Systems change:
from theory to practice

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J.J. Kessler and J.W. Molenaar

December 2022

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Summary

In recent years concepts such as market or sector transformation and systems change have become part of the mainstream development discourse. The aim is to address root causes that undermine the performance of sectors (e.g. agriculture, mining or energy) in order to achieve long-term and widescale impact. It seems, however, that it is not always clear to everyone using these concepts what is meant with these concepts and how it differs from 'business as usual.' Adopting a systems change approach is often seen as an incremental change from 'business as usual,' while in most cases it implies a much more fundamental shift to the 'way of working.' Moreover, even where systems change has been more or less clearly defined, it remains a challenge to actually achieve it and to monitor it. To provide practitioners with relevant input, this paper provides an overview of relevant insights from literature and AidEnvironment's own experience in conceptualizing, implementing and monitoring systems change. The insights have been brought together in a number of 'systems change characteristics ('what is it?'), and systems change principles ('how to do it?'), with actionable details. These are meant to support organisations in understanding and implementing systems change.

First, we define systems and systems change according to the following five characteristics.

Characteristics	Guidance
Understanding a system and systems change	
1. A system can be of any scale but requires well defined boundaries	• Set boundaries of the target system according to agreed criteria including your mission/vision, ambitions and capacities • Inform relevant stakeholders of the system boundaries and underlying rationale of setting these boundaries
2. A system consists of different interdependent components, and is influenced by the wider context	• Manage complexity of the target system by understanding its main components and the relationships between them • Understand the importance of the wider context and how this influences the target system
3. Systems change is about changing the different components of a system in an integrated way	• While distinguishing different components, systems change is about changing the system as a whole, in a holistic or integrated way
4. Systems change is about changing the root causes of structural weaknesses, both visible and non-visible aspects	• Be aware that systems change requires to address both visible and non-visible types of root causes. • Systems change may include a paradigm shift
5. Systems change is unpredictable, non-linear, and long-term	• Accept that systems change follows messy and non-linear dynamics, is long-term, and is characterised by unpredictability

Then we present 10 principles that can guide organisations in implementing a systems change approach. They are presented in the following table.

Principles	Guidance
Supporting systems change	
1. Systems change is driven and sustained through ownership by key stakeholders that collaborate and respect transparency	• The organisation collaborates with relevant stakeholders from the onset • A distinct objective is to build up awareness and capacity to create local ownership • The organisation ensures local on-the-ground presence • Priority will be given to work through local partnerships

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2. Systems change is oriented at a long-term vision that is shared with key stakeholders	• With key stakeholders a long-term vision is at least shared, or jointly created, as a horizon to direct systems change strategies • The long-term vision is embedded in your organisation and owned by partners
3. An integrated approach to systems change combines long-term change processes with quick wins.	• Long-term outcomes are agreed upon to solve systemic issues, and quick wins are planned to support local ownership, build trust, and develop collaboration and commitment of stakeholders
4. When focusing on specific systemic issues one needs to keep an eye on the wider system and its context	• Within the wider system, the organisation selects issues to focus upon and what others will do • The organisation keeps an eye on the wider system, by an intelligence or monitoring system
5. Organisations supporting systems change commit to flexibility, learning and adaptive management	• The organisation adopts principles of adaptive management oriented at the long-term vision • The organisation has leadership that attaches a high value to learning and adaptive management • The strategy allows to work on complex root causes for a long period, as such changes take time
6. Organisations supporting systems change adopt a specific mindset and capabilities, including a holistic system perspective and a long-term horizon	• Leadership is committed to adopt systems change as an approach to realise impact at scale and sustained in time • Skills and capacities are developed that include socio-cultural, policy and integrated planning skills • The organisation builds up networks and thorough understanding of the local context
Learning, monitoring and evaluation of systems change	
7. Learning, monitoring and evaluation of systems change is a joint and participatory process with local ownership	• Learning, monitoring and evaluation is ideally driven by local actors, and to do so capacity is being developed • The organisation has a budget to ensure participation by stakeholders in learning, monitoring & evaluation
8. A learning strategy is adopted to focus learning, monitoring and evaluation as part an adaptive management approach	• With stakeholders there is agreement on the need for a learning attitude • Through monitoring and evaluation evidence is collected to be able to learn and answer learning questions • Annually, the long-term vision is revisited, and progress is assessed in moving towards it
9. Monitoring, evaluation and learning of systems change is linked to a theory of change that captures long term systems change	• Systems change boundaries have been set, the system has been mapped, relevant context factors have been defined, and the dynamics have been discussed. • A theory of change with pathways of change towards a desirable long -term impact have been agreed upon • A learning, monitoring and evaluation framework has been developed
10. Monitoring and evaluating systems change makes use of mixed methods	• Learning questions have been defined and monitoring will generate information to inform learning • There is capacity to use mixed methods to assess systems change and the contribution by the organisation • A recommended method is tracking 'levels of change'

Introduction

In recent years concepts such as market or sector transformation and systems change have become part of the mainstream development discourse. The aim is to address root causes that undermine the performance of sectors (e.g. agriculture, mining or energy) in order to achieve long-term and widescale impact. It seems, however, that it is not always clear to everyone using these concepts what is meant with these concepts and how it differs from 'business as usual.' Adopting a systems change approach is often seen as an incremental change from 'business as usual,' while in most cases it implies a much more fundamental shift to the 'way of working.' Moreover, even where systems change has been more or less clearly defined, it remains a challenge to actually achieve it and to monitor it. To provide practitioners with relevant input, this paper provides an overview of relevant insights from literature and AidEnvironment's own experience in conceptualizing, implementing and monitoring systems change. The insights have been brought together in a number of 'systems change characteristics ('what is it?'), and systems change principles ('how to do it?')

This report focuses on what is being referred to as 'systems change.' However, this terminology overlaps with what others would refer to as system change, transformative change, systems transformation, market system development, market transformation and sector transformation. While these concepts may mean slightly different things, we have decided that for the purpose of this review it is not useful to consider these nuances. To improve readability, we have replaced in many cases the term used in the original source with 'systems change.'

Chapter 1 presents different concepts of a system and systems change, answering the question 'What is a system and what is systems change', and to answer this question introduces five characteristics. Chapters 2 (realizing systems change) and 3 (monitoring, evaluation & learning) present lessons and practices for organisations that want to adopt systems change, and introduces a set of ten principles for adopting a systems change approach. The summary presents characteristics and principles to support organisations in understanding and implementing systems change.

1.   Understanding systems change

1.1   What is a system?

The system's approach is often used in relation to market development. An example of a definition of a market system is given by The Springfield Centre (2015): a market system is as a multi-function, multi-player arrangement comprising the core function of exchange by which goods and services are delivered and the supporting functions and rules which are performed and shaped by a variety of market players. Another example of its use is in food systems approaches. Van Berkum et al. (2018) define a food system as follows: Food systems comprise all the processes associated with food production and food utilisation: growing, harvesting, packing, processing, transporting, marketing, consuming and disposing of food remains (including fish). All these activities require inputs and result in products and/or services, income and access to food, as well as environmental impacts. A food system operates in and is influenced by social, political, cultural, technological, economic and natural environments. There are also attempts to define Water, Sanitation and Hygiene (WASH) systems. For example, Huston and Moriarty (2018) define a WASH system as all the social, technical, institutional, environmental and financial factors, actors, motivations and interactions that influence WASH service delivery in a given context. In a more generic sense, the World Business Council for Sustainable Development (WBCSD, 2020) defines a system as a configuration of interdependent parts connected by a web of relationships. This definition resonates within numerous literature sources, for example reference to a complex whole (Miehlbradt et al., 2020).

There are two main characteristics for understanding a system and systems change.

Characteristic 1: A system can be of any scale but requires well defined boundaries

A system can be of any size or scale. Boundaries can be drawn around systems at many levels (WBCSD, 2020). A single household or school could also be considered a system. At the same time, systems are often nested and interlinked with the broader context. The smaller you define the system boundaries, the more likely it is influenced by what is happening in this broader context. For example, Huston and Moriarty, 2018 found that in WASH programs, the district or its equivalent to be a useful scale and a critical boundary. At the same time, the experience tells that certain factors must be addressed at the regional or national level. They found the national level to be particularly important, as it is where policies are developed and major financial decisions are made.

When working on systems change, it is important **to define the boundaries of the system** that is the object of change. Otherwise, it will not be clear what an organisation or program aims to influence and what it does not. Nor will it be clear where to focus systems change assessment efforts, or how significant assessed changes are. Clear system boundaries help a program to develop effective strategies and to assess and report systems change relative to the systems it has set out to influence (Miehlbradt et al. 2020). Koh et al. (2017) provide criteria which can help you to define system boundaries:
- *Mission and goals*: What boundaries of the market system would align most closely with your mission and goals?
- *Capabilities*: Do you have the knowledge and networks at national or local level and on specific sectors? Do you have the capability and resources to work effectively in multiple, more narrowly defined systems within the country?
- *Geographic diversity*: How significantly do the elements of the system vary as you move across different geographies within the country? Where is the focus of influence: are the formal rules

primarily set and implemented by the central government, or are they controlled by lower-level jurisdictions? In some cases, boundaries may need to be set at the international level.

- *Sector diversity*: How different are sub-sectors you are considering (e.g., rural and urban WASH services, value chains for the different crops)? The greater the similarities, the more feasible it might be to define the system boundary by lumping comparable sub-sectors.

In addition, a complementary criterion to define system boundaries is:
- *Sphere of influence*. What is your sphere of influence and what are factors outside your sphere of influence, to be considered outside your targeted system.

Note that the process of setting boundaries is often iterative, boundaries may need to be revised as insights build up or the program progresses (Miehlbradt et al. 2020; Impact Management (2019).

Characteristic 2: A system consists of different interdependent components, and is influenced by the wider context

To further define the system within its boundaries and to manage complexity, a system can be divided into specific parts or components. To do so, one should not get lost in detail and be exhaustive in all types of interactions but focus on the main distinct components. Systems thinking sees and understands systems as wholes, paying attention to the complex and dynamic interactions and interdependencies of its parts. Systems thinking is an alternative to reductionist approaches that focus on individual components of a system (Huston and Moriarty, 2018). This also needs to consider how the system, or its individual components are influenced by the wider context.

Consequently, there is need for **mapping the system in its different components**. System components generally refer to actors that interact with each other according to various incentives, capabilities, and power dynamics, formal and informal rules, mindsets as well as the physical environment (WBCSD, 2020; Brand et al. 2015; Kania et al. 2018). Through their interaction they produce emergent patterns of collective behaviour (Lomax, 2019) or a prevailing way of working (Molenaar and Kessler, 2021). There are different ways in which systems can be mapped, in terms of their different components and the contextual influences, see examples in Appendix 1. In mapping a system, avoid a paralysis by analysis (Molenaar and Kessler, 2021) as drafting perfect analytical deliverables is an opportunity cost (I4ID, undated).

1.2   What is systems change?

The literature frequently characterizes systems change in terms of its integrated nature, the depth of change and the non-linear relations. This is reflected in the following three characteristics of systems change.

Characteristic 3: Systems change is about changing the different components of a system in an integrated way

Numerous sources note that systems change requires to work on multiple components with complementary pathways (e.g., The Springfield Centre, 2015, NewForesight and Commonland, 2017 and Savage et al., 2020). As components relate to each other, achieving change in one component will require as well change in other components. Molenaar and Kessler (2021) refer to the fact that root causes of underperformance from different components are often intertwined with each other and interact, and this interaction may be mutually reinforcing or counteracting. Therefore, they need to be addressed in an integrated way. In practice, this can imply that you need to work on cross-

sectoral issues in different system components. Working the system as a whole, with its multiple components, is also important in creating self-sustaining changes (WBCSD, 2020). For example, building more climate resilient farming systems may require changes in farming practices, farmer service delivery (e.g., technical assistance and climate resilient planting material), market incentives (e.g. stable and fair trading relations), and public sector policies (e.g. investments in research, public extension or watershed management).

Case box 1. Complementary strategies to transform the seed sector in Ethiopia

In 2012, the Wageningen Centre for Development Innovation (WCDI) introduced the comprehensive programme on Integrated Seed Sector Development in Ethiopia (ISSD Ethiopia). Since then, it has been working towards the transformation of the Ethiopian seed sector to improve female and male smallholder farmers' access to and use of quality seed of new, improved and preferred varieties. It pursued this by implementing complementary pathways on:
- increased availability to and use of quality
- enhanced performance of seed value chains
- an improved enabling policy environment for the seed sector

Within these pathways much attention has been directed at underlying causes of systemic problems. For example, it successfully introduced disruptive models of production, allocation and distribution of seed which created alternatives for the incumbent centrally system. Meanwhile it worked on the improvement of critical public services including seed business licensing, seed quality inspection and testing for seed certification, and seed quarantine.

Source: Borman et al. (2020)

Characteristic 4: Systems change is about changing the root causes of structural weaknesses, both visible and non-visible aspects

Systems change is often referred to be **profound or transformational rather than incremental**. Incremental change can be defined as adoption, adaptation, adjustment, fine-tuning (WBCSD, 2020). System or transformational change, on the other hand, might be considered as re-invention, re-creation, can be disruptive and include a paradigm shift. System change is a new way of thinking about and doing things based on fundamentally new premises or value judgments. Incremental change may play a role in enabling systems change, but it can also serve to protect the status quo, holding the current system in place while giving the impression that progress is being made.
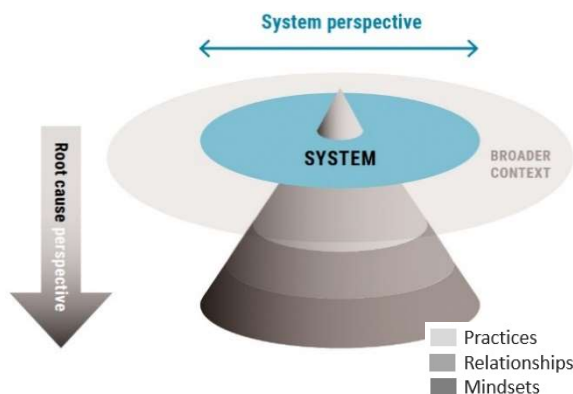
To come to transformational change, one needs to change the **root causes of underlying causes** of structural weaknesses. Kania et al. (2018) refer to the conditions which are believed to be fundamental for holding a systemic issue in place. They refer to tangible conditions such as practices, policies and resource flows, as well as less tangible ones such as relationships, power dynamics and mental models. Cunningham and Jenal (2016) also emphasise that systems change is about changes in people's perceptions, norms and values that shape institutions, as well as who is in power and what these people's interests are in directing institutional change. Molenaar and Kessler (2020) refer to **visible and non-visible aspects of change** and both are needed to ensure that systems change will sustain in time. Simply said, to fundamentally change the behaviour (doing things differently) one needs to change the underlying relationships as well (relate to others differently) and mindsets (thinking differently).

Case box 2. Visible and non-visible types of root causes for child labour in Uganda

In 2014, the Stop Child Labour (SCL) coalition started the "Out of Work and Into School" programme, with the aim to establish child labour free zones using an area-based approach. To do so, the programme supported companies to actively address child labour. Just addressing child labour in their supply chains will not prevent child labour from re-emerging, as long as the root causes will not be addressed. Therefore an area-based approach was adopted that allows to address root causes in an effective way. Root causes are of different nature, both visible and non-visible, with several interrelations:

- **Low incomes**, so that families send their children for paid work, and not able to pay school fees. Root causes are low agricultural productivity and low prices received from cash crops, related to the absence of fair trade relations in supply chains.
- **Lack of community awareness and predominance of socio-cultural norms** and mindset that for children work on family farms is more important than going to school
- **Poor access to education facilities and poor quality of education**, with root causes of lack of safety for children (especially girls) and poor training of teachers
- **Absence of law enforcement** of child labour legislation (in line with ILO) by local government, or predominance of punishment without raising awareness, with root cause of lack of awareness on what child labour is and what are its consequences
- **Poor role of women in decision-making**, leading to absence of decisions in support of children going to school, with root cause of **socio-cultural norms on gender**.

To address the problem of child labour with impact at scale and sustained in time, the child labour free zone approach addresses all above root causes in an integrated way.

Sources: Newsom et al. (2021) & Kessler (2021)

For example, a new attitude to child labour can be introduced through supply chain driven incentive programs (e.g., certification), but so long as sociocultural norms do not change, it is unlikely that there will be any fundamental improvement. Consequently, this will require as well to work on community targeted interventions which change the local norms around child labour. In addition, as systems change requires addressing multiple root causes, one may need to work on farm income improvement strategies in order to ensure farmers have the resources to send their children to school, or to work on the availability and quality of educational services (see case box above).

Characteristic 5: Systems change is unpredictable, non-linear, and long-term

While systems change theory may be easy to understand, the practice of systems change is messy and unpredictable; systems change is dynamic and non-linear (WBCSD, 2020). This is confirmed by multiple sources. For example, Koh et al. (2017) state that market systems, like all social systems, are characterized by complexity, meaning that patterns of cause and effect cannot be predicted with confidence in advance. In addition, the food systems approach highlights the complexity of the food system and how different subsystems interact with one another in multiple ways. It refers to non-linear processes in the food system and the non-linear nature of many cause-effect pathways, and on possible trade-offs between policy objectives (Van Berkum et al. (2018). The M4P approach stresses the need to deal with complexity and unpredictability (The Springfield Centre, 2015).

Setbacks can occur, and context, such as local resource availability, can also change, making earlier progress less relevant. Similarly, extreme weather events, political upheaval, global economic downturns, or other events can slow or reverse progress in uncontrollable ways. For these reasons, advancement in a linear and predictable fashion is not assumed, and the ability to be nimble and adapt design, strategy, and implementation are paramount to ultimate success (Savage et al. 2020).

The timescales of systems change towards a desirable end state are typically **longer** than those of conventional initiatives aimed at incremental changes. Systems change usually occurs beyond program/project boundaries and has less predictable result chains (Savage et al. 2020).

There are however examples of models which identify **typical phases** in systems change. For example, Simons and Nijhof (2020) refer to a S-curve with specific drivers for each phase (see appendix I). They link each phase to loops. Loops are a series or chain of 'cause and effect' relations that influence each other. Usually there are different 'cause and effect' loops at play at the same time and influencing each other. The interaction between different loops drives system behaviour. Different loops can reinforce each other or balance each other out. A model like the S-curve can help understand and design for the process of systems change towards a desirable state.

2.   Realizing systems change

2.1   What process can support systems change?

Systems change is about improving system performance and ensuring a better functioning (Miehlbradt, et al. 2020). 'Performance' and 'better functioning' of the system are normative concepts and may relate to different system qualities and impacts such as pro-poor, inclusiveness, competitiveness, sustainability and resilience. Systems change is about addressing the underlying causes in order to ensure that results will not remain 'islands of success' but will reach impact at scale and results that will be sustained in time.

Most systems show changes even without any deliberate interventions. WBCSD (2020) offers a useful classification of **drivers for systems change**, as follows:
- **Changes in the context** (which WBCSD refers to as mega-trends): Every system operates within a broader context or landscape. This context can change over time in ways that put pressure on the system. Examples include changes such as aging populations, cyber dependency, the global expansion of the middle class and climate change. In addition to long-term trends, Koh et al. (2017) also refer to powerful external events, such as economic or political crises.
- **Innovations**: As actors within the system react to the way the context is evolving, they begin to develop innovations that will offer improvements within that evolving context. These include new technologies, business models, even ideologies.
- **Enablers**: Ultimately, a set of enablers propel innovations into the mainstream and change the way a system works. Enablers are forces that shape the incentives, power dynamics, and capabilities of different actors in a system at scale. These forces can even change the composition of the 'cast,' with incumbents fading away and new actors taking on new roles. WBCSD classifies them in the following way:
  - Policy and regulations: The rules, guidelines, incentives and support services that government provides in line with priorities it has set
  - Information flows: The nature and quality of information available and accessible to different actors.
  - Financial flows: How capital is priced and allocated
  - Technologies and innovations: Innovations can have a technological nature, but technology can also serve to do more with less, or to do things that were simply impossible before.
  - Mindsets, norms, and values: Assumptions, habits of thought and deeply held beliefs, e.g., shaped through education, parenting, peers, religion, the media, advertising.

WBCSD also refers to **accelerators** of systems change which are deliberate interventions which may include influence, empowerment and alignment (see figures below). These accelerators resonate with the World Economic Forum (2020), who state that transforming food systems requires bold leadership and coordinated action by a diverse group of stakeholders using their combined skills, assets and capabilities to achieve a shared goal. These stakeholders should cultivate a shared vision for change, empower widespread innovation and action, and enable mutual accountability to accomplish systems change. This links to the principle of local ownership and concerted action.

EPIPHANY	RADICAL INTENT	SHARED VISION AND DIRECTION	COLLECTIVE EFFORT	MUTUAL ACCOUNTABILITY
• Widespread public awakening to challenges faced • Shared sense of ownership	• Bold leadership to tackle problems at root causes • A willingness to challenge the established order	• Clear picture of where we want to go • Relatable milestones along the way	• Leaders across multiple domains as well as a critical mass of followers • Cultivation of systems consciousness	• Balance the objective of learning with the objective of enforcing rules or commitments

Figure 3: The theory of systems transformation including accelerators (WBCSD, 2020)
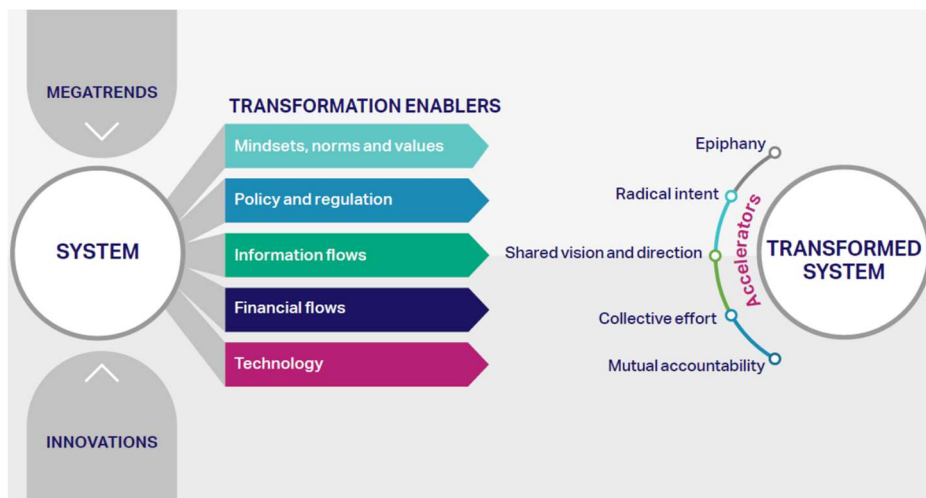
When dealing with deliberate interventions, various sources present **stepwise approaches to kick-start and facilitate the process of systems change**. They broadly follow a project cycle logic as presented by Molenaar and Kessler (2021).

1. **Diagnostics:** to create a shared understanding of the system and its broader context and the related root causes of underperformance. Koh et al. (2017) stress that in this step it is important to learn from the past journey of that system as understanding its past helps interpret the present and be more adept at influencing its future. Uren (2019) stresses the importance of creating a strong case for change. Helping key stakeholders to understand the problem and how it affects them is one important part in this.

2. **Vision:** having a compelling vision of what a sustainable future looks like is the other part of what Uren (2019) refers to as critical in building a strong case for change. Formulating a desirable vision should be part of a participatory process, contributing to create ownership.

3. **Strategy development.** The strategy should aim to address the root causes of underperformance and thus drive transformation of the sector towards this vision.

4. **Managing for transformation:** coordinate strategy implementation while collecting evidence and knowledge for learning, continuous improvement, and adaptive management. This should fuel the iterative process where along the way, changes in the dynamics in the sector and its broader context are captured as well as insights on the strategies that are effective and those which are not. These insights can then result in an adaptation of strategies, or even the vision itself. WBCSD (2020) stresses the importance to create mutual accountability in this step which balances the objective of learning with the objective of enforcing rules and commitments.

The following principles are related to the above steps.

Principle 1: Systems change is driven and sustained through ownership by key stakeholders that collaborate and respect transparency

The importance of **local ownership** is strongly emphasized in the literature on systems change. While an outsider can catalyse systems change processes, in the end systems change will sustain only if key stakeholders themselves embrace the changes (Cunningham and Jenal, 2016). Systems change must be driven by an endogenous motivation to explore what is possible, not by normative ideals of how resources and power should be allocated – particularly not if these ideals are brought into the system by external development agents. Consequently, systems change requires a process of joint sense making, exploration, adjustment and learning. As development actors you can work with local actors to encourage self-discovery.

The holistic nature of systems change also requires that **key stakeholders join efforts rather than work in isolation** (WBCSD, 2020). This is also highlighted by Simons (2017) who states that changing the rules of the game is a matter of getting organized and knowing and ensuring each stakeholder does the right thing at the right time, and also understands what not to do anymore. To catalyse the transition and achieve impact at scale, there is a need to form coalitions of the committed (NewForesight and Commonland, 2017), or, as the World Economic Forum (2020) states, systems change requires individual, coordinated and collective action.

Practical ways to accomplish this is by working in **partnerships** and through **multi-stakeholder mechanisms**. This will also support alignment, pooling of resources and knowledge sharing, which are all highly valuable when engaging in processes of systems change. There is recognition of the challenge of creating concerted local ownership in cases where the local institutional arrangements are weak and informal. In such cases, these institutions need to evolve locally, with development agents only to a small extent taking up their functions or promoting specific configurations of institutions, organisations and offerings (Cunningham and Jenal, 2016).

Whatever form is chosen, the process of systems change should be organized in a **transparent and participatory way** to ensure inclusiveness of the process. In doing so the process of trust building is critical for deepening understanding and creating commitment (I4ID, undated). This will also increase the chances that the social costs which are generally felt by some stakeholder in changing the status-quo are managed responsibly and take care that all relevant stakeholders are involved (WBCSD, 2020).

Case box 3: Building local commitment to transform the seed sector in Ethiopia

As described in case box 1, ISSD Ethiopia worked on multiple pathways to create a vibrant, pluralistic and market-oriented seed sector. An important strategy was to build ownership by key stakeholders for this ambitious transformative agenda. This started by making ISSD Ethiopia a consortium comprised of six organisations. Besides WCDI, these were Bahir Dar University, Haramaya University, Hawassa University, Mekelle University and Oromia Seed Enterprise. These partners have a wide collaborative network within the government, research organisations, industry and civil society, at federal, regional state and district levels in Ethiopia, and also internationally.

To overcome the weak coordination between seed stakeholders, ISSD Ethiopia established regional seed core groups with decision-makers in each of the four regions where the programme was active. Jointly, core group members formulate interventions to overcome challenges, coordinate developments, facilitate partnerships, channel financial and technical resources, monitor and support interventions, and embed successful innovations institutionally in Ethiopia.

After a few years of successful implementation, the opportunity for partnership at federal level emerged. It was agreed to facilitate stakeholder involvement in identifying, prioritizing and overcoming key challenges in the seed sector. In the second half of 2017, the National Seed Advisory Group, a team of experts in the sector, was established to advise the Ministry of Agriculture (MoA) on strategy and policy. In 2018, ISSD Ethiopia facilitated two workshops on seed sector governance to promote regional stakeholders' participation in strategic dialogue at national level and to propose a national agenda.

By December 2018, the document 'Transforming the Ethiopian seed sector: issues and strategies' was presented to the State Minister of Agricultural Development, who endorsed it as the guiding document for the seed sector nationally.

Source: Borman et al. (2020)

Principle 2: Systems change is oriented at a long-term vision that is shared with local partners

Many sources attribute much importance to having a **shared vision** on the desired performance of a sector, as the horizon for a sector change process. A shared vision can support the stakeholder alignment process. A vision can also help to prioritize systemic issues to be addressed, rather than fixing problems which support the current status-quo. For example, a sector transformation process in the seed sector of Ethiopia showed that developing the vision of tomorrow was a much better point of departure than dealing with the problems of today, as it raised the multi-stakeholder dialogue to a more strategic level (Borman et al., 2020). Creating a shared vision is also included as an important success factor in many of the guides or evaluations on systems / transformative change processes (The Springfield Centre (2015), Brand et al. 2015, Koh et al. (2017), Uren (2019), WBCSD (2020), Miehlbradt et al. (2020), Molenaar and Kessler (2021).

Creating a vision should not create the suggestion of leaping to an idealised designed state. As mentioned, systems change is non-linear and evolutionary. A vision gives direction, but evolution explores all 'adjacent possible' states to determine which one has the highest potential (Cunningham and Jenal, 2016).

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Having a long-term vision is fully in line with the principles of adaptive management. While interventions and strategies may change, a long-term vision is required for adaptive management to keep a clear direction. In the absence of a long-term vision, adaptive management may lead to chaos (Molenaar and Kessler, 2021).

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Case box 4: Building a vision to transform the seed sector in Ethiopia

The objectives of the workshops in 2018 (see case box X), were to develop a shared vision for the transformation of the Ethiopian seed sector; support representatives of the regional core groups to revise strategies on the best way to transform and govern the seed sector in each of their states; and reflect on differentiated roles and responsibilities in governing and coordinating seed sector development. The exercise to develop the vision of tomorrow turned out to be a far better point of departure than the pressing problems of today, as it elevated the dialogue to a far more strategic level. It required however skillful facilitation to reconcile opposing views.

A 2040 vision for the Ethiopian seed sector:
An efficient, well-regulated and dynamic seed sector that meets quality standards, adapts to climate change and market conditions, has transparent and inclusive governance, and maintains biodiversity. A sector that provides farmers with certified seed of improved varieties of key crops in sufficient quantity and quality, at a required place and time with affordable price through multiple channels.

This vision formed the basis of formulating strategies for the different sector functions of production, services, markets, regulation, coordination and investment.

Source: Borman et al. (2020)

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Principle 3: An integrated approach to systems change combines long-term change processes with quick wins.

As root causes are often intertwined with each other and interact, they need to be addressed in an integrated way (Molenaar and Kessler (2021). This requires working on different system components (e.g. producer strengthening, market development and policy influencing). It also requires ensuring that within these components the visible and non-visible underlying causes of structural weaknesses are being addressed. This includes the less visible aspects as power relations, trust and mindsets.

Addressing some root causes may be complex and require long-term change processes with uncertain outcomes. Typical strategies include multi-stakeholder convening, lobby & advocacy, awareness raising, capacity building and research and development trajectories. The lack of concrete short-term outcomes of such strategies may risk losing commitment by key stakeholders. Therefore, systems change processes will benefit from **balancing quick wins with long-term outcomes**. Whereas long-term outcomes are needed to address the systemic issues, quick wins are needed to support ownership, build trust, and develop collaboration and commitment of local stakeholders, while preventing initiatives being perceived as just talking shops (Molenaar and Kessler, 2021). Examples of quick wins are pilot studies or projects and external communication activities.

Meanwhile it is important to capture and celebrate the incremental changes, or **small wins** that are relevant in the process of systems change. These may include rather small and apparently insignificant changes such as changes in behaviour, norms and values with one organisation or even just one person, yet in line with the long-term goal. These have the potential to accumulate into systems change, and thus even if small, can be important to capture.

Case box 5. Integrated approach to address root causes of child labour in Uganda

As a follow-up to case box 2, the activities of implementing a child labour free zone approach adopt a combination of quick wins and long-term system changes, in an integrated way.
Quick wins include the following activities:
- Establishing Village Saving and Loans Associations (VSLAs) with a social fund that is available for poor families to access school fees
- Forming and training community-based child labour committees that monitor the presence of child labour in the community and support families to find solutions
- Training teachers on child labour and forming school committees to raise awareness and monitor child labour at schools
- Setting up a system of remedial teaching for supporting children out of school

Activities oriented at system changes that are more long-term include:
- Improve access to finance for school infrastructure and improved quality of education in areas with child labour, by supporting communities and local government to lobby national level and donors
- Support local government to develop by-laws on child labour and acquire capacities to implement it
- Stimulate the establishment of a collaboration platform between private sector, NGOs, local government and education agencies in monitoring and remediating child labour within a well-defined area
- Collaborate with companies to develop more fair trade relations with producers, including first of all payment that is in line with a living income benchmark

Sources: Newsom et al. (2021) & Kessler (2021)

Principle 4: When focusing on specific systemic issues one needs to keep an eye on the wider system and its context

Not every organisation is in the position to target whole systems to change. This does not mean that one cannot work on systems change. There is much value in addressing specific systemic issues. When doing so, there are three considerations to make:
- Focus upon a good understanding of the larger system and how this focus potentially contributes to improved performance in the system as a whole.
- By doing so, one will broaden and deepen the perspective when seeking solutions for the root causes of that issue (Van Berkum et al. 2018).
- Working in partnerships is important as coordination and complementary investments by different actors can facilitate change in the interrelated components of a system (see principle 1).

There is however an important caution to be made when focusing on solving specific problems. One should not assume that solutions being developed will automatically be scaled up through an Adopt-Adapt-Expand-Respond (AAER) logic. This will depend largely on whether the conditions in the system

enable scaling. This will likely require a more holistic and complementary change in other parts of a system (Cunningham and Jenal, 2016).

Principle 5: Organisations supporting systems change commit to flexibility, learning and adaptive management

Because systems change is non-linear and unpredictable, the process of systems change is adaptive. Complex systems often defy traditional notions of strategy, planning and management based on predictability and control (WBCSD, 2020). It requires curiosity and experimentation. This means deploying **flexible and adaptive management techniques**, alongside a commitment to **ongoing learning** (Impact Management, 2019). Systems approaches require us to respond to an evolving reality where new opportunities emerge, setbacks occur, and hypotheses about how to effect change will have to be revised as funders and intermediaries engage with the system. This requires an iterative approach, where strategies and goals are continually refined as we better understand the system and as the system itself evolves. It is important, therefore, that these efforts are underpinned by a set of mechanisms and a culture within our own organisations that support dynamic learning and adaptation (Koh et al. 2017).

Most sources refer to the need for **continual learning and adaptation**. Implementing systems change approaches is likely to encounter many unknowns and assumptions, although the design phase aims to reduce such uncertainty. There will always remain unforeseen context changes and new opportunities to which you will have to react. Retaining the responsiveness of strategies to context without losing strategic direction is therefore key (Molenaar and Kessler, 2021). This requires an organisational form that allows them to be flexible in terms of the precise activities they undertake (Koh et al. 2017).

Considering these characteristics, it should become clear that systems change does not prescribe a set of 'blueprint' interventions or a menu of policy prescriptions. Rather it is an adaptive process: a suite of principles and practices to help understand contextual market systems, and to guide practical interventions that can lead to enduring pro-poor systems change (Koh et al., 2017). Cunningham and Jenal (2016) refer in this regard to an evolutionary process, which includes variation, selection and amplification of solutions to complex problems.

2.2 What organisational mindset is needed to support systems change?

Principle 6: Organisations supporting systems change adopt a specific mindset and capabilities, including a holistic system perspective and a long-term horizon

Various sources also present organisational key success factors for organisations which support systems change. Molenaar and Kessler (2021) state that thinking and acting from a wider system perspective and a long-term horizon is fundamentally different from acting with an 'on the ground' and short-term impact perspective. At the highest level, there is need for support and commitment, by adopting principles of adaptive management oriented at the long-term vision and making available resources and time for learning and adaptive management events. Systems change should not be seen as an end in itself, but rather a means to realise large-scale and sustained impact, i.e., pro-poor, inclusiveness, sustainability and resilience. At management and operational levels, required skills and capacities are not only technical, but should also include socio-cultural, policy, systems change thinking and learning skills. These skills may need to be developed over time, as systems change is a new field of expertise.

The following table presents typical characteristics of the shift in mindset to successfully adopt systems change strategies. However, the shift in mindset should also be translated into consistent action. This includes for instance: human resources with other skills, support secured over a longer period of time, priority given to learning and working in partnerships, oriented at the long-term vision.

Table 1: Required mindshift within the organisation for sector transformation (Molenaar and Kessler, 2021)

Goal setting	
From solving today's problems	to working towards a future vision
From addressing symptoms	to addressing root causes
From short-term results	to long-term solutions to systemic issues
From small-scale impact (islands of success)	to large-scale impact (seas of change)
Strategy	
From an exclusive or narrow focus	to a holistic view
From individual projects	to aligned, complementary multi-actor, multi-level interventions
From ready-made solutions	to context-specific strategic processes
From tangible outcomes	to tangible and intangible outcomes
From certainty and strong sphere of influence	to uncertainty and addressing issues in a broader context
From logframe and linear thinking	to theory of changes, pathways of change, and adaptive management
Implementation	
From individual project cycles	to a continuous process of coordinated implementation between key stakeholders
From fixed budgets to achieve predefined results	to the inclusion of flexible budgets to take new opportunities into account
From monitoring as separate activity for accountability purposes	to monitoring embedded in the management cycle for learning and adaptive management

To implement typical systems change strategies, such as mentioned above, Koh et al. (2017) mention the **capabilities** which are needed to successfully adopt systems change approaches. They refer to:

- *Technical knowledge*: The capability to understand the technologies, processes, and practices related to the market, analyse innovations, and provide thought partnership on technical issues to innovators.
- *Socio-political skills and networks*: The capability to understand and navigate the political and social aspects of the system, along with personal and professional networks to leverage in support of change.
- *Systems orientation and thinking*: An appreciation of the nature and characteristics of complex social systems and a capacity to act, learn, and adapt in ways that respond to this reality.

Teams that possess these capabilities are likely to be assembled from a variety of backgrounds including those with experience working with government, business, and civil society. It is also recommended that organisations, or their 'anchor' partners, to be physically located in the target system, or can provide significant **on-the-ground presence** with a deep understanding of the local context. This local presence is preferably long-term (Koh et al, 2017).

Systems change approaches also require **long timeframes supported by sustained and flexible funding**. This is a challenge for many organisations supporting systems change (Miehlbradt et al., 2018). To realize systems change objectives sustainably, ten-year timeframes are no exception. In reality, many programmes have a four- or five-year timeframe, when it would be more appropriate to view it as a three-year programme (because of the starting up and winding down). This is obviously a constraint. The above-mentioned need to remain flexible and adaptive also requires being able to adapt without needing to continually secure external approval from donors. This is also not common practice among many donors. Another constraint with regards to donors is that the way donors allocate funding and the way they engage with governments contributes to the problem of sector bias in development efforts. While transformation implies that developing country governments are in charge, the 'projectized' nature of aid with discrete bounded logframes and demands for attribution and upwards accountability back to donors sends a message that donors are in charge.

Particularly in new contexts, a program cannot jump into addressing complex objectives right away. It must first **build confidence and increase understanding** within its own staff and among market actors through manageable early interventions. Systems change strategies might emerge gradually over the first few years of a program through a combination of 'top down' analysis and 'bottom up' experience (Miehlbradt et al., 2018), while recognizing that specific pathways and outcomes cannot be foretold with precision (Koh et al., 2017).

It is therefore critical that organisations pro-actively engage with donors in order to create the financial conditions that allow working effectively on systems change. If these conditions are not in place, then a more modest ambition on systems change is more appropriate.

Case box 6. Internal changes with companies involved in child labour

The Dutch fund against Child Labour has supported companies to address child labour in various sectors (natural stone, spices, seeds, coffee, cocoa, garments, coconut, …). Apart from concrete activities in sectors and areas with child labour risk, companies have been supported to understand their role in causing child labour, for instance by not paying fair prices. The following are examples of mindset changes that have been observed in some of these projects:

- Monitoring and remediating child labour as core activity for all field staff, with time available to support families in remediation activities
- Operational strategies to address child labour in company facilities and supply chain
- Purchasing policies that prioritise quality and fair wages for labourers without child labour risk
- Trade relations with suppliers based on the principle that producers should be able to reach a living income
- Service delivery systems that meet needs of smallholder producers for improved productivity and/or quality.

3. Learning, monitoring and evaluating systems change

3.1 How to integrate learning into systems change processes?

To support the evolutionary process of systems changes towards reaching a long-term vision and goals, adaptive management and evidence-based learning is important. This is a systematic and embedded approach to support learning and strategy review and make timely adjustments to the changing context. This is especially important for systems change, as these processes tend to take long and are characterised by unpredictability. The learning strategy is being informed by inputs from monitoring and evaluation (see next section). Learning, evaluation and monitoring are intricately linked. Evaluation and monitoring provide inputs and information in a structured way, to be effectively used for learning and strategy review. The following scheme shows the main characteristics and relations.

Figure 4: The relation between Learning, Evaluation and Monitoring
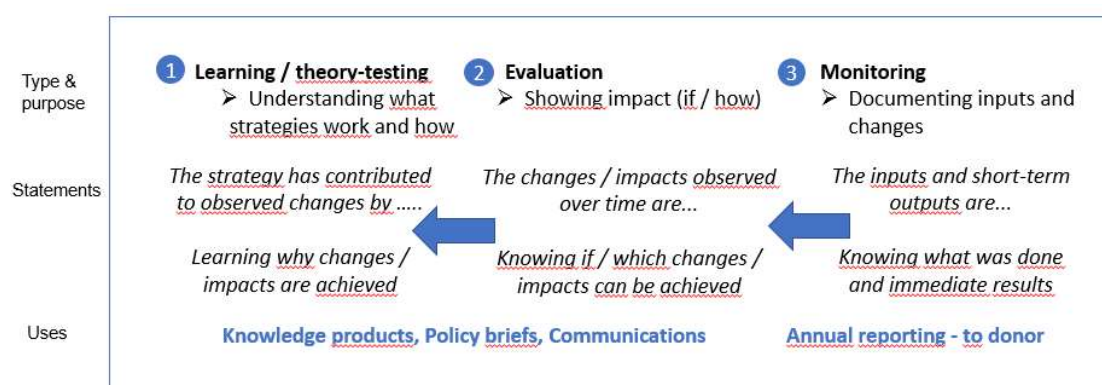
Principle 7: Learning, monitoring and evaluation of systems change is a joint and participatory process with local ownership

Systems change is necessarily a participatory process, with the learning process being at least as important as realising concrete results and finding responses to the learning questions, for two main reasons. Firstly, the process should contribute to joint learning among the participants (partners, stakeholders). For instance, as regards integrated water management governance, Bertule et al. (2018) highlight the need to design the monitoring process in such a way that relevant stakeholders engage with and contribute to the debate with their local contextual knowledge, and thereby be able to drive or instigate necessary amendments to the process of systems change, Secondly, there is need for the learning process to be based upon concrete sources of information, but this information should also be credible and, as much as possible, objectively validated. This can be achieved by ensuring broad participation, making room for different types of information (formal, informal, quantitative, qualitative) and promoting triangulation of insights.[1]

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[1] Triangulation means using more than one method and consulting different sources of information to collect data on the same topic. This is a way of assuring the validity of research through the use of a variety of methods.

Thus, learning and strategy review is best organised in such a way that participation by relevant stakeholders is assured. In doing so, it is important to ensure different types of stakeholders have the opportunity to participate.

Principle 8: A learning strategy is adopted to focus learning, monitoring and evaluation as part an adaptive management approach

Learning for systems change should also look at the assumptions and mindsets of the implementing organisations. Therefore, the desirable learning process can be characterised as **double and triple loop learning**, as the latter looks at assumptions related to implementing agencies as well as the broader context.

Table 2: Triple loop learning framework, tabular and scheme.

	Single-loop learning	Double-loop learning	Triple-loop learning
Main question	Are we doing things right?	Are we doing the right things?	How do we decide what is right?
What is being questioned	Activities, resources, tactics, procedures	Strategies, underlying assumptions, ToC	Context, mission and vision, organisational change and learning
Frequency	Continuous/ monthly	Annual	Multi-annual

Source: https ://leanpartners.nl/triple-loop-learning/

There are several sources providing **lessons on adaptive management,** which are relevant for working on systems change (e.g. Green and Christie, 2019; Seely, 2019; Kelsall et al., 2021, AidEnvironment 2021). Here we present a summary of some of the key insights from these publications:

- Focus on outcomes, not outputs, as this gives greater flexibility on whichever outputs are best suited to deliver the desired outcomes.
- Take time to set up a consistent approach of learning, monitoring and evaluation to support a coordinated and focused approach to adaptive management. This should include remaining well informed about new opportunities and context changes.
- Make sure to justify each adaptive change in the strategy and its management should be justified and documented, by making explicit the lessons learned.
- Be prepared that some interventions will fail or expected results will not be achieved. This also implies that staff should lead by example, admit failure, and encourage others to do the same.
- Reward adaptive behaviour of staff. Staff should be encouraged to act flexibly when the program or context changes, be eager to learn, think critically and use evidence for decision-making
- Avoid systems change strategies end up with a tick box /checklist approach. Systems change is not only about achieving certain results but also about the process, of building relationships and trust.
- Avoid dependency. Achieving systems change and mindset change requires building relationships with others, but these relationships not depend upon external support.

Determining a limited number of relevant **learning questions** is a crucial part of developing a learning strategy and helps to focus underlying collection of information. Following are examples of learning questions, particularly relevant for double- and triple loop learning, in support of a review of a strategy that aims to achieve systems change. Note that the questions are formulated in a generic way, but for every specific case should be made more context-specific:

1. What have been relevant changes in the external context factors and what are new opportunities? What is the relevance of the strategies to address systemic issues, in the changing context? Are adjustments required?
2. Which strategies have shown results in terms of contribution to systems change? Which 'small wins' have been made? Which strategies did not show any or insufficient progress?
3. Do the systems change result at positive impact at the desired scale, or is it expected to reach that scale? What are the mechanisms / dynamics which promote or impede this?
4. Do you expect the systems changes that were or will be realised will sustain in time? What are the mechanisms / dynamics which promote or impede this?
5. Which strategies should we pursue, and adapt, and which should we drop? Note that one should not too easily drop a strategy; even small contributions ('small wins') might be valuable, especially for complex issues and root causes. One reason to drop a strategy might be that the issue to be solved is (or turns out to be) beyond the influence of the organisations involved.
6. On the strategies we want to pursue, are we making a difference? Are we conducting the right activities? Do we have the right mindset? Do we have the right skills? Do we have sufficient resources? Do we have the right partners? What changes are needed in the selected strategies?

Note that specific learning questions may be associated with pilots, in that case there is a specific time horizon for answering the learning questions. One could also include specific activities oriented at learning as part of intervention strategies aimed at achieving systems change. These include research and action research to fill knowledge gaps, to validate assumptions and/or to test innovations, and would also have a specific time horizon.

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Case study 7: Partnerships for Forests (P4F) programme, learning and adaptive management

The UK Government-funded Partnerships for Forests (P4F) programme seeks to support partnerships and increase private investment that delivers on commitments for deforestation-free commodities, reduced pressure on forests, and improved livelihoods. An evaluative learning approach was employed to generate lessons and inform the P4F programme in its adaptive management approach, which is considered relevant to meet the programme's ambition to support transformative change in forest-landscapes and sectors.

Relevant learning questions were formulated as follows:
*   What are the mechanisms by which the project contributes to scaling, through any of the following:
    o   wider adoption and adaptation by targeted and non-targeted producers?
    o   expansion through crowding in by other companies in the same landscape / sector?
    o   supporting systemic changes that create conditions for more widespread adoption?
*   What are the P4F activities that have contributed to transformative changes, meaning changes that are perceived as disruptive of business models, leading to a change in mindset, creating leverage, viewed as a 'game changer'?
*   To what extent are the changes brought about by the programme expected to sustain in time, as a result of any of the following systemic changes:
    o   Improved capacities on management and governance
    o   More viable business models and access to finance?
    o   Improved collaboration and dialogue between stakeholders, both inn terms of structures and mindset that collaboration is needed

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3.2 How to monitor and evaluate systems change?

Principle 9: Monitoring, evaluation and learning of systems change is linked to a theory of change that captures long term system change

Monitoring and evaluation of intervention strategies aimed to achieve systems change serves the need to acquire credible information or evidence for accountability purposes and as inputs for learning (i.e. to respond to defined learning questions). The evidence should be credible, meaning it should provide objectively verified information on the changes and contribution by the sustainability system. The focus of systems change is at outcome level, where typical systems change of behaviour, policies and institutions would be nested.

Pre-conditions for effective monitoring and evaluation of systems change would include the following steps before effective M&E can be carried out:
1. Setting boundaries to the system that is the focus of change (see characteristic 1)
2. Breaking down the system into well-defined components and determining on which of the components investments will be focused to achieve change (see characteristics 2)
3. Defining the contextual factors that influence the system and its selected components (see characteristics 2 and 3)
4. Developing a theory of change with overall goal and expected changes for different components (see characteristics 3 and 4)
5. Developing nested pathways of change for the expected changes of different system components, including assumptions and contextual influences (see characteristics 4 and 5).

Principle 10: Monitoring and evaluating systems change makes use of mixed methods

Mixed methods seek to integrate social science disciplines with predominantly quantitative (QUANT) and predominantly qualitative (QUAL) approaches to theory, data collection, data analysis and interpretation. The purpose is to strengthen the reliability of data, validity of the findings and recommendations, and to broaden and deepen understanding of the processes through which program outcomes and impacts are achieved, and how these are affected by the context within which the program is implemented. Mixed methods are particularly useful to capture complex processes of change including the need to consider cultural, historical, political, legal, environmental and psycho-social factors.

There is general agreement that monitoring and evaluating systems change requires a mixed methods approach using qualitative methods as well as selected quantitative data (Mielbradt and Posthumus, 2018; Miehlbradt et al., 2020; Molenaar and Kessler, 2021). This has different underlying reasons:
1. Understanding systems change requires a broad and holistic view. Miehlbradt et al (2020) refer to a helicopter lens that takes the wider system as a starting point, alongside an intervention lens that takes the strategy and interventions as a starting point. The helicopter lens captures the interrelations between strategy components and unexpected effects.
2. System changes are complex processes with changes that are gradual, evolutive and include unexpected elements. Therefore it is important remain open to different types of outcomes along the pathway towards a long-term goal. This could include so-called 'small wins,' which may accumulate into systems change, and thus even if small, can be important to capture.
3. Systems change is also about the change in relations between actors and the change of mindsets of actors involved. These 'soft' issues cannot be captured by quantitative indicators and data collection methods.

4. The learning questions about systems change often relate to better understanding WHY certain changes have taken place (or not). This refers to the underlying causal chains which also include narratives that are often about subjects such as cultural attitudes, norms and values.

Quantitative methods are typically surveys (of households, value chain actors). Qualitative methods are typically focus group or multi-stakeholder discussions, interviews or polls. Methods commonly mentioned to monitor systems change are listed in below overview with a brief description (source: USAID, 2015). The focus of monitoring of systems change is clearly at outcome level, where changes of behaviour, policies and institutions would be nested.

Table 3: Main qualitative methods for monitoring systems change at outcome level (based on USAID, 2015)

Method/Tool	Description
Most Significant Change (MSC)	MSC is a participatory method based on stakeholder narratives. Stakeholders identify what they consider to be the most significant change in their situation. Stories can be selected and categorized by topic ("domains of change"). Stories may be collected on a monthly, quarterly or annual basis.
Outcome Harvesting (OH)	In OH, the evaluation user works with the evaluator (harvester) to define questions about outcomes that can be used to make decisions and take action. Outcomes may relate to behaviour, relationships, practices or policies. For each outcome, the harvester uses a variety of data sources to assess the degree to which outcomes have occurred and the contribution of the implementer to that outcome.
Outcome Mapping (OM)	OM is used to plan, monitor, and evaluate interventions working with boundary partners to achieve social change. Outcomes are changes in behaviours, actions, or relationships. OM measures the contribution of an intervention to complex change processes, assessing progress toward influencing behaviour change among boundary partners.
Sensemaker	The Sensemaker software program captures a large number of brief narratives that are interpreted by the people telling the story, using dimensions defined by the implementer. The software identifies emerging patterns of perceptions and attitudes, providing insights that the implementer can use to adjust the intervention in order to, for example, amplify or dampen the emerging patterns.
Social Network Analysis (SNA)	SNA is used to visualize and analyse actors in a system and relationships between them. It can depict formal and informal networks, including firms linked in a market system, households linked through kinship or social ties, and collaborating groups or associations. The linkages in a SNA can describe a variety of flows, including products, payments, business services, credit, information, and technology diffusion.
Systemic Action Research (SAR) / Participatory Systemic Inquiry (PSI)	SAR and PSI are related methods for capturing systems change. SAR is an iterative action research process of hypothesis testing, reflection and updating over a long period. It focuses explicitly on system dynamics and provides a framework for parallel inquiry processes at different scales within a system. PSI is an approach for mapping partners and relationships by engaging multiple groups of stakeholders within the system. Results from different subsystems are triangulated to verify with stakeholders how the system is operating. PSI can be conducted as part of SAR or on its own.

In the next section 3.3 we explain in more detail the method of monitoring systems change by tracking levels of change, which we find particularly useful for systems change purposes.

Analysis of quantitative and qualitative information

There are different ways of combining qualitative (QUANT) and quantitative (QUAL) data, giving a different weight to each of the two, see below overview (Bamberger, 2012).

Table 4: Different ways of combining qualitative and quantitative data in mixed methods analyses (Bamberger, 2012)

Which approach is dominant?	How the dominant approach works	How the other orientation is used to strengthen the design
QUANT	The evaluation typically administers a structured questionnaire to a randomly selected sample of individuals, households, groups, institutions or communities and the analysis mainly relies on econometric or other quanti-tative methods.	In-depth interviews, observation and group interviews are used to provide deeper understanding of statistical relationships found in the QUANT analysis. Cases can be representative of each main category identified in the analysis or used to study outliers or other groups selected purposively.
Equal weight is given to QUANT and QUAL approaches	QUANT surveys are combined with a range of different QUAL techniques. Sometimes the latter focus on the process and contextual analysis, in other cases the focus is on the same unit of analysis as the surveys (e.g., individuals, households, communities, organisations) but different data collection methods are used.	
QUAL	Case studies, in-depth interviews and other QUAL techniques are applied to relatively small samples of individuals, households, communities or groups.	A rapid QUANT survey is used either to identify the issues or groups to be covered in the in-depth QUAL studies or to show that the QUAL sample is reasonably representative of the total population

Building up a credible contribution story

Because of the often complex and multi-faceted change processes including external context influences, evaluating systems change strategies is not about proving attribution. Moreover, realising systems change is a collective effort, which emphasises the need for joint learning, and not claiming impacts. As systems change strategies are complicated, discussions 'who did what?' seem to be a waste of effort. As a consequence, forget about counterfactuals and about sample sizes that allow for statistical analyses.

Thus, at best one can assess whether a useful contribution has been made to your set systems change goals. A **credible contribution story** can be produced by the following seven steps:
1. Set out the contribution problem to be addressed: Do we expect that the interventions will contribute to a specific systems change impact?

2. Take the theory of change with impact pathways describing the set goals, expected changes and assumptions as a basis.
3. Gather the existing evidence on the theory of change, both secondary and primary data, both qualitative and quantitative information, using different tools.
4. Assess what has caused the changes, or the absence of changes, by distinguishing between your own contribution (intended and unintended) and those from others.
5. Assemble and assess the contribution story, or performance story, and challenges to it.
6. Seek out additional evidence to test the contribution story, by the collection of additional, new data such as from surveys, focus groups, field visits, secondary sources and statistics, etc.
7. Revise and where the additional evidence permits, strengthen the contribution story.

It may be useful to score levels of contribution, for example as (5) very high, (4) high, (3) moderate, (2) low, (1) none. When communicating about systems change impacts, it makes sense to describe the nature of your interventions clearly and also to communicate about other influencing factors. This helps to avoid overclaiming the impacts of your contributions. On the contrary, as solving systemic issues can be complex and take a long time, it is important to note which short-term small wins have been made.

3.3   How to track progress of systems change processes?

In this section we present more specific information on the method of monitoring and evaluating systems change by tracking levels of change.

Systems change can be captured by tracking change according to 'levels of systems change.'
Monitoring complex changes can be done by tracking different levels of change for relevant system change outcome indicators. The method of tracking 'levels of systems change' can be used to capture change in variables related to a complex phenomenon judgment (e.g. behaviour, functioning of an organisation, cultural norm). This method is also referred to as 'ladders of change' or 'rubrics of change.' Several organisations have used such tools during the last years for capturing system or market changes (e.g. MDF, 2015; USAID, 2016; SNV, 2019).

The process of coming to an agreed score is at least as important as the score itself. Ideally, the score is being tracked on a regular basis, at least once per year, and this is being done with involvement of relevant stakeholders. These are supposed to provide information that will lead to agreements on the scoring levels. The underlying reasoning and evidence must be noted in the column of justifications (see below examples). Justifications can vary from opinions or perceptions, to written reports with indicative numbers or indications of change. Participants must be selected to represent different background, therefore aspects of who participates, equality, power dynamics and agency are important to take into account. There are different approaches to engage with participants, which in short can include:
- using surveys or polls
- focus group or multi-stakeholder discussions
- guided self-assessments or narratives.

Ladders or scoring rubrics: Defining the desirable state and levels towards reaching this. This tool helps in quantifying qualitative information with the help of progressive scales towards the highest level of a well-defined desirable state. The ladder could be applied to assess a certain situation (e.g. level of organisational performance), or to measure a process of change (e.g. towards developing and implementing a new policy). Each step on the ladder can have a short description, with a number of dependent variables, referred to as a 'mini-scenario', which are factual statements that

describe the situation as related to a particular score. Each scale ranges from the absence of the particular state at the lowest level to the optimal mini scenario (the desirable state) at the highest level. Note that the mini-scenarios and especially the optimal / desirable state / scenario is ideally described and agreed by key stakeholders.

The following case box shows how this approach can be applied to systems change, using a 5- or 4-point scale. Other examples are given in appendix 2.

Case box 9: Partnerships for Forests (P4F) programme, measuring system change

As a follow-up to case box 7, to monitor and evaluate system change, a number of system components were defined for each of which change was evaluated. A distinction was made between visible, semi-visible and non-visible systemic issues (see characteristic 4), as follows:

Visible: Business model innovation, Investment model innovation, Enabling policies, Market demand for more sustainable produce, Technological innovations
Semi-visible: Equitable power relations, New organisational models, Relationship building, Coordination and dialogue, Systems that enhance accountability & participation, Monitoring and learning for adaptive management
Invisible (Mindsets): Mental models, Socio-cultural norms.

For each of above components the desirable end state was defined. Following are 3 examples.

Component	Desirable end state
1. Business model innovation	Viability of new business models supported by a clear business case (positive sustainability impact and benefits for the 'owner')
2. Investment proposition innovation	Viability of new investment propositions demonstrated to investors, with potential to reduce risks and shift investments to more sustainable industry (away from less sustainable, incumbent ones)
3. Enabling policies	Enabling policy and regulations with potential to mainstream sustainable business models and investment propositions

The assessment of current state and conclusions on changes on these systemic issues was obtained by comparing the current state with the desirable state on a scorecard from 0-4.

Level of change	Description of level of change
0	Far from desirable transformative state, no evidence of change to be expected, no evidence of scaling
1	Far from desirable transformative state, some evidence of positive change, no evidence of scaling
2.	Evidence of move towards desirable transformative state, potential for further improvement, some evidence of scaling
3.	Current state at least half way desirable transformative state, potential for further improvement, evidence of scaling
4.	Current state at half way or fully reached desirable transformative state, potential for further improvement, evidence of scaling

Source: Nelson et al. (2021)

The method of tracking change according to 'levels of systems change' has been well developed by UNEP to monitor progress on SDG 6.5.1 on Integrated Water Resources Management (IWRM) governance (Bertule et al., 2018; UNEP, 2021). The method was developed under the recognition that it is challenging to identify meaningful numerical indicators to assess policy and governance dimensions, as these may take years to take measurable effect. Also, it was recognized that it is difficult to properly define the desirable end situation of IWRM policies and governance, and the process of change is more valuable than achieving an end goal.

Case box 10: Monitoring IWRM governance by tracking levels of change

The Integrated Water Resource Management (IWRM) monitoring framework consists of survey questions and underlying indicators that cover the four main dimensions of IWRM governance. Each indicator is scored on a scale of zero to 100, guided by specific threshold descriptions. For each of the four dimension average scores are computed. Six implementation levels have been defined, from "very low" to "very high," with general interpretations and score thresholds given in the below example. In their reflection on this method, Bertule et al., (2018) emphasise that with the score the justification is important to provide. It will reduce error and bias due to different interpretations by surveyors from different locations or from subsequent years.

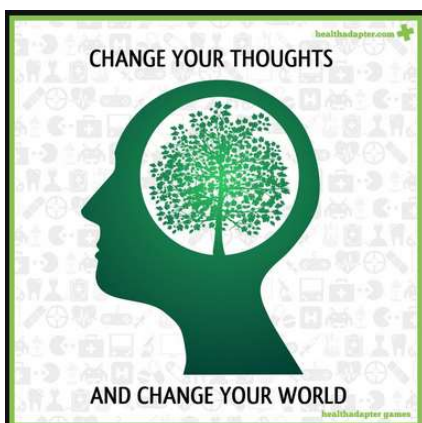| **1. Enabling Environment**							
		Degree of implementation (0 – 100)					
		Very low (0)	Low (20)	Medium-low (40)	Medium-high (60)	High (80)	Very high (100)
1.1 What is the status of policies, laws and plans to support Integrated Water Resources Management (IWRM) at the national level?							
a	National water resources **policy,** or similar	Development **not started** or not progressing.	Exists, but **not based on IWRM.**	**Based on IWRM, approved** by government and **starting to be used** by authorities to guide work.	**Being used by the majority** of relevant authorities to guide work.	Policy **objectives consistently achieved.**	Objectives consistently achieved, and **periodically reviewed and revised.**
	Score or n/a: [Enter score]	Justification/evidence	[Enter text here. E.g. reference to policy, when the policy was created/revised, examples of how the policy is being used to guide work, or which policy objectives are monitored/achieved]					
b	National **water resources law(s)**	Development **not started** or not progressing**.**	Exists, but **not based on IWRM.**	**Based on IWRM, approved** by **government** and **starting to be applied** by authorities.	**Being applied by the majority** of relevant authorities**.**	**All laws are being applied** across the country.	**All** laws are **enforced** across the country, and **all people and organizations** are **held accountable.**
	Score or n/a: [Enter score]	Justification/evidence	[Enter text here. E.g. reference to law(s), when it was created, mechanisms in place to apply/enforce the law, or examples of the law being applied]					

Source: UNEP (undated)

3.4   How to track mindset changes?

A particular challenge is to monitor mind-set changes. This section provides some input on how this could be undertaken.

Mindset changes are fundamental to systems change

Mindset changes, meaning the change in norms, values, habits of thought and belief systems about what is right or important, are at the basis of human behaviour. Mindsets are shaped through education, parenting, peers, religion, the media, advertising and other forces. Mindset changes may be referred to as the 'soft' side of systems change. These 'soft' inner factors have, so far, received much less attention in the field of human development in contrast to 'hard' indicators such as income levels, life expectancy and years of education. This underscores the need of a new holistic approach that takes the interaction between internal (personal) and external factors into account for development to be transformative and advance sustainable wellbeing for people and planet. As Nobel peace prize winner Prof. Muhammad Yunus illuminates: *"Unless we change our mind we cannot change the world.*

Using mixed methods to capture changes in mindset

Qualitative methods that rely on open-ended questions are, generally speaking, best suited for examining mindsets, as they can elicit talk that draws upon mindsets without explicitly asking about them. This poses another challenge for researchers, however, as quantitative methods are better suited to provide precision in measurement, clear comparability over time, and generalizability across a population. For these reasons, we believe a mixed-method approach that combines the strengths of qualitative and quantitative methods is necessary to accurately and precisely measure mindsets and mindset shifts (Frameworks research, 2020).

AidEnvironment carried out a study to capture systems change as part of an area-based approach to remediate child labour in the coffee sector in Uganda. Part of the monitoring focused on monitoring changes in the mindset towards child labour. This revealed convincing results, with a correlation between mindset changes and change in mindsets (Kessler, 2021; Newson et al., 2021). Mindset changes were captured through a short survey, focusing on awareness, actions taken and proactive attitude in the community, with responses following a ranking of responses (se Appendix 3).

Working towards a sustainable and inclusive mindset rubric.

Research has been done on what is referred to as the Sustainability Mindset, an instrument to map and profile where an individual is on their personal journey toward a Sustainability Mindset (Rimanoczy and Klingenberg, 2021). It has inspired us to develop a sustainability and inclusive mindset with a number of dimensions that we have adjusted to the typical context of agro commodities in a southern country. This could be used as indicated above, by scoring the current state of mindset for each dimension for an individual or a group of people.

Table 4: Different dimensions of a sustainable and inclusive mindset

Dimension	Indicator / description of desirable end state
1. Rational knowledge	Awareness and understanding the problems at stake as regards the natural resources / the environment and human rights / social issues, as well as then underlying root causes
2. Emotional connectedness	Experiencing a sense of urgency and sensitivity with respect to the problems at stake and the need for solutions
3. Spiritual connectedness	Experiencing a sense of oneness and connectedness with Nature and with other people
4. My contribution	Awareness of and understanding the way in which I / we contribute to the perceived problems, directly or indirectly
5. Solution orientedness	Conviction that I / we have the ability to contribute to solve the perceived problems by working on creative solutions
6. Long-term thinking	Awareness of the importance of a long-term perspective and vision of our decisions and behaviours to help solve the perceived problems, especially by addressing underlying root causes
7. Inclusive thinking	Awareness of solutions that are inclusive of all stakeholders, appreciating diversity, showing interest in other perspectives, and the ability to put oneself in other people's shoes.
8. Cyclical thinking	Accepting impermanence and accepting solutions that are based on maintenance or restoration of natural cycles.
9. Collaborative attitude	Conviction that working together can help solve perceived problems, especially to achieve changes beyond one's personal level but also at the level of underlying root causes / system levels
10. Learning attitude	Willingness to learn from failures and from each other, and to adapt one's assumptions in the face of uncertainty of failure

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Appendix 1: Different ways of mapping a system

Systems are complex. This makes it difficult to identify and analyse systemic issues that need to change for improved system performance. Some of the sources propose models that break systems down into specific interdependent components or building blocks.

In market system development the core of these models is the distinction between **supply and demand and the enabling environment**. The Springfield Centre (2015) refers to core functions (supply and demand), supporting functions and rules (Figure 6). They apply this model on systems for the exchange of goods, services and commodities as well as systems for the delivery of basic services, such as education, health and water.

The Market System by The Springfield Centre (2015)
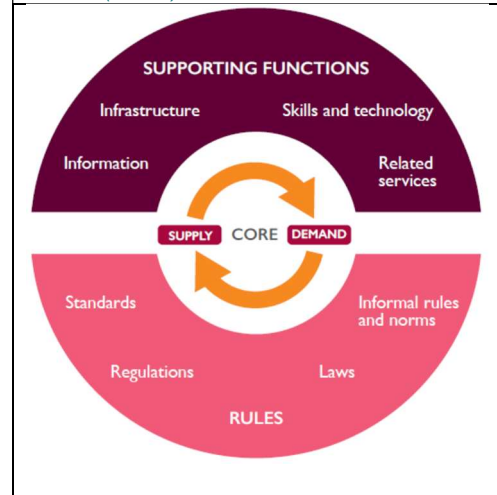
Van Berkum et al. (2018) present a comprehensive model to map food systems. In line with the M4P model the supply and demand activities (they call them value chain activities) are at the core. The food system furthermore consists of services and the enabling environment (e.g. infrastructure and regulation), the food environment (e.g. food labelling nutrient quality) and consumer characteristics (e.g. knowledge and purchasing power). These food system activities contribute to outcomes at the socio-economic level (such as income and work), and in the areas of the environment and food security). They also distinguish environmental and socio-economic drivers that interact with the food system.

A way of mapping the relationships of the food system to its drivers, by Van Berkum at al. (2019)
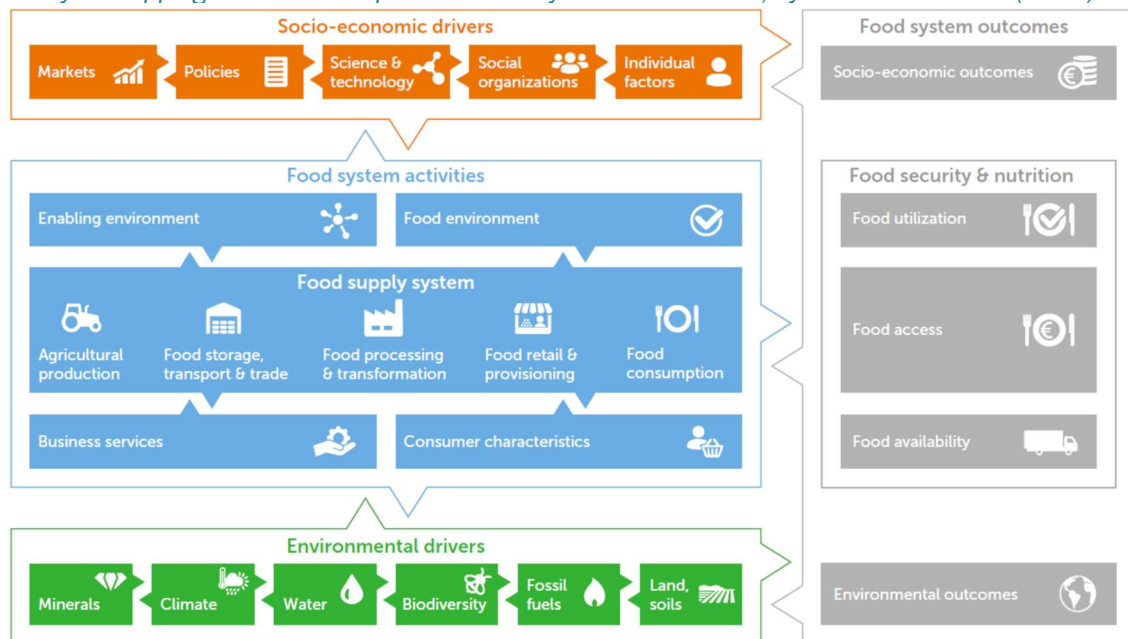
Molenaar and Kessler (2021) from AidEnvironment also present a model which allows for better understanding of the sector from the systems perspective, helps identify systemic issues and the identification of strategies. They distinct three interconnected spaces: landscape, market, and governance. Each space is subdivided into system components. The landscape space represents the location (origins) of the production unit (such as farms, forests, or mines) and its relationship with the surrounding communities and ecosystems. The market space refers to the relationship between producers, value chains, consumers, and service providers within the sector. It also includes the organisation of producers or other value-chain actors. The governance space refers to the policy and regulatory environment and the capability of a sector to collect revenues and to reinvest them strategically. It also includes the coordination and alignment of stakeholders.

The ten system components of a sector and the five broader context factors by Molenaar and Kessler (2021)
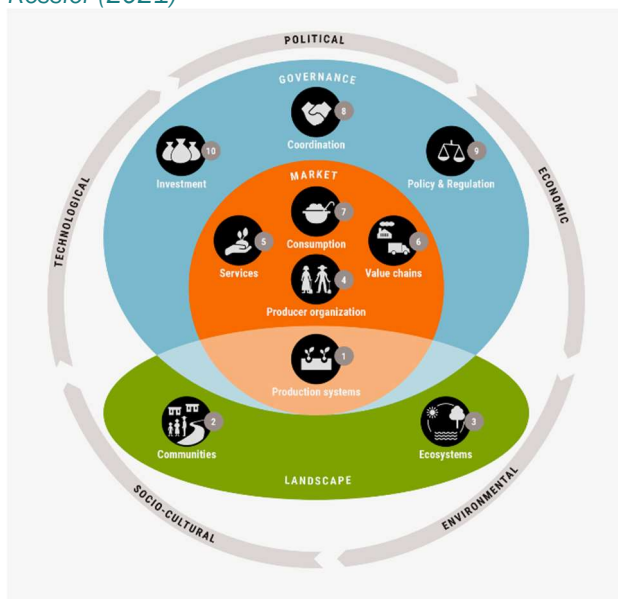
Borman et al. (2022) have integrated this system framework with the Food Systems Framework presented above by replacing the food systems activities in the Food System Framework with the relevant components from the AidEnvironment model. This allowed them to make the food systems thinking more actionable and practical.

Whereas the spaces and components introduce the horizontal systems perspective, Molenaar and Kessler (2021) complement this model with a vertical root-cause perspective, which classifies the deeper root causes of underperformance for target actors within the system. These root causes are largely based upon FSG's system conditions.

The systems and root cause perspectives by Molenaar and Kessler (2021)	Six conditions for systems change by FSG
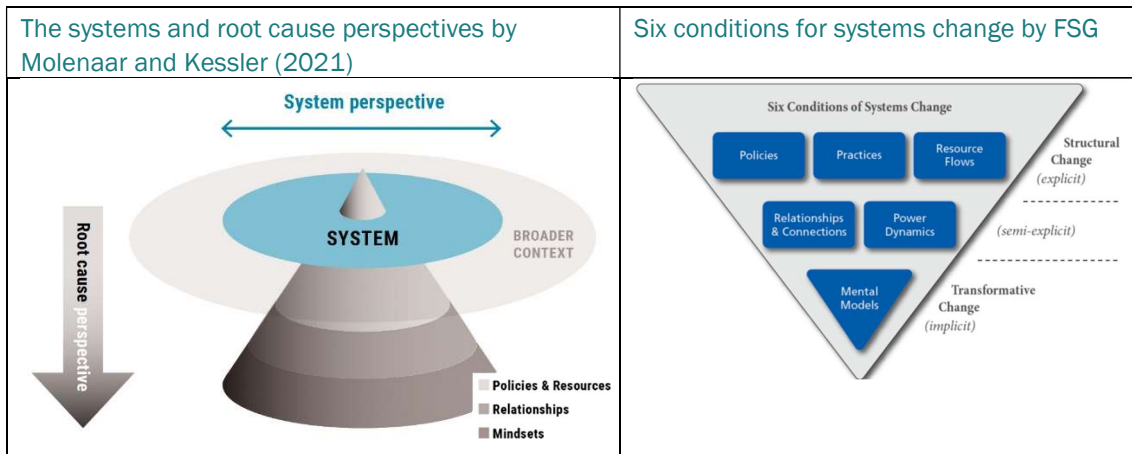
The WASH sector can also be broken down into components or building blocks. Huston and Moriarty, 2018 present the below example. They also recognize the broader context, which they refer to as political economy in which they particularly highlight the interaction with the education and health systems.

Nine essential building blocks of the wash system, as define by IRC (Huston and Moriarty, 2018)

There are numerous other models that map systems or identify components relevant to systems change. Examples include the Scaling Scan of the PPP Lab (Jacobs et al, 2018).

The above models use components or building blocks to break down sectors. This is common practice, but Water Aid (2019) presents some **risks of using building blocks frameworks**, which they identified on the context of monitoring WASH and health sector systems. There risks include:
- Building blocks, and indicators used to measure them, encourage a focus on what a sector system should look like. But a focus on 'form' may not say much about, or incentivise, improved 'function' within the system.
- A building block approach involves dividing up the WASH system into more manageable component blocks. This may overlook the interactions between different sub-systems and across

governance levels that are vital drivers of sector performance, such as learning, coordination and political commitment.
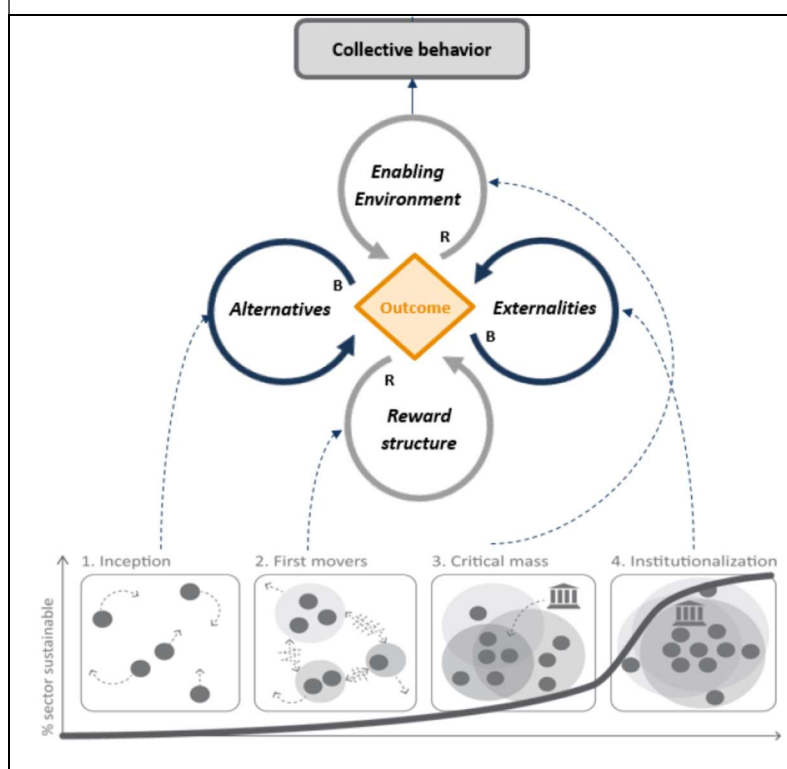
- Building block frameworks can encourage a static view that does not adequately recognise, capture or measure unpredictable changes, which are often a feature of complex systems.
- Most building block frameworks aspire to be comprehensive, but this does not necessarily help tackle complex problems. A lack of focus on the binding constraints on system performance leads to undue attention on marginal issues and encourages over-complex responses.

One can argue that these risks are not only relevant for monitoring purposes but also for diagnostic and strategy development. They can however be overcome by for example looking specifically at the interdependencies between building blocks, identifying and monitoring root causes of behaviour, and continuously monitor and respond to changes in the broader context.

Simons and Nijhoff (2020) identify **four phases and four loops** in changing the system for more sustainable collective behaviour:

- Phase I *Inception*: This phase often starts with a crisis that raises general awareness in the sector about the problem. The dominant loop is the Alternatives loop which answers the question: Are (sustainable) alternatives for the current behaviour available, and are the conditions in place to use those alternatives? The end state of this phase is that the sector is more receptive to accept there is a problem and that viable and actionable alternatives are available to help solve the problem.

A model for understanding and changing the system leading to more sustainable collective behaviour by Simons and Nijhof (2020)

- Phase II *Competitive advantage*: In this Phase it becomes evident that the problem is persistent, and the pressure is increasingly felt by government and industry. First movers use the viable alternatives from the phase I pilots to their competitive advantage as they absorb first mover cost and risks. The dominant loop here is the Reward Structure loop related to the following question: What behaviour is the system rewarding? The dynamics of a system consist of self- optimizing actors that together form a system of supply and demand of goods and services. The end state of this phase is that businesses will be competing on sustainable business models. There will be confusion in the system on what to do next with growing frustration that the problem is not solved despite all efforts. Claims of greenwashing will be made, while the marketing value of current sustainability work is decreasing, though its costs are increasing.

- Phase III *Non-competitive collaboration*: After competition in phase II, a critical mass of actors is ready for non-competitive collaboration through coalitions and platforms. Actors increasingly realize a collaborative systems approach is needed to solve persistent issues. Phase III addresses the Enabling Environment loop. By working together with all stakeholders, a more supportive enabling context can be created that facilitates the uptake of the new practices.
- Phase IV *Institutionalization*: In this phase the sector is ready for change. Laggards need to come on board and a level playing needs to be created. Creating a level playing field has become a market opportunity. Political leadership at this stage is crucial as choices will have to be made and the anti-lobby needs to be resisted. This phase reached the tipping point in the system. Phase IV addresses the Externalities loop, which relates to the question: Are the negative consequences felt by the ones who are causing them? In the institutionalization the new practice has become the new normal.

Appendix 2: Examples of monitoring systems change through tracking levels of change

Example 1: Systems change issue: development of a **No Deforestation, No Peat, and No Exploitation (NDPE) and implementing it - predefined levels of change**

Characteristics of the state of the systems change issue	Score	Justification / supportive evidence
No awareness The company does not have a no-deforestation policy. Unresponsive to research or campaign findings showing involvement in deforestation and exploitation activities	0	• Company documents • Multi-stakeholder meeting minutes • NGO reports • …
Awareness raised The company is responsive to research findings showing involvement in deforestation activities and is exploring options to incorporate deforestation risks in policies.	1.	
Preparing an NDPE policy and practices The company is developing or has recently approved a NDPE policy.	2.	
Adoption of an NDPE policy The company has adopted a policy to avoid deforestation risks, and has developed an action plan, human resources, and has a budget available	3.	
Initial implementation of NDPE policy The company is implementing its NDPE policy, on a no-regret or basic level. It stops all illegal deforestation but might proceed with legal deforestation.	4.	
Full implementation of NDPE policy The company is implementing its NDPE policy in a pro-active way. It stops all legal deforestation. It actively monitors implementation of the NDPE policy.	5.	

Example 2: Systems change issue: Sector dialogue with scales of change - undefined levels towards reaching a desirable state

Systems change indicator (outcome level)	Characteristics of the desirable state (= a score of 4)	Current performance, scored 0–4	Justification / supportive evidence
Sector dialogue	There is a platform or network that allows stakeholders to discuss frequently sector issues and solutions.	0. No: this is not the case 1. Limited: This happens occasionally and of poor quality 2. Moderate: This is generally the case but poor quality (or occasionally of good quality) 3. Substantial: This is generally the case, but not always or as good as desired 4. Yes: this is at desired level (or close to)	Number of meetings
Inclusive dialogue	The dialogue takes place with active participation of all key stakeholders, including legitimate representatives of vulnerable groups.		Number and type of actors participating
Mandate	The platform or network has a clear mandate by the relevant authorities		Participation and/or recognition by relevant authorities
Effective goal setting	The platform or network is able to set relevant precise goals and plans to pursue these.		Availability and quality of strategic/ operational plans
Policy dialogue	The platform or network influences private and public sector policies and investments.		Reports of advocacy activities Number of policies influenced

Example 3: Systems change issue: fairness of trading practice: distribution of levels of change in the sector in a given geography

Criteria	Scope	Insufficient	Medium	Substantial	Good
Fairness of trading practices	The degree of unfair trading practices (e.g. side-selling, quality adulteration, rebates, unjustified quality claims, collusion, delayed payments) vs. fair trading practices (respect of contracts, fair arbitration, transparency, risk sharing)	Entirely unfair trading practices take place	Mostly unfair trading practices exist	Mostly fair trading practices exist	Trading relationships are mutually beneficial and fair
		% of sector:	% of sector:	% of sector:	% of sector:

Appendix 3: Protocol to monitor mindset changes with respect to child labour

Source; Kessler J.J. (2021). Results and insights from the child labour free zone program in West Nile, Uganda. AidEnvironment

#	Questions	Response Code	Code List
Within your own household - awareness			
1	Do you take your BOY child (< 15 yrs) out of school to help you with any work?		1=yes, often 2=yes, sometimes
2	Do you take your GIRL child (< 15 yrs) out of school to help you with any work?		3=yes, rarely 4=no, never
3	Does your BOY child (< 15 yrs) help you with work, outside of school hours?		1=yes, often 2=yes, sometimes
4	Does your GIRL child (< 15 yrs) help you with work, outside of school hours?		3=yes, rarely 4=no, never
5	Can your BOY child (< 18 yrs) spray chemicals on the crops?		1=yes, that is always possible 2=yes, but only when there is no school
6	Can your GIRL child (< 18 yrs) spray chemicals on the crops?		3= yes, when I really need help 4=no, this is not possible any time
7	Should your BOY child of less than 15 years old be in school, at school hours?		1=no, that is not necessary 2=no, not always
8	Should your GIRL child of less than 15 years old be in school, at school hours?		3=yes, most of the time 4=yes, always
9	Do you agree with your husband / wife on the desirable level of education for your BOY child?		1=no, we do not agree at all 2=no, we do not agree most of the time
10	Do you agree with your husband / wife on the desirable level of education for your GIRL child?		3=yes, we agree most of the time 4=yes, we always agree
11	What do you consider as a desirable level of education for your BOY child?		1= P7 would be enough 2= S2 is good
12	What do you consider as a desirable level of education for your GIRL child?		3= S4 4= S6
Within your own household - actions			
13	What do you do if you do not have enough money to send you BOY child (< 15 yrs) to school?		1=then it will not go to school 2=then I will look for money
14	What do you do if you do not have enough money to send you GIRL child (< 15 yrs) to school?		3=then I will make use of the VSLA 4=then I will ask money from others 5=then the child has to earn the money Other response: ….
Within the community - actions			
15	What do you do if you see a BOY child (< 15 yrs) working in the marketplace?		1=do nothing, it is his own responsibility 2=do nothing, I have nothing to say
16	What do you do if you see a GIRL child (< 15 yrs) working in the marketplace?		3=talk to the child / its parents 4=report to the CL committee 5=report to the LC1 6=report to the police Other response: ….

#	Questions	Response Code	Code List
17	What do you do if you see your neighbour taking a BOY child (< 15 yrs) from school to work on the farm?		1=do nothing, it is his own responsibility 2=do nothing, I have nothing to say 3=talk to my neighbour 4=report to the CL committee 5=report to the LC1 6=report to the police Other response: ….
18	What do you do if you see your neighbour taking a GIRL child (< 15 yrs) from school to work on the farm?		
19	What do you do if you see your neighbour using a BOY child (< 15 yrs) to spray chemicals on the farm?		1=do nothing, it is his own responsibility 2=do nothing, I have nothing to say 3=talk to my neighbour 4=report to the CL committee 5=report to the LC1 6=report to the police Other response: ….
20	What do you do if you see your neighbour using a GIRL child (< 15 yrs) to spray chemicals on the farm?		

aid environment