

# Using Logic Models in Evaluation

Briefing

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# Introduction

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This briefing has been prepared for NHS England, by the Strategy Unit, as part of a programme of training to support national and locally-based evaluation of the Vanguard programme and sites. This paper accompanies a series of national workshops for Vanguard sites and is designed for sites to use with stakeholders, providing a brief summary and signposting further information.

The briefing is based on a literature review conducted during June 2015, which included a search of key bibliographic databases, including Medline and HMIC, and key online sources.

# What is a logic model?

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Evaluation is an active component of change management, ideally achieving a balance of meaningful practical application and methodological rigour. For the Vanguard, dealing with high levels of complexity and uncertainty, theory-based evaluation offers a robust approach to measuring impact. The logic model is a key tool to support this approach.

*“A logic model is a graphic display or ‘map’ of the relationship between a programme’s resources, activities, and intended results, which also identifies the programme’s underlying theory and assumptions.”*

(Kaplan and Garrett, 2005)

Essentially, a logic model helps with evaluation by setting out the relationships and assumptions, between what a programme will do and what changes it expects to deliver (Hayes et al., 2011). A logic model can be particularly valuable in drawing out gaps between the ingredients of a programme, the underlying assumptions and the anticipated outcomes (Helitzer et al., 2010).

Logic models have been used for at least 30 years and are recommended in official evaluation guidance (HM Treasury, 2011) as a method to support robust evaluation. Logic models are typically used in theory-based evaluation, which is designed to explicitly articulate the underlying theory of change which shapes a transformation programme. Put very simply, this is your theory of how you will achieve the desired outcomes and impacts through a series of activities. Theory-based evaluation recognises the importance of articulating and analysing the logic at the very heart of the programme. In complex programmes, such as the Vanguard, logic models used as part of a wider theory-based approach can help to clarify vision and aims; support real improvement; and build a solid evidence base.

Logic models are usually developed alongside narrative descriptions of a programme as well as frameworks for measuring outcomes and impact. The process of developing a logic model helps to define the various elements of your programme, which creates the foundation for measurement and evaluation. There are a number of examples of logic models in the literature, some of which are referenced in this report. Increasingly, logic models are being seen in secondary research to develop theories for change programmes and to support systematic reviews (Baxter et al., 2014; Allmark et al., 2013; Hawe, 2015).

*“The main problem I see in most BCF [Better Care Fund] areas is that the logic models are often under-developed and or flawed, usually because system leaders have not done enough in the first instance of really thinking through the actual changes in service delivery and how these can actually change the way the system operates. Too often the initial focus is on funding and organisational issues.”*

Dr. Nick Goodwin, International Foundation for Integrated Care, The King's Fund (Better Care Fund, 2015)

# Why use logic models?

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As McLaughlin and Jordan (1999) note, creating a logic model enables you to set out the programme's "story", detailing:

- What are trying to achieve and why is it important?
- How will you measure effectiveness?
- How are you actually doing?

The process of creating a logic model is considered to be valuable as it requires programmes to fully and clearly articulate vision and aims, thus introducing a more structured approach to evaluation, setting out a clear hypothesis to be tested. The logic model can also help to build ownership, consensus (Kaplan and Garrett, 2005; Hulton, 2007) and a shared understanding (Helitzer et al., 2010; Hulton, 2007). A collaborative approach acknowledges the range of different perspectives and facilitates communication with stakeholders, by setting out clearly the vision and expected outcomes in a credible way and stating what it means for participants and stakeholders (Kaplan and Garrett, 2005).

*"The logic modelling process makes explicit what is often implicit."*

(Jordan, 2010)

Logic models can help support communication in setting out a clear argument for the programme (Gugui and Rodriguez-Campos, 2007). Most of the literature (McLaughlin and Jordan, 1999, Hayes et al., 2011, Gugui and Rodriguez-Campos, 2007) recommends that logic models are developed collaboratively, with key stakeholders, as the process of developing the model creates shared understanding and expectations of the vision, activities, roles and responsibilities (Jordan, 2010; HM Treasury, 2011). This is particularly helpful in a complex environment where programmes are working towards long term outcomes with high levels of uncertainty (Reynolds and Sutherland, 2013). In the Vanguard setting, this can help local health economies to define what integration means within their local context. The collaborative process can help to reveal and test the underlying assumptions behind the programme, essentially acting as a type of "health check" of the clarity and consistency of ideas (Helitzer et al., 2010, McLaughlin and Jordan, 1999) and how clearly these are expressed to stakeholders. Having a clear visual model of the programme can also aid communication with local communities (McLaughlin and Jordan, 1999) but there may be a need to test it before sharing more widely (Baxter et al., 2014). Page et al (2009) note:

*"The use of the logic model became a second language within the organization, allowing for effective communication among programme staff and the evaluator."*

From an evaluation perspective, using a logic model involves evaluators early on in the lifetime of the programme (Helitzer et al., 2010). This means evaluation can be built around the vision and aims of the programme and can be designed to facilitate formative (continuous) as well as

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summative (at the end of the programme) evaluation. The use of the logic model approach across a larger programme offers a standardised approach to evaluation whilst allowing for flexibility for different approaches to suit different local contexts (Helitzer et al., 2010) can help to create a valuable evidence base, by establishing what works for which groups in what contexts (Reynolds and Sutherland, 2013) and informing the transferability of key learning. The logic model can also help to identify what features of your programme contributed to “intended and unintended outcomes” (McLaughlin and Jordan, 1999)

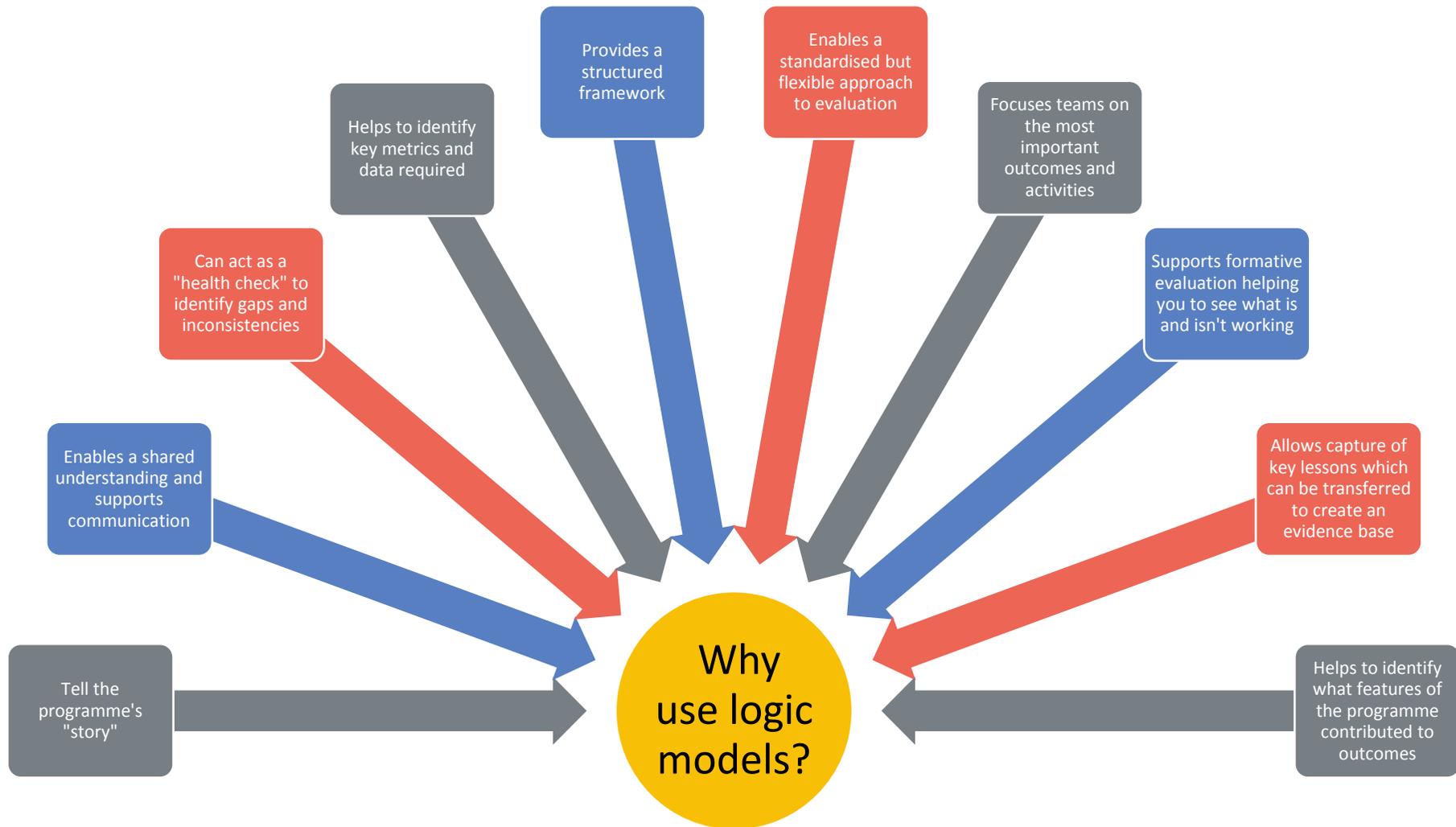


Figure 1 : Benefits of logic models

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For the programme team, the logic model can help to focus teams on the activities which will deliver the most critical outcomes (Hayes et al., 2011). The process of developing the model can also help teams in identifying key metrics (Gugui and Rodriguez-Campos, 2007) and therefore what data needs to be collected to monitor progress (Hayes et al., 2011, McLaughlin and Jordan, 1999; HM Treasury, 2011) and to be able to see what is working well and what isn't working and to explore possible reasons and actions (Hayes et al., 2011).

*"The approach is grounded by first defining the health impacts integration is intended to affect. The mutual goal of designing, implementing, and scaling up interventions to improve a particular health outcome or impact is the "glue" that holds together disparate interests, services, and sectors. "*

(Reynolds and Sutherland, 2013)

Without a logic model, there's a potential risk of missing the key mechanisms and outcomes of a programme in the evaluation, thus limiting the value of the evaluation (Gugui and Rodriguez-Campos, 2007). Programme team will need to state explicitly how activities and resources will lead to desired outcomes (Helitzer et al., 2010) which helps to reduce potential misunderstandings whilst ensuring that activities are focused on the outcomes to be achieved. The process can also help to bring together stakeholders who will inevitably have different perspectives and possibly conflicting agendas or imposed targets (Helitzer et al., 2010). A collaborative approach will add the insight from multiple perspectives, which can help to identify barriers at micro, meso and macro levels, and help to clarify what is within or out with the programme's control (Jordan, 2010).

# What you should bear in mind

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Creating robust logic models can present some challenges. To create an effective logic model takes commitment in time, resources and training (Kaplan and Garrett, 2005). Involving experts in the process can help create a more robust model but will require investment of resource. Programme teams sometimes worry about “burdening” people with more work (Kaplan and Garrett, 2005).

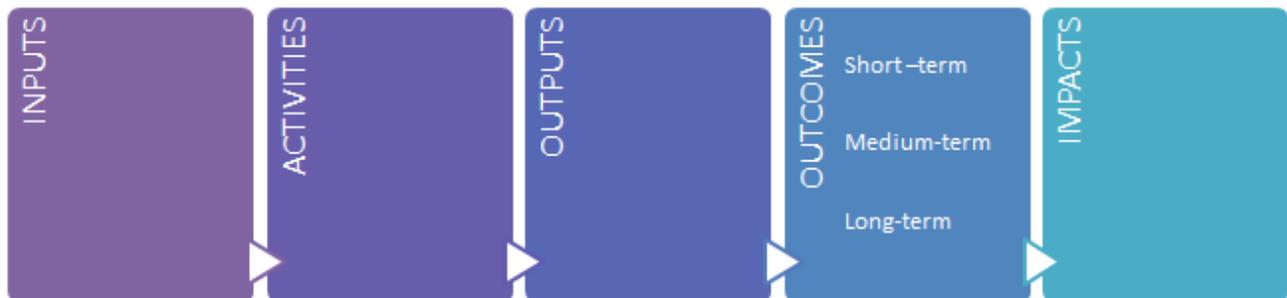
A logic model can only ever be a simplification of the complexity with which you’re working and can’t always capture the nature of the complexity but does offer a representation of what you’re aiming to achieve that everyone involved in the programme can understand (Hulton, 2007; Craig, 2013). It’s often hard to attribute outcomes to specific interventions but a logic model approach can help you to measure outcomes and assess whether interventions were implemented as planned and to explore possible explanations for the outcomes (Craig, 2013). This helps you to build your understanding of how your programme has contributed to intended and unintended outcomes. The Aspen Institute (Auspos and Cabaj, 2014) suggest that logic models can encourage a focus only on those outcomes which have been articulated, which risks missing other unintended consequences (positive or negative) so it’s important for programmes to work with stakeholders on real-time feedback mechanisms to avoid blind spots:

*“The process begins with asking better questions. Instead of asking, ‘Did we achieve what we set out to achieve?’ they can ask, ‘What have been the many effects of our activities? Which of these did we seek and which are unanticipated? What is working (and not), for whom, and why? What does this mean for our strategy?’ Simply framing outcomes in this broader way will encourage people to cast a wider net to capture the effects of their efforts (Patton, 2011).”*

It’s important to remember that logic models should be dynamic – a logic model essentially is a snapshot of your programme (Gugui and Rodriguez-Campos, 2007) and needs to be maintained on an ongoing basis. This means setting up a process to monitor outcomes, including unintended outcomes. The Magenta Book (HM Treasury, 2011) provides some guidance on the unintended consequences of change programmes, classifying these as: displacement (such as moving demand to another part of the system), substitution (such as a particular group’s needs being prioritised over another’s), leakage (such as benefits being seen outside the target population) and deadweight (the outcomes would have happened regardless of the programme).

# How to develop your logic model

Your logic model should incorporate the underlying assumptions, or programme theory, which articulates how what you're doing (interventions and mechanisms) will resolve the problems you programme aims to resolve (Gugui and Rodriguez-Campos, 2007). A logic model is often expressed in a tabular format, such as:



McLaughlin and Jordan (1999) outline the typical stages in developing a logic model:

1. Collection of information needed to develop the model. This will involve working with multiple sources, including, the published literature; programme documents and stakeholders.
2. Description of the problem(s) the programme aims to address and the context in which you're working, including the factors which contribute to the problem.
3. Definition of the individual elements of the logic model. At this stage, it may be helpful to ask constructively challenging "how" and "why" questions to articulate what you are doing and why (Kaplan and Garrett, 2005).
4. Construction of the model.
5. Verification of the model, working closely with stakeholders, which sets the tone for continuous review.

The literature features a number of different approaches to the development of logic models (Gugui and Rodriguez-Campos, 2007):

- **W K Kellogg Foundation**<sup>1</sup>: This approach, which is recommended in the Magenta Book (HM Treasury, 2011) suggests three different types of models, which each serve a different purpose:
  - The theory approach model is used to articulate the underlying programme theory, in other words the "how and why the programme will work (Gugui and Rodriguez-Campos, 2007). It poses 4 questions:
    - What issues or problems does the programme seek to address?

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<sup>1</sup> <https://www.wkcf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide>

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- What are the specific needs of the target audience?
  - What are the short- and long-term goals of the programme?
  - What barriers or supports may impact the success of the programme?
  - The activities approach model is designed to support implementation by setting out the programme activities in detail, to a timescale. This model also incorporates monitoring processes and approaches to identifying and managing barriers.
  - The outcomes approach model is focused on demonstrating impact of the programme and is recommended for short and longer term follow up.
- The **United Way**<sup>2</sup> (University of Wisconsin) approach is perhaps the most familiar. This model specifies four elements: the **inputs** are the resources used by the programme; the **activities** are the processes undertaken to implement change; the **outputs** are the direct products from the activities; and the **outcomes** are the benefits derived from the programme (usually expressed as short, medium and long term), which may be direct or indirect. Outcomes indicate a change from pre to post programme, typically more associated with behaviours, skills, attitudes and knowledge (Gugui and Rodriguez-Campos, 2007). A fifth element, contextual factors, is often added to articulate the constraints within the programme's environment (such as legal requirements, workforce, location).
  - Gugui and Campos developed a **semi-structured interview protocol (SSIP)** approach to assist less experienced evaluation teams to collect perspectives from programme teams and stakeholders, to inform the logic model. The protocol is divided into 7 sections:
    - **Gathering information** from key stakeholders: this includes basic programme (including purpose, financial status and capacity) and contextual information (e.g. social, political, legal);
    - **Generating elements** of the logic model which is likely to be an iterative process;
    - **Organising these elements into outcomes, activities, outputs** (which should all cover individual, organisational, system, community etc. levels) **and inputs** (which should cover resources and resource gaps) ;
    - Identifying and removing those elements which are unclear, unrealistic or meaningless;

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<sup>2</sup> <http://www.uwex.edu/ces/pdande/evaluation/evallogicmodel.html>

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- **Identifying a plausible theory of change, which essentially links together the outcomes, activities, outputs and inputs.** A process theory approach might consider how a programme has implemented activities (e.g. has the target population been identified? Do staff have the required skills and knowledge?) and an outcomes theory approach would look at whether the theory of change which sets out why activities will lead to desired outcomes, is feasible (have the underlying health needs been identified? Which activities are most critical for achieving outcomes?);
  - **Prioritising your intended outcomes,** to identify the most critical outcomes and therefore where to focus evaluation;
  - **Presenting the graphical or tabular logic model** to organise the information collected in steps 1 through 6.

According to Kaplan and Garrett (2005), logic models work best where they are adapted to meet the needs of the programme and local community as opposed to a rigid exercise. Development of your logic model will be an iterative and dynamic process (Hulton, 2007) and will benefit from a coproduction approach (Kaplan and Garrett, 2005; Jordan, 2010) which helps to “grounded in local context” (Helitzer, D et al., 2010). Helitzer et al. advise that key stakeholders should share the latest versions of their models within their constituencies to discuss, revise and keep communication lines open, and then feed in any learning or feedback. Kaplan and Garrett suggest that a co-production approach leads to more complete models, which have been subjected to greater scrutiny and broader input. This can prove challenging as stakeholders are likely to vary in their levels of commitment to the process; Kaplan and Garrett suggest working with small interactive groups is particularly effective.

McLaughlin and Jordan (1999) recommend asking a series of questions to ensure the model is as comprehensive and robust as it can be:

- “Is the level of detail sufficient to create understandings of the elements and their interrelationships?”
- Is the programme logic complete? That is, are all the key elements accounted for?
- Is the programme logic theoretically sound? Do all the elements fit together logically?
- Are there other plausible pathways to achieving the programme outcomes?
- Have all the relevant external contextual factors been identified and their potential influences described?”

It is important to articulate and test the validity of underlying assumptions; this helps to identify gaps and inconsistencies in your model (Kaplan and Garrett, 2005), which in turn, builds a stronger case for change and helps to translate nebulous ideas into clear aims and activities. Kaplan and Garrett share an example where a number of programmes were able to identify gaps in their workforce planning as a result of collaborative development of logic models. There can often be an

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assumption that behaviours will change simply as a result of an intervention, such as a new technology; it is important that assumptions such as these are acknowledged and challenged before implementation. Assumptions can be tested through a review of the evidence base (Helitzer, D et al., 2010; McLaughlin and Jordan, 1999) and engagement with experts and stakeholders. Kaplan and Garrett advise this testing happens as early on as possible as there may be a need to consider reallocating resources; they also advise that funders be open to changes to overall design. There are numerous guides available online, including:

- Evaluation Support Scotland tutorial <http://www.evaluationsupportscotland.org.uk/resources/278/>
- Evaluation Support Scotland guide <http://www.evaluationsupportscotland.org.uk/resources/127/>
- The Tavistock Institute's guide developed for the Department of Transport: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3817/logicmapping.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3817/logicmapping.pdf)
- Chapter 6 of the Magenta Book focuses on the development of logic models (Kellogg approach): <https://www.gov.uk/government/publications/the-magenta-book>

Your logic model will enable you to ask questions during and after the programme, such as (McLaughlin and Jordan, 1999):

- "Is (was) each element proposed in the Logic Model in place, at the level expected for the time period?
- Are outputs and outcomes observed at expected performance levels?
- Are activities implemented as designed?
- Are all resources, including partners, available and used at projected levels?
- Did the causal relationships proposed in the Logic Model occur as planned?
- Is reasonable progress being made along the logical path to outcomes?
- Were there unintended benefits or costs?
- Are there any plausible rival hypotheses that could explain the outcome/result?
- Did the programme reach the expected customers and are the customers reached satisfied with the programme services and products?"

# Learning more about theory based evaluation

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This report has provided a brief introduction to logic models and summarised the key benefits of using logic models to plan and evaluate your programme. Logic models are typically used within theory-based evaluation. HM Treasury (2011) note that complex programmes typically need a theory-based evaluation framework to triangulate the evidence you're collecting and to refine the assumptions made in your logic model. The purpose of a theory-based framework is to enable you to systematically test and review the relationships between your programme activities and intended outcomes.

The Aspen Institute has developed a reputation in this area. Their **Theory of Change evaluation** (Connell et al., 1995) "involves the specification of an explicit theory of 'how' and 'why' a policy might cause an effect which is used to guide the evaluation. It does this by investigating the causal relationships between context-input-output- outcomes-impact in order to understand the combination of factors that has led to the intended or unintended outcomes and impacts."

# Alternative approaches to evaluation

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There will be occasions when logic models are not the most appropriate method to support evaluation, for example, the linear approach of the classic logic model may not work with the complexity of your programme.

Transformational change is increasingly being viewed through a complex systems lens (Best et al., 2012). Greenhalgh et al. (2012) suggest a systems approach is beneficial for large-scale transformation programmes, emphasising the need to incorporate analysis of the wider context in addition to the “hard components”:

*“Specifically, policymakers and programme architects who embark on complex change efforts will, at any point in the unfolding of the programme (and perhaps also after the funding period has ended), be implementing and/or seeking to sustain a particular set of activities oriented to producing a particular set of outcomes. To that end, they should undertake (or commission) an intervention-focused evaluation based on a set of hypothesis-driven questions and (largely) predefined metrics. However, the programme will inevitably encounter unforeseen factors and events, which, at least in the eyes of some stakeholders, will necessitate changes to the protocol “on the fly.” These changes, and their ramifications, demand rich processual explanations, for which a system-dynamic evaluation is needed. [...] But we believe it should be possible to set up a change programme and linked evaluation in a way that anticipates and accommodates the flexible use and juxtaposition of both intervention-focused and system-dynamic evaluation components.”*

There is some literature (Hawe, 2015) suggesting options to build complexity into your model, such as: including feedback loops in the model; expressing models in a cyclical rather than linear format. However, there are other methodologies which may prove more appropriate, including: realist evaluation and soft systems methodology.

These alternative approaches have in part, developed, due to the difficulties in demonstrating the impact of large-scale change programmes (Blamey and MacKenzie, 2007). Both approaches recognise the influence of context (e.g. political, social, economic), arguing that impact cannot be measured without this acknowledgement. Context matters not just to be able to explain outcomes but to understand what may be transferable to other settings.

*“Systems theory is a specific way to conceptualize the world around us. In its broadest sense, a system consists of elements linked together in a certain way, i.e. inter-relationships that connect parts to form a whole. And it has a boundary, which determines what is inside of a system and what is outside (context or environment).”*

(Hummelbrunner, 2011)

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**Realist Evaluation** typically asks: 'what works, for whom, under what circumstances?' (Pawson and Tilley, 1997). Realist evaluation explores the relationships between the mechanisms (what you do) of your programme within different settings (context) and the impacts which result. This method is becoming increasingly popular due to the acknowledgement of the influence of context (Greenhalgh, T. et al., 2009). Pawson (2013) has recently published a book which builds on the earlier work and gives an in-depth account from an evaluator's perspective.

**Soft systems methodology**, developed by Professor Peter Checkland at the University of Lancaster (Checkland, 2000), is an attempt to address the complexity and volatility of problematic situations, acknowledging that different stakeholders will perceive problems and proposed solutions differently (worldviews). The methodology involves 7 steps:

1. Situation is considered problematic
2. Problem situation expressed (usually by a "rich picture")
3. Root definitions of relevant systems (a description of goals)
4. Conceptual models based on the root definitions
5. Comparison of models and the real world which leads to suggestions for improvements
6. Changes which are systemically desirable and culturally feasible
7. Action to improve the problem situation

If you're interested in learning more about soft systems methodology, there are a number of textbooks available (e.g. Checkland, P. and Poulter, J., 2006).

# Some key points for reflection

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Who needs to be involved in the development of your logic model?

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How will you engage people to get (and stay) involved?

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What information do you need (and have) to get started?

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How will you capture and share learning as your programme progresses?

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How will you scan for unintended consequences which might be outside your immediate line of vision?

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How will you articulate and test the underlying assumptions of the programme?

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What resources do you need, and have, to manage evaluation?

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How will you communicate your model to and capture feedback from local communities?

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How will you maintain your model?

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What expertise can you draw on to help with different stages of the logic model process?

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