed, validated and refined in two workshops.

A key source, in particular for the assessment of the Effectiveness criterion, has been the 2021 Programme Impact Assessment carried out by IDEA Consult on behalf of AALA. It is

⁷³ See footnote 59

⁷⁴ See footnote 60

largely based on a survey of 91 AAL2 participants, covering 38 AAL2 projects that had been completed by December 2019. The secondary analysis and use of this evidence has been one of the pillars of the study design. In addition, the desk research retrieved information from various published documents such as pertinent strategic, operational and policy documents, and annual programme reports.

The quantitative findings were enriched with qualitative information from 27 interviews⁷⁵ with Programme participants, Programme officials, NCPs, project beneficiaries and a wider variety of stakeholders (see Annex V. Stakeholders consultation for full list). These interviews had a dual purpose: part of the questions were directly related to the evaluation criteria, other questions were primarily linked to two case studies that accompanied the evaluation. Interviews were conducted in a semi-structured format, i.e. using topic guides that provided a general structure, but leaving the flexibility to zoom in on specific aspects when relevant.

Case studies

Two case studies have been conducted to explore specific areas of interest, to complement evaluation questions and to provide relevant learnings to inform future programmes.

- case study 1: *'Support Actions for capacity development and community building'*;
- case study 2: *'Learnings from the AAL2 Public-Public Partnership Approach'*.

The case studies largely drew on desk research and interviews. While being standalone cases, they also inform the assessments of several evaluation criteria in the final evaluation support study.

Case study 1 focussed on the contributions of the AAL2 Support Actions to capacity building of programme beneficiaries, to strengthening and building the wider community of AAL stakeholders. It examines the evolution of the Support Actions portfolio from its initial focus on strengthening end-user involvement to an ecosystem approach to enable societies to use the full potential of digital technologies for active and assisted living.

The focus of case study 2 is on the Partnership approach underpinning AAL2 and its contribution to achieving Programme objectives and identifies possible learnings. It maps the structures, processes and tools of the AAL2 Partnership and analyses its strengths and weaknesses with the overall aim to identify learnings from the experience of the AAL2 Partnership relevant to other (future) programmes.

The full case study reports are available as annexes to the support study report⁷⁶.

⁷⁵ Out of the 27 interviewees, 4 had provided their responses in writing

⁷⁶ See footnote 59

Case study questions	Criteria
Case study 1	
What are the key characteristics of the Support Actions and how did they contribute to the objectives of the AAL Programme?	Mapping of Support Actions Programme level e.g. needs identified, target groups, frequency/intensity, KPIs, time-limited actions Activities by Member State partners
To what extent did the Programme demonstrate flexibility towards adapting the Support Actions to cope with changing needs and context?	Evolution and adaptation over time Changing needs/demands Changing context
To what extent have Support Actions contributed to developing the capacities of project beneficiaries and the wider community?	Contribution to knowledge (e.g. market, systems, regulation) Networking and community building (e.g. investors) Support and care systems (e.g. awareness, openness)
What is the impact of the Programme on EU and national policy aimed at facilitating or supporting uptake of AAL technologies	EU level or regional policy changes in support of AAL
Case study 2	
Which structures, processes and tools have been established to implement the Partnership approach that provide key learnings to other programmes?	Key characteristics of the Partnership e.g. governance structure, mechanisms for aligning goals and objectives, financial rules, monitoring and reporting; evolution
How effective and efficient are these Partnership structures, processes, and tools in achieving the Programme objectives? Are measures aimed at improving the Partnership and sustaining its effects appropriate?	Analysis of strengths and weaknesses of the Partnership, e.g. Flexibility of adjusting to changing markets and needs Openness to new participants EU value added as opposed to national activities
What are the key learnings relevant to other programmes at the end of their lifecycle in view of creating lasting impacts?	Conclusions and recommendations for future actions

Analysis of funding and administrative data

The study team has also conducted a thorough analysis of funding and administrative data, which have been provided by the CMU. These data included information on applications received, funding committed, funding actually spent and projects launched, etc. They were analysed along different dimensions, including overall level, disaggregation by countries and disaggregation by types of organisation.

Other quantitative methods

A calculation of centrality score has been conducted, to assess the extent to which AAL2 beneficiaries were integrated into the broader Horizon 2020 R&I network. For this, the

contractor has scrapped the URLs of all AAL2 participants from the AAL website. Subsequently, these were matched to the URLs of H2020 participants available in CORDA, to identify the PIC numbers of relevant organisations. Next, the analysis was extended to the full list of Horizon 2020 projects and participations. Based on this analysis, the extent to which AAL2 participants are integrated into Horizon 2020 R&I networks was established.

Finally, the contractor conducted an analysis of investment data related to AAL2 beneficiaries. For this, the contractor made use of the **Dealroom platform**. Dealroom provides data on investments in companies by various business organisations such as banks, investors or business angels. While it is not possible to link investment data to specific AAL2 projects, they may provide interesting contextual information. From a dataset that contained the URLs of 703 AAL2 participants, 205 participants (i.e. approximately 30%) could be matched to data entries included in the Dealroom database. Dealroom identified investments being made in 35 out of those 205 organisations (i.e. approximately 17%) between 2014 and 2020.

Limitations and reliability of data

Time table final evaluation

The final transnational project call was launched in December 2020 and from mid-2021, the AAL2 Programme is gradually being phased out. Approximately 40% of the AAL2 research projects are still ongoing⁷⁷. Activities will stop completely once ongoing projects have ended. The Programme is expected to close by end 2027 at the latest.

The present evaluation was informed by the updated intervention logic (Figure 1) that underpins the implementation of the AAL2 Programme and focuses on the outputs, and outcomes levels (blue-coloured parts of the framework). Data on the long-term impacts (green, red and orange parts in Figure 1) of the AAL2 Programme are still emergent.

For a definitive assessment of long-term results (+5 years after project completion) and Programme impacts it is too early because they include both direct and indirect macro-level results enabled by the Programme and depend on the projects' outcomes and the uptake of the results ideally 2-3 years after project implementation. Furthermore they can also depend on external factors of context and barriers, such as the availability of funding from internal or external investors, the regulatory framework, the business cycle, market developments, competition, sales and marketing efforts, etc. factors which lie outside the scope of the AAL2 Programme.

Small sample sizes of the Programme Impact Studies

A key source for the assessment of impact and effectiveness criteria was the 'Third edition of the AAL Programme impact assessment from 2021' conducted by IDEA Consult. It studied a

⁷⁷ Status 151 AAL2 projects end 2021: 78 finished; 59 ongoing; last projects are estimated to be finalised mid-2025.

relatively small sample size of 38/151 AAL2 projects completed by December 2019 and interviewed involved AAL2 beneficiaries. 282 participants involved in the 38 projects were invited to a survey. While the survey yielded a high response rate of 34.7% (91 complete responses and 7 partial), and each of these 38 projects had been covered by at least one of these 91 complete responses, the effective sample size of projects covered was small.

Also, the number of respondents that had participated in AAL Support Actions and were able to reply to related questions were limited: 33 respondents had participated in AAL2Business and 56 respondents had participated in the AAL Forum. The sample size was even smaller for those questions about the effects of solutions on older people and their carers: only 13 of 91 respondents were in a position to answer these questions because they had launched solutions on the market. This means that these numbers are illustrative rather than statistically representative.

The answers reflect the views of a limited sample of relevant stakeholders linked to the small number of projects finalised at the time of inquiry.

Given the constraints imposed by the time table for current final evaluation of the Programme and the relatively high number of still ongoing AAL2 research projects, this was the maximum sample size that could be attained at the time of the assessment.

Furthermore, the evaluation results have been clustered per targeted Programme beneficiaries (industry, older adults and support and care systems). This is not a direct one-on-one relation between the initial Programme strategic objectives, nevertheless the assessment of programme effectiveness has been structured in this document according to the strategic objectives in order to ensure coherence with both the interim-evaluation and the Better Regulation Guidelines.

The available datasets provided by the CMU were considered as highly reliable.

The impact of the above limitations was mitigated to a maximum possible extent, in particular by counter balancing lacking reliable quantitative data with qualitative data and the long list of studies and sources of additional evidence listed in Annex I.

Critical assessment of work carried out by external contractor

The work carried out by the contractors is of good quality. The conclusions of the support study are sound and based on a good understanding of the complexities inherent to the AAL2's underlying indirect management model for 'Article 185 TFEU partnerships' with Member States. The Commission services agree with the conclusions presented.

ANNEX III. EVALUATION MATRIX AND, WHERE RELEVANT, DETAILS ON ANSWERS TO THE EVALUATION QUESTIONS (BY CRITERION)

Evaluation Matrix

Evaluation question	Judgment criteria	Indicator	Data sources
Relevance			
<p>To what extent have the objectives of the AAL2 partnership been, and are still relevant vis-à-vis of the needs and problems addressed by the Research and Innovation (R&I) Framework programme?</p> <p>Do the challenges of demographic change and digital transformation remain valid and will their relevance increase in the future?</p> <p>How flexible has the partnership been?</p>	<p>JC 1.1: The objectives of AAL2 Programme continue to be relevant vis-à-vis of the needs and problems addressed by the R&I Framework programme, namely demographic change and digital technologies.</p> <p>JC 1.2: The AAL2 Programme has proved to be flexible in responding to new insights and changing demands.</p>	<p>Percentage of the EU population aged 65 and over/aged 80 and over (current and projected)</p> <p>Market size of AAL products and services</p> <p>Number of investors (ICT field, service and care providers)</p> <p>Number and ‘prominence’ of references to demographic challenge and ICT-based solutions in EU policy and strategy documents</p> <p>Number and degree of adjustments/improvements that have been made to the Programme</p>	<p>Document review</p> <p>Interviews</p>
Coherence			
<p>How well do the different actions work together, internally (i.e. to the</p>	<p>JC 2.1: The different activities of AAL2 work well together internally,</p>	<p>Evidence on how AAL2 is coherent</p>	<p>Document review</p>

<p>partnership, with other partnerships and with other R&I Framework programme activities), and with other EU interventions/policies (complementarities, synergies, overlaps)? Did AAL2 Programme demonstrate complementarity with relevant interventions/policies at national level?</p>	<p>are well aligned with each other and with the three strategic objectives of the Programme.</p> <p>JC 2.2: The different activities of AAL2 work well with other EU policies, are well aligned with the EU's overarching policy objectives. AAL2 is complementary to other relevant programmes and initiatives.</p>	<p>internally</p> <p>Degree to which AAL2 created synergies between its Programme activities and projects</p> <p>Evidence on how AAL2 is coherent with/complementary to other EU initiatives</p> <p>Degree to which AAL2 engaged with the active and healthy living community such as with the EIP AHA and JPI MYBL</p> <p>Number of international participants to the yearly AAL Forums</p> <p>Degree to which AAL2 collaborated with other EU initiatives</p> <p>Degree to which AAL2 was complementary to activities at national level</p> <p>Involvement of AAL2 participants in Horizon 2020 (centrality score)</p>	<p>Public consultation on Article 185 initiatives of 2017</p> <p>Interviews</p> <p>Cordis data (for calculation of centrality score)</p>
<p>Efficiency</p>			
<p>What is the relationship between the resources used by the partnership</p>	<p>JC 3.1: The costs and efforts for governing and operating the</p>	<p>Smoothness of the governance</p>	<p>Document review</p>

<p>and the changes it is generating?</p> <p>Has the implementation of the Programme been efficient as regards its governance structure, the performance of the CMU, the administrative burden at Programme and project level?</p> <p>How did processes cater for flexibility needs in implementation?</p> <p>Has the Partnership been flexible towards adjusting its objectives, activities and resources to changing circumstances?</p> <p>How cost-effective has AAL been?</p> <p>How proportionate were the costs of application and participation borne by different stakeholder groups, taking into account the associated benefits?</p>	<p>Partnership have been appropriate (operational efficiency).</p> <p>JC 3.2: The resources used by the Partnership are proportionate in relation to the changes it is generating (cost-effectiveness).</p> <p>JC 3.3: The costs borne by the stakeholders were proportionate to the associated benefits.</p>	<p>structure and processes</p> <p>Performance of the CMU</p> <p>Administrative burden</p> <p>Ratio between total budget committed by Participating States and annual budget contracted over the Programme period</p> <p>Extent to which AAL2 has been flexible in adjusting objectives, activities and resources to changing market and policy needs</p> <p>Percentage of administrative costs and of spending on Support Actions in the annual Programme budget</p>	<p>MTR Satisfaction Survey of 2020</p> <p>Public consultation on Article 185 initiatives of 2017</p> <p>Interviews</p> <p>AAL2 administrative and monitoring data</p>
<p>Effectiveness</p>			
<p>What is the progress made towards the objectives of the partnership and those of the R&I Framework programme, including the</p>	<p>JC 4.1: AAL2 made progress towards the strategic Programme objectives of the Partnership and those of the Framework programme</p>	<p>Evolution of end-users involvement in funded projects</p> <p>Number of solutions on the market</p>	<p>Third edition of the AAL Programme impact assessment (2021)</p>

<p>contribution to EU priorities and Sustainable Development Goals?</p> <p>In particular, what is the progress made towards the strategic Programme objectives:</p> <ul style="list-style-type: none"> • Enhance the availability of ICT-based products and services for active and healthy ageing, to improve the quality of life of older people and their carers, and help increase the sustainability of care systems; • Create/maintain a critical mass of trans-European applied research, development and innovation for ICT-based products and services for ageing well, in particular involving SMEs and users; • Leverage/maintain private investments and improve conditions for industrial exploitation by providing a coherent framework for developing European approaches and solutions including common minimum 	<p>including the contribution to EU priorities and Sustainable Development Goals.</p> <p>JC 4.2: Adequate systems were put in place to produce and share lessons learned from implementation and results achieved, for policy making and between Framework programme interventions.</p>	<p>Perceived improvement of quality of life through developed solutions</p> <p>Number of organisations participating in each call</p> <p>Number of proposals and of projects funded</p> <p>Percentage of SMEs and of end-users among applicants</p> <p>SMEs and end-users participation in projects</p> <p>Geographical distribution of applicants and project participants</p> <p>Learnings identified by participants</p> <p>Degree to which AAL2 has helped to develop networks among relevant actors in the Participating States</p> <p>Involvement of large industry players</p> <p>Support for business planning to strengthen commercialisation</p> <p>Beneficiaries' own contributions and private investments</p>	<p>Impact assessments of 2019 and 2020</p> <p>Interviews</p> <p>AAL2 administrative and monitoring data</p> <p>Dealroom data (Dealroom.co) and Pitchbook</p>
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<p>standards that meet varying national and regional social preferences and regulatory aspects.</p> <p>Were adequate systems put in place to produce and share lessons learnt and results achieved, for policy making and between R&I Framework programme interventions?</p> <p>To what extent does the programme communication/valorisation strategy allow identifying, capitalising upon and (possibly) transferring good practices/results?</p>		<p>Participation of investors and companies at investor events</p> <p>Ability to create a network of stakeholders (ecosystem) in ICTs for active and healthy ageing</p>	
<p>EU added value</p>			
<p>What is the additional value resulting from the partnership compared to the value resulting from regional or national interventions or with other forms of implementation? Has AAL2 inspired new initiatives?</p> <p>Includes also the partnership-specific question of how the</p>	<p>JC 5.1: The value resulting from AAL2 that is additional to the value that could result from interventions carried out at regional or national level or with other forms of implementation is positive. AAL2 inspired new initiatives.</p> <p>JC 5.2: AAL2 has helped fostering the international positioning and</p>	<p>Degree to which AAL2 has added value to national initiatives, perspectives and/or markets.</p> <p>Degree to which AAL2 inspired new initiatives.</p> <p>Number of non-EU countries participating in AAL2</p> <p>Percentage of the non-EU countries</p>	<p>Third edition of the AAL Programme impact assessment (2021)</p> <p>Public consultation on Article 185 initiatives of 2017</p> <p>Interviews</p> <p>AAL2 administrative and</p>

<p>partnership has helped fostering the international positioning and visibility of the European R&I system, and an assessment of the level of international cooperation at partnership and project level.</p>	<p>visibility of the European R&I system and the level of international cooperation at Partnership and project level. The participation and level of involvement of non-EU countries in AAL2 is good.</p>	<p>funding in the total national Programme funding</p> <p>Participation of non-EU countries in project calls</p>	<p>monitoring data</p>
<p>Additionality</p>			
<p>How much additional private and/or public R&I investments on EU priorities have been mobilised thanks to the partnership, under the partnership and on top of contribution of partners, both at national and European level?</p> <p>How do partnerships facilitate the creation and expansion of R&I networks that bring together relevant and competent actors from across Europe, thus contributing to the realisation of the ERA (European Research Area)?</p> <p>Has AAL2 managed to bring together topics and policy areas which had previously been separate at EU level? Has AAL2 managed to bring together stakeholder groups</p>	<p>JC 6.1: AAL2 has had a leverage effect on private and/or public R&I investments on EU priorities both at national and European level.</p> <p>JC 6.2: AAL2 managed to bring together topics and policy areas which had previously been separate at EU level and managed to bring together stakeholder groups that previously had little or no interaction with each other.</p> <p>JC 6.3: AAL2 has had a positive impact on the competitiveness of the Union's industry, aimed at a better exploitation of the industrial potential of policies of innovation, research and technological development (Horizon 2020), in particular with regards to ICT based</p>	<p>Extent to which AAL2 managed to bring together topics and policy areas that were previously handled separately (EU level)</p> <p>Extent to which AAL2 managed to bring together stakeholder groups that previously had limited or no interaction</p> <p>Budget leverage effect</p>	<p>Third edition of the AAL Programme impact assessment</p> <p>Interviews</p> <p>AAL2 administrative and monitoring data</p>

<p>that previously had little or no interaction with each other?</p> <p>To what extent has AAL2 created conditions for the competitiveness of the Union's industry, aimed at a better exploitation of the industrial potential of policies of innovation, research and technological development (H2020), in particular with regards to ICT based products and services for active and healthy ageing?</p>	<p>products and services for active and healthy ageing.</p>		
<p>Transparency & openness</p>			
<p>How open is the partnership to new participants (incl. procedures / mechanisms to involve new members at partnership and project level, as well as gradually engage a broader set of stakeholders across Europe)?</p> <p>How transparent are the processes for consulting all relevant stakeholders and in the identification of priorities?</p> <p>How open is it to SMEs?</p>	<p>JC 7.1: AAL2 is open towards new participants.</p> <p>JC 7.2: AAL2 has developed transparent processes for consulting stakeholders in the identification of priorities.</p> <p>JC 7.3: Accessibility for SMEs is enabled by the decentralised set-up of AAL2 (national rules).</p>	<p>Degree to which membership is flexible, inclusive and open to subnational regions and international project teams</p> <p>Frequency of consultation of the AALA members</p> <p>Percentage of participants from the private sector</p> <p>Share of SMEs among participants</p>	<p>Interim Evaluation of AAL2</p> <p>Public consultation on Article 185 initiatives of 2017</p> <p>Interviews</p>

ANNEX IV. OVERVIEW OF BENEFITS AND COSTS

The data presented in table underneath is based on the results of the first AAL2 published in 2021. Although the quality of the data collected is high and the overall response rate to the underpinning surveys was good, some limitations on the robustness of the methodology should be taken into consideration. On average the AAL2 R&I projects are 3 year projects so only a limited number of completed projects could be taken into account (38 projects completed by end 2019, most projects issued from first 3 calls of the programme: call 2014 (20), 2015(16), 2016(2)).

With data on the long-term impacts of the Programme still emerging (see the section on Effectiveness), an assessment of the relationship between resources used and the changes which the Partnership is generating is preliminary.

Overview of costs and benefits identified in the evaluation							
		Citizens/Consumers		Businesses ⁷⁸		Administrations	
		Quantitative	Comment	Quantitative	Comment	Quantitative	Comment
Costs on research programme level							
Administrative Indirect-management dedicated implementation structure cost (EC-level)	recurrent					6% of total annual Programme budget	Participating countries invested in-kind through FTEs working on the Programme; these efforts are not quantified and thus not included in the national contributions
Support Actions Portfolio of services and activities to strengthen the skills and knowledge of project beneficiaries and the wider community	recurrent					5.9% of total annual Programme budget	Support Actions were tailored to serve specific needs of the programme beneficiaries and initiated at EU-level. Participating States' delegates were closely involved in the steering committees of the SA.
Research projects Grants funding transnational R&I projects	recurrent					88% of total annual Programme budget	37% national grants (cash contribution), 33% EU funding, 30% private investment ⁷⁹
BENEFITS							
Direct benefits							
Strengthening the industrial base in Europe	recurrent		Involving end-users in the development of new products and services, increases user-	1) 61% of the projects launched a new product, systems or services on the market			

⁷⁸ Including health and (social) care professionals and institutions (public and private) and research organisations

⁷⁹ Based on project funding data see section 3.2 Key Programme Statistics

			acceptance and product adoption	2) 40% of project beneficiaries are SMEs and 4.9% large enterprises 3) 40% of budget dedicated to collaborative project calls is allocated to SMEs			
Strengthening trans-European R&D network, with a market-oriented mindset, in active and healthy ageing digital innovations	recurrent			56.2% of AAL2 participants have not participated in a Horizon 2020 project (outside AAL2)	62.8% of SMEs, participating in AAL2 projects not participated in a Horizon 2020 project	AAL2 created a European-wide network of over a thousand actors in active&healthy ageing. It also created an emerging network of regional health&care ecosystem in 15 countries	
Increased awareness of ICT-enabled solutions	recurrent	25% of budget dedicated to collaborative project calls is allocated to end-user organisations	High involvement of end-users (26% of project beneficiaries) in the development phase has an important impact on the relevance of the products and services.	User-testing has helped 82% of project participants to identify their customers' needs more precisely.			
Capacity building and	recurrent			1) Organisation	68% of the		

transnational networking, knowledge exchange and best practices				of 8 AAL2 forums with 4 800 participants. 2) 65 projects participated in AAL2Business Support Action to increase their market skills.	project participants think they are currently benefiting from the collaborations and networks that were established during their AAL project.		
Indirect benefits							
Better quality of life	recurrent	More than 60% of the 2021 IA report respondents with an AAL product/service on the market think that their products/services support older people to live independently at home and to remain in better mental condition.	Indirect evidence of positive impact on older adults live longer in their own homes in better mental condition				
Support sustainability of health and (social) care systems	recurrent				Indirect evidence of positive impact on the relevance and quality of care visits and unburdening cares with some preliminary		

					indications of cost-saving effects		
Increased openness of health and care systems towards innovative solutions	recurrent				The high involvement of end-users in the development phase has an important impact on the adoption and use of innovative solutions		
Increased Active and healthy ageing market share				1) 5 investor events organised, involving 27 investors, 26 different AAL solutions. 2) 35 companies participating in AAL2 projects (2014–2020) received in total EUR 374 million of private investments. The direct link to specific AAL2 projects could not be made.	1) 68% of companies could bring faster products to the market 2) Indirect evidence of increased revenues and share of paying customers		

ANNEX V. STAKEHOLDERS CONSULTATIONS

Overview of consultation activities

- Beneficiaries projects MTR Satisfaction Survey, July 2020
- Third edition of the AAL Programme impact assessment, December 2021
- As part of the supporting study, in-depth interviews with stakeholders at EU and national level, 2022
- Feedback on the call for evidence, July-August 2022

Stakeholders consulted

The table ‘Stakeholders engaged per consultation activity’ provides an overview of the stakeholders consulted and follows the stakeholder consultation strategy set-out in the call for evidence.

Consultation activity	Stakeholder group	Number of stakeholders who responded
Beneficiaries projects MTR Satisfaction Survey	AAL project beneficiaries	433
Third edition of the AAL Programme impact assessment ⁸⁰	All participants from projects finished by the end of 2019 (full survey) and respondents from the AAL Impact Assessment survey of 2020 (follow-up survey)	Full survey: 91 Follow-up survey: 11
Interviews as part of the supporting study	Commission (DG CNECT), AAL Programme Director, Programme Operations Manager, members of the Executive Board (Acting President, Vice Presidents), members of the Advisory Board; NCPs, representatives of national ministries; Research institutes, private companies, end-user organisations	27
Feedback on the call for evidence document ⁸¹	Micro organisation from Germany, UK and Romania	3

⁸⁰ <http://www.aal-europe.eu/wp-content/uploads/2022/02/IA-AAL-Final-summary-report-FINAL.pdf>

⁸¹ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13531-Active-and-assisted-living-joint-RD-programme-final-evaluation/feedback_en?p_id=31313223

The call for evidence was open for feedback between 22 July 2022 and 2 September 2022. Feedback received is very low; only three feedbacks were submitted. The limited number of received responses are not pertinent and were not taken into consideration.

Other consultation activities (Beneficiaries projects MTR Satisfaction Survey, Third edition of the AAL Programme impact assessment and interviews) have proved very useful. The identified stakeholder groups have been reached and their inputs have been considered in the supporting study and in the Staff Working Document. It is however to be noted that the Beneficiaries projects MTR Satisfaction Survey and the Third edition of the AAL Programme impact assessment were not conducted specifically within the scope of the final evaluation but provided valuable evidence to feed the different evaluation criteria.

Overall results per consultation activity

Beneficiaries projects MTR Satisfaction Survey

In the context of issues being spotted at mid-term reviews of AAL2 projects related to, among others, project administration, a questionnaire was prepared and sent to project participants for feedback on their satisfaction regarding the national and CMU support, reconfiguration of projects, grant negotiation, project execution, MTRs, etc.

The Beneficiaries projects MTR Satisfaction Survey included positive and negative opinions:

- The accessibility of the involved funding agencies and the CMU, throughout the whole project life cycle was recognised in that survey.
- Lengthy time to national grant in some funding agencies was an identified bottleneck in the survey (especially for SMEs).
- The need for harmonisation between national and European frameworks (eligibility criteria, submission, funding rates, grant agreement, reporting and other) was called for.

Third edition of the AAL Programme impact assessment

Various aspects emerged from the Third edition of the AAL Programme impact assessment, such as:

- Important contributions to knowledge-base, network as well as learning;
- Important learnings as regards the centrality and importance of user-involvement;
- Positive economic effects, e.g. new solutions, new markets;
- Value added of the international dimension;
- Improved awareness among target groups;
- Indirect evidence of positive impact on older adults living longer in their own homes and remaining in better mental condition;
- Indirect evidence of positive impact regarding the relevance and quality of care visits as well as unburdening the carers.

Interviews of the supporting study

Finally, as regards the interviews part of the supporting study, overall, the results were positive or very positive. The purpose of interviews was to enrich quantitative findings with qualitative information from a variety of stakeholder perspectives. The interviews were conducted in a semi-structured format, i.e. using topic guides that provided a general structure, but leaving the flexibility to zoom in on specific aspects when relevant. Not all questions could be given the same priority during the interviews and questions were selected that were most pertinent to interviewees. The relevant results are integrated under the respective criteria throughout the evaluation and referenced in the current document. Overall, the interviewees found the Programme in general useful and well organised. Specific aspects of the Programme and its implementation were only noted in some comments as suboptimal.

Governance

The AAL Programme is set-up and governed by the Participating States via a dedicated implementation structure, the AALA set-up as an international not-for-profit association under Belgian law (AISBL). The highest decision-making body of the AALA is the GA, which comprises representatives from all Participating States who enjoy the same voting rights. If more than one agency for the same country is present in the GA, a representative (bearing the country vote) must be designated. Members of the GA are typically national funding authorities (ministries and/or funding agencies). In total 21 countries participated throughout the Programme's lifecycle, 16 EU Member States, 3 Horizon 2020 associated countries and 2 third-countries^{82,83}. The Commission has observer role in the GA and a veto right over the AWP, and is also a party to the delegation agreement with the AALA as regards the EU's financial contribution.

The GA elects an Executive Board (EB) as the official legal representative of the Association responsible for staffing, contracting and budget planning. The GA also organises working groups on specific topics such as the drafting of the AWP or the preparation of calls. Each year the Participating States, together with the EC, agree a joint AWP. This invites proposals for joint projects with participants from at least three partner countries, subject to a common evaluation procedure and co-funding from national budgets. The AWP has to be approved by the EC. EU funding is only committed once Participating States have made clear political and financial commitments to the Programme, and EU payments are only made once Participating States have paid their contributions.

The Management Unit (Figure 9) is responsible for the operational management of the Programme and consists of an EU layer and a national layer. The CMU works closely together with a network of NCPs based in each member country or region. The NCPs check the eligibility of applicants, sign and manage the national project grant agreements, transfer payments and monitor project progress. They are the most important point of contact for the national project consortia along with the CMU. NCPs are required to conduct *ex post* audits of expenditure on indirect actions as per Decision No 554/2014/EU. A key characteristic of the Programme is therefore its degree of decentralisation⁸⁴.

⁸² Austria, Belgium (2 regions), Canada, Cyprus, Denmark, Hungary, Ireland, Israel, Italy (3 regions), Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain (3 regions), Sweden, Switzerland, Taiwan and the UK.

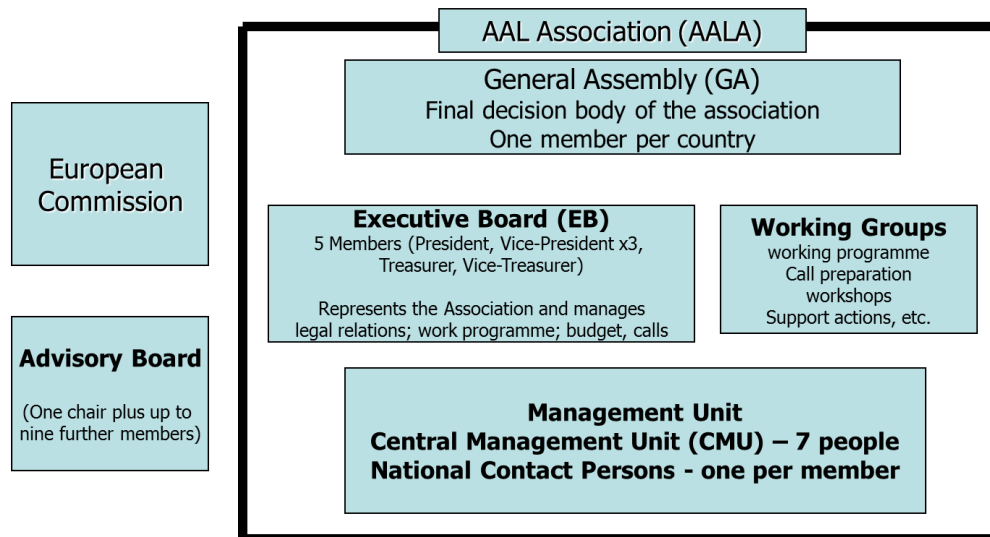
⁸³ The full list of countries and corresponding agencies who participated at some point in AAL2 can be found in Table 4: List of national sources for the co-financing of the AAL2 Programme over the period 2014-21

⁸⁴ European Commission, Directorate-General for Research and Innovation, *Meta-evaluation of Article 185 initiatives : report of the expert group*, Nauwelaers, C.(editor), Hunter, A.(editor), Meyer-Krahmer, F.(editor), Galetta, D.(editor), Santos, F.(editor), Publications Office, 2017, <https://data.europa.eu/doi/10.2777/421843>, pp. 9-10.

An Advisory Board of experts from business, technology, research and politics provides senior technical advice to the AALA.

Figure 9: AAL Programme governance structure

Source: Interim Evaluation of the Active & Assisted Living Programme (p. 9 and 39)



Transnational call management

A well-functioning call management and implementation process was put in place. The process was adapted over the years taking into account emerging and continuously evolving characteristics of digital technologies as well as the learnings on challenges identified over the previous years. This continuous evolution and learning loop resulted in a structured process illustrated in the figure below.

Figure 10: AAL2 annual project call management process



Support Actions portfolio

The Support Action portfolio has been implemented alongside the annual transnational project calls. The Support Action portfolio has evolved and expanded over time and became more tailored to specific support needs, using insights from previous evaluations and from the programme impact monitoring.

The establishment of the Support Actions portfolio distinguished four phases:

- An initial focus on networking, mutual learning and actions to strengthen the involvement of end-users in projects approved for funding (starting in AAL1);
- A second phase in which Support Actions addressed specific information and capacity needs of project teams by strengthening their market orientation and business skills (from 2012);
- A third phase that supported projects in bringing their products and services to the market by providing access to market intelligence tailored to the knowledge gaps of participants and the wider community (from 2014);
- A fourth and final phase which saw the development of an ecosystem approach, in addition to the consolidation and diversification of the Support Actions (from 2017) – the ecosystem approach built on the realisation that a wider approach to health and care system transformation is needed if AAL innovations are to realise their full potential.

Figure 11: AAL Support Actions portfolio

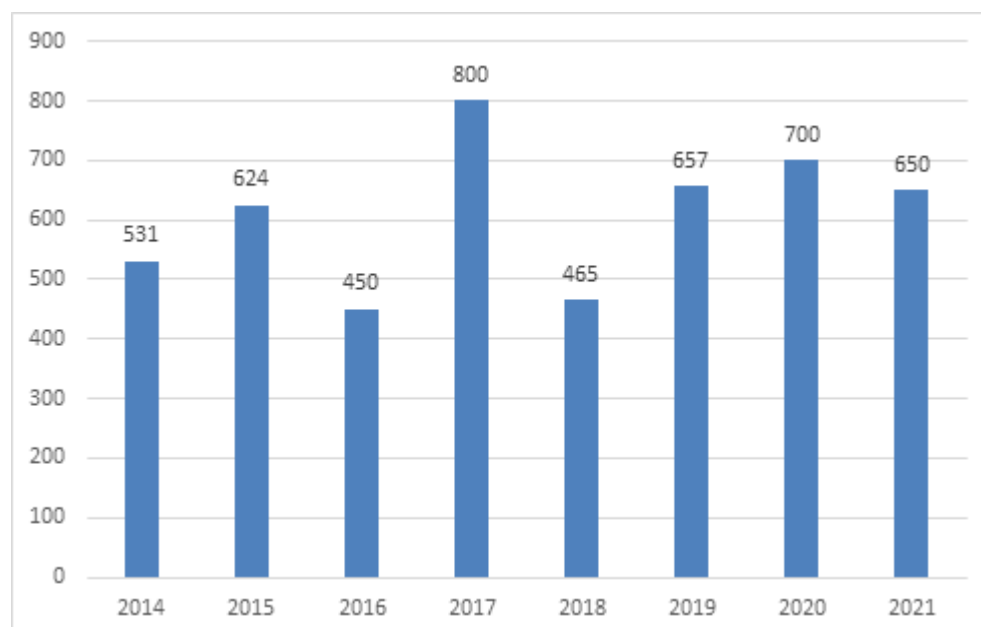


AAL Forum

Throughout the Programme, the AAL Forum has been a key Support Action bringing together AAL beneficiaries and the wider community to showcase project experiences, share good practices and stimulate mutual learning. As shown in Figure 12, participation in the AAL Forum varied between years, reaching a peak of 800 participants in 2017. Participation remained high in 2020 and 2021 despite the constraints of the COVID-19 pandemic which caused the Forum to move to an online format. The AAL Forum continues to attract researchers, end-users, business representatives and public officials, with the largest share of participants coming from the EU-27 countries (81%-89%). A smaller share of participants

from non-EU-27 countries, such as Switzerland (0%-7%), the UK (2%-4%) and Norway (2%-4%). Participation was particularly strong from Austria, Belgium, Denmark, Germany, Italy, the Netherlands, Romania, Spain and Sweden. The Forum has also attracted participants from Canada, Israel, Serbia, Taiwan and the United States⁸⁵.

Figure 12: Number of participants in the AAL Forum, per year



Networking opportunities associated with the AAL Forum were consistently rated highly valuable by project beneficiaries. They also found these events useful for mutual learning and as source of inspiration for their own projects, user involvement and business approach. Programme beneficiaries stated that having these learning and networking opportunities – as well as exposure to potential project partners, user groups and investors at the European level – was a key reason for participating in the AAL2 Forum.

AAL2Business

AAL2Business was launched in 2013 as a Support Action, initially for a three-year period that was subsequently extended to cover the entire duration of the AAL2 Programme. AAL2Business capitalised on the fact that each project consortium had to undergo a MTR. Projects that were likely to benefit from tailored business coaching support were identified. In total, 154 projects participated in the AAL2Business Support Action, of which 40 participated more than once, and a total of 51 requested business coaching. Around 60% of those that participated noted that their capabilities to develop a commercialisation strategy improved due to their participation in AAL2Business⁸⁶. Of the 23 projects that launched an

⁸⁵ Third edition of the AAL Programme impact assessment, Analytical report final, December 2021, <http://www.aal-europe.eu/wp-content/uploads/2022/02/IA-AAL-Final-summary-report-FINAL.pdf>, p. 69.

⁸⁶ Third edition of the AAL Programme impact assessment, Analytical report final, December 2021, <http://www.aal-europe.eu/wp-content/uploads/2022/02/IA-AAL-Final-summary-report-FINAL.pdf>, p. 18; p. 70; p. 71; p. 73.

AAL solution or component in the market, almost half (48%) had participated in AAL2Business.

Challenge Prize / Smart Ageing Prize

The AAL Challenge Prize (later renamed the Smart Ageing Prize) has been awarded every two years from 2016 onwards. Calls for submissions were devoted to priority themes such as the Internet of Things (2016), Social Inclusion through Digitalisation (2018) and Silver Entrepreneurship (2020). At its peak the Smart Ageing Prize attracted over 170 submissions. In total, 306 applications were submitted from a wide spectrum of applicants. Shortlisted entries were evaluated by a panel of judges and semi-finalists were offered additional business coaching. Prize winners and runners-up reported that the experience enabled them to generate additional visibility for their project and products, reach new audiences and build new partnerships.

Market Observatory

A Market Observatory Support Action was created in 2016 to further strengthen the market orientation and business knowledge of project beneficiaries, and provide specialist insights into the emerging market for active and assisted living. Following an assessment of beneficiaries' information needs, five Investor Events were organised in 2017 and 2018 during which start-ups learned how to pitch their projects to a panel of investors 'Dragons Den' style. Over 22 investors took part in these events. In total, 32 AAL solutions were pitched at the AAL investor events. The Support Action also included the publication of an 'AAL Market and Investment Report' and a 'Dos and Don'ts when Finding an Investor' booklet.

Programme Statistics

Table 2 shows the number of countries financially contributing to the annual project call per year. While a decrease of participation can be seen after 2014, the number of countries participating remained stable at around fifteen countries after 2017. The lower participation of countries in 2021 is linked to the fact that the 2021 call was an additional call, not initially planned but enabled by a desire of some countries to spend unused budget.

Table 2: Number of participating countries in project calls, per year

Call Year	2014	2015	2016	2017	2018	2019	2020	2021
Number of participating countries	19	14	15	14	15	15	17	13
Difference from previous year	0	-5	1	-1	1	0	2	-4

Figure 13 shows the distribution of projects over the different application areas of AAL2, per year. Please note that double counting is possible and quite common, as individual projects can be linked to several application areas. As can be seen, a significant proportion of the projects are linked to the field ‘Health & Care’. This trend is particularly pronounced in 2019 and 2020, preceding the COVID-19 pandemic. The least common application area is ‘Mobility & Transport’.

Figure 13: Number of projects per application area, per year

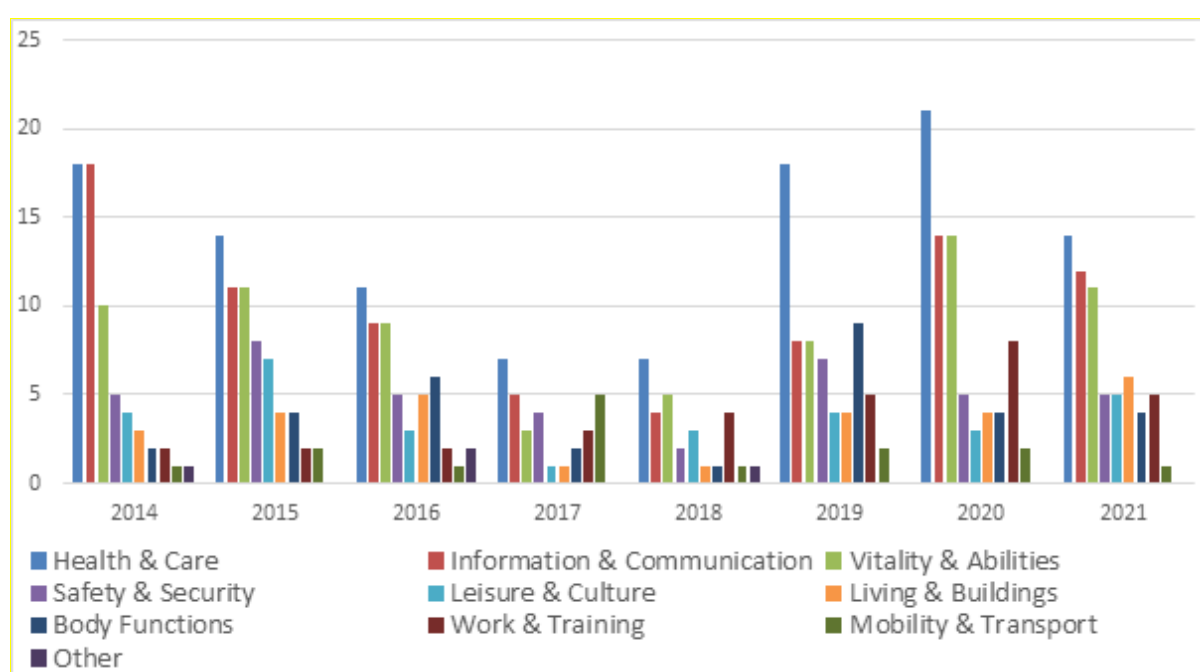
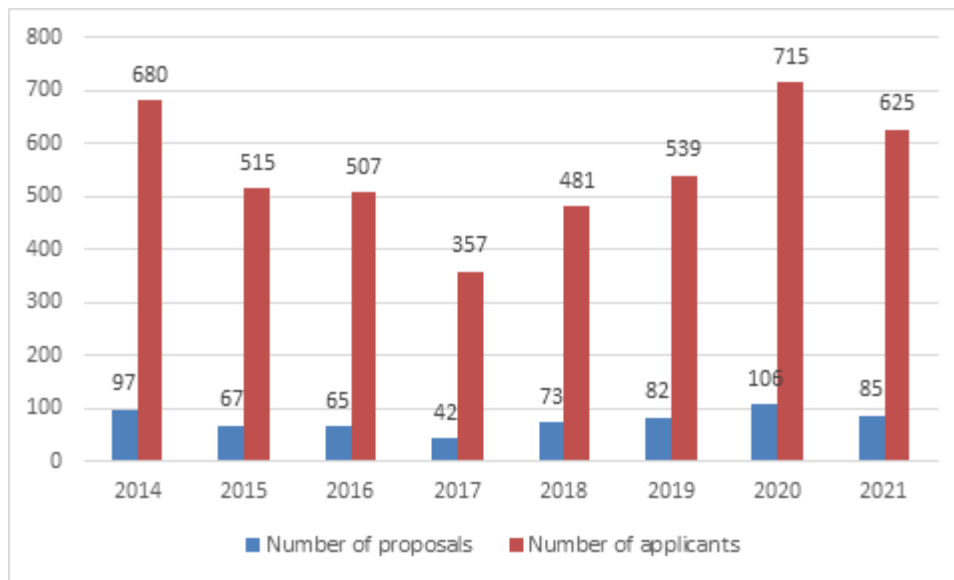


Figure 14 illustrates the evolution of proposals over the years. The number of submitted proposals peaked at the beginning and at the end of the Programme period. It started with 97 proposals (680 individual applicants⁸⁷) in 2014, then fell to 42 proposals (357 individual applicant) in 2017 and rose again to 106 proposals (715 individual applicants) in 2020. The final and additional call 2021 (with only 13 participating states), saw 85 proposals (625 individual applicants), possibly reflecting increased interest during the pandemic.

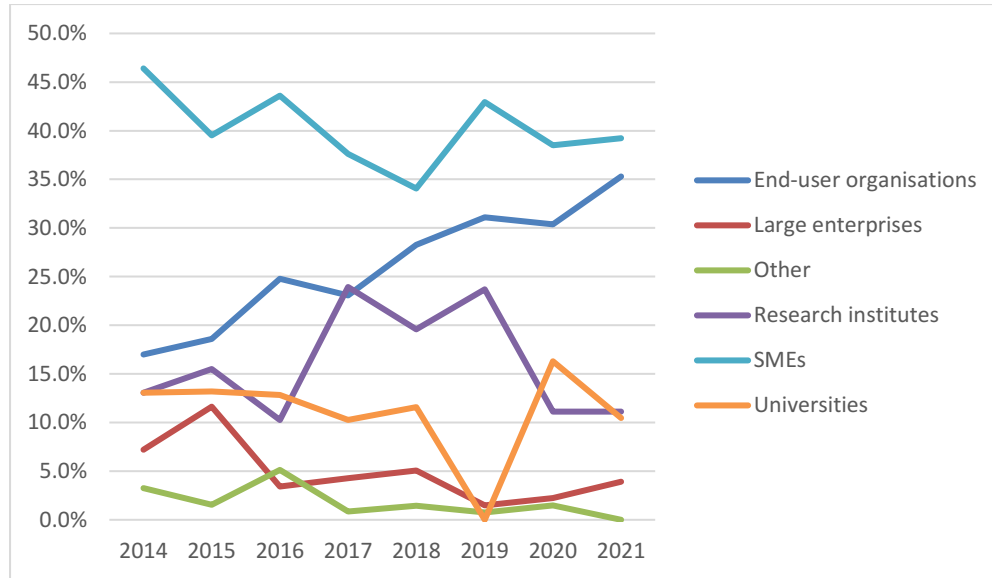
Figure 14: Number of proposals and individual applicants per year



⁸⁷ Number includes multiple counting of individual organisations that participated in several applications in the same year.

Figure 15 shows the share of participations in newly started projects by type of organisation, per year. As can be seen, SMEs participations varied over the Programme period, yet was higher than the shares of all other types in every single year. The participation of end-user organisations saw a steep increase over the course of the Programme.

Figure 15: Share of project participations by type of organisation, per year



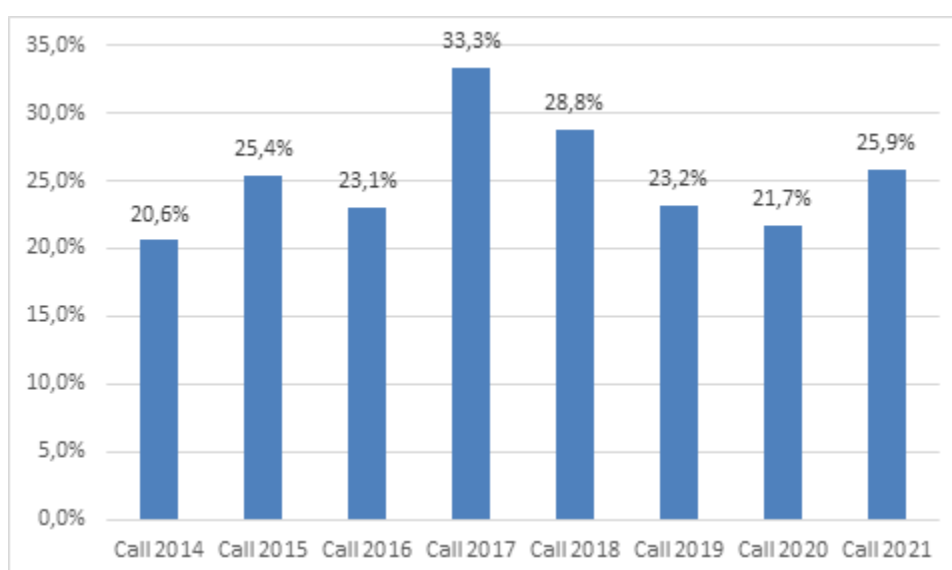
The following table groups the project beneficiaries by number of participations. More than three quarters of the participants participated only once in AAL2 projects, 13.2% participated twice and only 10.0% participated three times or more.

Table 3: Beneficiaries grouped by number of individual participations

Number of individual participations per participant	Number of participants	Share of participants
1	541	76.8 %
2	93	13.2 %
3	27	3.8 %
4	14	2.0 %
5	13	1.8 %
6	7	1.0 %
7	2	0.3 %
9	2	0.3 %
10	3	0.4 %
11	1	0.1 %
15	1	0.1 %
19	1	0.1 %

Figure 16 depicts the overall success rate of applications throughout the years. Seen over the entire Programme duration, 24.5% of applications were successful and selected for AAL2 funding.

Figure 16: Success rate of applications, per year



Analysis per country

Throughout the AAL2 Programme lifecycle (covering 2014-21) following Participating States and associated national funding bodies contributed to the AAL2 Programme activities and are/were a member of the AALA. Table 4 lists them in alphabetical order.

Table 4: List of national sources for the co-financing of the AAL2 Programme over the period 2014-21

	AAL2 Participating State	National Funding Agency (NFA)
1	Austria	Austrian Research Promotion Agency [FFG]
2A	Belgium	Flanders Innovation & Entrepreneurship / Agentschap Innoveren en Ondernemen [VLAIO]
2B	<i>Belgium^{2*}</i>	<i>SPW-DGO6 Economie, Emploi et Recherche [Wallonia]</i>
2C	Belgium	Brussels Region [Innoviris]
3	Canada ^{4*}	Canadian Institutes of Health Research [CIHR]
4	Cyprus	Research Promotion Foundation [RPF]
5	Denmark	Danish Innovation Fund
6	Hungary	National Innovation Office [NIH]
7	Ireland ^{2*}	Enterprise Ireland
8	Israel ^{1,2*}	Israel-Europe R&D Directorate for FP7 [ISERD]
9A	Italy	Ministero dell'Università e della Ricerca [MIUR]
9B	Italy	Ministry of Health [MoH]
9C	Italy	Friuli-Venezia Giulia Region
10A	Luxembourg	Fonds National de la Recherche [FNR]
10B	Luxembourg	Luxinnovation GIE
11	Netherlands	The Netherlands Organisation for Health Research and Development [ZonMW]
12	Norway	Research Council of Norway
13	Poland	Narodowe Centrum Badań i Rozwoju [NCBR]
14	Portugal	Fundação para a Ciência e a Tecnologia [FCT]
15	Romania	Executive Agency for Higher Education, Research, Development and Innovation Funding [UEFISCDI]
16	Slovenia	Government Office for Digital Transformation
17A	Spain	Ministerio de Industria, Energia y Turismo [MINETUR]
17B	Spain	Instituto de Salud Carlos III [ISCIII] del Ministerio de Sanidad y Consumo
17C	Spain	Government of Biscay region
18	Sweden ^{1,2*}	Verket för Innovationssystem – Swedish Governmental Agency for Innovation [Vinnova]
19	Switzerland ^{3*}	Federal Department of Economic Affairs, Education and Research [EAER]; State Secretariat for Education, Research and Innovation [SERI]; International Cooperation in Research and Innovation

20	Taiwan ^{4*}	Ministry of Science and Technology [MOST]
21	UK ^{1*}	Innovate UK

1* Participating States who contributed to the first AAL2 calls only with national funding. They are/were member of the AALA but did not request EU co-funding because of not signing the AAL2 bilateral agreement with the AALA to be eligible for EU co-funding as stipulated in the co-decision establishing the AAL2 Programme.

- Israel (call 2014 and 2015)
- Sweden (call 2014)
- UK (call 2014 and 2015)

2* Participating states/regions who left the AAL2 Programme:

- Wallonia–Belgium in December 2016
- Ireland in February 2017
- Sweden in March 2018
- Israel in September 2018

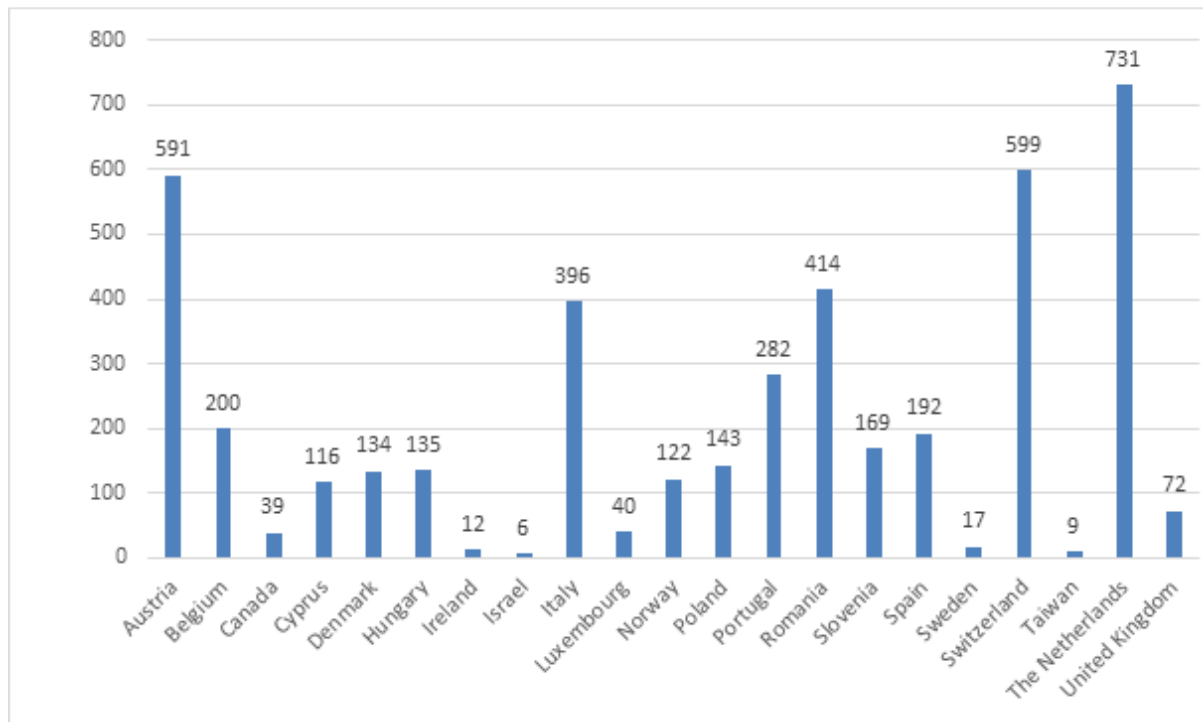
3* As partly associated with Horizon 2020, Switzerland was not eligible to receive AAL co-funding from the EU until December 2016. The Swiss national funding body therefore augmented its national funding by the co-funding percentage granted to an AAL call by the EC.

4* AALA third-country members not eligible for EC co-funding:

- Canada joined in September 2015
- Taiwan joined in September 2019

Figure 17 shows per country the number of individual participations in proposals over the whole Programme period. The largest share came from the Netherlands with 731 applicants⁸⁸. Switzerland and Austria rank second and third with almost 600 applicants each. The countries with the lowest number of participations in applications are Sweden, Ireland, Taiwan and Israel, all below 20 applicants.

Figure 17: Number of Individual participations in proposals per country



Whereas Table 5 shows the evolution of call budget committed per participating country at Programme level, shows the actual project funding per country. The significant drop of funding committed by Switzerland after year one has technical reasons⁸⁹. Apart from that, Spain also saw a drastic decline in funding after the first year. Sweden, the UK and Ireland ceased contributing after year 1, 2 and 3, respectively. For all other countries, the commitment remained relatively stable over the Programme period. The actual project funding provided per country varied throughout the Programme period, yet without a clear trend. Furthermore, as can be seen for example in the Belgian case, the countries with the highest call budget commitments were not necessarily the countries with the highest amount of project funding being provided.

⁸⁸ Number includes multiple counting of organisations that participated in several applications in the same year.

⁸⁹ Switzerland committed a particularly high amount in the first year of AAL2. This is explained by the fact that Swiss participants were initially not eligible for EC funding and hence were compensated for this by additional funding from the Swiss funding agency. Once Switzerland became an associated country in the Horizon 2020 Programme, Swiss partners were eligible for EC funding.

Table 5: Budget committed per country, per year

Country	Call 2014	Call 2015	Call 2016	Call 2017	Call 2018	Call 2019	Call 2020	Call 2021	Total Country
Austria	1,500,000	2,500,000	2,000,000	2,000,000	2,000,000	2,093,931	1,200,000	1,470,000	14,763,931
Belgium	2,800,000	2,800,000	2,900,000	2,500,000	2,500,000	2,500,000	2,300,000	2,000,000	20,300,000
Canada			580,000	232,000	235,868	231,779	230000		1,509,647
Cyprus	200,000	200,000	400,000	400,000	400,000	400,000	100,000		2,100,000
Denmark	267,000				450,000	500,000	400,000	1,363,497	2,980,497
Hungary	750,000	500,000	500,000	500,000	500,000	500,000	500,000		3,750,000
Ireland	500,000	500,000	500,000						1,500,000
Israel	300,000	300,000							600,000
Italy	1,000,000	524,000	1,555,000	1,500,000	1,695,000	1,735,000	1,735,000	1,735,000	11,479,000
Luxembourg	650,000	650,000	650,000	650,000	650,000	650,000	650,000	325,000	4,875,000
Norway	725,000	700,000	625,000		600,000	400,000	450,000	450,000	3,950,000
Poland	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	4,000,000
Portugal	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	4,000,000
Romania	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	8,000,000
Slovenia	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	1,600,000
Spain	1,950,000	200,000	800,000	800,000	950,000	950,000	300,000		5,950,000
Sweden	1,000,000								1,000,000
Switzerland	5,882,353	2,500,000	2,000,000	2,175,000	1,800,000	1,775,000	1,775,000	2,216,650	20,124,003
Taiwan							200,000	200,000	400,000
The Netherlands	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000	1,417,074	1,350,000	350,000	9,867,074
United Kingdom	1,200,000	1,200,000							2,400,000
Total year	22,274,353	16,124,000	16,060,000	14,307,000	15,330,868	15,352,784	13,390,000	12,310,147	125,149,152

Table 6: Project funding per country, per year

Country	Call 2014	Call 2015	Call 2016	Call 2017	Call 2018	Call 2019	Call 2020	Call 2021	Total country
Austria	1 535 296	2 680 776	2 052 432	2 622 578	2 886 305	1 990 325	1 232 313	1 493 193	16 493 218
Belgium	557 062	1 095 588	406 017	2 304 808	977 081	403 297	992 094	2 021 863	8 757 809
Canada				309 693	124 107	118 764	122 222		674 786
Cyprus	60 879	99 267	410 470	193 920	75 518	550 745	92 842		1 483 640
Denmark	222 105				186 145	107 348	286 741	1 360 494	2 162 833
Hungary	637 858	483 058	273 363	470 753	426 507	460 467	143 466		2 895 471
Ireland	309 533	234 762	336 974						881 270
Israel	171 753								171 753
Italy	951 487	926 220	889 255	168 631	804 077	635 993	739 088	1 360 108	6 474 860
Luxembourg	302 940	249 623	136 985	322 972	100 926		280 822	315 040	1 709 309
Norway	484 383		713 410			401 109	227 691	391 986	2 218 579
Poland	47 165	149 686	213 178	753 355	213 575	496 380	144 022	592 157	2 609 517
Portugal	500 000	500 000	296 933	500 010	500 292	456 223	448 065	514 791	3 716 314
Romania	1 000 002	1 000 000	811 337	1 061 208	1 124 717	998 318	772 647	995 028	7 763 257
Slovenia	116 115	132 375	183 701	145 719	264 330	117 450	53 598	162 024	1 175 311
Spain	1 428 125		319 023	337 142	486 461	231 938	311 134		3 113 822
Sweden	0								0
Switzerland	4 464 805	4 827 421	4 270 212	2 110 527	1 800 913	1 499 642	2 565 906	2 328 273	23 867 698
Taiwan							280 060	102 937	382 997
The Netherlands	1 289 925	1 597 924	1 706 954	1 513 644	1 360 354	1 381 858	1 308 189	331 820	10 490 668
United Kingdom	526 295	514 700							1 040 995
Total countries	14 605 729	14 491 400	13 020 245	12 814 959	11 331 308	9 849 855	10 000 898	11 969 714	98 084 107

Table 7: Number of individual participations in newly started projects per country, per year. Austria has the highest total number of participations (166), followed by Switzerland (152) and the Netherlands (150). Sweden (6), Canada (5) and Israel (2) are at the bottom of the list. In cases where a country did not commit any funding to a specific call, this is indicated by 'n/a'.

Table 7: Number of individual participations in newly started projects per country, per year

Country	CALL 2014	CALL 2015	CALL 2016	CALL 2017	CALL 2018	CALL 2019	CALL 2020	CALL 2021	TOTAL
Austria	17	23	22	21	22	24	16	21	166
Belgium	6	13	5	13	7	11	11	18	84
Canada	n/a	n/a	0	2	1	1	1	n/a	5
Cyprus	2	2	6	3	1	7	1	n/a	22
Denmark	4	n/a	n/a	n/a	5	4	12	17	42
Hungary	6	6	3	3	7	6	2	n/a	33
Ireland	3	2	2	n/a	n/a	n/a	n/a	n/a	7
Israel	2	0	n/a	n/a	n/a	n/a	n/a	n/a	2
Italy	15	13	13	5	12	11	8	20	97
Luxembourg	1	1	1	3	1	n/a	2	2	11
Norway	6	0	8	n/a	0	6	8	5	33
Poland	1	2	3	7	1	6	2	8	30
Portugal	13	7	2	5	12	8	7	9	63
Romania	8	11	10	11	15	9	12	12	88
Slovenia	3	2	2	4	6	1	1	2	21
Spain	18	0	4	4	6	6	7	n/a	45
Sweden	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6
Switzerland	21	20	15	18	17	17	22	22	152
Taiwan	n/a	n/a	n/a	n/a	n/a	n/a	7	3	10
The Netherlands	15	23	21	18	25	18	16	14	150
United Kingdom	6	4	n/a	n/a	n/a	n/a	n/a	n/a	10
Total	153	129	117	117	138	135	135	153	1077

Analysis per type of organisation

Figure 18 shows the share of individual participations in proposals per type of organisation, counting each individual partner in each application. Seen over the entire Programme duration, SMEs make up 42.1%; the second largest group are end-user organisations with 24.9% of all applications. The least common organisations among the applicants are large enterprises (5.3%) and other organisations (4.0%).

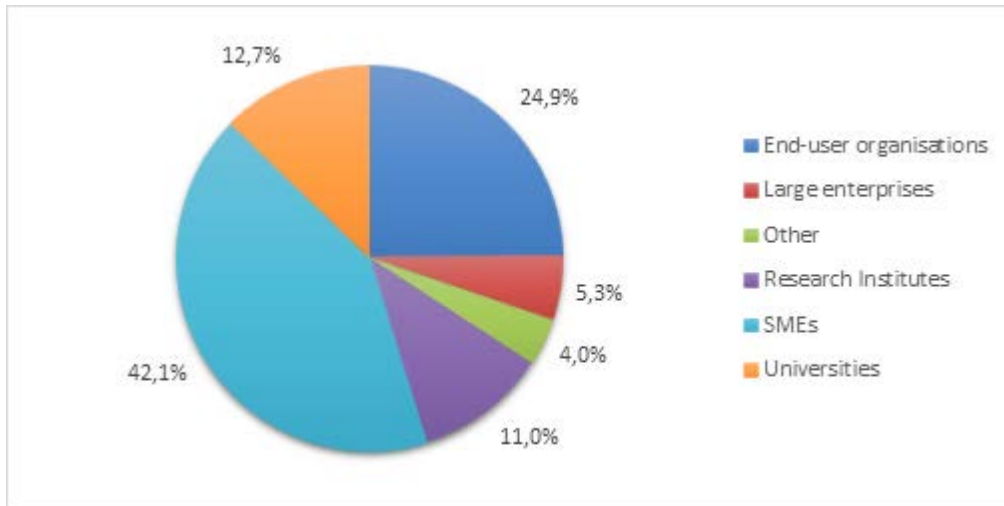


Figure 18: Share

of individual participations in proposals by type of organisation

Figure 19 shows the share of individual participations in newly started projects per type of organisation, counting each individual partner in each project. The distribution across the different types is quite similar to applications, with the higher share of research institutes being the only noticeable difference.

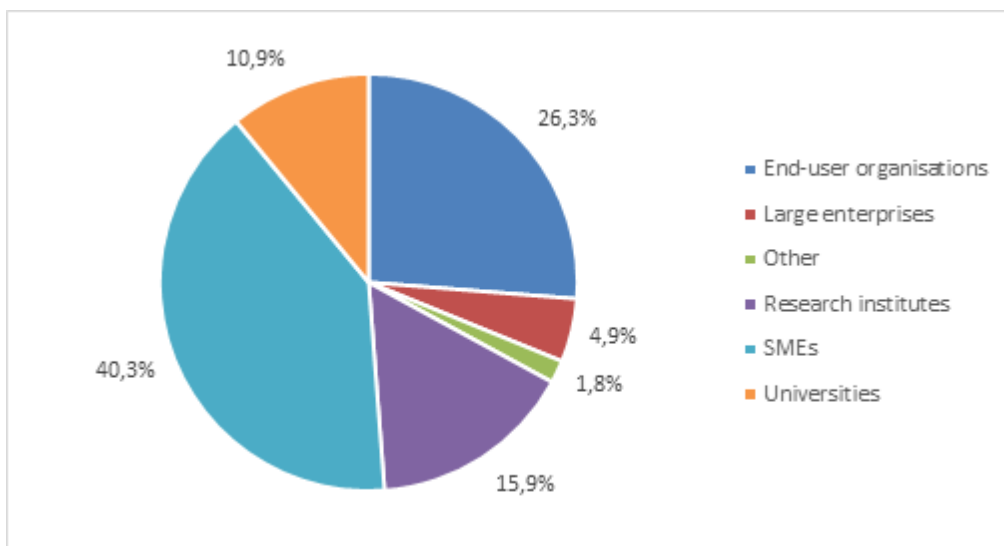
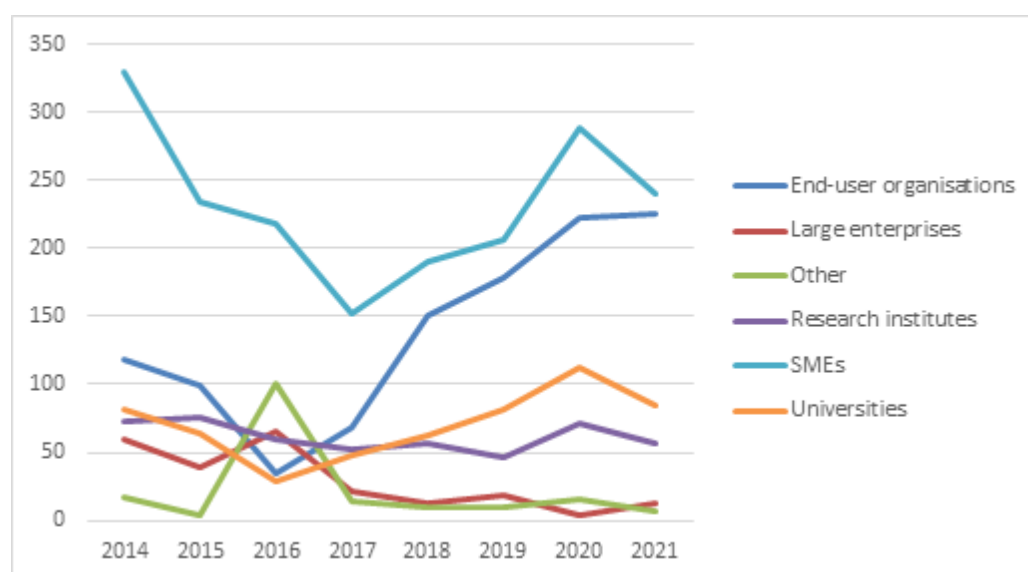


Figure 19: Share

of individual participations in projects by type of organisation

Figure 20 shows the number of applications of individual participations in proposals by type of organisation, per year. While the number of SMEs among applicants fell from approximately 330 in 2014 to 152 in 2017, this number recovered and stabilised at about 250 towards the end of AAL2. There was a strong increase in the number of end-user organisations among applicants since 2017, which rose from 69 in 2017 to 226 in 2021.

Figure 20: Number of individual participations in proposals by type of organisation, per year



The ‘user or end-user organisations’ category in AAL covers three specific types of end-users:

- **Primary end-user:** the person who uses a digital solution for ageing well, considered as a single individual: ‘the Well-Being Person’.
- **Secondary end-users:** persons or organisations directly in contact with one or more primary end-user, including informal carers such as relatives, friends or neighbours and formal carers such as care organisations and their representatives.
- **Tertiary end-users:** private or public organisations that do not directly use a digital solution, but are tasked with organising, enabling or paying for them.

Examples of solutions developed in AAL projects and brought to market

- **RemeCare Heart Failure** (launched in 2021), a remote patient monitoring service for patients with chronic heart failure. Heart failure patients use RemeCare to improve their medication compliance, and to monitor their vital parameters and heart failure symptoms. The use of the app ensures that communication between healthcare providers and patients is improved.
- **123family.org** (launched in 2020), a videocall app suitable for people without digital skills and or with dementia.
- The **DomoCare** product range (launched between 2017 – 2021), a safety and care service platform for seniors living at home (alert systems for home and outside, systems for health monitoring, sleep assessment and combinations thereof).
- **Cariot Brush** (launched in 2020), a solution that helps remind users and their carers to brush their teeth. CARIOT BRUSH can identify residents that have not received the minimum oral care needed and remind nursing home caregivers to facilitate the missing tooth brushing actions via an interactive live info screen placed in the guard room of the nursing home.

- **Anne4Care** (launched in 2019), a virtual assistant supporting videocalling, medication and agenda planning and communication, radio and news selection and communication.
- **Revita** (launched in 2018), a technological platform / monitoring app that brings the hospital and its professionals closer to the patient's home. Users can consult their diaries, obtain reminders, make video calls with professionals and manage their measurements.
- **James Telecare** (launched in 2018), an emergency call system, a watch, which ensures safety of older adults, health monitoring and social integration.
- **Palettev2** (launched in 2018), a contact platform for older adults to share interests, activities and visit events together (matching facility).