



ASTAHG ALPINE SPACE TRANSNATIONAL
GOVERNANCE ON ACTIVE AND HEALTHY
AGEING

WP T2

REPORT ON THE AHA GOVERNANCE
ASSESSMENT METHODOLOGY

D.T2.2.3

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[NIJZ](#) | National Institute of Public Health (Slovenia)

[GINA](#) | Geneva International Network on Ageing (Switzerland)

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LIST OF ACRONYMS

AAI	Active Ageing Index
AHA	Active and Healthy Ageing
AS	Alpine Space
ASTAHG	Alpine Space Transnational Governance of Active and Healthy Ageing
B3-MM	EIP on AHA Action Group B3 Maturity Model
CEA	Cost Effectiveness Analysis
CBA	Cost Benefit Analysis
DG	Directorate General
EUSALP	EU Strategy for the Alpine Region
GAWI	Global Age Watch Index
HrQoL	Health related Quality of Life
HTA	Health Technology Assessment
ICER	Incremental Cost Effectiveness Ratio
ICT	Information and Communication Technology
ICVR	Incremental Cost Value Ratio
IPTS	Institute for Prospective Technological Studies
IQWiG	Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen (Institute for Quality and Efficiency in Health Care)
JRC	Joint Research Centre
MAFEIP	Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing
MCDA	Multicriteria Decision Analysis
MOU	Memorandum of Understanding
NICE	National Institute for Health and Care Excellence
TGB	Transnational Governance Board
WP	Work package
WTP	Willingness to Pay
QALYs	Quality Adjusted Life Years



1 INTRODUCTION

Demographic change constitutes a major societal challenge in most industrialised countries that requires combined efforts from different stakeholders, including public authorities, industry, academia and civil society across policy areas to support Active and Healthy Ageing (AHA) (e.g. Rechel et. al., 2013; WHO, 2002; 2013). This challenge is amplified in the Alpine Space (AS) region by its distinctive characteristics, including considerable regional variation both in demographic change and population growth projections, ultimately calling for tailored interventions to foster Active and Healthy Ageing (AHA). In addition to that, the AS area is composed of regions that belong to different countries which, thus far, has limited the scope for trans-regional and transnational cooperation to tackle the ageing challenge. Further, AHA policies are often restricted to a few areas of public service provision, such as healthcare and welfare authorities. Potential synergies from cooperation across sectors, for instance, cultural, economic or housing policies, are thus often neglected (WHO, 2012; 2013; 2017; OECD, 2015).

1.1 THE ASTAHG PROJECT AT A GLANCE

The Alpine Space Transnational Governance of Active and Healthy Ageing (ASTAHG) project aims to tackle this challenge by following a *multisectoral, transnational, and multilevel* approach to improve AHA in the AS. It is *multisectoral* as it aims to facilitate innovation across sectors, such as social care, healthcare, long term care, independent living, mobility and transport, as well as culture and tourism; and it follows a *transnational* approach as it brings together stakeholders from different regions of the AS to exchange experiences, ideas and innovations, streamline strategies to address



the ageing challenge and to share knowledge and best practices across geographically and/or politically defined contexts. The project's *multilevel* approach aims at cooperation between stakeholders on local, regional, and national level to identify, implement, evaluate and improve upon successful AHA policies and to harvest potential synergies through efficient cooperation along all stages of the policy cycle.

The overall objective of the project is to improve capacities and coordinating efforts in support of AHA between sectors and different levels, and to respond with tailored initiatives to AS territorial needs. It aspires to enhance governance capacities related to regional AHA policies, foster the transfer of innovation for AHA in the AS, and to develop a social innovation framework for generating and adopting innovative solutions for AHA involving both public and private actors (ASTAHG, 2018). To achieve these objectives, ASTAHG will establish a *Transnational Governance Board* (TGB) for AHA to bring policy makers and other stakeholders in the AS together, to develop a network, and to foster the exchange of successful AHA policies, initiatives and innovations. The TGB is defined as '*an open network and the participation of members is free of charge and voluntarily*' (MoU, 2019). Whilst all ASTAHG partners are founding members of the TGB (Managing Committee), other interested organisations and stakeholders may apply to join at any time. (MoU, 2019). The TGBs main objective is '*to promote an 'age-friendly' Alpine Space Area creating synergies between interested stakeholders and governance levels and helping the Alpine Space local, regional and national authorities and other stakeholders to collaborate in promoting innovative solutions that address the needs of the ageing population*' (MoU, 2019).

To this end, ASTAHG will also develop a portfolio of good practices in AHA governance and establish an AHA innovation observatory which classifies AHA initiatives and solutions with context and efficiency indicators (ASTAHG, 2018). A framework for AHA



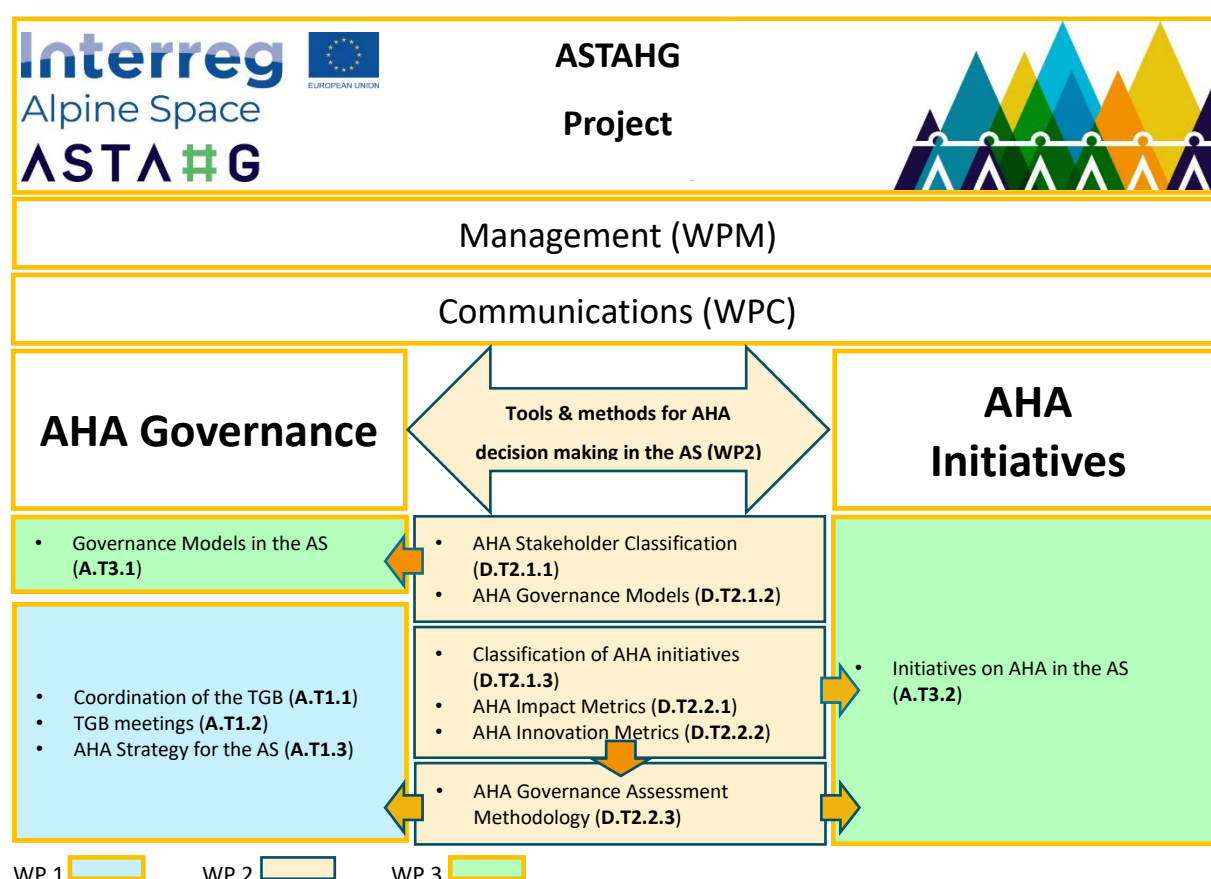
innovation based on the Quadruple Helix model (Carayannis & Campbell, 2009) will foster collaboration between different actors from local, regional and national governance, industry, as well as academia and civil society (ASTAHG, 2018). ASTAHG will also align its efforts and results with the EU Strategy for the Alpine Region (EUSALP) so to further enhance the level of transnational governance throughout the AS.

The ASTAHG project has been designed in several Work Packages (WPs), each of which contributes towards the common aim and objectives (Figure 1). Horizontal activities are concentrated in WPM (Management) and WPC (Communication). Whilst WPM is concerned with overall project management and ensures sound and smooth project implementation, internal communication between partners and with the funding organisation, WPC is dedicated to the development and execution of an efficient communication strategy, engagement with Quadruple-Helix actors in the TGB; exchange with other AHA initiatives, in particular EUSALP; dissemination of project outcomes as well as engagement with AHA stakeholders and a wider public audience.

WPs 1 to 3 are concerned with project implementation. In this context, WP1 aims to establish and manage the TGB that will be composed of public and private actors, pertaining to different levels (regional/local) and sectors as well as representing AS territorial characteristics (ASTAHG, 2018). The TGB is organised in different thematic groups and meets regularly in order to share experiences, knowledge and expertise and to develop a sustainable AHA strategy for the AS based on intersectoral, transnational and multilevel cooperation. The activities in WP1 range from the coordination of the TGB (A.T1.1) to the organisation of regular TGB meetings (A.T1.2) and to develop an AHA strategy for the AS (A.T1.3).

WP2 develops and provides tools and methods for the project, in particular a classification of AHA stakeholders (D.T2.1.1), a model for AHA governance in the AS (D.T2.1.2), a classification of AHA initiatives (D.T2.1.3), as well as AHA impact evaluation metrics (D.T2.2.1), AHA innovation evaluation metrics (D.T2.2.2) and an AHA governance assessment methodology (D.T2.2.3, this report). WP3 is concerned with the application and use of tools and methods developed in WP2: data gathering and analysis of AHA governance models (A.T3.1) and the identification and monitoring of innovation in AHA in the AS (A.T3.2).

Figure 1: Components of the ASTAHG project and WP2 in context



Source: Own drawing based on ASTAHG (2018).

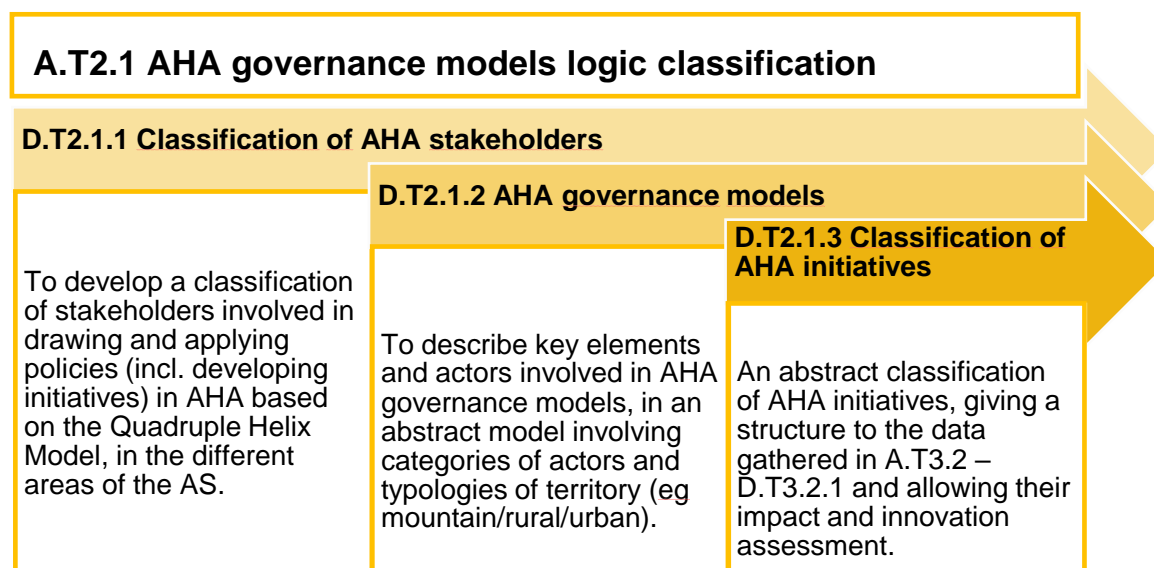


1.2 CONTRIBUTION OF WORK PACKAGE 2

As depicted in Figure 1 above, the overall aim of WP2 is to provide tools and methods for the ASTAHG project to bridge the gap between AHA governance and AHA initiatives and to enable efficient AHA decision making in the AS. WP2 thereby aims at supporting activities both in the context of implementing a Transnational Governance Board (WP1) as well as activities in WP3, which will gather data and information on AHA initiatives and governance models in the AS. Whilst deliverables D.T2.1.1 (AHA stakeholder classification) and D.T2.1.2 (AHA governance models) play a particular important role in the conceptualisation, design, and composition of the TGB by contributing both theoretical models and structuring the space of relevant stakeholders in accordance with the Quadruple Helix Model (Carayannis & Campbell, 2009), they also provide tools for WP3 to collect context specific data on relevant AHA actors and governance models prevalent in the AS region. Deliverable D.T2.1.3 (classification of AHA initiatives), on the other hand, is more concerned with developing a tool to gather information on policies, initiatives and innovations which aim at improving Active and Healthy Ageing in the AS. This tool will, in turn, provide a framework for WP3 to collect and analyse relevant information from each project region, and help structuring the evidence on cross-sectorial AHA policies, initiatives, and innovations which may have the potential to:

- support AHA of the population in the respective project regions
- improve the sustainability of social, health and care systems, as well as other areas of public service provision, and
- contribute towards the competitiveness of local economies by encouraging innovation for AHA in the AS.

Figure 2: Deliverables in Activity T2.1 - AHA governance logic classification



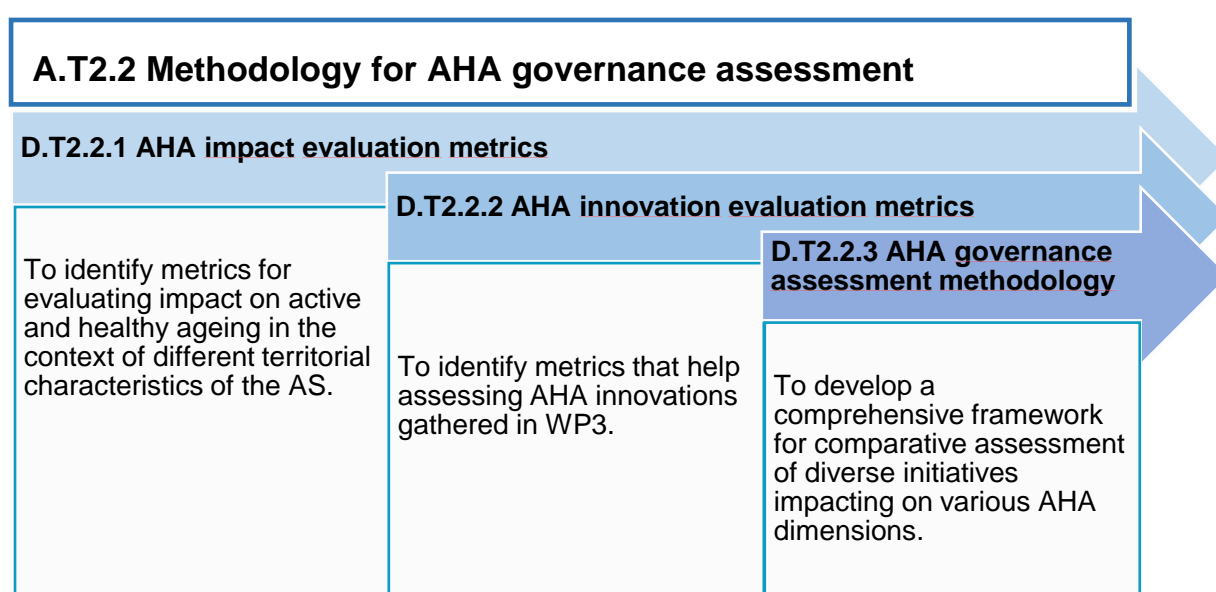
Source: Own drawing based on ASTAHG (2018).

Activities in A.T2.2 (Methodology for AHA governance assessment, Figure 3), are concerned with developing tools and methods for efficient cross-sectorial AHA decision making in the AS. In this context, Deliverable D.T2.2.1 (AHA impact evaluation metrics) gathers indicators that may help quantifying the impact of AHA policies, initiatives and innovations on various dimensions of AHA with the aim to support decision makers identifying promising AHA interventions in their respective contexts. To better understand the innovative character of AHA policies, initiatives and innovations, deliverable D.T2.2.2 further proposes how to identify innovation evaluation metrics from the long list of indicators gathered in Deliverable D.T2.2.1, whilst both deliverables ultimately feed into the development of an AHA governance assessment methodology (deliverable D.T2.2.3, this report). The latter is based on the concept of multicriteria decision analysis (MCDA) and will help decision makers in prioritising amongst policy alternatives that may all lead to various favourable effects across relevant sectors but generally compete for limited resources. The three deliverables also form the basis for data collection and analysis in WP3, with the



ultimate aim to identify and monitor innovation in AHA in the AS through the development of an AHA innovation observatory.

Figure 3: Deliverables in Activity T2.2 - Methodology for AHA governance assessment



Source: Own drawing based on ASTAHG (2018).

1.3 AIM AND STRUCTURE OF THIS REPORT

This report (D.T2.2.3) summarizes the work carried out to develop an AHA governance assessment methodology based on the AHA impact evaluation metrics (D.T2.2.1) and AHA innovation evaluation metrics (D.T2.2.2).

Whilst evidence-based decision making is a well-established process in some areas of public policy making (such as healthcare), there is still ambiguity as to how to prioritise innovations which are competing for limited public resources across traditional silos of



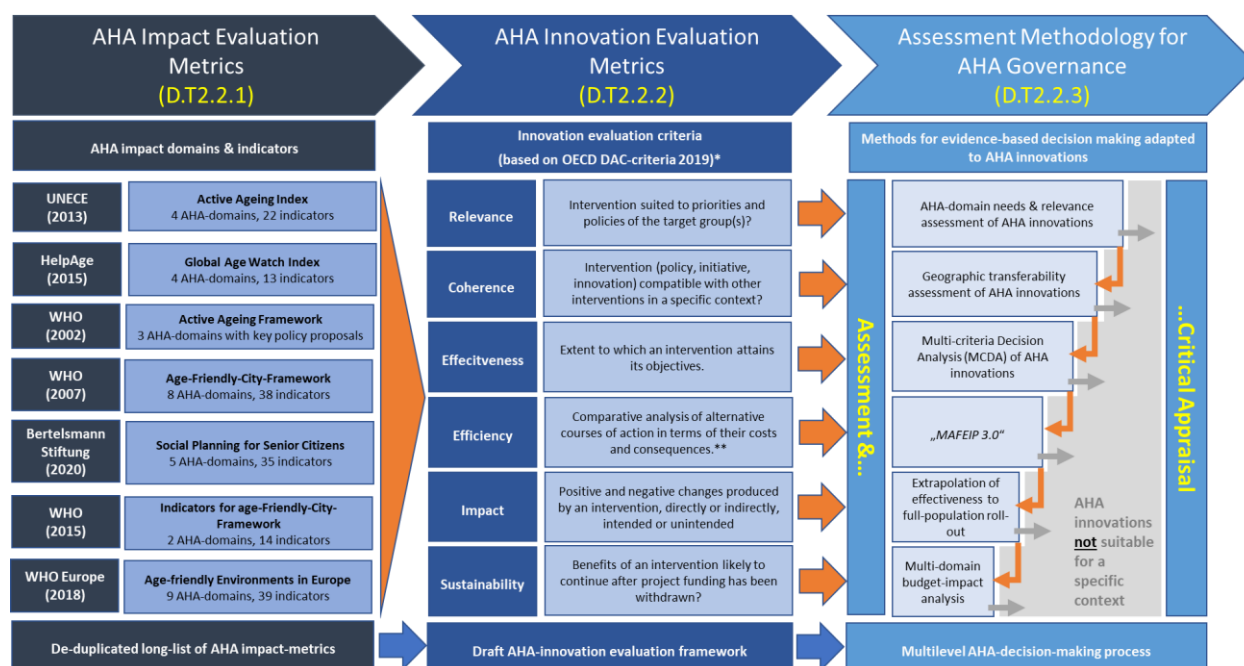
governance, especially when innovations are likely to yield diverse (and sometimes perhaps even conflicting) outcomes. Nevertheless, it is important for AHA-stakeholders to engage in a transparent process so to identify innovations that provide not just good value for money but are also tailored to the needs and preferences of the population in their respective target settings. Some attempts have been made in order to support decision-makers in allocating scarce resources towards cost-effective AHA innovations, most notably with the development of the Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing (www.MAFEIP.eu), developed by the European Commission's Joint Research Centre, Institute for Prospective Technological Studies (Boehler et al., 2015, Boehler & Abadie, 2015, Boehler & Abadie 2016). However, as of today, there is ambiguity as to how to identify the most beneficial technologies from a diverse set of AHA innovations, and a lack of understanding on how to embed evaluation and critical appraisal methods within a structured and transparent process of multi-stakeholder AHA governance.

The aim of this report is to develop such a governance assessment process (Figure 4), building up from AHA impact evaluation indicators and dimensions (D.T2.2.1) and well-established innovation evaluation criteria (D.T2.2.2). It follows the thought that evaluation supports AHA decision making, and should therefore consider the idiosyncrasies of the AHA innovation market, such as:

- Constantly evolving technologies with expanding areas of application
- Innovations yielding multiple outcomes relevant for public policy making across traditional silos of governance
- Immense contextual variation in population needs and preferences, as well as
- Factors facilitating or hindering the success of AHA policies, initiatives and innovations in a particular setting.

Whilst all of the above requires a comprehensive, structured and transparent process of innovation assessment, there is another aspect of effective AHA governance that has not been sufficiently considered thus far, namely the critical appraisal of evidence on innovation cost, outcomes, and impact. Whilst tools such as MAFEIP can help decision-makers to better understand the potential cost and (health) outcomes of innovation, they also provide an incentive for innovators to market their technologies in the most favourable way possible. For this reason, capacities need to be built up on all levels not just to assess the potential impact of innovations on their target populations and respective budgets, but also to critically appraise the available evidence so to make well-informed allocation decisions.

Figure 4: Relationship between deliverables D.T2.2.1, D.T2.2.2 and D.T2.2.3



Sources: Own drawing based on OECD 2002 & OECD 2019. **Drummond et al., 2005.

This report describes the governance assessment process developed within the ASTAHG project as depicted in the third column of Figure 4. This process is based on a combination of AHA impact evaluation metrics and innovation assessment criteria. It



attempts to provide a structured methodology to prioritise AHA innovations in a transparent manner, starting with an assessment of their relevance in a particular setting, and followed by an assessment of geographic transferability, effectiveness, cost-effectiveness, impact and sustainability. At the beginning of this process, the decision problem should be defined, which includes identification of relevant stakeholders and potential AHA innovations (see also Deliverables D.T2.1.1 and D.T2.1.3), and respective innovations should then funnel through the governance assessment process, whilst each step functions as a filter for innovations that are not suitable for a specific context. Hence, at the end of the process, only the most beneficial innovations suitable for a specific context should remain in the basket, and decision makers can prioritise activities based on the evidence collected and critically appraised along the way.

The following chapter reports on the methods used to develop the governance assessment methodology, which is then being explained in detail in chapter 3. Chapter 3 also suggests and presents methods to perform assessments of relevance, coherence, effectiveness, cost-effectiveness, impact and sustainability, but it is not in the scope of this report to provide specific tools for this matter. Instead, the discussion in chapter 4 picks up on remaining gaps and challenges for the assessment and critical appraisal process for AHA innovations presented in this report and provides an account of the steps to be taken to put the governance assessment methodology into practice. These steps include the development of transparent tools and methods for the innovation assessment along each step of the governance assessment methodology, and most importantly, measures to build up capacities for evidence-based decision making for AHA on national, regional, and local levels. Chapter 5 concludes the report and summarises recommendations for future work on AHA innovation assessment and effective multilevel AHA governance methods for AHA decision making.



2 METHODS

This report follows up the work on impact evaluation metrics (D.T2.2.1) and innovation evaluation metrics (D.T2.2.2) and takes it further by developing a governance assessment methodology for decision-making in AHA. More precisely, the indicator sets matched with OECD DAC evaluation criteria form the basis for designing a transparent assessment framework for innovation in AHA that considers the dimensions of relevance, coherence, effectiveness, cost-effectiveness, impact and sustainability.

Based on matching AHA impact evaluation metrics with the OECD DAC evaluation criteria, a raw assessment framework for AHA innovation was developed by reviewing the methodological literature and identifying appropriate methods to answer key questions for each evaluation criterion. The methodology may best be described as an iterative process within which potential methodologies were first identified based on the core questions to answer for each DAC evaluation criterion adapted to AHA, and then scrutinised as to whether they would allow:

- prioritising amongst a constantly increasing set of potentially beneficial AHA innovations;
- considering the multidimensional character of AHA with innovations often yielding a diverse (and sometimes conflicting) set of outcomes with potential relevance for several sectors of public service provision;
- Helping identify key innovations by arranging OECD DAC evaluation criteria adapted to AHA within a multi-step process, where each step acts as a filter for potential innovations to pass through, thereby identifying the most beneficial innovations for a particular context;



- Avoiding duplication of work by aligning methodologies within each assessment step of the process, resulting in an overall assessment framework that would be feasible to implement within the ASTAHG TGB and perhaps function as a blueprint for implementation elsewhere;
- Identifying key areas of further development and improvement.

Hence, in line with the aims and objectives of WP2.2 of the ASTAHG project, the resulting AHA governance assessment framework is of conceptual nature, and more work will be required to operationalise methods within each step of the assessment and appraisal process. Some of these steps should and will be taken within this project (in particular WP3), whilst there will certainly be considerable work to be carried out beyond the scope of this project. This report identifies key areas for further development and suggests necessary next steps within and beyond the scope of ASTAHG.



3 RESULTS

This chapter first outlines the overall ASTAHG AHA governance assessment methodology, before going through each individual assessment step of the process. However, it needs to be stressed that this report is conceptual in nature, there is considerable work to be done to further define and develop tools and methods, but this is not within the remit of this exercise. Some of this work may form part of WP3 of the ASTAHG project and the establishment of the ASTAHG TGB, however, the research required to fully implement the governance assessment methodology certainly goes beyond the scope of this project.

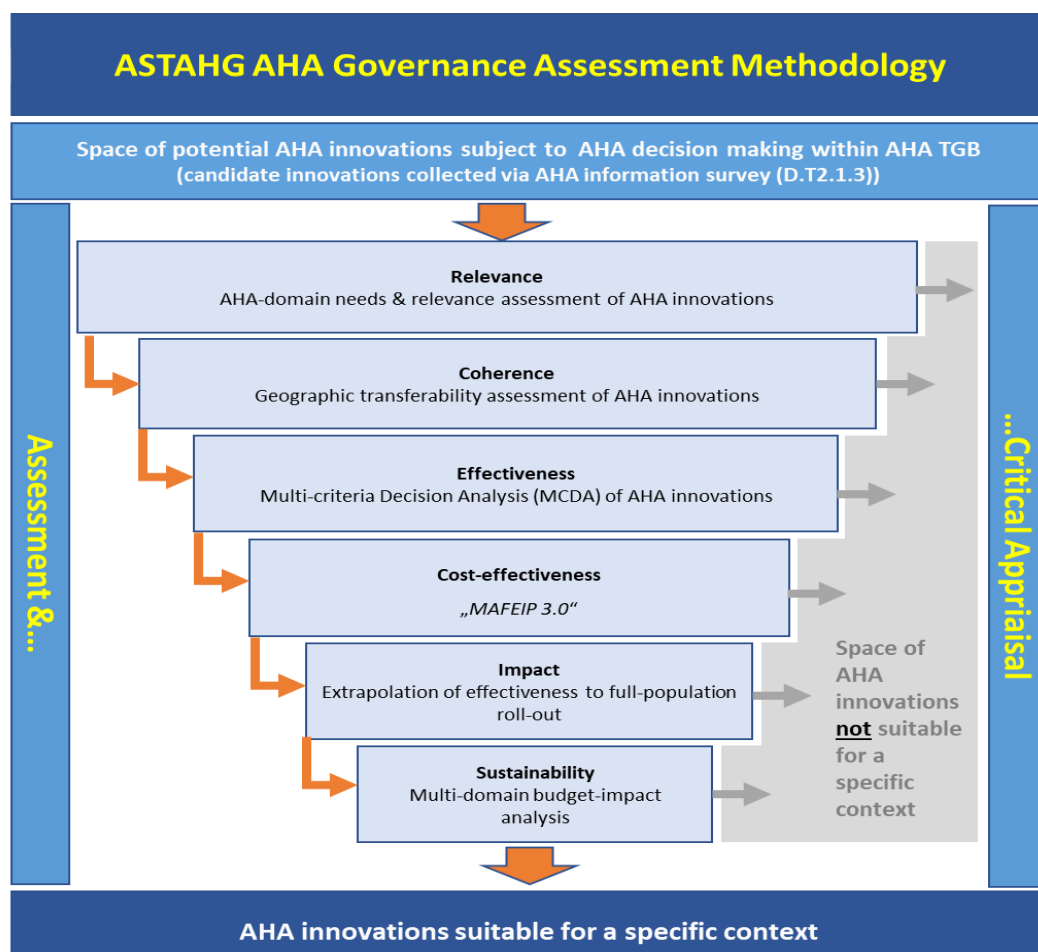
3.1 THE OVERALL AHA GOVERNANCE ASSESSMENT FRAMEWORK

The ASTAHG governance assessment methodology aims to provide a transparent process to funnel AHA innovations through a set of assessment steps based on the OECD DAC evaluation criteria adapted to AHA decision making (OECD, 2002 & OECD, 2019). The objective is to gradually divide the ***‘space of innovations’*** into those that are relevant, transferrable and effective in a certain context, provide good value for money and have positive impact on their respective target populations and the sustainability of health, care and social systems, and those innovations which do not (sufficiently) meet the above named criteria (Figure 5).

The process follows the thought that, as a first step, decision makers ought to assess whether an innovation is actually ***‘relevant’*** for a particular context, which should be based on an assessment of specific needs and preferences of a target population in a particular context. A major difficulty in assessing innovations’ relevance in the context

of AHA decision making is the fact that an innovation may be highly relevant for a particular sector of public service provision in a certain setting, but not so much for other sectors in that setting. Hence, innovation relevance assessment does already entail an element of cross-sectoral decision-making, and respective methods to support this process need to take into account the cross-sectoral character of innovations for AHA. Innovations which are not deemed sufficiently relevant within and between affected sectors of public service provision may not be assessed further.

Figure 5: ASTAHG AHA Governance Assessment Methodology at a glance



Source: Own drawing based on OECD DAC (2019)



Those innovations that meet the relevance criterion should be assessed with respect to their **‘coherence’**. This assessment step aims to identify, from the space of potentially relevant innovations, those that can - at least in principle - be adapted to the target setting, and this setting needs to show the required **‘maturity’** or **‘readiness’** for this particular innovation to be adapted. Note that, according to the OECD DAC criteria, coherence is predominantly concerned with the question of how well an innovation fits into the existing mix of AHA policies, initiatives and innovations in a particular setting. However, we take a broader perspective on this criterion for the purposes of the ASTAHG AHA governance assessment process, as we believe that coherence should be assessed both from:

- the perspective of the innovation itself, considering all criteria potentially relevant for the innovation to work in a particular setting, and
- from the perspective of the ecosystem in which the innovation ought to be embedded, including the maturity of the setting into which the innovation should transfer into.

Again, innovations that are not deemed adaptable to the target setting may not be assessed further, but those that do have the potential to be adapted to a specific context, ought to be assessed with respect to their effectiveness and cost-effectiveness.

The major issue with respect to AHA innovation **‘effectiveness’** assessment is the multitude of potential outcomes these innovations may yield, some of which perhaps conflicting with each other, and many of them certainly relevant to different sectors of public policy making. An assessment process that aims to address this challenge therefore needs to be based on the principles of multicriteria decision analysis (e.g. Thokala & Duenas, 2012; Thokala et al., 2016), which aims to combine relevant indicators (performance measures) with respective preference or relevance weights.



Based on performance measures combined with relevance weights, it should be possible to rank innovations with respect to their potential to meet the preferences and needs of a target population in a particular context.

Whether only the most effective innovations should pass through to the subsequent step, i.e. the assessment of innovations' '**cost-effectiveness**', or whether less effective innovations may also be considered for this part of the ASTAHG AHA governance assessment methodology, is a decision local decision-makers should take. For instance, some Health Technology Assessment (HTA) guidelines only consider those innovations for the assessment of cost-effectiveness which have shown to be more effective and provide an additional benefit compared to the current standard of care (e.g. IQWiG, 2017). This follows the thought that innovations should never make the target population worse off, even if they are highly cost-effective. However, one could also argue that innovations which are less effective but have a highly favourable ratio between their respective incremental cost and outcomes compared to a suitable alternative, may also be considered for adoption in a specific context as this may yield to a higher technical and perhaps allocative efficiency of scarce public resources, especially in times when public budgets are contracting. For more details on this matter see Chapter 3.5 below.

Another question relates to the methodology to assess innovations' cost-effectiveness for AHA in a particular context. In 2015, the European Commission's Joint Research Centre, Institute for Prospective Technological Studies (DG-JRC-IPTS) published the MAFEIP Tool (www.mafeip.eu), which provides a monitoring and assessment framework for the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) (Boehler et al., 2015; Boehler & Abadie, 2015; Boehler & Abadie 2016). The tool allows, from a healthcare and a societal perspective, the early, iterative and



comparative assessment of innovations' cost and health outcomes over a lifetime horizon. It is built upon a Markov process with health states which a certain target population may transition through based on probabilities, as well as resource use and health related quality of life (HrQoL) weights to value these states in terms of their cost and health outcomes (Boehler et al., 2015). Since its launch, the tool received considerable attention, and as of today, about 20 use cases have been published (www.mafeip.eu).

However, for the purposes of multidimensional and cross-sectoral decision making, the MAFEIP Tool is not suitable in its current form as it only considers life expectancy and HrQoL as dimensions of outcome, and therefore is entirely confined to the assessment of healthcare innovations. A suitable methodology for economic evaluation in the context of cross-sectoral decision making for AHA needs to go considerably beyond MAFEIP by incorporating a variety of outcomes potentially relevant for different areas of public policy making. Section 3.5 below goes deeper into this issue and provides some thoughts on how economic evaluation may be conducted in the context of multiple criteria relevant for AHA decision making.

Information on AHA innovations' effectiveness and cost-effectiveness is invaluable for evidence-based decision making. However, decision makers also require information on innovations' long-term '**impact**' on various sectors of public policy making as well as their financial '**sustainability**'. For the purposes of this report, impact is defined as positive and negative changes produced by an intervention, directly or indirectly, intended or unintended (OECD, 2002 & OECD, 2019) and financial sustainability as the cross-sectoral budget impact an innovation may yield under a full population rollout-scenario. Hence, this report outlines how to extrapolate innovation effects and cost



towards a full roll-out scenario so to provide decision makers with information on its expected cross-sectoral impact and financial sustainability in sections 3.6 and 3.7.

3.2 ASSESSING THE RELEVANCE OF AHA INNOVATIONS

For an innovation to be **‘relevant’** in a particular context, it must be able to serve the needs and preferences of the target population in that setting. However, there is considerable variation in population needs and preferences within and across contexts, and AHA innovations generally yield the potential to serve different population needs. Therefore, decision makers across different areas of public service provision need to understand these needs and preferences in their respective settings, and how AHA innovations may help addressing them. In theory, we should be able to assess the relevance of an innovation for AHA in a particular setting through its various dimensions of potential outcomes across AHA sectors combined with an explicit quantitative weight assigned to each dimension of outcome. The idea follows the thought of **‘Random Utility Theory’** (Lancaster, 1966, p.134), which postulates that

- *‘The good, per se, does not give utility to the consumer; it possesses characteristics, and these characteristics give rise to utility’;*
- *‘In general, a good will possess more than one characteristic, and many characteristics will be shared by more than one good’;* and
- *‘Goods in combination may possess characteristics different from those pertaining to the goods separately.’*

Hence, an AHA innovation (*‘the good’*) possesses several characteristics, and each of them contributes differently to the utility a consumer may derive from it. To which extent an individual characteristic may contribute to overall utility also depends on the



context in which the good or service is being implemented, based on actual needs and (perceived) gaps in goods and service provision in that context. In order to prioritise innovations that may enter a particular AHA market within which they essentially compete for limited resources, we therefore ought to know

- which particular needs and preferences they serve;
- to which extent they potentially could do so; and
- the trade-offs between those needs and preferences expressed in a quantitative manner.

Assessing relevance based on multiple indicators, preferences for changes in indicator scores and relevance weights between indicators helps making decisions in a multisectoral context, when innovations have the capacity to serve population needs across different areas of public service provision.

As for the ASTAHG governance assessment methodology, the first step in the process should, *at a minimum*, involve an assessment of

- which subset of indicators reported in Deliverable D.T2.2.1 (AHA impact evaluation metrics) are particularly relevant for capturing population needs and preferences in a particular context based on the selection criteria described in Deliverable D.T2.2.2 (AHA innovation evaluation metrics); and
- whether an innovation may, at least in principle, be able to affect change in those relevant indicators, without (yet) scoring alternatives or weighting indicators.

If an innovation is deemed potentially able to affect change in relevant indicators, it should remain in the process and pass through to the next step (coherence assessment), and this decision is highly context-specific. For a more comprehensive assessment of innovations' relevance, it would of course be necessary to assess not



just whether an innovation may, in principle, be capable to positively affect change in relevant indicator scores, but also the:

- preferences for changes in individual indicator scores; and
- relevance weights based on marginal substitution rates (or trade-offs) between such indicators.

This would ultimately help decision makers understanding not just the principle direction of an effect, i.e. whether consumers would prefer an increase or decrease in a specific indicator score, but also to which extent people would trade characteristics against each other, i.e. whether they would accept a certain decrease in one service in order to obtain better access to another.

However, the ASTAHG AHA governance assessment methodology also aims to strike a balance between scientific rigor and feasibility, which is why this first step should rather be seen as an initial filtering process within which the space of potentially relevant AHA innovations is being divided into those that may or may not be capable to respond to needs in the most relevant AHA dimensions and indicators in a particular context. Scoring alternatives and weighting indicators is a more complex procedure, which should therefore only be applied to innovations that pass through to the third step of the AHA governance assessment methodology, which is concerned with a Multi Criteria Decision Analytic (MCDA) framework. This step of the ASTAHG AHA governance assessment methodology, including scoring and weighting of indicators, is further described in Section 3.4 below.



3.3 ASSESSING THE COHERENCE OF AHA INNOVATIONS

Knowing that an AHA innovation may potentially be relevant for a particular setting does not mean that it may also yield the desired outcomes in that setting. Indeed, it may not even be applicable at all if the context in which the innovation ought to be applied is not sufficiently ‘*mature*’ for that innovation, or if knock-out criteria exist that make it impossible to adapt the innovation to local circumstances. Therefore, assessing the coherence of an AHA innovation constitutes the second step of the ASTAHG AHA governance assessment methodology, and for the purposes of this report, we view coherence both through the lens of:

- **the innovation**, i.e. which characteristics does it possess that determine its outcome and are they adaptable to another context without compromising innovations’ cost and/or outcomes, and
- **the ecosystem**, i.e. is the context sufficiently ready (‘*mature*’) for the innovation to be adapted.

Note that, according to the OECD DAC criteria, coherence is mostly concerned with the current mix of interventions in a particular setting and whether the innovation fits into this mix, adds value, and avoids duplication of efforts. However, we take a broader perspective on coherence by assessing both the context’s maturity and the innovations transferability.

To assess the geographic transferability of AHA-innovation to other contexts, decision makers need to know which factors determine whether the innovation can yield its effectiveness at given costs; which of those factors may vary between the original context (in which the innovation was developed) and the decision makers’ target context; and which of these factors may either constitute ‘**knock-out**’ criteria for



transferring innovations, or perhaps can be adapted to make the innovation work in the new setting (Boehler, 2013; Boehler & Lord 2016).

Likewise, in order to assess the maturity of a particular setting for an innovation to be implemented, decision makers need to know which factors may contribute to the success of an innovation in that setting (Grooten et al., 2018). The distinction between an innovation's geographic transferability and a context's maturity, however, essentially divides the space of variability factors into those that can be addressed by either tailoring the innovation to the context (transferring the innovation) or the context to the innovation (improving context maturity). In this sense, context maturity and innovations' transferability potential appear to be two sides of the same coin.

The European Innovation Partnership's for Active and Healthy Ageing Action Group B3 developed a model (B3-MM) to assess the maturity of a specific context to deliver integrated care (Henderson et al., 2016; Grooten et al., 2018). Henderson et al. (2016) state that *'a key notion in the B3-MM is that of understanding the context in which a good practice has been developed, and into which a good practice will be transferred'* and its goal is to *'provide a multi-dimensional benchmark of the maturity of a context (the regional delivery system and political and organisational environment) in which a good practice operates or is proposed to transfer into.'* (Henderson et al., 2016)

The B3-MM is based on twelve dimensions which aim to capture the activities that ought to be addressed when delivering integrated care in a particular context, including the specific delivery system of care as well as its political and organisational ecosystem (Grooten et al., 2018). These dimensions include the readiness to change; structure and governance; information and e-Health; standardisation and simplification; finance and funding; barriers (inhibitors); population aspects; citizen



empowerment; evaluation methodology; ambition; innovation management and capacity building (Grooten et al., 2018). Within each domain, there is a set of performance indicators which can be scored on a 5-point scale (Henderson et al., 2016). Based on its results, local stakeholders may assess the maturity of their context for innovation (confined to integrated care) to be implemented.

The B3-MM provides a good basis for the ASTAHG AHA governance assessment methodology in the context of coherence assessment as it:

- Considers various aspects of context maturity along the policy cycle and is therefore generally compatible with the ASHTAG governance assessment model described in deliverable D.T2.1.2, and
- Allows scoring the readiness of a particular context for innovation to be adopted and thereby helps identifying factors that may either facilitate or constitute barriers to the successful adoption of innovation in a particular setting.
- Combined with intuitive visualisation, results may help decision makers targeting efforts towards those areas that require improvement before innovations may be adopted successfully in their setting.

However, there are also a few further developments that could make the B3-MM even more useful in the context of ASTAHG in particular and cross-sectoral AHA decision-making more generally:

- A further refinement of contextual factors along the policy cycle may help disclosing further gaps in context maturity, including for instance: legal aspects; specific financing mechanisms (beyond the question of project funding); cultural barriers; existing services and infrastructure; etc. This would help identifying concrete areas for further development before an innovation may be adopted in a particular setting



- The B3-MM in its current form is exclusively focussed on the maturity of the context, whilst the other side of the coin (i.e. the potential of an innovation to be tailored to a particular setting) would warrant further assessment.
- Finally, the B3-MM has been developed to assess the maturity of a context for integrated care innovation to be adopted. Whether this model could be generalised to other AHA innovations within the context of multisectoral decision making would have to be tested.

A third dimension of coherence, which is related to the above, refers to the transferability of evidence on the cost and potential effects of innovations. Whether an innovation yields the desired outcomes at reported costs in one setting does not necessarily mean that it will do so in any other setting. In 2004, Sculpher et al. reviewed the cost-effectiveness literature and identified 77 unique factors that may cause variability in the reported cost-effectiveness of healthcare innovations (Sculpher et al., 2004). In 2007, Goeree et al. grouped these factors into patient characteristics, disease characteristics, provider characteristics, healthcare system characteristics and methodological factors (Goeree et al. 2007). Boehler (2013) and Boehler & Lord (2016) reported on a study that aimed to quantify, in a multilevel meta-regression framework, the extent to which these factors may cause variability in incremental cost and effects within and between geographic contexts. This approach could help identifying those factors most relevant when transferring innovations from one context to another, and thereby help decision-makers focussing efforts to tailor innovations to a particular target setting on those aspects that critically impact on its expected cost and outcomes, given that there are no specific knock-out criteria for adaptation. Finally, there is also a considerable body of literature on critically appraising the transferability potential of evidence from one context to another, and various tools (such as checklists, decision charts or indices) have been developed (Goeree et al., 2011). This

body of literature could help further refining the B3-MM in the context of ASTAHG, thereby shedding more light on innovations' potential to be transferred to a particular target context.

3.4 ASSESSING MULTIPLE EFFECTS OF AHA INNOVATIONS

One of the key problems of assessing AHA innovations' effectiveness is their potential to yield multiple outcomes which may be relevant for various sectors of public policy making. As ASTAHG explicitly follows a multisectoral approach, this problem moves even further into the focus of AHA innovation effectiveness assessment. The third step of the AHA governance assessment methodology is concerned with multicriteria methods for AHA decision making.

Multi Criteria Decision Analysis (MCDA) is a widely accepted methodology to support decision making when innovations yield multiple (and sometimes perhaps even conflicting) outcomes, and it has been successfully adapted to areas such as environmental, agricultural, energy, or healthcare priority setting (e.g. Baltussen & Niessen, 2006; Dolan, 2010; Devlin & Sussex, 2011; Thokala & Duenas, 2012; Thokala et al., 2016; Marsh et al., 2016). Thokala & Duenas (2012) state that MCDA studies always rest on the following components:

- The **alternatives** to be appraised, in our case represented by competing AHA innovations with potential cross-sectoral impact
- The **criteria** (or attributes) against which these alternatives are being appraised, as identified (from the long list of potential indicators reported in Deliverable D.T2.2.1 using selection criteria as reported in Deliverable D.T2.2.2) during the first step of the ASTAHG AHA governance assessment process (relevance).



- The **scores**, reflecting the performance of each alternative with respect to relevant criteria. These scores should be sourced from the best available information available about the potential outcomes of innovations at their time of assessment
- Criteria **weights**, which measure the relative importance of each criterion in comparison to others.

The MCDA method, more precisely, the value measurement approach, then combines numerical attribute scores with their respective relevance weights, which allows calculating an overall score for each innovation alternative, and also permits assessment of uncertainty and heterogeneity through sensitivity and scenario analyses (Thokala & Duenas, 2012). In some respects, this method may bear at least some similarities with composite indicators already in use in the AHA area, such as the Active Ageing Index (AAI) (OECD, 2008; Zaidi et al, 2013). However, the AAI has not been developed as a tool for the comparative analysis of innovations and there has been substantial criticism, for instance, with respect to the elicitation and use of static linear weights used for the AAI, as thoroughly discussed by Boehler et al., 2018.

The steps typically taken in performing MCDA have been summarized by Thokala et al. (2016) and adapted to the ASTHAG governance assessment methodology below.

3.4.1 Decision Problem

A definition of the '**decision problem**' includes, for instance, a description of the alternative AHA innovations under consideration as well as relevant stakeholders and the desired / required outcomes. The AHA information survey (Deliverable D.T2.1.3) gathers relevant information on potential AHA activities (policies, initiatives and innovations) that may be subject for evaluation within the ASTAHG TGB. The AHA-



stakeholder survey (Deliverable D.T2.1.1) and the AHA-information survey (Deliverable D.T2.1.3) also provide initial information on relevant stakeholders as well as available evidence on innovation effectiveness, cost-effectiveness and impact. The information gathered through these instruments may therefore be used (and perhaps updated and complemented with additional evidence) to define the decision problem within the TGB, in coordination with and between its thematic groups.

3.4.2 Evaluation criteria

As described in Section 3.2 above, the first step of the ASTAHG AHA governance assessment methodology aims at refining the long list of potentially relevant AHA dimensions and indicators so to provide a shortlist of indicators which is relevant for the particular decision problem and fulfils essential indicator requirements. This task, however, depends on the definition of the decision problem and the respective context, and therefore needs to be carried out within thematic groups of the ASTAHG TGB.

To support this task, Deliverable D.T2.2.1 provides information on dimensions and indicators to assess the state of AHA in a particular context (AHA impact evaluation metrics), elicited from tools such as the Active Ageing Index (AAI) or Global Age Watch Index (GAWI). This long list of AHA dimensions and indicators may further be refined with respect to their potential to serve as innovation evaluation metrics. Deliverable D.T2.2.2 provides recommendations on how to perform this selection based on theory of change models as well as technical and policy criteria. Additional criteria to consider may be completeness, non-redundancy, nonoverlap, and preferential independence of indicators (Thokala et al., 2016).



Based on the information provided by Deliverables D.T2.2.1 and D.T2.2.2, there are different methods for TGB thematic groups that could be applied to derive such a short list of relevant indicators to be used in a particular decision on alternative AHA innovations, such as focus groups or facilitated workshops (Thokala et al., 2016).

3.4.3 Performance measures

The AHA information survey (Deliverable D.T2.1.3) provides initial information about evidence on AHA-innovation effectiveness, cost-effectiveness, and impact, and this information should be followed up further to gather information on performance measures for relevant indicators.

Performance measures are essentially the data that feed into relevant indicators, and Thokala et al. (2016) state that gathering of evidence on innovations' performance may be based on various methods, ranging from rigorous evidence synthesis to elicitation of expert opinion (especially in situations when evidence on innovations' effects is scarce). Results of this step may be collected within a '**performance matrix**' (Thokala et al., 2016).

3.4.4 Scoring

Each relevant indicator may be measured in different units and / or scales. Indicator scores maybe assigned so to measure indicators on a common scale (Thokala et al., 2016).

For instance, each indicator may be expressed as a score ranging from zero to 100. Translating the actual performance alongside an indicator (e.g. increased participation in society; change in life expectancy; etc.) into a numerical score ranging from zero to 100 involves elicitation of stakeholder preferences. Potential methods to derive



indicator scores include, for instance, direct rating (e.g. visual analogue scales; point allocation), pairwise comparisons, but also discrete choice experiments (DCEs) or conjoint analysis (Thokala et al., 2016).

3.4.5 Weighting

In order to derive an overall score for each alternative AHA innovation under consideration, it is necessary to estimate quantitative weights between indicators. Indicator weights provide an expression of relevance for that indicator in a particular context, and they should also be based on stakeholder's preferences. Weights also express trade-offs between indicators and are therefore essential for multisectoral decision-making.

There are several methods available to estimate indicator weights, such as choice based approaches (e.g. Discrete Choice Experiments), pairwise comparisons (e.g. Analytic Hierarchy Process) or direct ranking or rating methods (e.g. worst / best scaling, point allocation, or swing weighting) (Marsh et al., 2016; Thokala et al., 2016).

Based on an appropriate methodology, weights should be elicited from ASTAHG TGB members and relevant stakeholders in each project region. Especially in a multisectoral decision context, it is important to note, however, that the choice of stakeholders to elicit indicator weights from is a normative one and will have an influence on the overall score of each alternative innovation under consideration (Thokala et al., 2016), and the discussion section of this report will further elaborate on this issue. Results should therefore also be assessed with respect to uncertainty and heterogeneity (Section 3.4.7 below).



3.4.6 Aggregation of scores and weights

The most commonly used MCDA approach is perhaps the value measurement model, in which indicator scores are multiplied by their respective weight and results are then being added to calculate an overall score (Thokala & Duenas, 2012). Decision alternatives can then be compared by means of their overall scores. For instance, competing AHA alternatives could be ranked by means of their overall scores and prioritised respectively.

Of particular relevance for the purposes of multisectoral decision making may also be partial scores of innovations which have the potential to serve needs and preferences across different sectors of public service provision. Such partial scores may help informing allocative decisions across traditional governance silos, which will be further elaborated in Section 3.7 below.

3.4.7 Uncertainty and heterogeneity

Essentially all aspects of the MCDA model are subject to uncertainty, including its design, the choice of indicators, the information on indicator performance as well as the views feeding into the development of scores and indicator weights (Thokala et al., 2016).

Uncertainty with respect to the model structure may at least partly be addressed by assessing different scenarios and / or using different subsets of indicators relevant for AHA innovations under consideration. Deterministic and probabilistic sensitivity analyses may be used to address parameter uncertainty, i.e. the data that feeds into the model based on the best available evidence on AHA-innovations' performance along relevant indicators. Finally, local stakeholder views and preferences may differ, especially if they represent different sectors of public policy making. It is therefore



possible to test variation in scores and weights between relevant subgroups and their impact on overall scores (Thokala et al., 2016).

3.4.8 Reporting

As Thokala et al (2016) state, MCDA *'provides clarity on which criteria are relevant, the importance attached to each, and how to use this information in a framework for assessing the available alternatives'*. This way, MCDA *'can help increase the consistency, transparency, and legitimacy of decisions'* (Thokala et al., 2016), and consistency, transparency and legitimacy should also be guiding principles of the ASTAHG TGB.

Reporting MCDA results in a consistent transparent manner is equally important for that purpose. Alternative innovations may be presented in tables in descending order of their overall MCDA scores, and results may also be presented graphically. Even though there is no commonly accepted threshold value, another advantage of MCDA is the possibility to assign cost to scores, which is discussed in more detail in Sections 3.5 and 3.7 below. Finally, within the context of cross-sectoral decision making, it may be possible to assign fractions of the total MCDA score an alternative may yield towards AHA sectors based on the weights elicited for indicators (which may pertain to specific AHA domains). This information may prove invaluable for cross-sectoral decision making and, if combined with cost data, cross-sectoral budget allocation.



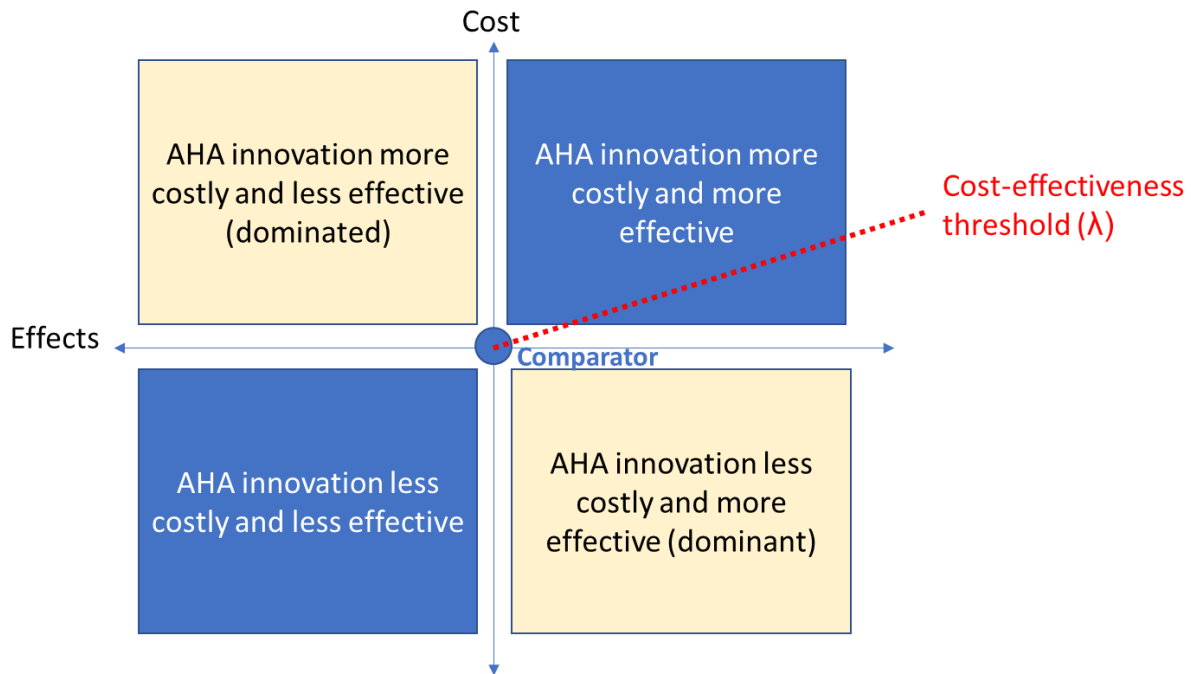
3.5 ASSESSING THE COST-EFFECTIVENESS OF AHA INNOVATIONS

According to Drummond et al. (2005), economic evaluation is *‘the comparative analysis of alternative courses of action in terms of both their costs and consequences’*. A methodology for the analysis of AHA innovations’ consequences was presented in the previous section. The purpose of this section is therefore to expand the multi-criteria decision analytic approach towards both the consequences and cost of AHA-innovations in a comparative manner.

There have been attempts to assess the incremental cost and health outcomes of innovation for active and healthy ageing, most notably with the development of the Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing (MAFEIP). The MAFEIP tool allows for an early and iterative assessment of innovation in terms of its cost and health outcomes (life expectancy and health related quality of life) over a lifetime horizon (Boehler et al., 2015, Boehler & Abadie, 2015, Boehler & Abadie 2016).

As it builds up from the conventional cost-effectiveness framework, results of the MAFEIP tool may be graphically displayed in a cost-effectiveness plane (Figure 6). In Figure 6, the plane originates from the alternative against which the innovation is being compared, so that incremental cost of the innovation are measured on the vertical axis, whilst incremental health effects are measured on the horizontal axis. Should an innovation fall into the northwest-quadrant of this plane, it means that it is less effective and more costly than the alternative against which it has been compared and therefore dominated. Likewise, innovations falling into the southeast quadrant are more effective and less costly compared to the alternative and therefore dominant.

Figure 6: Cost-effectiveness plane



Source: own drawing based on Drummond et al. (2005)

The decision is more difficult for innovations that are either more costly and more effective (northeast-quadrant) or less costly but also less effective (southwest-quadrant) as compared to the alternative under consideration. Some jurisdictions mandate that innovations subject to cost-effectiveness analysis should always yield additional benefit so that only innovations falling into the northeast-quadrant should be considered (e.g. IQWIG, 2017). This follows the thought that innovations should never make people worse off. However, in times of contracting budgets, there is also an argument to improve technical and perhaps allocative efficiency by considering cost-effective innovations falling into the southwest-quadrant of the cost-effectiveness plane.

Whether an innovation yields better outcomes at higher cost, or may save resources but yield lower outcomes, in both cases we require a decision criterion upon which we

may judge whether an innovation is deemed cost-effective. This is represented with the dashed line in Figure 6, representing the cost-effectiveness threshold λ . Innovations below this threshold are considered cost-effective and the threshold value usually represents the opportunity cost of the displaced alternative (e.g. Drummond et al., 2005).

One shortcoming of the MAFEIP tool in the context of AHA decision making is that it is entirely constrained to health outcomes, thereby falling short of assessing the various non-health outcomes of AHA innovation in a particular context. Indeed, a key problem of multi-outcome cost-effectiveness analysis within the analytical framework of MAFEIP is the current lack of a composite measure of AHA innovation outcomes. There have been attempts to develop such measures, some trying to transcend Quality Adjusted Life Years (QALYs) beyond health, others advocating to express outcomes entirely in monetary units (Brazier & Tsuchiya, 2015). However, many object against monetarising outcomes such as health (and with that life per se), and others argue that the multiple dimensions of outcome relevant to a decision cannot be incorporated into one single metric within the cost-effectiveness framework (e.g. Reed et al., 2019).

MCDA as described in the previous section may provide a transparent alternative to the CEA framework upon which MAFEIP was built. It explicitly considers what constitutes ‘value’ and to whom, and it also provides methods to weight between different dimensions of innovations’ outcome. This feature of MCDA may prove invaluable especially in the context of cross-sectoral decision making on AHA innovations that may yield impact across various domains of public policy-making and may improve communication between decision-makers across traditional policy silos (Thokala et al., 2016). This is also a core ambition of the ASTAHG project.



One way to incorporate cost into the MCDA framework is to compare the aggregate MCDA-value of AHA innovations with their respective cost, hence estimating *‘incremental cost value ratios’* (ICVR) (Angelis and Kanavos, 2016). In analogy to the conventional incremental cost-effectiveness ratios (ICERS), those innovations that achieve a lower ICVR would provide better value for money and therefore constitute a preferable option. However, whilst there are numerous jurisdictions that already base healthcare decision making on CEA and therefore have estimated threshold values reflecting opportunity cost as depicted in Figure 6 above, such a threshold does not exist in the context of MCDA and decision makers may be unaware of the benefits foregone from displaced alternatives (Marsh et al, 2016). Estimating a value threshold for MCDA, however, would be considerably more difficult compared to the conventional CEA framework as opportunity cost would have to be considered across all relevant criteria (Thokala & Duenas, 2012).

At a minimum, MCDA results could be presented to decision makers in a table with innovations ranked by their ICVR in increasing order. This would not solve the problem that decision-makers cannot put a value on the benefits foregone from the displaced alternative, but it could help prioritising investments into AHA innovations based on their respective value for money (Hansen & Devlin, 2019). It would assume that the process *‘involves the assessment of all technologies simultaneously, [so that] the challenge of estimating opportunity cost is removed’* (Marsh et al., 2018, p. 4). Innovations cost and MCDA-scores could also be plotted in a **‘value for money-chart’**, which could help decision makers identifying the **‘optimal portfolio’** of AHA innovations for their respective contexts, given the respective AHA-resources available (Hansen & Devlin, 2019).



3.6 ASSESSING THE IMPACT OF AHA INNOVATIONS

Based on the OECD-DAC evaluation framework, upon which the ASTAHG Governance assessment methodology is built, the distinction between outcomes (considered above in Section 3.4) and impact may best be captured by their respective time horizon and scope (OECD, 2002;2019). Whilst outcomes are defined to be rather immediate and direct, impact is understood as the long-term, intended and unintended, direct and indirect, positive or negative higher-level effects of an activity in terms of lasting changes in systems, norms, well-being, human rights, equality and / or the environment (OECD, 2002;2019).

Obviously, the distinction between outcomes and impact poses several questions in the context of the proposed ASTAHG governance assessment methodology:

First and foremost, as indicators for assessing innovations' effectiveness must be identified and agreed upon, so must dimensions of impact. The key questions are what constitute '**higher level effects**' of an activity in the context of AHA, and for whom. A convenient starting point for commonly agreed criteria in the realm of AHA is the EIP on AHA's headline target (increase of healthy life expectancy by 2 years until 2020) and its triple-win, i.e. improved quality of life, sustainability of health and care systems (see section 3.7 below), as well as innovation and growth (EC, 2020). Though this would certainly be in line with many of the ASTAHG objectives, there may also be other important components of innovations' impact for the purposes of ASTAHG (and perhaps beyond), and the literature review reported in Deliverable D.T2.2.1 provides a long list of AHA indicators and domains that may be used for innovations' impact assessment. Also, in addition to those metrics identified in D.T2.2.1, other important impact dimensions should perhaps be considered, such as distributional effects and



equity (e.g. between genders, age groups, socio-economic subgroups, etc.), impact on ageism and stereotypes against older people, or moving towards and an age-inclusive society, amongst others.

However, the appropriate choice of indicators also depends on the respective level of policy-making and the perspective of the relevant stakeholders. Obviously, relevant dimensions of innovations impact may differ both vertically and horizontally within the context of multisectoral AHA-governance, and different AHA stakeholders will consider different dimensions of innovations' impact more relevant. Indeed, the complexities arising from the multisectoral decision-making approach within ASTAHG has been stressed before, and the MCDA framework proposed in this report is a direct response to this challenge. The same complexity that has been stressed with respect to innovation outcome assessment, however, equally applies to the assessment and evaluation of impact. What constitutes relevant impact may differ drastically between sectors of public policy-making, and perhaps the weights elicited within AHA innovation outcome assessment may also help assigning innovations' impact towards respective silos of public service provision. This knowledge may then help decision makers informing cross-sectoral funding decisions, which will be further detailed in the subsequent section. In conclusion, however, the choice of appropriate indicators for innovations' impact assessment is not trivial and needs to be considered within the context in which the innovation is being implemented and in consultation with relevant stakeholders.

Finally, there are considerable methodological challenges as to how to extrapolate from innovation outcomes towards its higher-level impact. In this context, Grieve & Briggs (2015), for instance, developed a '*theory of change*' based framework to assess the impact of HTA in a given context (Grieve & Briggs, 2015). They distinguish between



the potential impact of an innovation given a full-implementation scenario versus actual current implementation levels. The difference between both represents the *‘expected value of perfect implementation’* and denotes *‘the upper bound on the value of what we should be prepared to invest [...] to improve implementation of (or adherence to) cost-effective interventions to generate greater impact’* (Grieve & Briggs, 2015, p. 15). Obviously, there needs to be more conceptual development to extrapolate AHA innovations’ multiple outcomes towards higher-level population impact, and this also includes theories of change and modelling of causal relationships between innovations’ outcomes and its potential higher-level impact. In this context, evaluators should make use of the entire arsenal of appropriate quantitative, qualitative and mixed methods to conduct innovation impact assessment.

3.7 ASSESSING THE SUSTAINABILITY OF AHA INNOVATIONS

The final step in the ASTAHG governance assessment methodology involves the evaluation of innovations’ sustainability. According to the OECD evaluation criteria, the assessment of sustainability includes the *“examination of the financial, economic, social, environmental, and institutional capacities of the systems needed to sustain net benefits over time.”* (OECD, 2002;2019). Further, assessing innovations’ sustainability includes *“analysing the actual flow of net benefits or estimating the likelihood of net benefits continuing over the medium and long-term”* (OECD, 2002;2019). For the purposes of ASTAHG, we take a budget impact perspective on innovations’ sustainability, and thereby closely follow the EIP on AHA’s triple win objectives (EC, 2020), i.e.

- *“Improving the health and quality of life of Europeans with a focus on older people;*



- *Supporting the long-term sustainability and efficiency of health and social care systems; and*
- *Enhancing the competitiveness of EU industry through business and expansion in new markets”*

Further, we regard sustainability as the financial impact an innovation may have on AHA stakeholders’ budgets over time. Hence, as with innovations’ impact described above in Section 3.6, assessing sustainability involves constructing a full-rollout scenario and estimating financial impact over time in a respective target setting. Therefore, as with innovations’ impact, we distinguish between the budget consequences given a full-implementation scenario versus actual current implementation levels. The difference between both represents the expected cost of perfect implementation.

An appealing side effect of the proposed multi-criteria decision analytic approach is that it provides a comprehensive framework consisting of a) the indicators stakeholders regard as relevant for assessing AHA innovations in their respective settings, b) performance scores of such indicators and c) quantitative weights between indicators so to estimate an overall score upon which innovations may be ranked. Also, the metrics proposed in deliverable D.T2.2.1 provide a long list of potentially relevant indicators grouped in AHA dimensions:

- Demographic and social-structural data;
- Civic engagement and participation in society;
- Mobility and transport;
- Communication, information and ICT;
- Housing, outdoor spaces and enabling environment;
- Health and care; and
- Security and safety



Hence, in terms of financial sustainability, the framework allows, at least in theory, to work backwards from the overall MCDA score an innovation may achieve towards partial scores of (groups of) indicators within each AHA dimension listed above. This, in turn, may allow representing the partial value of an intersectoral innovation across relevant AHA dimensions, and this information could ultimately be used to support cross-sectoral resource allocation.

There is an overlap between the AHA dimensions proposed in Deliverable D.T2.2.1 and traditional sectors of public service provision. In addition, the exercise of estimating indicator weights reveals preferences of various stakeholders with respect to diverse innovation outcomes, and subgroup analysis may be conducted to estimate respective relevance weights for stakeholders representing different sectors of public service provision. Based on this information, we can estimate partial scores falling into different AHA dimensions and simultaneously estimate the fraction of expected cost of perfect implementation that should be assigned to impact achieved in AHA dimensions relevant for respective governance sectors. Based on these cost fractions, we could then estimate budget impact in each relevant sector of public service provision (also taking into account sector-specific financial impact, e.g. of changes in demand for other services from implementing the innovation under assessment) and thereby help decision makers across traditional silos of public policymaking to:

- better understand the financial impact an AHA innovation may / should have on their respective budgets, and
- negotiate funding for implementation between their respective sectors.



This would ultimately support cross-sectoral funding decisions for implementing AHA innovation in a particular market and achieving this goal would be ground-breaking and truly make a step towards effective multilevel and cross-sectoral AHA governance.



4 DISCUSSION

This report outlines a governance assessment methodology to support multisectoral decision making for AHA within the ASTAHG TGB. It is important, however, to put this framework in context. This section provides a discussion on the above presented framework, its strengths and weaknesses and critical areas for further work.

4.1 SCOPE OF THE ASTAHG GOVERNANCE ASSESSMENT METHODOLOGY

According to the proposal for the ASTAHG project, this governance assessment methodology should be based on the following features (ASTAHG, 2018):

- The governance assessment methodology should provide an *abstract logical model* based upon *widely used, international indicators* and concepts (e.g. AAI, MAFEIP);
- The logics used should allow a certain degree of *flexibility* to the final user, in order to take into account the *priorities of the specific territory/country/organisations* using it;
- The activity should adapt the current AAI into a *comprehensive tool for needs and impact assessment of AHA* governance, based on:
 - *multiple criteria* relevant for decision making in AHA governance;
 - *stakeholder preferences* (and variation therein), reflected in weights between relevant criteria; and
 - specific indicators to represent the *peculiarity in the AS* area.
- The methodology should provide a comprehensive framework for *comparative assessment of diverse initiatives impacting on various AHA dimensions*, based on *multi-criteria decision analysis*;



- The method should thereby help *prioritising innovations and initiatives that best meet context specific needs.*

The methodology described in Deliverables D.T2.2.1 (AHA impact evaluation metrics), D.T2.2.2 (AHA innovation evaluation metrics) and in particular this report (D.T2.2.3, AHA governance assessment methodology) aims to provide such an abstract framework, and in several aspects goes beyond what has been suggested in the ASTAHG proposal.

For instance, instead of basing AHA domains and indicators on the AAI alone, we have conducted a pragmatic review of existing tools and frameworks to measure the status quo and / or progress in AHA so to compile a long list of AHA indicators and domains that may be suitable for the assessment of AHA innovations with multiple, diverse and sometimes perhaps conflicting outcomes in different contexts. Results of this exercise are reported in Deliverable D.T2.2.1. Further, we have reviewed the literature to provide guidance on indicator selection and composed a list of indicator properties that should be satisfied for AHA innovation assessment. These principles are outlined in Deliverable D.T2.2.2. Finally, we have developed a comprehensive assessment framework for AHA innovations to support decision making within a multisectoral AHA governance board. The resulting framework is presented in this report (D.T2.2.3).

However, even though it was our aim to provide a generalisable blueprint that may also be transferrable to other contexts, projects, or initiatives, it needs to be stressed that the work presented here can only be regarded as the beginning of a long term process, which will require further research into:

- operationalising the abstract model presented in this report;
- developing practicable tools and methods for AHA decision making; and



- addressing outstanding challenges for effective multisectoral decision making for AHA, such as capacity building and critical appraisal.

Some of these challenges may be addressed within the remainder of the ASTAHG project and the subsequent work of the ASTAHG TGB. Others, however, can only be regarded as long-term challenges which need to be addressed in similar projects in the future. Some of these challenges are further outlined below.

4.2 THE NEED FOR A BALANCED INTERSECTORAL AHA DECISION MAKING BODY

Some commentators believe that informing multisectoral decision making through evaluation of innovative technologies and services is possible only within a welfarist framework using cost-benefit analysis (CBA), where both innovation cost and outcomes are valued in monetary units. However, valuing outcomes for innovations falling into the realm of health, long-term care, social services and/or other sectors relevant for active and healthy ageing is controversial, as it ultimately requires a monetary valuation of life per se. Also, CBA, which rests on the quantification of individuals' willingness to pay (WTP) for innovations' outcomes, does not work if market failures exist and prices for goods and services cannot be set within freely operating markets. Finally, in a world with explicit budget constraints for sectors of public policymaking affected by AHA innovations, CBA becomes conceptually less straightforward as it also requires estimation of a shadow price for displaced goods and services (Claxton et al., 2007).

In theory, this would require estimating *all* the cost and *all* the outcomes of *all* interventions across *all* sectors, obviously posing an informational challenge that is



impossible to solve (Claxton et al., 2007). Claxton et al (2007) state that *“a ‘welfarist’ societal perspective is not sufficient; rather, a multiple perspective evaluation which accounts for costs and effects falling on each sector is required.”* Further, they propose a pragmatic solution to the problem which may hold *“if objectives and a measure of outcome for each sector can be based on institutions with a legitimate remit to make social decisions about allocations within each particular sector”* (Claxton et al., 2007, p 12).

The aim of ASTAHG is to bring AHA stakeholders across sectors and silos of public policy making together and help them reaching evidence-based decisions on the implementation and perhaps reimbursement of AHA innovations which provide good value for money. The TGB would satisfy the condition stated above if, and only if, its composition would appropriately reflect societal preferences for outcomes generated across relevant sectors of public policy making. Only then can we put faith in the valuations (i.e. scoring and weighting of MCDA outcomes) which are required for the multicriteria governance assessment methodology proposed in this report.

Deliverables D.T2.2.1 and D.T2.2.2 provide an intersectoral AHA governance model following the policy cycle and outline principles of stakeholder identification and selection for the ASTAHG TGB. Whether a balanced representation of AHA stakeholders representing 4-Helix actors within the TGB is possible will ultimately determine the credibility of the TGB itself as well as the assessments upon which the board will issue its recommendations.



4.3 THE NEED TO FURTHER DEVELOP TOOLS AND METHODS

As mentioned above, the AHA governance assessment methodology provided in this deliverable constitutes an abstract framework, and more work will be required to develop and test appropriate tools and methods to put this methodology into practice. This holds for each step of the proposed framework.

For instance, assessing relevance as well as choosing and weighting appropriate indicators for innovation assessment in a particular context should be based on needs and preferences of respective populations, and eliciting this information from relevant stakeholders will require appropriate tools. These tools should strike a balance between scientific rigor and feasibility so that the work of the TGB is not overburdened by the informational requirements of innovation assessment that ultimately aims to assist and inform rather than hinder efficient cross-sectoral AHA decision making.

Likewise, for assessing the coherence of AHA innovation, i.e. its geographic transferability to specific contexts, we require practicable tools to evaluate whether a context is sufficiently mature (i.e. ready) for the innovation to be implemented, and whether the innovation can be adapted to that setting. Hence, those tools should be informed by literature focussing on both the ecosystem (i.e. the context) and the innovation to be transferred and assessing coherence should be both systematic and practicable without overburdening assessors, evaluators and decision-makers.

Further, tools and methods for MCDA need to be adapted to the realm of AHA and developed further, and their complexity, informational requirements and computational burden need to be balanced against their benefits to support evidence-based decision making. The same holds for extending MCDA by including intervention



cost, i.e. moving beyond the currently accepted MAFEIP-tool as reference framework for assessing AHA innovations, and the assessment of innovations' impact and financial sustainability.

Addressing the above issues requires significant resources put into further research on concepts, methods and tools, as only then can we move towards effective evidence based multisectoral decision making for AHA.

4.4 THE NEED FOR CAPACITY BUILDING AND CRITICAL APPRAISAL

Finally, there is a long standing controversy over the complexity of methods used for evaluation in the context of evidence-based decision making, and that decision makers are often faced with evaluation results based on methods they regard as '*black-box assessments*'. This is a fundamental issue for the legitimacy of decisions based on such evidence, as there is an implicit danger that decision-makers do not properly understand methods, put too much faith in evaluation results, and do not adequately take into consideration potential flaws in underlying theories, assumptions, models and parameter values. As a result, the balance between informing decisions (the evaluators task) and making decisions (the decision-makers task) may get fundamentally distorted.

For this reason, it is imperative to scrutinize evidence upon which decisions are being based, and in order to do this, we must rely on sufficient critical appraisal capacities. These capacities, however, do not currently exist within the realm of active and healthy ageing, and we therefore need to put effort into building up such capacities, together



with appropriate processes for innovation assessment, critical appraisal and evidence-based decision making.

One example is the current use of the Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing (MAFEIP). Since its launch in 2015, the European Commission tendered out a project to provide support services for the use of the MAFEIP tool, and in this context, about 20 use case studies have already been published (www.mafeip.eu). However, the way this support exercise was set up may provide adverse incentives for all parties involved, and without critical appraisal of the reports published, it is nearly impossible for decision makers to rely on this evidence. Note that other shortcomings of MAFEIP in the context of multisectoral AHA decision making have been thoroughly discussed elsewhere in this report (in particular in section 3.5). The aim of this section is explicitly to highlight the challenges of MAFEIP which arise because of a lack of critical appraisal methods and processes.

More precisely, when developing the MAFEIP tool at the European Commission's Joint Research Centre, Institute for Prospective Technological Studies (DG-JRC-IPTS), the intension was to provide a framework for innovators to perform a self-assessment of their respective innovations, and in this context, the tool may be useful as innovators want to base their decisions on further investment into technologies on the best available information (Boehler et al., 2015). Otherwise they would face the risk of making suboptimal allocation decisions of their own restricted resources. However, the way the support services for MAFEIP were designed and launched creates a complicated network of overlapping interests between participating parties, in particular the funding source (EC-DG-CNECT), the contractors carrying out the support services, and the innovators providing use-cases for MAFEIP in a voluntary fashion.



- The **contractors** of course want to fulfil their contractual obligations towards the funding source, and for this matter, they need innovators to sign up for MAFEIP use-cases assessments, which they can do in a voluntary fashion.
- **Innovators** signing up with MAFEIP would perhaps not do so if they feared evaluations (which are publicly available) may be less favourable than anticipated, and as participation is voluntary, this provides an implicit incentive for selection bias, reporting bias, and perhaps for identifying appropriate comparators and sourcing the best available evidence to feed parameter estimates for the model.
- The **funding source**, finally, issued the support services for MAFEIP with the explicit and legitimate aim to foster its use and to create a positive and supportive environment for its application, and therefore does not constitute an appropriate instance to critically appraise the results of MAFEIP-use cases.

What is missing in this triangle of overlapping interests is an independent party which critically appraises the assessments conducted with MAFEIP, and these critical appraisals should also be publicly available. Whilst there are currently no appropriate processes set up in the area of AHA, we could learn from other sectors of public policy making, and in particular from the processes and methods established by institutions such as the National Institute for Health and Care Excellence (NICE), which is responsible for Health Technology Assessment and Critical Appraisal of evidence in England and Wales.

For critical appraisal to be implemented in the context of AHA decision-making, however, we need to develop and build up respective capacities on all levels of AHA decision-making, which is a long-term challenge that needs to be addressed before evidence-based decision making for innovation in AHA can deliver to its full potential.



The need for capacity building has also been recognised by the European Commission, for instance within the coordination and support action “*scaling up innovation for active and healthy ageing*” (SC1-HCC-08-2020). This call has been published under the European Commission’s Horizon 2020 programme, and it explicitly recognises the need for capacity building for local and regional authorities in the context of uptake, implementation and scaling-up of innovation for AHA. The capacity building objective should explicitly include building up capacities for AHA innovation assessment and critical appraisal.



5 CONCLUSION

AHA innovations have the potential to deliver multiple outcomes relevant for decision makers across various sectors of public policy making. This poses an immense challenge for evaluators as methods need to be developed that are capable of capturing diverse innovation outcomes and inform policy-making across traditional silos of governance. This report provides an abstract framework for assessing AHA innovations within multisectoral AHA governance. The methods developed rest on multicriteria decision analysis and aim to provide a flexible framework that can be adapted to local settings. These methods, however, need to be tested in practice, developed further and complemented with appropriate analytic tools along each step of the assessment process. For efficient multisectoral AHA decision making, capacities need to be built up on all levels both for the assessment of AHA innovation and the critical appraisal of evidence.



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