

2. Whole-of-systems approaches

2.1 Whole-of-systems approaches to physical activity

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Note: [Chapter 2.2](#) describes the Australian context and the physical activity systems mapping work undertaken by the Australian Systems Approaches to Physical Activity (ASAPa) project. This chapter describes how whole-of-systems approaches (WSAs) to physical activity contribute broadly to a more active society.

2.1.1 How does this area of work contribute to a more active society?

While efforts during the 1990s to take a multisectoral approach to physical activity (PA) in Australia and elsewhere showed promise, subsequent efforts over two decades have not improved PA participation rates in the adult population.¹⁻³ There is growing recognition that many complex public health problems, such as obesity and physical inactivity, are not amenable to simple, single solutions. This has led to increasing interest in whole-of-systems approaches to identify effective mechanisms for tackling them. Effective action requires an integrated, system-wide approach⁴ in consultation with policy makers and stakeholders from multiple sectors.⁵ WSA is at the heart of the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) – Objective 4 of the plan is “create active systems” (see [Appendix 4](#) for an overview of GAPPA).⁶ The related Action Statement 4.1 explains how WHO would like to see this objective translated to action:

Create Active Systems (GAPPA Action 4.1)

Strengthen policy frameworks, leadership and governance systems, at the national and subnational levels, to support implementation of actions aimed at increasing physical activity and reducing sedentary behaviour, including: multisectoral engagement and coordination mechanisms; policy coherence across sectors; guidelines; recommendations and action plans on physical activity and sedentary behaviour for all ages; and progress monitoring and evaluation to strengthen accountability.

WHO GAPPA (2018)⁶

A commentary by Peters, addressing the question ‘why use systems thinking?’⁷, puts it nicely, as follows:

“Systems thinking adds to the theories methods and tools we otherwise use...and provides new opportunities to understand and continuously test and revise our understanding of the nature of things, including how to intervene to improve people’s health...”

To help explain a WSA from the point of view of the relevant organisations involved, it may be helpful to consider using a bicycle as a metaphor (Figure 7). The bicycle has many separate parts. No single part, working in isolation, operates the system. The bicycle can only be ridden when all parts work together; yet this alone is not enough to move the bicycle. A ‘rider’ is needed to coordinate and get the components of the system working together to enable the bicycle to move forwards. The function of the system overall is different from the sum of the individual parts.⁸

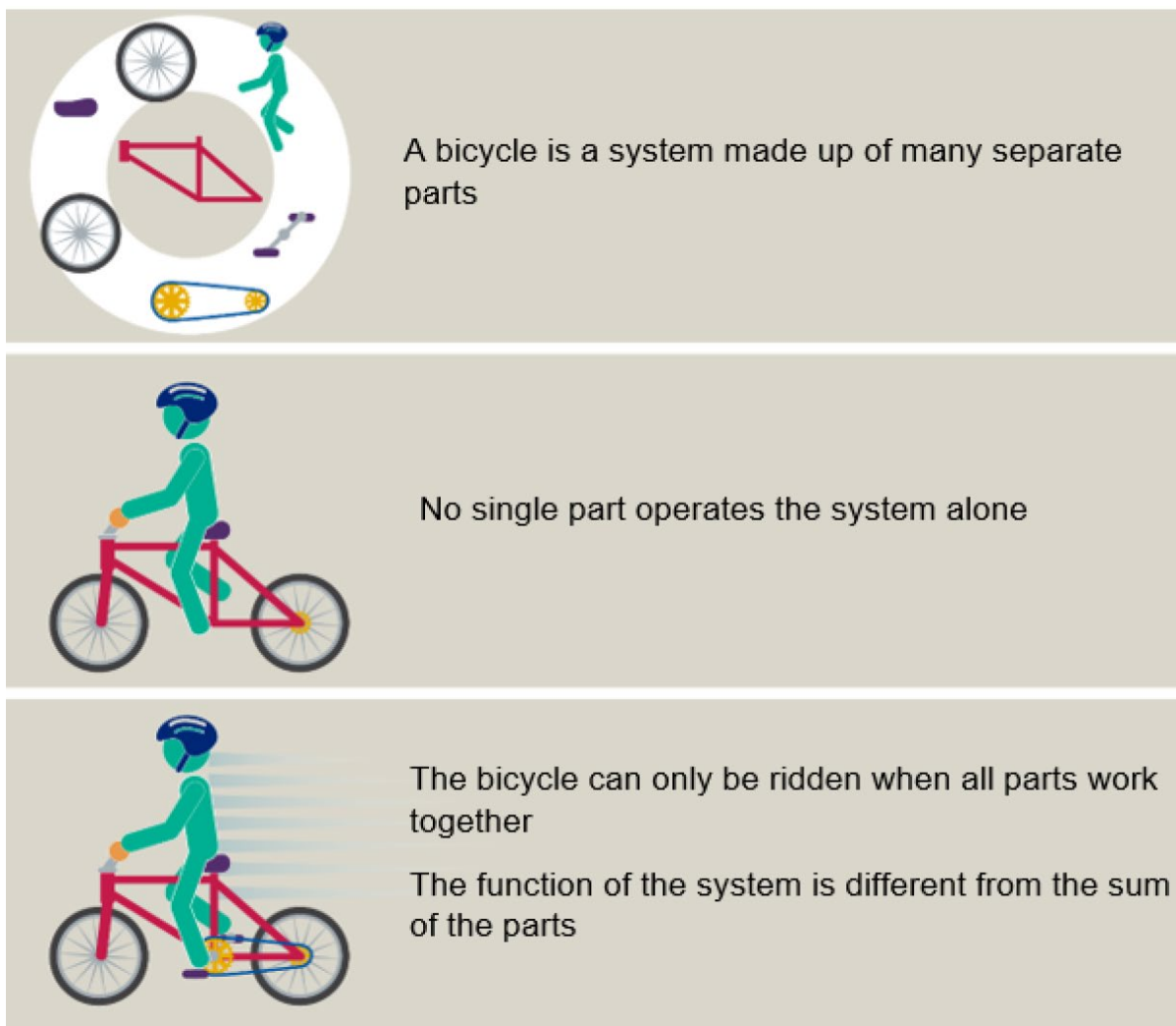


Figure 7. Using a bicycle: a simple metaphor to explain systems approaches

Source: Public Health England.⁸

Similarly, a WSA for PA includes many separate sectors, agencies and organisations. No single sector, agency or organisation operates the whole system overall. The overall PA system can only work properly, optimally, when all the sectors, agencies, organisations are working together. The function of the PA system as a whole is different from the sum of the individual component sectors, agencies and organisations. In other words, in an organisational sense, *the whole PA system is greater than the sum of the individual partners*.

In Australia, as elsewhere in the world, there is a need to improve on our results in getting people and communities more physically active throughout the stages of life.^{6,9} This is not to say that our PA system is 'broken', but rather that we can diagnose and make improvements to fine tune the way the PA system performs its intended function, for all of the population across all life stages.

2.1.2 What is the supporting rationale?

Whole system thinking focuses on understanding interrelationships, interactions, and various perspectives of a system, including the boundaries of that system. It is enhanced by complexity science which emphasises that systems reflect dynamic, often unpredictable interactions among diverse, constantly adapting parts. Drawing on complexity science, WSA may be used to conceptualise the PA system as a *complex adaptive system* — a collection of interacting entities that continually change in relation to one another and their collective environment.¹⁰ The changes one might expect in ways of working in transitioning from more traditional approaches to WSAs are shown in Figure 8, adapted from Public Health England.⁸ It is argued that the advantage of WSA is that it takes into account the changing context, its key actors, and their interactions over time in understanding health, thereby allowing planners a better understanding of the system, of 'how things work' and of where and how to intervene to improve health outcomes.¹⁰⁻¹²

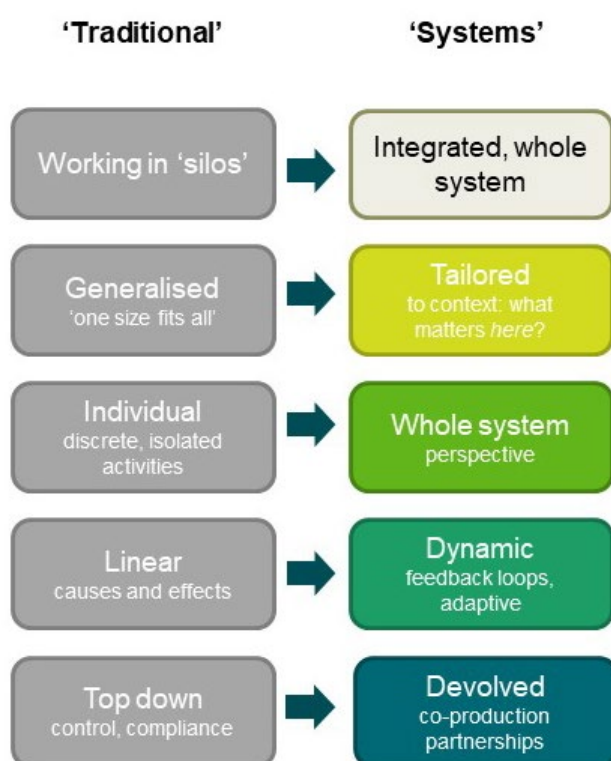


Figure 8. Contrast of traditional and systems approaches to ways of working

WSAs to PA (and to public health more broadly) are a relatively recent phenomenon and sit more in the theoretical than applied domain of practice. More work is needed to achieve clarity and consistency in the concepts and language used by academics and others who engage in these approaches. Some scholars have dealt more with describing and investigating complex adaptive systems¹³, while others have focused more on systems thinking as a practical way of helping people understand a problem or an operational context.^{7,14,15} We can define a continuum of approaches to whole-of-systems thinking, ranging from basic cognitive mapping through to advanced dynamic modelling¹⁶⁻²² (Figure 9).

Not every aspect of WSAs in this continuum needs to be adopted, however components of WSAs should be adapted as appropriate by all working at the national, regional or local level. For example, a visual depiction of PA influences which exist and operate within a given context (LGA, town, city, region), undertaken by key stakeholders is increasingly recognised as a valuable approach, and especially so where community engagement and co-production is emphasised.^{23,24} This corresponds to the *Initial scoping* and *Conceptualisation* components shown in

Figure 9. All policy makers and stakeholders involved in the promotion of more active populations are encouraged to use this process as part of their approach to planning, implementation and evaluation.

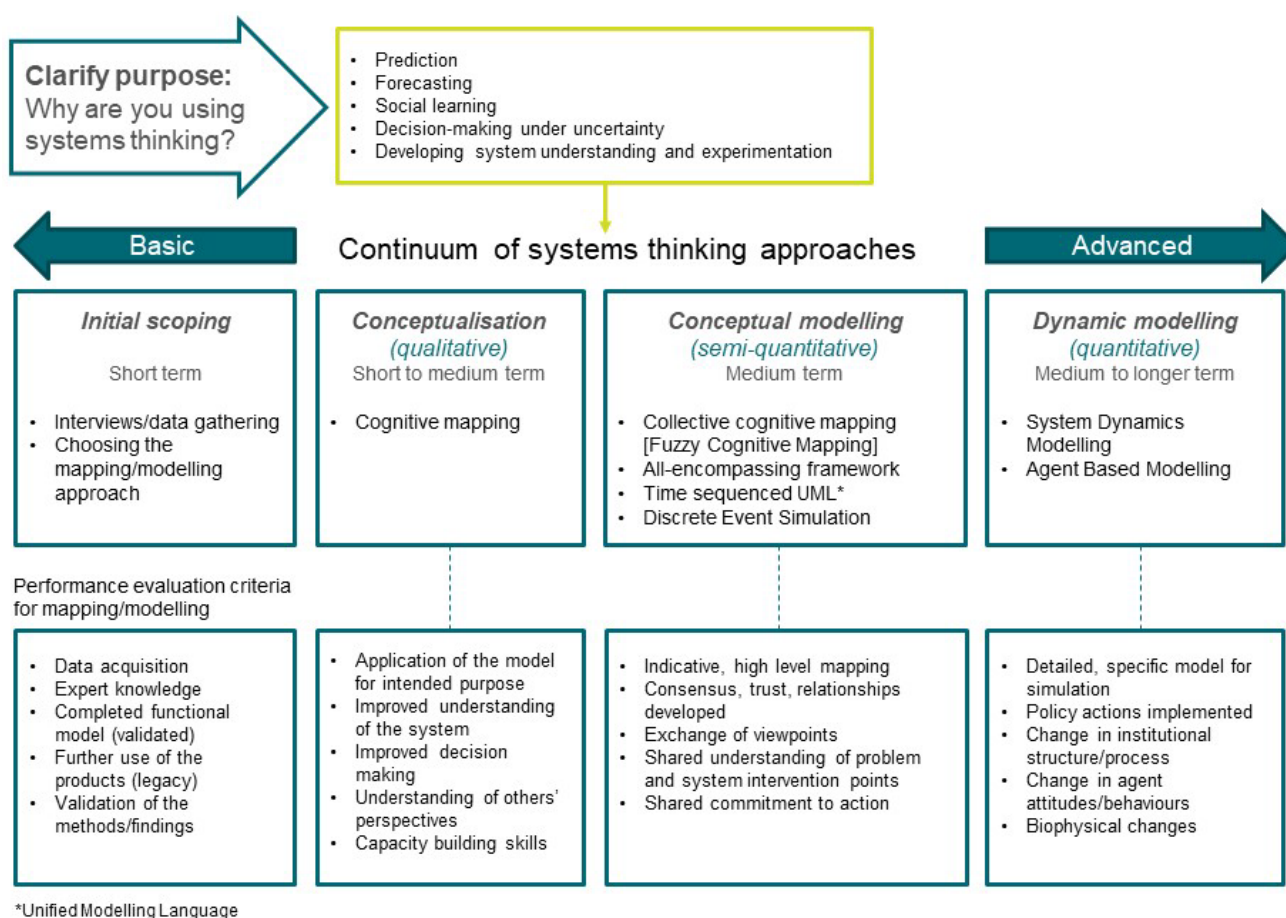


Figure 9. A continuum of systems approaches

Source: Bellew et al 2019²⁵ adapted from Stave and Hopper 2007¹⁹, Kelly et al 2013²⁰, Elsworth et al 2015¹⁶, 2017¹⁷, Voinov et al 2018¹⁸, Hamilton et al 2019²¹, Pluchinotta et al 2019.²²

2.1.3 What are the recommendations for investment and action?

Potential ways to use WSAs

Notwithstanding the evolving nature of WSA, its applications are many and include:^{7,23,26}

- Providing a nuanced depiction of the multisectoral and complex nature of PA as a problem in your specific context or region
- Helping understand how a PA program works/is supposed to work
- Identifying gaps in current activity or service provision
- Identifying areas where we wish to gather data, evaluate, generate hypotheses
- Predicting how a scenario may unfold/scenario planning
- Testing the viability of PA policy interventions in a safe and inexpensive way; systems maps may be used as the basis of system dynamics and other models to explore causal mechanisms and potential impacts of interventions.

Key considerations

In terms of recommended investments and actions, we offer the following considerations:

- a) The WHO GAPPA states that increasing PA requires a systems-based approach – there is no single policy solution.⁶ GAPPA includes five policy actions outlining the investments needed to strengthen the systems necessary to implement effective and coordinated international, national and subnational action to increase PA and reduce sedentary behaviour. These actions address:
 - Governance
 - Leadership
 - Multisectoral partnerships
 - Workforce capabilities
 - Advocacy
 - Information systems
 - Financing mechanisms across all relevant sectors in a WSA to PA.
- b) The *process of collaboration to build a map* can contribute to building consensus on the nature of a problem and engagement with the potential range of policy responses required. The *insights gained by participating stakeholders* may be more important than the map itself. This is a planning and conceptual process. Not every relationship in the systems map will be underpinned by clear epidemiological evidence, rather the stakeholders who develop the map will make assumptions about likely pathways to define the tasks and planning needs for the WSA to be translated into practice.
- c) It is not necessary to start with a blank page when developing a whole-of-systems map of PA. For example, to support the implementation of GAPPA, Rutter and colleagues used the known or likely correlates of PA to map the multiple factors underpinning the different domains (Figure 10).²³ This map, or the map developed for Australia, shown in the next section, could be used as a starting point in its existing or in adapted form, to commence the process of developing a systems map for a given local planning/implementation context – for example a state or municipal level multisectoral plan for PA.
- d) Progression to dynamic modelling: Maps provide an opportunity for stakeholders to explore the broad ‘system space’ and better understand the pathways and interrelationships between multilevel factors that drive a complex problem. These maps describe a complex causal hypothesis that helps identify innovative options for intervening that might lie outside the usual scope of a single stakeholder’s perspective and helps build stronger alliances for collaborative action.²⁷ Progression to dynamic simulation modelling enables the hypothesis to be tested using processes of quantification, calibration and validation through ensuring the computer model is able to reproduce historic data patterns across a range of indications. The final model can then be used as an interactive ‘what if’ tool to test alternative scenarios and assumptions and forecast their likely impact over the short and longer term before they are implemented in the real world – saving time and resources.

Dynamic simulation modelling

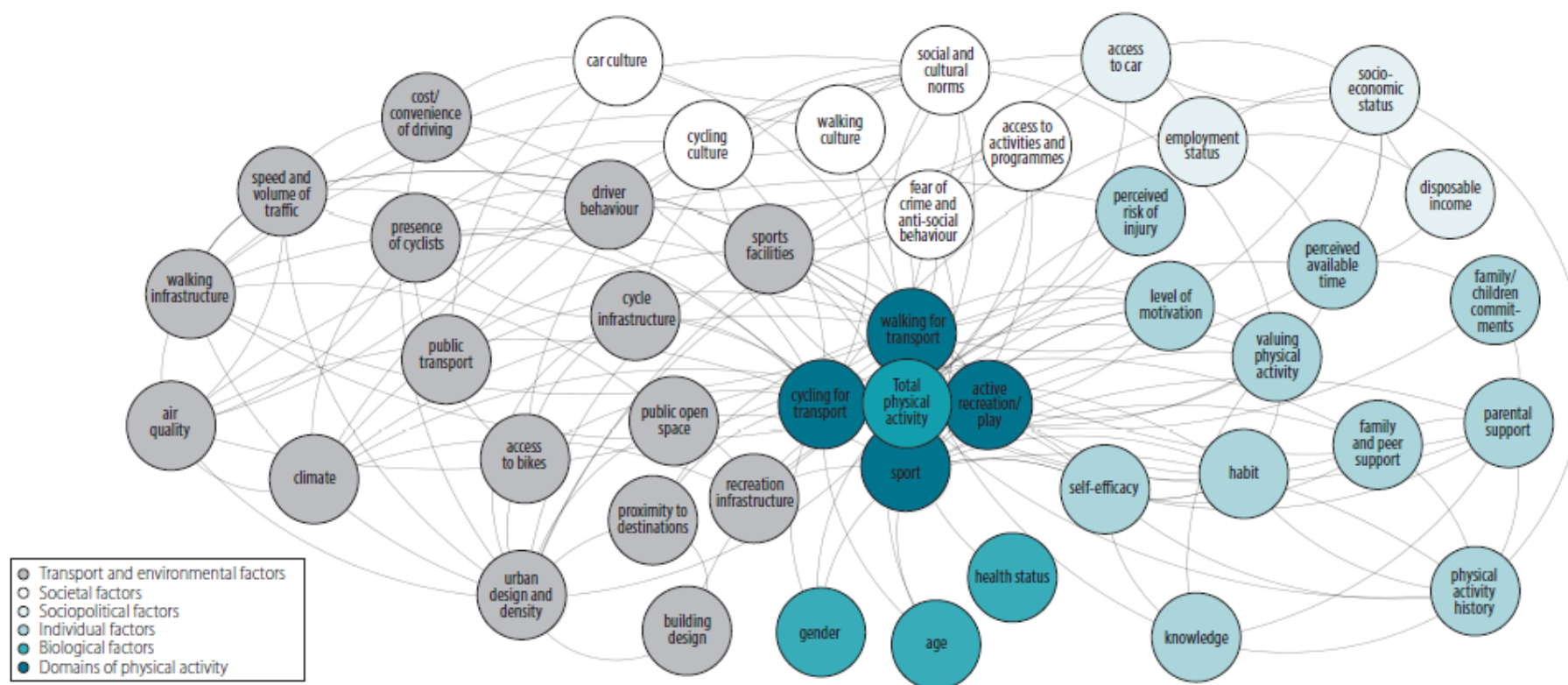
Decision making regarding how best to address the complex problem of getting Australia active is challenged by the multisectoral determinants of PA, a vast array of potential intervention options supported variably by the evidence, geographic variation in infrastructure, programs, services and workforce available to support PA, changing population needs over time, and competing views and agendas about what should be done. Without the appropriate decision support tools to manage complexity and to navigate the challenging decision-making environment, there has been a move towards the implementation of so-called ‘comprehensive’ strategies (invest a little bit in everything deemed likely to be effective), based on the rationale that if more evidence-based interventions and services are implemented, then the impact is likely to be greater. However, such comprehensive strategies often lack focus or sufficient actual investment in time, resources and capacity to implement at scale.

Consequently, comprehensive approaches may actually undermine the potential impact of investments by spreading available resources too broadly over a range of poorly targeted programs and services.

Much of the research that informs decision making to improve PA emphasises single programs, static, linear, program logic-based evaluation approaches, and assume simple additive effect of interventions that are inadequate for assessing how intervention strategies will play out in complex systems, potentially leading to disappointing results.²⁸

In contrast, dynamic simulation models uniquely capture the population and demographic dynamics, behavioural dynamics, service and workforce dynamics and interacting intervention effects that can influence the effectiveness of intervention strategies in real world contexts. They bring together best available evidence, data and expert and local knowledge and represent our best understanding of a complex problem in a given context. These sophisticated decision support tools can assist in focusing investments in a suite of interventions that would work well together and are forecast to deliver optimal impact.

Australian applications of dynamic simulation modelling in chronic disease in recent years has highlighted the value of participatory processes in facilitating model transparency, validity and credibility, communication and intellectual exchange, the advance of contentious debates, and the building of consensus among stakeholders. The transparent and interactive interfaces of the models allow stakeholders to run scenarios and collectively weigh up the quantitative trade-offs of alternative intervention combinations. They also facilitate collaboration between the different factions in the public health community and more broadly, help to align agendas for action and make recommendations with a united voice.



Note: This map provides an illustration of some of the main drivers of physical activity and inactivity, and the relations between them, based on evidence from systematic reviews and expert opinion. The map is a tool to illustrate the breadth of factors driving physical activity, and does not purport to provide a definitive description of all possible ways of conceptualizing the physical activity system.

Figure 10. An initial PA systems map

Source: Rutter et al 2019.²³

2.1.4 What other strategies intersect with this area of work?

WSAs to PA intersect and integrate with multiple policy and intervention domains for PA. WSA maps can contribute to communicating these multiple factors and the cross-sectoral nature of the influences on PA for policy makers. The maps can illustrate the range of opportunities to implement policy actions across multiple areas to influence the system; demonstrate the breadth of partnerships needed (including outside the health sector); identify key areas for action that may represent opportunities for significant impacts on policy; support analysis and identification of priorities for action; support the development of tailored local-level maps that include important contextual factors; help audit existing policy actions or plan new ones; and inform monitoring and evaluation.²³

2.1.5 What are the implications for policy?

A WSA provides a framework for understanding inter-relationships, interactions and various perspectives in the PA system. This allows policy makers to better understand how different parts of the system currently work and interact, and where and how to intervene to improve PA and other complementary outcomes. The process of collaborating with others from different sectors to develop a systems map for PA can help build consensus around the nature of the problem and stimulate engagement around the policy responses required, and opportunities for collaborative action. There is no need to start from scratch, as the map developed by Rutter and colleagues for PA²³, or the map developed for Australia (shown in [Chapter 2.2](#)), can be adapted or developed further to suit a given purpose or context.

The initial process of conceptual systems mapping can later progress to dynamic simulation modelling to support decision making about the optimal types and mix of intervention strategies to deliver greatest impact. This is a participatory process that brings together best available evidence, data and expert and local knowledge, and enables stakeholders to run scenarios and collectively assess different intervention combinations, thus further strengthening consensus and alignment of agendas for action.

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- In an organisational sense, the whole PA system is greater than the sum of the partners (and the individual sectoral programs)
- The Australian PA system is not 'broken', as such, but we can make improvements to fine tune the way the PA system performs its intended function, for the whole population across all stages of life
- Whole-of-systems approaches are built on a participatory process that brings together best available evidence, data and expert and local knowledge, and enables stakeholders to better align agendas for action.

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2.2 A whole-of-systems map for physical activity in Australia

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Note: [Chapter 2.1](#) provides a general background on WSAs to PA and how they contribute generally to a more active society. This Chapter 2.2 deals more specifically with the Australian context and the mapping work undertaken by the Australian Systems Approaches to Physical Activity (ASAPa) project. [Chapter 2.3](#) deals with governance and leadership aspects of WSAs, while [Chapter 2.4](#) covers capacity building for WSAs.

2.2.1 How does this area of work contribute to a more active society?

The Australian Systems Approaches to Physical Activity (ASAPa) project is a national initiative to support a whole-of-systems approach (WSA) to the development and alignment of policies, programs and surveillance addressing physical activity (PA) at the population level. Further information about this project can be found in [Appendix 6](#). The Australian Prevention Partnership Centre (the Prevention Centre) is the managing grant body for ASAPa, which is being undertaken by the University of Sydney Prevention Research Collaboration. The Prevention Centre is a national collaboration of researchers, policy makers and practitioners which emphasises systems approaches to prevention. Taking a WSA to PA is important, as effective action requires an integrated, system-wide approach in consultation with policy makers and stakeholders from multiple sectors.

2.2.2 What is the supporting rationale?

The aim of ASAPa in Australia has been to advance WSAs for PA from theoretical to practical applications.¹ The initial phase of the project involved: (i) the development of a conceptual map of the PA system in Australia (Figure 11); (ii) an audit and gap analysis of policies and programs nationally and across Australian state and territory jurisdictions through stakeholder engagement, desktop searches, and reviews; and (iii) a review of PA monitoring and surveillance systems in Australia. Further, it will advance more practical applications of WSA through: (iv) an update and dissemination of knowledge for best practice; (v) a WSA critical analysis to identify PA components in the prevention system in Australia to develop an integrated, cross-government framework of policy actions with appropriate monitoring and surveillance to achieve best practice; and (vi) research and stakeholder consultation to devise sustainable design specifications for a knowledge hub (K-Hub). The main purpose of a K-Hub would be to assist PA communities of practice (CoPs) in Australia to improve public health outcomes through the curation of knowledge products, sharing of better practice approaches and guidance to strengthen the development and implementation of evidence-informed policies and programs.^{2,3}

A whole-of-systems map for physical activity in Australia

Taking account of feedback from national stakeholders, existing WSAs described by public health researchers and policy makers^{4,5}, and work related to PA (whether directly or as a discussion of obesity)⁶⁻⁸, the project team developed a WSA conceptual map for PA (Figure 11).

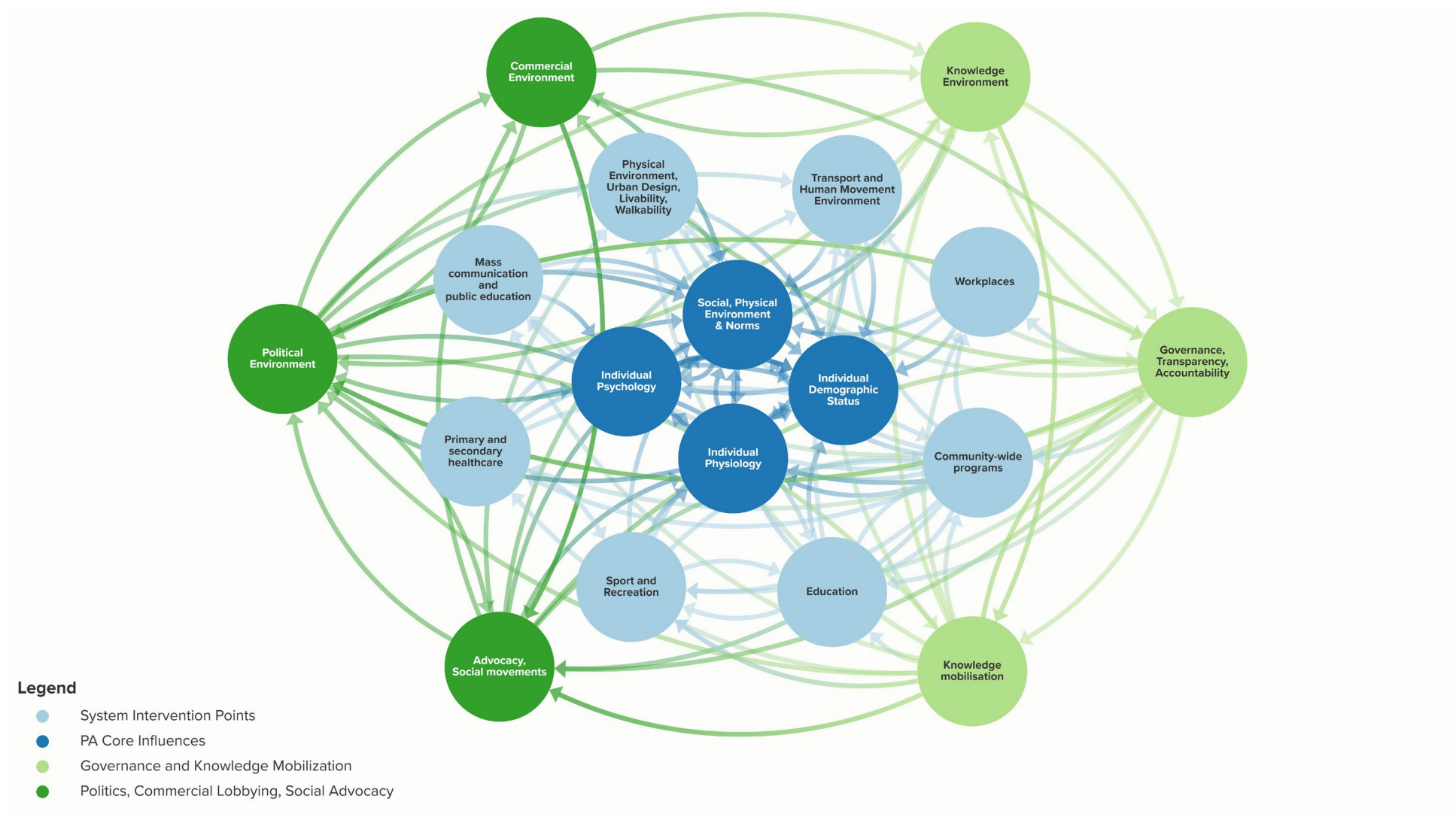


Figure 11. A whole-of-systems map for PA in Australia

Source: Bellew et al 2019.¹

2.2.3 What are the recommendations for investment and action?

The mapping of high-level PA systems in Figure 11 includes: (a) PA influences; (b) governance, knowledge translation, and advocacy mechanisms; and (c) system intervention points for policies and programs. The mapping of PA influences is consistent with the obesity systems mapping provided by Butland and colleagues in the UK Government Foresight obesity report⁸ as well as the more detailed conceptual framework developed by Rutter and colleagues in support of the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) (see [Appendix 4](#) for an overview of GAPPA).⁶ The inclusion of governance, translation and advocacy mechanisms in this map centred on the need to avoid four classic strategic errors which are described elsewhere in relation to obesity⁹, but which are highly relevant to PA: (i) shortcomings in strategy design; (ii) investment failures; (iii) inconsistent governance and accountability; and (iv) (mis)underestimating the need for government intervention to address market failures. Our 'system intervention points' for policies and programs align with the policy actions stipulated in GAPPA¹⁰ and elsewhere.^{11,12}

Using this PA systems map, the ASAPa project completed an audit of PA policies in Australia¹³, using the framework of the four overarching themes of GAPPA:

- **Active societies** which focuses on creating positive shifts in social norms and attitudes towards PA
- **Active environments** which focuses on creating and maintaining supportive spaces and places for PA
- **Active people** which focuses on creating and promoting access to opportunities and programs for PA
- **Active systems** which focuses on creating and strengthening governance and policy enablers for effective and coordinated action.

The audit found substantial evidence of policies that align with the 'active environments' objective of GAPPA but fewer examples addressing the 'active people' objective, particularly in relation to high needs groups and PA promotion through healthcare, workplace and education settings. The analysis suggested that policy governance, coordination, financing and evaluation are areas in need of development and that there is considerable progress yet to be made in relation to the 'active system' objective of GAPPA.¹³

This map and the policy audits undertaken provide reference points for guiding comprehensive policy action as well as research in Australia, by focusing action on important areas where remedial action appears to be needed. Addressing these areas of need will be critical if Australia is to make progress towards achieving the 'active system' objective of GAPPA.¹⁰ Refer to other chapters in Part 2 for related recommendations.

Case studies: Developing whole-of-systems approaches at the local level (Public Health England)

www.gov.uk/government/publications/whole-systems-approach-to-obesity

Public Health England has produced guides, resources and case studies to inform a WSA to obesity in England. Much of the information is relevant for PA and for the Australian context.

The video below is an example (Ctrl + Click to show).



Resources

Guidance

[Health matters: a whole systems approach to obesity](#)

25 Jul 2019



[Interactive links](#)

Case study

[Phase 1 of a whole systems approach to obesity](#)

2 Sept 2019

Case study

[Phase 4 of a whole systems approach to obesity](#)

2 Sept 2019

Case study

[Phase 3 of a whole systems approach to obesity](#)

2 Sept 2019

Case study

[Phases 5 and 6 of a whole systems approach to obesity](#)

2 Sept 2019

2.2.4 What other strategies intersect with this area of work?

The WSA is a cross-cutting concept – it intersects (integrates) all policy or intervention domains for PA, but also highlights areas where new policy synergies may be possible (with, for example, actions promoting environmental sustainability, mitigating risks of the climate emergency, and creating liveable communities). The process may stimulate more integrated planning at subnational levels.

Some stakeholders will regard parts of a systems map as more significant than other parts, depending on where their work and engagement is located and depicted; they may also wish to use their experience to develop their particular section of the map in finer detail.

In some cases, that may mean that PA forms part of the solution or may feature in systems maps generated for other complex problems (e.g. environmental sustainability, air pollution, traffic congestion, health problems such as mental ill health or unhealthy weight). Others may wish to work with colleagues to develop their own regional and local maps from first principles or by drawing on elements of the national map.

The ultimate goal is to shift the PA system to a more positive state. The ASAPa project has worked to develop and promote such systems thinking and best practice approaches to cross-sectoral PA policy and implementation, and it is hoped that the participants will also find ways to extend the approach to policy contexts other than PA.

The ASAPa Project mapping of high-level (national) PA systems (Figure 11) includes influences on PA, intervention points for policies and programs, as well as advocacy, governance and knowledge translation mechanisms (items that have typically not been captured in other maps).

2.2.5 What are the implications for policy?

Policy makers may refer to the conceptual systems map in Figure 11 as a prompt for the range of areas that are important for developing comprehensive policy action in relation to PA – in effect, a ‘discussion trigger’. Policy makers and practitioners can develop those parts of the map that are most applicable to them in more detail or develop their own maps which may draw on elements of the national map.

Researchers may find the systems map helpful in identifying priorities for research and evaluation. The process of mapping with other stakeholders provides a valuable opportunity in and of itself to explore different perspectives and better understand the interrelationships between different aspects of the system to identify opportunities for collaborative action and synergy, as well as contentious issues or areas of potential conflict. Refer to the other chapters of Part 2 for related policy implications.

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2.3 Leadership, governance and knowledge mobilisation for whole-of-systems approaches to physical activity

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2.3.1 How do ‘leadership, governance and knowledge mobilisation’ contribute to a more active society?

Effective policy solutions are intersectoral and beyond any one sector such as health, sport or education¹; these effective policy solutions involve what is increasingly recognised and described as a whole-of-systems approach (WSA).²⁻⁴ For a WSA to enable better PA policy it needs: (i) systems leadership; (ii) good governance; and (iii) effective knowledge mobilisation (KMb).

These functions are essential to avoiding conceptual and operational pitfalls which otherwise lead to flawed policy development.⁵ For example, avoiding narrow or ‘magic bullet’ policy formulation, steering clear of imbalanced policy framing (overreliance on downstream educationally focused approaches to the neglect of upstream environmental change approaches) or thinking that any one sector has ‘the answer’.

These conceptual pitfalls can lead to policy that is *unbalanced* (overemphasis on less effective strategies), *lightweight* (omission of the most effective strategies) and/or *unsustained* (insufficient resourcing for the necessary intensity and duration across the chosen policy mix).⁵ In this section, we explore the three fundamental prerequisites to enable WSA – leadership, (intersectoral) governance and KMb.

2.3.2 What is the supporting rationale?

The importance of a WSA and the role of leadership, governance and KMb has been noted. It is important for key stakeholders to have an overall shared vision and basic understanding of the whole system for PA, where they (their agency) ‘fit in’ and which parts of the system they can and should usefully interact with. For those in leadership and/or governance roles it is essential to have such a grasp of the overall system map.

Working to achieve this shared overall vision is important to overcome the natural tendency to think and act in the ‘sectoral silos’ that we come from, know best, and are most comfortable in. Unless we transcend the ‘sectoral silos’, it is difficult to appreciate that the whole system may be greater than the sum of the parts and to act accordingly.

2.3.3 Leadership for whole-of-systems approaches

Modern *leadership development* theory holds that while some leaders may be ‘born’, leadership is mostly ‘made’ in the sense that it can be learned and nurtured.⁶ Effective leadership within WSA governance and KMb is arguably built on particular forms of knowledge, attitudes, skills and values that can be developed over time.

A full consideration of the leadership development literature is beyond the scope of this publication. While we expand below on a particularly relevant framework of leadership for WSAs that employ adaptive, administrative and enabling practices, this is underpinned by insights from other relevant concepts of leadership including:

- Situational leadership⁷
- Complex systems leadership⁸⁻¹⁴
- Distributed leadership^{15,16}

- Multidomain/identity-based leadership¹⁷
- Multiplex^a network leadership.¹⁸

There are undoubtedly challenges involved in building support for and implementing WSA – such as creating the common sense of policy purpose needed to mobilise diverse actors, distilling the sense of urgency needed for engagement and action, and achieving policy legitimacy, coherence, coordination and durability.¹⁹ Addressing these challenges requires intersectoral governance²⁰, as recognised by the WHO *Global Action Plan on Physical Activity* (GAPPA) (see [Appendix 4](#) for an overview of GAPPA). Intersectoral governance for PA can be described as the mechanism for bridging fragmented policy responses (both policy gaps as well as policy incoherence originating in different sectors)²⁰ and enabling effective collaboration and alignment.²¹ It also requires effective leadership which, in the context of WSA, can be described in general terms as engaging with and playing a significant role in influencing the existing system to shift it in more desirable directions.¹⁶

Catalysing systems change can come from anywhere in the system, not necessarily from positions of formal authority.¹⁶ A range of leadership practices is likely to be needed that balances the administrative functions of coordinating, structuring and managing organisational and interorganisational activity, with the adaptive practices required to create the conditions for innovation, change and transformation. Murphy and her colleagues,¹⁴ consistent with Noteboom²², have described *Enabling leadership* as providing a bridge between these two functions of administration and adaptation, allowing the emergence of new ideas and approaches and facilitating their integration into formal and coordinated networks and action (Figure 12).



Figure 12. Leadership practices for systems change

Source: Adapted from Murphy 2017¹⁴ and Nooteboom 2013²².

^a 'Multiplex' networks are those where both formal and informal ties exist between actors simultaneously.

2.3.4 Governance for whole-of-systems approaches

Insights into the role of leadership, governance and coordination for WSA to PA policy may be drawn from the literature on leadership^{7-13,16-18,20,23-25}, systems and governance^{3,10,11,26-30}, health in all policies (HiAP)^{31,32}, intersectoral approaches in public health³³⁻⁴², and KMB and translation through a 'communities of practice' approach^{3,27,36,43-49}.

Governance is achieved through a combination of formal and informal processes and structures and has been defined as:

*"the sum of the many ways individuals and institutions, public and private, manage the connections of their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest."*⁵²

Good governance then, takes these general notions of process a step further and may be defined as decision making, policy creation and rule enforcement that is non-discriminatory, participatory, has integrity, is transparent, efficient (not wasteful) and is subject to accountability (if someone does the wrong thing). Criteria for effective governance have been described by researchers in relation to obesity policy; these high-level criteria are readily applicable to PA and are shown in Table 7.⁵

Table 7. Criteria for effective policy governance

Criteria for effective policy governance, coordination and accountability
Incorporation of strategic advice from expert advisors
Partnership with multiple stakeholders inside and outside government
Robust surveillance and evaluation mechanisms
Comprehensive, high level, long term strategy
Cabinet level support for government leadership
Allocation of sufficient resources
Long term vision and goals as well as interim measures
Coordination within and outside government to synergise cross-cutting policies and link with local government
Use of evidence and building on best practice
Transparency and accountability for use of public funds; stewardship to protect health from conflicts of interest

Formal structures and processes may involve formalising an overarching policy that sets out a clear goal and purpose for intersectoral collaboration on PA; appointing leaders with the necessary boundary-spanning and relational skills for intersectoral collaboration; setting up a network or community of practice to facilitate trusted interaction and coordinate action; and developing robust monitoring and evaluation systems with agreed data sharing protocols.^{29,41,51}

However, in complex, heterarchical systems (as opposed to hierarchical ones) there may be no overarching policy at all. The process of coordination and negotiation is a continual one, not something that is completed at the time

the 'policy' is set. Cumming⁵² argues complex systems exhibit a continuum of structure that ranges from network to hierarchy. Instead of a clear-cut distinction between two fundamentally different kinds of complex system, what we see in reality is a continuum of system architecture in at least two dimensions (Figure 13).

Just as important are the informal processes and structures for fostering relational factors including high levels of trust and goodwill among partners; this requires people getting to know each other, and demonstrating competency, good intentions and follow through.^{29,51}

Structural arrangements should allow flexibility for adaptive leadership to occur (i.e. for new conversations to take place, new relationships to be formed and a responsive approach to partnership working), which can be enabled by increasing the number of opportunities and mechanisms for KMB.^{29,53}

Broadly, this can be achieved by establishing and brokering relationships, disseminating and synthesising knowledge, and facilitating interactive learning and co-production of research.⁵⁴

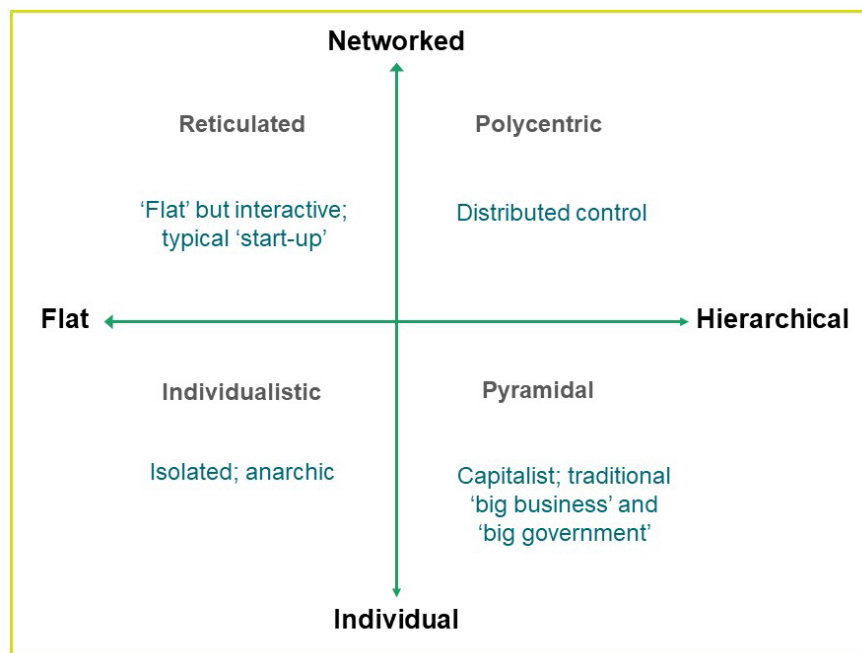


Figure 13. Complex systems: Four basic types of heterarchy

Source: Cummings 2016.⁵²

Some practical insights derived from the complexity leadership literature are provided in Table 8 about the types of leadership functions and examples of associated practices that may be relevant and useful for WSA, noting that they are interdependent rather than mutually exclusive of each other.

Table 8. Leadership functions and examples of associated practices for WSAs

Leadership functions	Examples of associated practices
Administrative	<ul style="list-style-type: none"> • Develop, communicate and monitor the realisation of a shared vision for action on PA • Direct, plan and provide resources for implementation of PA policies and programs and for surveillance of the PA system • Create clear lines of authority, roles and responsibilities for PA-relevant actions • Integrate and embed innovation into the formal system for PA
Adaptive	<ul style="list-style-type: none"> • Allow for and stimulate a variety of strategies, options and approaches for PA • Actively support the inclusion of diverse skills and perspectives (boundary spanning) in addressing PA • Mobilise actors to develop solutions for PA by organising linkages and connections between people, domains and organisations through formal and informal networks • Search for new possibilities to address PA within existing frameworks
Enabling	<ul style="list-style-type: none"> • Reflect on cross-organisational relationships with other possible leaders to identify ways of enabling adaptive leadership to emerge across organisations • Invest in personal relationships with counterparts to share ideas about possible desirable outcomes and need for adaptive leadership strategies, and to take mutually reinforcing steps towards joint goals. Build trust and legitimacy • Coordinate and allocate resources that support creative, learning and adaptive leadership behaviours and protect against external politics or top down directives that may inhibit innovation in relation to PA • Use sensemaking/framing to generate support for new ideas or ways of working in relation to PA to facilitate their integration into the formal system

Source: Based on Fawkes 2012¹⁶, Nooteboom 2013²², Murphy 2017¹⁴, Uhl-Bien 2007.¹³

Through a combination of leadership, governance and KMb processes and structures, impactful progress on PA can be expected to be made by producing first, second and third order effects – first order effects being those that are initially apparent and the result of deliberate action; second order effects being those that emerge when partnership activities are well underway; and third order effects being those that occur over time.⁵¹

Effective governance can help ensure the durability and resilience of intersectoral collaboration despite changes in political circumstances or failure to achieve expected outcomes, so that these second and third order effects are more likely to eventuate and produce positive shifts in the PA system (Figure 14).

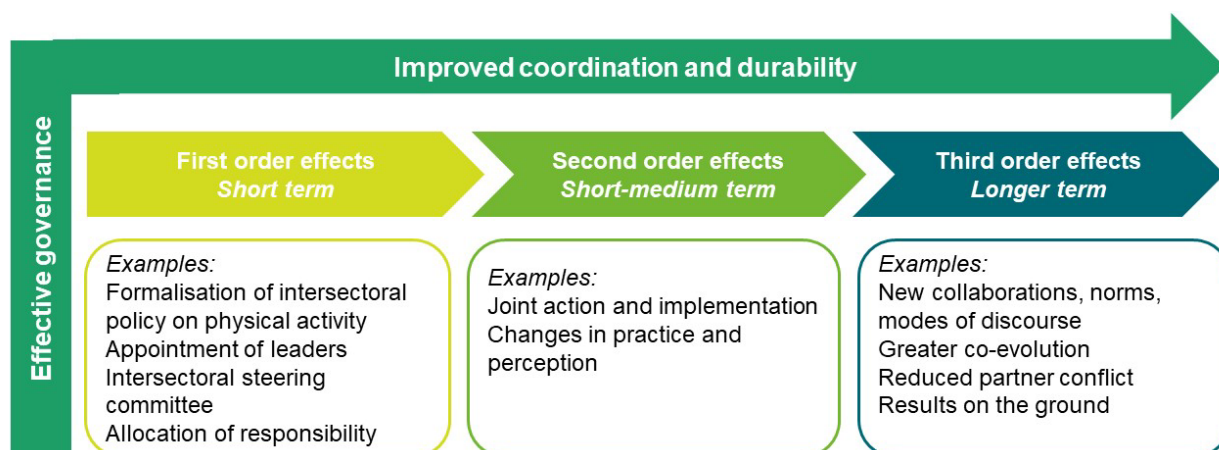


Figure 14. The role of governance in improving coordination and durability of WSAs for sustainability of effects

Source: Based on Bryson et al 2006.⁵¹

2.3.5 Knowledge mobilisation for whole-of-systems approaches

Knowledge mobilisation refers to the processes of generating, sharing and using knowledge to develop and improve policy and practice and produce useful research.⁵⁴ 'Knowledge' broadly encompasses scientific/factual knowledge (research findings, population data and statistics, evaluation data), technical (skills, experience, expertise), and practical (professional judgements, values, beliefs, intuition), and is generated by any stakeholder in the PA system, including researchers, advocates, frontline practitioners, and policy makers (Figure 15).⁵⁴

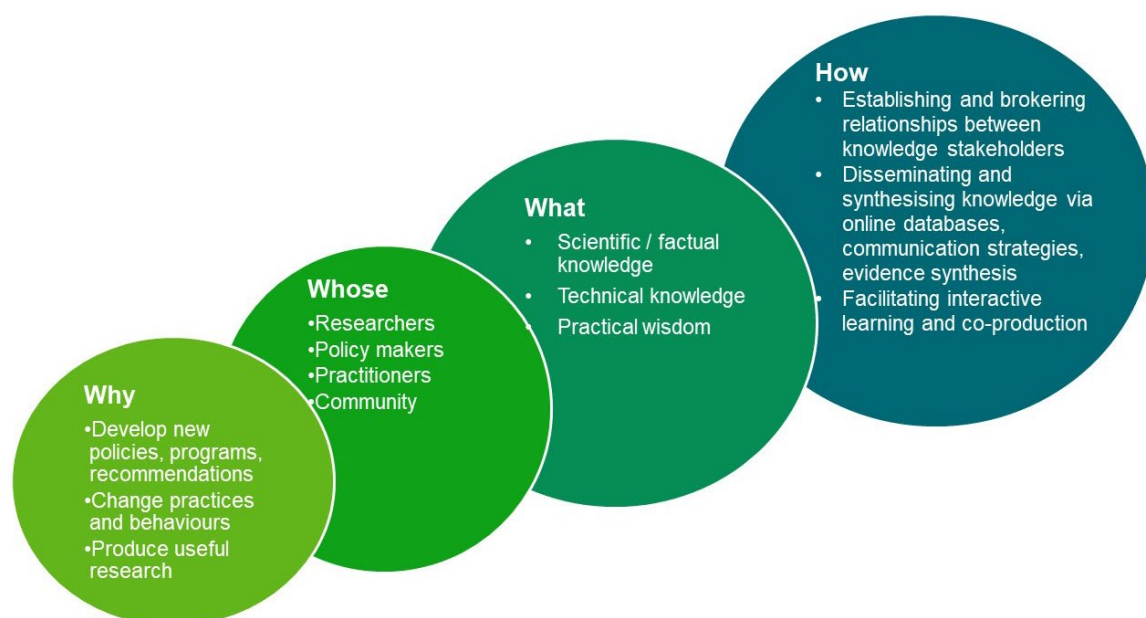


Figure 15. A framework for understanding knowledge mobilisation

Source: Adapted from Ward et al 2017.¹²

The important functions of KMb are illustrated in Figure 16, with examples of how it can contribute towards WSAs.

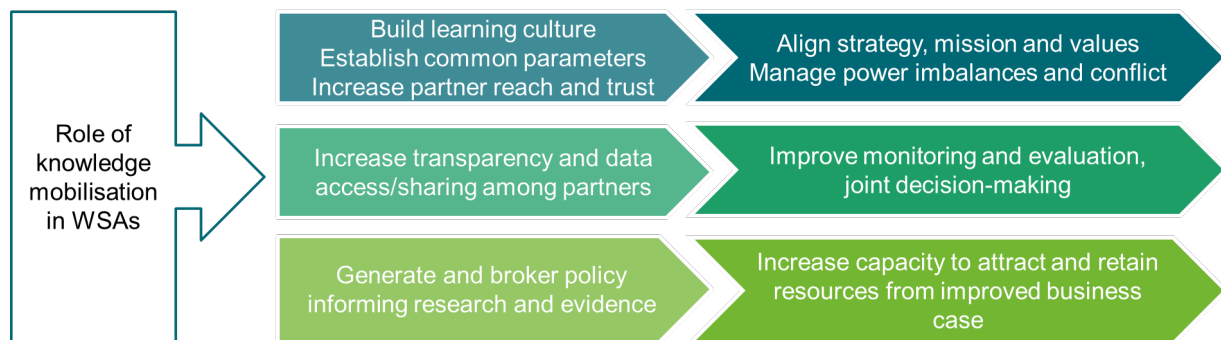


Figure 16. Role of knowledge mobilisation in whole-of-systems approaches

Source: Based on Willis et al 2017⁵³, de Leeuw 2017²⁸.

2.3.6 What other strategies intersect with governance, leadership and knowledge mobilisation?

Governance, leadership and KMb provide the underlying structures, processes and mechanisms for facilitating and maintaining coordinated intersectoral action on PA and generating new connections, ideas and ways of working that can create positive shifts in the system for PA. They therefore intersect with every part of the PA system including all eight domains for policy action, and system supports including surveillance systems (refer to [Chapter 5](#)). The strategic principles for capacity building to advance a WSA to PA are discussed in [Chapter 2.4](#).

2.3.7 What are the implications for policy?

Both formal and informal processes and structures are needed to support effective governance and knowledge mobilisation in WSAs and enable coordinated action and effective collaboration across diverse sectors and jurisdictions. The importance of relational factors such as trust and goodwill should not be understated, as these influence the level of partner commitment, ability to manage power imbalances and conflict, interactions between partners, and willingness of partners to contribute and share knowledge to promote a learning culture and improve joint decision making. However, institutions themselves need to be strong enough to ensure that cooperation, coordination and resource investment continue even when there is change of individuals and personnel. Processes themselves need to be legitimate (seen as fair, right and proper) so that there is less reliance on interpersonal relationships – particularly over time.

Policy makers may need to consider whether they need to build capacity at an individual, community, organisational or system level to support good governance and KMb in WSAs to PA (Chapter 2.4). Leadership for governance and KMb in WSAs can more usefully be conceptualised as *a property of the system* than the attributes of a person¹⁶; the notion of distributed leadership²⁵ is also helpful. An implication here is that if leadership in WSAs is distributed and complex, then the learning and development to nurture this leadership may also need to be purposefully embedded/distributed and made explicit to the system actors, and involve periods of reflection on how leadership, governance and KMb is functioning across the system.

- For a WSA to enable better PA policy there are three key requirements:
 - (i) Systems leadership
 - (ii) Good governance
 - (iii) Effective KMb
- Leadership requirements for WSAs are different to those needed for single or even multisectoral approaches. This section draws on five leadership theories to describe the Enabling style of leadership for WSAs
- KMb can work in WSAs to
 - (i) Build a learning culture
 - (ii) Increase transparency and sharing
 - (iii) Stimulate evidence translation for better policy and practice.

Further resources and examples

Refer to the links listed under ‘Governance, leadership and knowledge mobilisation’ in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 4.1, 4.4).

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2.4 Strategic principles and capacity building for a whole-of-systems approaches to physical activity

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2.4.1 How does capacity building for a whole-of-systems approach contribute to a more active society?

Effective action for the creation of a more active society demands the development and implementation of integrated, comprehensive, system-wide approaches¹ in consultation with policy makers and stakeholders from multiple sectors and communities.² Using a WSA conceptual approach is perhaps more helpful than alternatives because it accounts for changing contexts, current and emerging key actors and their interactions over time, deepening our understanding of the system, of 'how things work' and where and how to intervene to improve the desired outcomes.³⁻⁵ WSAs to PA (and to public health more broadly) are a relatively recent development, sitting more in the theoretical than in the applied domain of practice so that the emergence of empirical evidence on the usefulness of WSA *per se* is in its infancy, as noted in the 2019 systematic review by Bagnall² (Table 9).

Table 9. Features of a whole-of-systems approach to physical activity

Feature	Details
Identifying a system	Explicit recognition that the PA system consists of interacting, self-regulating and evolving elements. Recognises that a wide range of bodies including those that do not have any overt interest or objectives in relation to PA, may have a role to play, meaning the boundaries of the system may be broad
Capacity building	Explicitly aims to support communities and organisations within the system
Creativity and innovation	Mechanisms to support and encourage local creativity and/or innovation to address PA problems
Relationships	Methods of working and specific activities to develop and maintain effective relationships within and between organisations
Engagement	Clear methods to enhance the ability of people, organisations and sectors to engage community members in the development and delivery of programs
Communication	Mechanisms to support communication between actors and organisations within the system
Embedded action and policies	Practices explicitly set out for public health and social improvement within organisations within the system
Robust and sustainable	Clear strategies to resource existing and new projects and staff
Facilitative leadership	Strong strategic support and appropriate resourcing developed at all levels
Monitoring and evaluation	Well-articulated methods for providing ongoing feedback into the system, to drive change to enhance effectiveness and acceptability

Source: Adapted from Bagnall et al.²

By contrast, WSAs have been used in other fields for much longer so we can also draw on the non-health WSA literature in thinking about strategic principles and capacity building. Capacity building is a term used for the familiar concepts of community and workforce development. Capacity building taps into existing abilities of: (i) individuals; (ii) communities; (iii) organisations; or (iv) systems, to increase involvement, decision making and ownership of issues (Table 10).⁶

Table 10. Potential outcomes of capacity building

The outcomes of capacity building may relate to:	
Individual	Participation levels, skill (leadership, problem solving, negotiation), knowledge, values, empowerment, increased engagement with (or connection to) the community, and desired behaviour changes
Community	Changes in membership, technical abilities and interpersonal skills (confidence, communication) of individuals, collective knowledge, planning and evaluation skills, and resource management (financial or non-financial)
Organisational	Changes in decision making, organisational policies, resource allocation, partnerships, collective attitudes and values
Systemic	Changes in interorganisational planning and/or collaboration, new legislation, resource allocation, values, cultural norms, societal values

Source: VicHealth 2012.⁶

2.4.2 What evidence can inform capacity building for whole-of-systems approaches to physical activity?

As noted above, key features of a systems approach to public health problems (such as physical inactivity) have been proposed in the systematic review by Bagnall², adapted from a UK National Institute for Health and Care Excellence (NICE) evidence review⁷, as well as a guide to supporting local agencies with WSAs.⁸ Evidence for the effectiveness of WSAs is emergent; as might be expected there are various approaches to the articulation of principles and activities which may guide capacity building to underpin their development. Reich and colleagues (Flagship Program) offer 'strategic design principles'⁹, Bagnall and colleagues set out the 'features of a systems approach'², while the framework developed by Foster-Fishman and colleagues describes essential components for understanding and transforming systems.¹⁰ These approaches are described in more detail in the following paragraphs.

Lessons from 20 years of capacity building for health systems thinking have been reported by Reich and colleagues based on a study of the World Bank/Harvard School of Public Health 'Flagship' program.⁹ While the Flagship program focused mostly on the health sector, the review identified generic principles which we have adapted for use in systems approaches to the promotion of PA (Table 11).

Table 11. Capacity building for a whole-of-systems approach – strategic design principles

Design principle	Practical application	Further information and examples
Common priority themes	Find and focus on the common themes across heterogenous needs	<ul style="list-style-type: none"> The communication domain and PA (see Chapter 3.5) Addressing inequity in PA participation (see Chapter 4)
Shared frames of reference	Provide analytical frameworks that create a common language for teaching and learning	<ul style="list-style-type: none"> Whole-of-systems map for PA (see Chapters 2.1 and 2.2) Policy domains for action on PA (see Part 3)
Action oriented	Get the right balance between systems theory and operational practice	6-step process model of implementing a WSA for PA (see Figure 18 in this Chapter)
Participatory and interactive	Emphasise Adult Learning approaches	<ul style="list-style-type: none"> Integrated model of Adult Learning for PA <ul style="list-style-type: none"> Ascertain, share existing knowledge and experience Reflect, observe to develop new PA concepts Articulate new concepts and put into practice Reflect on, share experience of implementation of PA interventions and lessons learned
Evaluation and continuous improvement	Evaluate to ensure the responsiveness and relevance of capacity building activities	<ul style="list-style-type: none"> Process evaluation <ul style="list-style-type: none"> Were the teaching and learning experiences delivered as planned? Well received by the participants? Relevant? Impact evaluation <ul style="list-style-type: none"> Did the teaching and learning influence PA policy and practice for the better?

Source: Reich et al.⁹

Foster-Fishman and colleagues have provided a useful framework (Table 12) for understanding and changing organisational and community systems¹⁰ which has been applied in Australia by Allender and colleagues.¹¹

Table 12. Foster-Fishman framework – essential components of transformative systems change

Bounding the system	Understanding system parts as root causes	Assessing system interactions	Identifying levers for change
<ul style="list-style-type: none"> • Problem definition • Identification of the levels, niches, organisations and actors relevant to the problem 	<ul style="list-style-type: none"> • System norms • System resources • System regulations • System operations 	<ul style="list-style-type: none"> • Reinforcing and balancing interdependencies • System feedback and self-regulation • Interaction delays 	<p>Identifying parts to leverage for change</p> <ul style="list-style-type: none"> • Exerts or could exert cross-level influences • Directs system behaviour • Feasible to change <p>Identifying interactions and patterns to leverage for change</p> <ul style="list-style-type: none"> • System differences that create niches compatible with systems change goals • Long standing patterns that support or hinder change goals • Gaps in system feedback mechanisms • Cross-level/sector connections that are needed
<p>Examples for PA:</p> <ul style="list-style-type: none"> • Compile a WSA map of PA for a specific local government area • Complete a PA stakeholder mapping and analysis • Identify 'community ambassadors' for PA 	<p>Examples for PA:</p> <ul style="list-style-type: none"> • Audit of community assets for PA • Data on knowledge and attitudes of management stakeholders across sectors • Mapping of potential policy co-benefits 	<p>Examples for PA:</p> <ul style="list-style-type: none"> • Data report on the effects of speed zones and traffic calming on pedestrian and cycling PA • Citizen science data on street lighting, perceived safety and likelihood of PA participation 	<p>Examples for PA:</p> <ul style="list-style-type: none"> • Add new section to existing walkway to create a 'loop' and additional connections • Install new speed bumps and speed feedback monitors near local park • Modify maps on display for city trains and light rail to show walking distance and time between stops

Source: Foster-Fishman et al.¹⁰

2.4.3 What works to build capacity for whole-of-systems approaches to physical activity?

Towards infrastructure and program specification

Taylor and Hamdy have provided an integrated model across Adult Learning (AL) theories (Figure 17).¹² **Dissonance** is where the learner's existing knowledge is challenged and found to be incomplete. In 'Refinement', the learner seeks possible solutions to a problem ('Elaboration'), and through completing tasks, research, reflection and discussion refines newly acquired information into *new concepts*. In 'Organisation', the learner restructures their previous ideas to account for the new information acquired through: (a) *reflection in action* (test, re-test); and/or (b) *organisation of the information into schema(ta)*. In the crucial 'Feedback' phase, the learner articulates their new acquired knowledge and tests it against what their stakeholder peers believe. Feedback either reinforces their schema(ta) or prompts reconsideration/revision in light of the new information.

Use of Adult Learning Theory is a core design principle in Teaching and Learning for WSAs

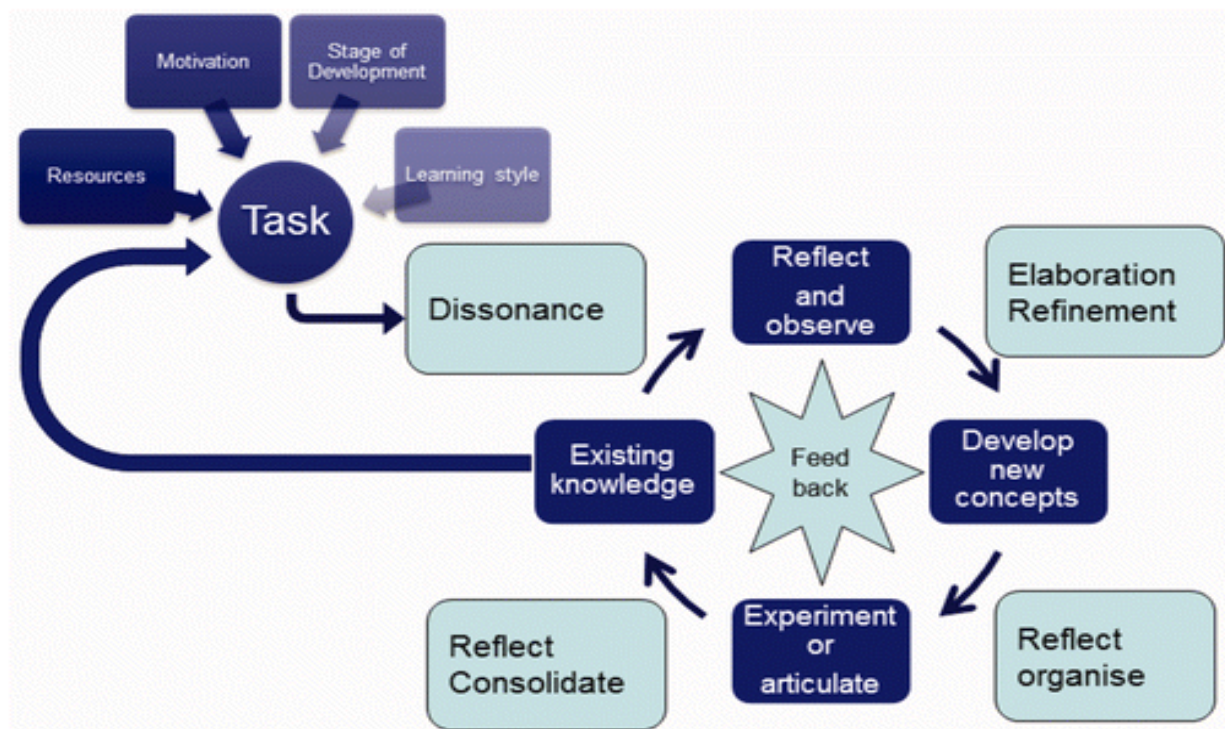


Figure 17. An integrated model of Adult Learning

Source: Taylor and Hamdy 2013.¹²

Using an AL approach is a key design principle (Table 13). Taylor and Hamdy have developed an integrated model of AL (Figure 17) and a practice guide.¹² We can now bring together evidence on the features of a systems approach in public health (Table 9), design principles for WSA capacity building (Table 11), an integrated model for AL (Figure 17), relevant new evidence from Public Health England and the National Institute for Health and Care Excellence^{8,13}, and research findings from Australia.^{11,14-17}

For our purposes a *competency* is a general and broad description of the desired knowledge, applicable skills or behaviours from a learning experience that enable people to perform a given role in a WSA to public health – more specifically a WSA to PA.

We propose a taxonomy of competency domains and learning outcomes for WSAs (Table 13). Nine **Competency Domains**^a are set out with corresponding examples of **Learning Outcomes**, adapted from or informed by Public Health England^{8,13}, Allender¹¹, Nau¹⁷, Bellew¹⁶ and Roberts.¹⁸ While we have identified what we regard as very important learning outcomes, we are not suggesting that the listed set of examples is comprehensive or definitive.

^a Competency domains are based on the key system behaviours identified by [Public Health England](#) (2019).

Table 13. A taxonomy of competency domains with examples of learning outcomes for whole-of-systems approaches to physical activity

Competency domains	Learning outcomes
Innovation culture Embedding policies and actions	<ul style="list-style-type: none"> - Demonstrate responsibility and sustained support for the design and delivery of a local WSA to PA - Articulate a vision for a WSA and describe how own role could fit within the local systems approach - Learn about differing stakeholder viewpoints and priorities and describe the interconnectedness across the breadth of a stakeholder network
Shared aspirations Building effective relationships; developed shared goals; finding common operational ground	<ul style="list-style-type: none"> - Create an engaging, open and honest conversation within stakeholder network(s) - Develop a clear and shared aspirational vision with stakeholders on what the WSA is and trying to achieve - Develop a common conceptual framework to capture co-benefits beyond health, in agreement with sectoral community stakeholders
Whole-of-systems learning Capacity building, knowledge mobilisation, evaluating complex adaptive systems	<ul style="list-style-type: none"> - Communicate the concepts of and effective approaches to Communities of Practice (CoP) and knowledge mobilisation; explain these in terms of the whole system - Promote a culture and environment that encourages reflection and continuous learning at the individual and whole-of-system levels - Share insights, learn from other stakeholders, communicate efficiently what is happening locally and other information in support of the shared vision - Create structured opportunities to foster communication and shared learning about methods of practice, experience and outcomes of implementation across stakeholder network(s) and CoPs - Seek to explain changes in a range of core system features including leadership, culture, depth and breadth of connections as well as service delivery
Collective action Stakeholder analysis; Coalition building	<ul style="list-style-type: none"> - Communicate key concepts and relevant approaches to stakeholder analysis and coalition building - Learn about the co-benefits of PA beyond health, as perceived by sectoral and community stakeholders - Identify alignment between current and possible future actions, at differing levels, across sectors using whole-of-systems mapping and intelligence - Influence and facilitate stakeholders, across the system, to take responsibility and own or co-own actions
Communication mechanisms Advocacy, communication and social marketing	<ul style="list-style-type: none"> - Communicate concepts and best practices in advocacy, communication and social marketing (ACSM) - Create effective approaches to ACSM. Share insights and data to support system-wide action

Competency domains	Learning outcomes
Governance structures Governance for a WSA; sustainability strategies; monitoring and evaluation of WSA	<ul style="list-style-type: none"> - Communicate the concept of governance for whole systems; explain the function of governance in terms of the whole system - Co-design strategies and processes with stakeholders and communities, to collect, monitor and make sense of information to help evaluate progress - Understand that evaluation considers the cumulative impact of a wide range of inputs rather than focusing on a set of discrete outcomes - Design approaches to secure and maintain stakeholder accountability, including (as required) building incrementally on what may already be in place and working well - Learn about sustainability strategies such as Whelan et al, Hailemariam et al
Community engagement Engagement of sectors, organisations, people; building a common language	<ul style="list-style-type: none"> - Meaningfully involve key stakeholders in every aspect of whole systems work to benefit from their expertise in understanding what communities want, their perception of the relevant community assets and how efforts to intervene and drive improvement might be made more effective - Communicate a process model showing phases of implementation for a WSA (e.g. Public Health England 6-Step model) - Develop an understanding of the variety of nomenclature used by sectoral stakeholders to describe their strategies, activities and success measures
Systems thinking A joined up, shared view of how things work	<ul style="list-style-type: none"> - Communicate the concept of a continuum of systems thinking approaches; contrast scoping/conceptual mapping with quantitative dynamic modelling e.g. Bellew, Roberts - Co-design a WSA conceptually to enable all stakeholders to share common ground and purpose - Build understanding of fundamental system parts as potential root causes of the public health problem (e.g. physical inactivity) - Adopt a mindset of seeking 'plausibility' not 'causality' with a view to increasing our confidence that action has had an impact - Recognise that no single action in a system will be responsible for any observed changes in our desired outcomes - Identify system parts to leverage for change - Stimulate and lead discussion on delivering collective and aligned system-change strategies
Mindset Leadership for WSAs	<ul style="list-style-type: none"> - Learn about current concepts of Shared Leadership and Complexity Leadership - Seek first to understand the different perspectives and priorities of those working across the system, recognising what is currently working as well as exploring new behaviours, thinking and action - Create a consensus towards collective gain rather than individual benefit - Lead by example, setting aside personal and institutional objectives and agendas. Look for opportunities to collectively learn rather than seeking to take credit for success - Approach change with optimism, empathy and humility and a willingness to question assumptions, behaviours and current ways of working - Commit to the long-term outcomes

2.4.4 What are the recommendations for investment and action?

In [Chapter 2.1](#) we described WSAs as being at the heart of the WHO *Global Action Plan on Physical Activity* (GAPPA) – Objective 4 of GAPPA is “*create active systems*.”¹⁹

In this section we have defined investment guidance for capacity building for a WSA to PA in terms of: (i) design principles; (ii) essential components of transformative systems change; and (iii) competency domains and learning outcomes (examples, not an exhaustive compendium).

In terms of recommended investments and actions, we suggest developing tender specifications/requests for proposals/learning experiences consistent with the following:

1. Clarify which of the four levels of capacity building are to be addressed in the proposed actions to increase PA
2. Incorporate the five Strategic Design Principles (Table 11) as the overarching approach to PA planning
3. Use the Foster-Fishman Framework (Table 12) as an overview of the essential components of whole system change that teaching and learning experiences should be designed to address
4. Refer to the Taxonomy of Competency Domains and Learning Outcomes for WSAs (Table 13) when designing teaching and learning experience and in thinking about capacity building opportunities whether planned or incidental-by-design.

WSA capacity building (CB) may be framed at four levels:

- **INDIVIDUAL:** Participation levels, skills (leadership, problem-solving, negotiation), knowledge, values, empowerment, increased engagement with (or connection to) the desired behaviour changes
- **COMMUNITY:** Changes in membership, technical abilities, and interpersonal skills (confidence, communication) of individuals, collective knowledge, planning and evaluation skills, and resource management (financial or non-financial)
- **ORGANISATION:** Changes in decision making, organisational policies, resource allocation, partnerships, collective attitudes and values
- **SYSTEM:** Changes in inter-organisational planning and/or collaboration, new legislation, resource allocation, values, cultural norms, societal values.

Policy makers and development officers should:

- Clarify the applicable CB level(s)
- Incorporate the recommended five strategic design principles
- Consider using Foster-Fishman as an overarching framework
- Refer to the Taxonomy of Competency Domains and Learning Outcomes when designing learning experiences in WSA.

2.4.5 What other strategies intersect with capacity building for whole-of-systems approaches?

Capacity building adds to and strengthens the abilities of: (i) individuals; (ii) communities; (iii) organisations; and (iv) whole systems, to increase involvement, decision making and ownership for WSA. Capacity building for WSAs is at the very heart of WSA to PA. In that sense, this strategy potentially intersects with all and any part of the system. Key steps are to clarify which of the four levels of capacity building are to be addressed, which whole-of-system intervention points are to be the focus and which competency domains and learning outcomes are a priority. The six-step implementation process model developed by Public Health England⁸ depicts a process comprising six phases of implementation; however, the **capacity requirements to deliver these steps are not shown**. The models, frameworks, competency domains and learning outcomes identified in this section can be thought of as sitting behind that process model and are what will underpin successful implementation. A PA-specific model developed by Copeland and colleagues is also available as a reference point (Figure 19).²⁰

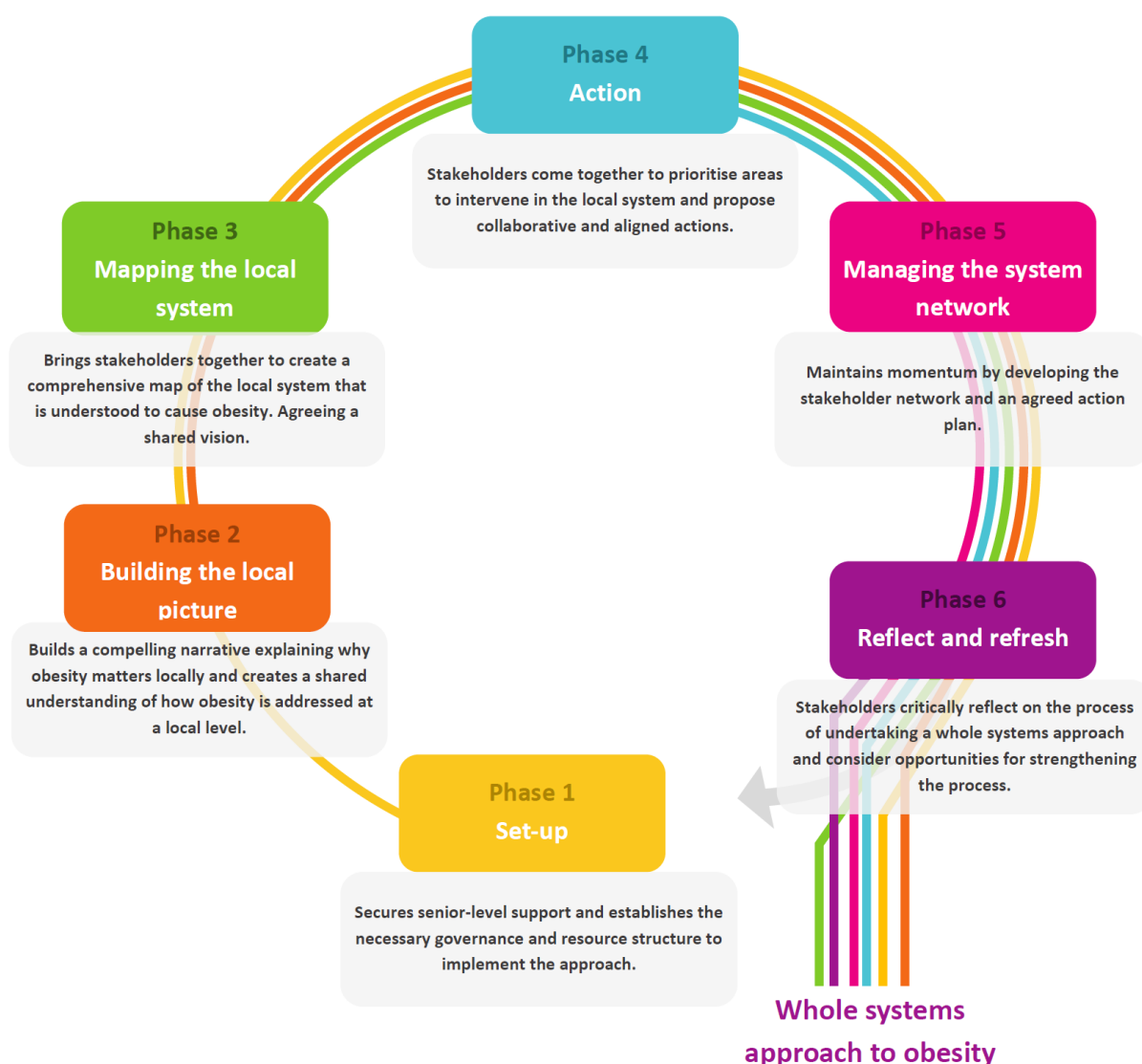


Figure 18. A six-step process model of implementing a whole-of-systems approach (the example here is for obesity but is equally applicable to PA)

Source: Public Health England.⁸

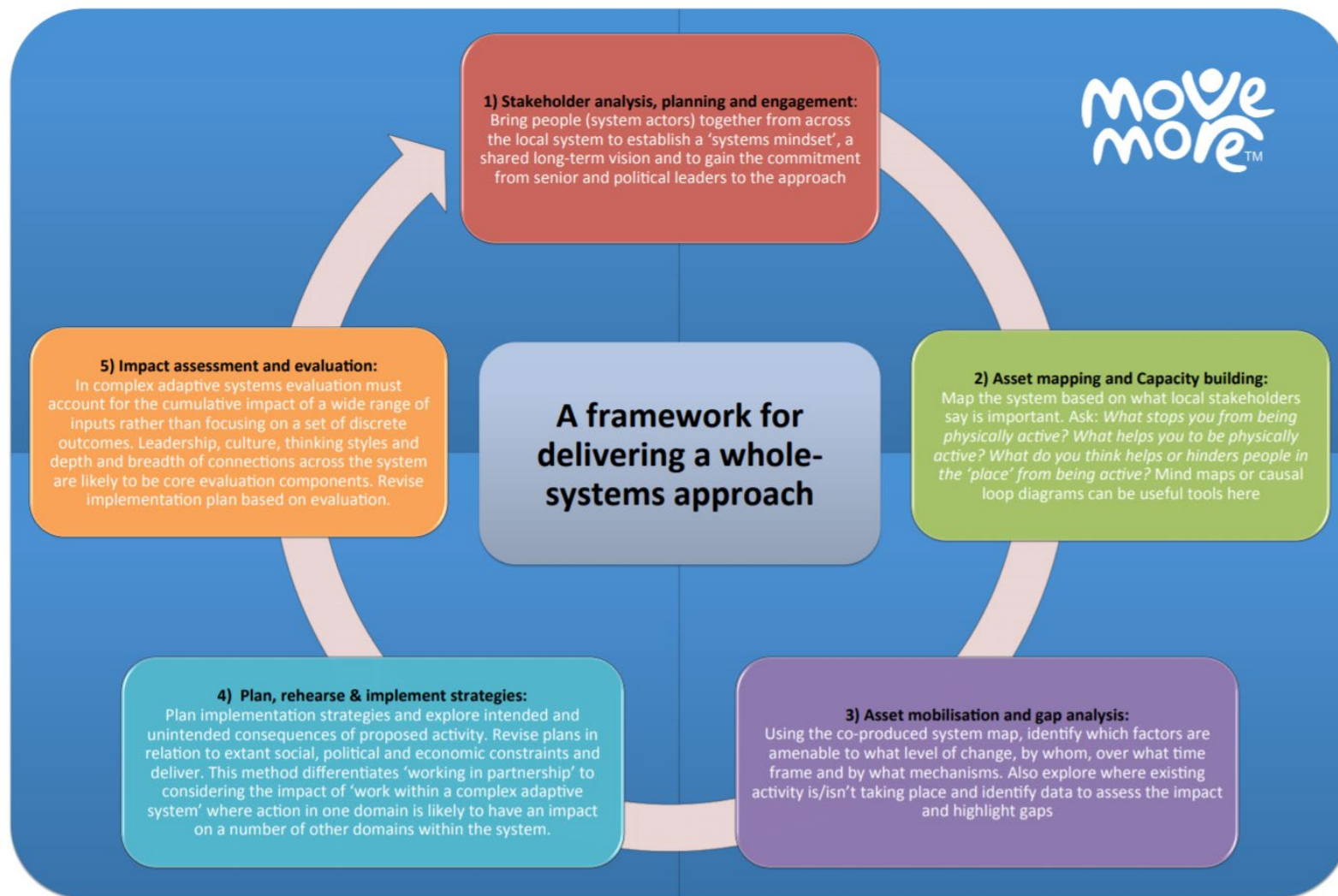


Figure 19. Five stages of a whole-of-systems approach to increasing physical activity in Sheffield, UK

Source: Copeland et al 2018.²⁰

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