



A guide to managing in the face of complexity

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Abstract

Complexity heightens the importance of effective management, but poses challenges for the tools and approaches used most widely in international development. This guide provides an overview of these challenges and proposes a way forward:

- Management tools need to be chosen to match the situation in hand, based on whether capacities are distributed, goals are divergent, and whether there is considerable uncertainty.
- Managing in the face of complexity should be guided by three key principles: decentralised, collaborative and adaptive management.
- A selection of appropriate approaches illustrates how these principles can be applied in practice.

At the end, the guide provides readers with further resources on the subject.

Introduction

The challenges to economic, social and political development are complex and unpredictable (Ramalingam and Jones, 2008). To respond to these challenges, governments, NGOs and international development agencies need to rely less on rigid implementation structures built on pre-chosen outputs and targets. Instead they need to manage policies, programmes and projects in more flexible and adaptive styles that take account of new threats, opportunities and the lessons learned during implementation. How then can development interventions be steered towards intended goals? Is it possible - and feasible - to manage interventions faced with so many influences and uncertainties?

This working paper is a guide to how interventions can be managed in the face of complexity. The guide builds on academic, policy and programmatic literature related to themes around systems and complexity (such as an in-depth study by Jones, 2011, which synthesises much of the material), and draws on the authors' experience of advising development agencies and governments in both developed and developing countries. To understand the way we use the term 'complexity' throughout the paper, please see box 1.

First, this guide describes the features of complex situations, and explains why they pose a challenge for traditional management approaches. This should give the reader the necessary tools to assess whether and in what way they are facing a complex situation (and, therefore, whether the guide is relevant for them). Second, it outlines key principles for managing in the face of complexity. This should help the reader understand how management needs to differ from more traditional approaches when confronted with complex issues. Third, the guide provides examples of approaches that have been used for managing in situations of complexity. This should give the reader a deeper understanding of the principles involved, and practical illustrations of how they can be applied.

For the purpose of this paper we understand 'management' as the process of translating plans into action (for making plans, see '[A guide to planning and strategy development in the face of complexity](#)', 2013). This encompasses defining and structuring activities, organising resources (including staffing), determining the division of work and responsibilities (including for decision-making) and specifying information needs and communication flows. We also highlight leadership tasks throughout the paper, which are usually seen as being complimentary to management: while a manager assures that things are done rightly, a leader's job is to inspire and motivate, seeing that the right things are done (Drucker, 2001). Yet nowadays management and leadership are not easily separated and in development work in particular the same people act as both leader and manager (perhaps at different points in time).

Box 1: Defining *the challenges of complexity*

There are a number of different definitions of 'complexity', but there is considerable consensus about the challenges that complexity poses for policy and programming. A common approach (Stacey, 1993, Kurtz and Snowden, 2003, Rogers, 2008) argues that a situation is:

- *Simple* when the core features are known to all actors and there is a high degree of agreement among them about what needs to be done. The relationships between an action and its consequences are known and predictable.
- *Complicated* when the core features are not necessarily known to those within the situation, and there is some disagreement about the nature of the situation and what needs to be done (e.g. different theories of change). The relationship between an action and its consequences is knowable by bringing in relevant expertise, although not fully predictable.
- *Complex* when many features of a situation are unknown, and there is not only considerable disagreement about the nature of the situation and what needs to be done, but also about what is happening and why. The relationship between an action and its consequences is unknowable beforehand, depending considerably on context.

The twin challenges of certainty (how much we know about a situation) and agreement (to what extent we agree on what needs to be done) run through these definitions. For the purposes of this paper we separate them as they pose different types of challenge for programming (as can be seen below).

We also add a third parameter, distributed capacities, or how the skills, resources and actions needed to achieve a change are spread between different agencies or organisations. This represents a strong theme in the work on systems theory, complex adaptive systems and elsewhere. While some work assumes the distribution of capacities is a product of the other two dimensions, this work tends to come from European and North American contexts. It is not only conceptually distinct, but also it seems likely that configurations of actors and institutions in developing countries may be quite different. Assessing the level of distribution is particularly relevant for development problems where e.g. formal institutions may be relatively weak and interventions frequently rely on large and often 'messy' partnerships (Guijt 2008) in order to succeed.

Section 1: Identifying the nature, level and challenges of complexity

How can we determine whether an intervention will face complex problems and, therefore, what is the most suitable management approach? There are various ways to define ‘complexity’ in economic, social and political development. We use a problem-focused definition, grouping the characteristics of complexity according to the type of challenges they pose for the design and implementation of development interventions. See box 1 for an explanation of the choice of definition.

In this section, we describe three types of challenge:

- The level of uncertainty involved
- The extent of agreement about project goals or ways to achieve them
- The extent to which knowledge and capacities are distributed.

We suggest ways in which the reader can decide to what degree they face each challenge of complexity, and outline the implications for management.

It is important to note that situations will hardly ever be complex in their entirety, with all three types of challenge being clearly present. One needs to focus on the combination and respective importance of the three challenges, which have equal status and can be addressed by the reader in any order. It may be that the reader should aim for a ‘fit’ between the three elements, i.e. ensuring they are based on similar principles and understandings; Korten (1980) argued that there needs to be appropriate fit between programme (comparable to our discussion of goals), organisation (capacities), and beneficiaries (change pathways). This is illustrated in figure 1 below.

Figure 1:



Source: Shaxson (unpublished) adapted from Korten, 1980

Task 1: Assess the level of uncertainty

First, we must decide **whether there is clear advance knowledge on how to achieve the desired outcomes in the given context**. For example, if the intervention aims to build a school or road, the required ingredients and outputs are well-known, and we can rely on standards and best practices methods. It is worthwhile, therefore, to work according to pre-determined and detailed procedures in order to produce the expected outputs. For other interventions, such as improving human rights practices or combating poverty, neither the outputs nor the means to achieve these goals are well established: experience and ‘good practice’ from other contexts may not be appropriate and will need to be ‘re-learned’. It may be that **our goals change over time**, as we learn from implementation and experience gained elsewhere – or have to adapt to changes in context. This might include intermediary outcomes (e.g. when outcomes are considered inappropriate or have negative effects that could not have been foreseen) or even top-level goals, as well as outputs. If the best ways to address a problem are not yet well understood, and if alternative routes are available or innovative solutions could be developed, it can be difficult to fix detailed deliverables or rigid divisions of labour. What is possible is to have a broad understanding of relevant roles and responsibilities, an evolving list of tasks and activities and an emergent understanding of how to achieve outcomes.

Second, we should assess **whether the intervention’s success depends in part on forces that are outside the control of its managers**, or on trends about which there is little advance knowledge. While traditional project management tools are designed to function best in controlled environments, interventions must often proceed without outright control, and sometimes without any significant influence, over key factors that will affect its success. A programme of reform might rely on achieving political and bureaucratic buy-in at various stages, but securing genuine ownership can only be influenced, rather than guaranteed. For example, a project working to protect migrants leaving to work abroad is strongly influenced by the behaviour of employers in another country, over whom the project has very limited influence. This is particularly true for interventions that require a combination of resources and, therefore, the collaboration of various actors.

Why does uncertainty matter for management?

- In situations when it is not clear how to achieve the best result in a given context, using only fixed plans and procedures to guide management could reduce the relevance of formal tools to key management tasks and decisions. The actual work and outputs of the team may itself become irrelevant due to having to fit within a rigid framework. Without space for learning or innovation in performing key functions, the intervention may not get the best end result or not achieve its aims at all.
- Changes in the context which are outside an intervention's control (and often therefore difficult to predict) have major implications for its success. If emerging windows of opportunity are not responded to, opportunities for success might be missed. Where unexpected new blockages or crises arise, interventions may not achieve desired outcomes if they do not adapt.

Task 2: assess the level of agreement

Next we need to assess **the extent to which there is agreement about the problem and/or about what to do**. For some interventions, there are very clear goals and objectives, which are shared by everyone who is implementing the project, or necessary to its success. After setting clear and unambiguous targets, management can rigorously track performance against those targets and tie decision-making to their achievement alone. However, when it comes to many of the multi-dimensional issues faced in development, different types of knowledge and interpretations of the evidence may lead to different perspectives between stakeholders on a problem and its causes. Barriers to the development of a joint understanding of success or measures of progress can emerge when the various perspectives overlap or even conflict.

The reader should also gauge **whether an intervention's goals are multidimensional**, requiring positive progress against distinct and non-overlapping qualities. In some fields there are unified measures of change such as improved length or quality of life for healthcare, against which other aims can be seen unambiguously as incremental steps or a 'means to an end'. For example, the aim of improving the health of a population has intermediate outcomes that represent unambiguous progress towards the greater goal, but an aim such as promoting political accountability requires a number of intermediate outcomes that may or may not lead to this aim: building the capacity of civil society to make demands on government has, in some contexts, led to less accountability where it has resulted in state 'crack downs' on dissent, or led to civil society organisations being less responsive to grassroots concerns.

In other interventions the aim will include a number of different goals, and choosing the correct trade-offs to make between them cannot be foreseen or decided in advance. For example, a project aiming to improve water resource management might aim to simultaneously achieve progress in economic efficiency, social equity, and environmental sustainability. It is not possible to reduce these aims to one measure of 'success', and choosing trade-offs between these goals is a management task that should be taken seriously.

Why does divergence on goals matter for management?

- Without support and ownership from important actors some interventions will be doomed to failure or significantly more narrow impact. Leadership is needed to build coherent working and a shared vision of success between partners.
- Success of an initiative may require convincing team members or partners who don't have a shared vision on the issue, or who don't agree on the most important goals, so that you don't miss out on their skills or expertise.
- Attempting to proceed with narrow, quantifiable goals and performance indicators can reduce the relevance of the initiative. When different actors pursue their own dimension of 'success', key elements may be ignored, or side-lined.

Task 3: Assess the distribution of capacities

First, we need to **assess whether the capacities to tackle an issue are distributed across a range of interacting players** and to what extent the success of our project/programme depends on the actions of others. International development interventions often involve a range of actions implemented by a network of partners who possess or control the relevant skills and resources. For example, the management of natural resources and the maintenance of common assets such as fisheries, forests or freshwater drainage require action at a number of different levels, from communities through local government to national policy and international agreements; the outcomes at many of these levels are influenced by a range of loosely-connected stakeholders. When interventions disregard the agency of any one level they are often ineffective: for example, fish stocks have become severely depleted when local communities have lost their rights to fish in local waters (Ostrom, 1990). Success in promoting policy change is a prime example of the need to collaborate, relying on forming coalitions and interacting with broad networks of actors.

Management and decision-making during implementation needs to take into account relevant knowledge, where it can be found, and how it should be connected to the intervention for effective action.

Why do distributed capacities matter for management?

- Knowledge of key tasks and contextual dynamics may be incomplete at the 'top' level, due to being experiential or hard to codify. For example, genuine local progress might only be accurately judged by those working on the ground there, or opportunities for change on an issue may only be understood well by those continually engaged in working on it.
- Rigid targets and tasks reduce ability to capitalise on internal knowledge and spot opportunities. Formal management structures and tools may become less relevant and more a 'tick box' as teams at lower levels do what is required to achieve the desired results but fit reporting into standardised formats. Worse, treating lower levels (including, for example, NGOs contracted to implement projects) as merely a means to achieve higher level goals disempowers and demotivates, reducing the effectiveness.
- Overly hierarchical decision-making is not suitable in the face of this kind of issue due to the need to value inputs from lower levels. This is increasingly important in the face of fast-paced and unpredictable issues, as staff at lower levels need the capacity to act quickly, in order to capitalise on opportunities or make important corrective actions.

Section 2: Tailoring management approaches to complex situations

Complexity heightens the importance of effective management. As argued in our guide to planning in the face of complexity (Hummelbrunner and Jones, 2013a), high uncertainty reduces to what extent all relevant aspects of an intervention can be decided before it begins, meaning we should pay more attention to sound decision-making throughout the course of an intervention, rather than enforcing a preconceived approach. The key function of management is (at least) twofold: providing leadership and guidance for the desired change, but also being sensitive to contextual factors and responsive to changes, emerging facts or experience gained during implementation.

However, the management approaches and tools used most widely in international development (e.g. Logical Framework, Project Cycle Management, project management, change management) are founded predominately on the assumption of high certainty, consensus, and concentrated capacities, making them less appropriate for complex situations. A way out of this dilemma would be to follow the growing trend in management for **contingency**, i.e. moving away from regarding management approaches as a universally applicable set of principles, towards advocating that they should be chosen to match the situation at hand.

Recently some management thinkers inspired by complexity theory (e.g. Stacey, Snowden) emphasise the limits of predictability for choosing the appropriate management approach. They propose to distinguish between the three types of situations described in Box 1 (simple, complicated and complex) and argue that making these distinctions is **important for an efficient and effective use of resources**. Because of their predictable nature, simple situations are easier to manage and therefore require less resources (e.g. people, money, time). Conversely, managing situations as if they were simple - when in fact they are not - is also a poor use of resources because actions are probably based on wrong assumptions about the relationships between action and their consequences, which can lead to costly failure and revisions. The Cynefin approach outlined in section 3 can be used as a framework for identifying appropriate management responses.

The need for situational adaptation would also apply to the various forms of ‘performance management’ or Results Based Management (RBM) currently on the rise in development aid. As argued in box 2, they are based on the assumption of unequivocal and shared definitions for performance as well as knowable relationships between activities and results, which may not be the case for many aspects of an aid agency’s work. There is a growing literature (e.g. Bowland/Fowler, Seddon, Eyben) showing how, applied to complex problems, these approaches lead to perverse incentives and sometimes the undermining of performance (see box 2). However, RBM and performance frameworks tend to be

rolled out wholesale across agencies, without sensitivity to the different types of challenges faced e.g. working on health vs. working on human rights. Despite this growing evidence it remains to be demonstrated how this management approach can be applied in a more reflective and differentiated manner, although there are some efforts undertaken in this direction (see Wauters, 2013).

Box 2: is Results-Based Management (RBM) fit for complexity?

RBM is a broad organisational performance management strategy that emphasises the measurement of results at various levels, and the use of that information to prove and improve performance. By comparing RBM with our three complexity challenges, we can get a better understanding of how and where it might be relevant or useful:

- 1) **Uncertainty:** RBM is meant to allow teams the flexibility to experiment, adapt and learn, and is hence based on an appreciation that there may not be clear knowledge on how best to achieve an outcome. However, in practice, often the level of 'results' at which teams are meant to perform is that of 'impact', which is not realistically in the control of any one unit (or even agency) to achieve, especially not in the timeframe of development interventions – and this misalignment dis-incentivises learning and innovation (APSC, 2009).
- 2) **Distribution of capacities:** As originally conceived, RBM is designed to empower different management units, giving the space and responsibilities required in order to innovate and to formulate their own approaches to achieving results. However, in practice RBM has been implemented in addition to procedural regulations (as opposed to these being relaxed to allow for innovation), meaning that it imposed additional rules and rigidities rather than freeing up space to learn.
- 3) **Divergent goals:** Most problematically, RBM is based on an assumption of unequivocal and shared definitions of 'results' and performance which can be formulated into a hierarchy of quantitative indicators. This is not appropriate in many areas of the public sector; goals that are too narrow promote risk-averse behaviour and dis-incentivise the kinds of collaboration and relationship- building actually required to achieve them (Kamarck, 2007).

The weight of experience is holds that RBM has not functioned well, either for the complex problems faced in development and or in the public sector more broadly. On points (1) and (2) this would seem to relate to how it has been implemented, where practices do not fit with complexity principles; on (3), there is a more fundamental problem of inappropriate assumptions. The evidence to some extent aligns with the symptoms of mis-applying tools designed for non-complex situations described in section 1: not only with the perverse incentives mentioned above, but and more broadly with respect to the divide between formal structures and implementation realities. For example, evaluations all around the world have recurrently shown that the information about performance information has minimal utility for decision-making in the public sector (OECD DAC, 2000; Thomas, 2007).

The principle of contingency is the underlying thread to this guide, running through the links between challenges and principles below, and the more specific approaches that we will suggest. Therefore, if you have found that your project, programme or policy is facing complexity according to the criteria set out above, it is important to choose approaches that fit with the nature of the problems you face. Beyond adopting a generalised contingency approach, we suggest applying the

following **three principles** when one or more of the three complexity challenges (uncertainty, distribution of capacity, uncertain goals) are present:

- A. Move from static to adaptive management**
- B. Move from directive to collaborative management**
- C. Move from centralised to decentralised management**

The relevance of these principles can be seen when applied to any or all of the three complexity challenges. The choice of principles should depend on your assessment of the degrees and types of complexity faced:

- Interventions facing **high uncertainty** are likely to find all three principles useful, but in particular an **adaptive management approach**. Managing an intervention as if everything was simple is ineffective, but managing everything as if it was complex is inefficient (management approaches designed to handle complexity will be ‘overkill’ for a simple scenario). Therefore the management response should be adapted to the situation at hand and also be suited to deal with the type of change envisaged.
- Interventions facing **divergence** are likely to find **collaborative management and leadership** styles useful. Instead of leadership by a single entity, partners should be involved in ‘steering’ processes based on iterative cycles of negotiation and agreement. Taking account of different perspectives is key for dealing with divergent opinions. But reducing disagreement about what to do may mean having to cope with messy or wicked problems and difficult conversations. Contingency approaches may also be useful to help distinguish between elements most in need of collaborative management and those less so.
- Interventions facing **distributed capacities** can turn to **decentralised management**, leadership and organisation. Ownership and responsibility can be strengthened by distributing management tasks throughout a cooperation system that is organised as a set of interconnected subsystems. Leadership styles that support and respect self-organisation, quality assurance measures and adequate information flows will strengthen coherence.

A. Move from static to adaptive management

In the face of complexity, managing should neither be reduced to mechanistic implementation of pre-defined plans nor to engaging in ad hoc ‘trial and error’ testing of what works. Managing requires different approaches that acknowledge the limits to prediction and control and adapt to unfolding realities. In short, be open for learning and adaptation (this corresponds to the adaptive approach to planning in the face of complexity outlined in Hummelbrunner and Jones, 2013a). Section 3 contains Problem-Driven Iterative Adaptation (PDIA) as a recent example of the growing number of adaptive management approaches (Booth, Eoyang/Holladay, Heifetz, Manzi, Rondinelli, Pritchett et al).

Express and test a theory of change

Essential to this shift is to see your intervention as an expression of hypotheses and assumptions. At the same time as attempting to produce deliverables or to achieve goals, your intervention is putting to the test ideas about how to best do this, i.e. positing theories of change and of action. This means that a central part of managing well is understanding the relevance and validity of those ideas.

Monitoring is a key management tool in order to test hypotheses and theories of change; learning-based processes and the purposeful and systematic pursuit of knowledge need to be an explicit part of management. On-going monitoring is the best tool to carry out this function by measuring, assessing and interpreting the effects an intervention is having. In particular, monitoring should focus on the key assumptions and hypotheses about how the intervention will have impact – this information should be used to adapt and refine the theory of change and the intervention itself.

Experiment to learn

Promoting experimentation and innovation is one way to ensure that development interventions can be rich learning exercises. As well as taking an opportunistic approach to learning, ‘active adaptive management’ promotes learning by doing by deliberately intervening in the system, in order to test hypotheses and generate a response that will shed light on how to address a problem. This is not quite as simple as management by ‘trial and error’, which might be inefficient and can hinder the institutionalisation of experience. However, there could be some small-scale interventions that are ‘safe-fail’, i.e. it is acceptable for them to fail (Snowden, 2010). Learning gained from a ‘failed’ project should be valued highly; and expecting a certain level of ‘attrition’, and ensuring sufficient redundancy should be seen as the only responsible approach to programming in complex domains. Unfortunately, the concept of pilots being allowed to fail, or agencies valuing bureaucracies is somewhat at odds with the current culture in development agencies – this point will be picked up again in the concluding section.

Incentivise learning

Carrying out good monitoring is more to do with leadership and communication than it is with the analytical tools used for the task. In the face of complex problems, actors are more likely to respond to evidence where it emerges in the context of trust and ownership. Monitoring functions must be embedded throughout implementation chains, with autonomy to shape M&E frameworks at different levels. Incentives are also important: when things that don’t go to plan are seen as a ‘failure’, staff are unlikely to reflect genuinely on issues. An alternative approach is to see an opportunity for learning in a project which seems to be underperforming – for example, triggering additional support and expertise. There may need to be a shift in accountability practices. Rather than being judged by results alone, in the face of uncertainty managers should set in place learning objectives alongside performance goals – this has also proven beneficial on staff motivation and productivity in the face of complex problems (Ordonez et al., 2009).

B. Move from directive to collaborative management

Many management models, in particular those conceived for corporate business, are based on a ‘command and control’ logic. An organisational hierarchy specifies the rules and procedures to be followed and specifies who is responsible and has the authority for decision-making. This classic model of ‘military’ style leadership is often used, but rather ineffective when faced with complexity. For example, an overly narrow set of goals and targets dis-incentivises the kinds of behaviour required to actually tackle complex problems (Ordonez et al, 2009; for more, see box 2 on RBM). Alternative models have been developed in corporate business, public sector institutions and even the modern military to better fit complex problems.

Interventions in international development usually assume or even demand collaborative action. A programme might require assistance from civil society

organisations and local communities in order to achieve its aims, or a proposed reform may need assistance and input of government Ministries which, in turn, requires the consent and collaboration of various Ministers and civil servants. Rather than working as a ‘purposive’ system, which is aligned on declared objective(s), managers face a ‘purposeful’ system, which has to pursue and accommodate multiple objectives and interests, only some of which might be known at the beginning.

Collaboration on complex issues thus takes place beyond the control of individual actors. With no hierarchy or authoritative leader to assure decision-making or resolve tensions, partners are obliged to collaboratively ‘steer’ their intervention through the troubled waters of implementation in order to reach their goals. Leadership must be relatively ‘democratic’, drawing on people’s knowledge and skills, and encouraging a group commitment to joint goals. Collaborations need strong internal communications in order to increase the level of agreement.

Limits to collaborative leadership

It should be noted that the suitability of leadership styles also depends on other factors. For instance, in times of crisis, when urgent events demand quick decisions, a democratic, consensus-building approach can be too cumbersome and an authoritarian style becomes suitable (at least temporarily). Or when development interventions are naturally organised in a hierarchical manner, command and control might work quite well, provided the partners agree on who leads.

Developing objectives

When choosing collaborative objectives, actions or resources must be negotiated and agreed. This is particularly important with collective action problems, where acting on individual incentives undermines the overall, long-term benefits to a group of actors (e.g. over-using natural resources for individual gain). Here it is essential that the stakeholders involved build a shared understanding of the problem at hand, and jointly negotiate new institutions to govern their actions and interactions (Ostrom, 1990).

A number of factors are crucial in understanding and managing these kinds of initiative. Attention must be paid to:

- the **perspectives** of the actors involved
- **interrelationships** of actors and their actions
- **boundary** choices, which determine what is relevant and important or who benefits in which way.

Reflecting on the implications of these choices usually involves dealing with power and control issues, in particular between involved partners, (Williams and Hummelbrunner, 2011).

In development interventions one will often be faced with rather messy situations or **wicked problems**, characterized by multiple stakeholders who have an interest in the problem and its solution, and who are engaged in multiple or unpredictable interactions. In order to reach shared understanding and agreement you will likely have to deal with rather **difficult conversations**, to sort out misunderstandings, contradictions or conflicts. Section 3 outlines several methods to deal with different aspects of these challenges (decision-making, surfacing assumptions, dis-solving problems and conflicts).

C. Move from centralised to decentralised management

Centralised management works well when it can rely on top-down hierarchies and on distinct functions: managers take decisions and other people execute them. Resources are allocated and their application is tightly controlled by the management hierarchy, which also holds the authority to revise or adapt actions. The focus is on compliance and activity, not on realising an objective and being responsive to change. While appropriate for the routine production of standardised products or services in stable environments, when these conditions are not met this model becomes ineffective.

Managing cooperation

Development interventions, especially those structured in line with the new aid architecture, are not hierarchical entities but cooperation systems, involving a set of semi-autonomous yet interdependent partners (often with highly skewed power relations). Management needs not only to take into account that relevant knowledge is distributed between partners, but also to ensure that the partners contribute to joint objectives and are on the alert for any obstacles to reaching them. Recent research has emphasised the value of polycentric institutional arrangements, where management power is shared between many nested and quasi-autonomous decision-making units, operating at many different levels, and governance relies on emergent and voluntary coordination, collaboration and partnerships (Folke et al., 2005). Decentralised management should encourage the **self-organisation** capacity of actors; distribute the management functions among them in a way that avoids a dichotomy of managers and implementers; and ensure adequate information flows.

Nested responsibilities

Direct influence and interference in micro-management is likely to lead to disturbance or outright resistance from self-organising systems. It is preferable to influence their behaviour through **indirect (contextual) steering**, i.e. by specifying rules, defining criteria or setting boundaries. Therefore, decentralised management should be conceived as a **set of nested sub-systems**, where each level acts within a context defined by others. A **clear separation of responsibilities** is crucial to make such an 'embedded' structure work: higher levels limit themselves to specifying the framework conditions, but refrain from interfering in micro-management, leaving the details to the lower levels. Agreements should determine the *what*: expectations from an intervention and the key framework conditions for implementation (e.g. rules, milestones, issues to be taken into account). What should not be specified, however, is *how* this agreement is to be fulfilled, namely the activities and operations envisaged. This should be entrusted to the sole responsibility of those carrying out the intervention. For example, agency HQs might provide quality assurance and approval for country strategies developed by the country office themselves. In general, an agency delegating the implementation of a programme to a contracted organisation should specify key problems to address or outcomes to achieve, but avoid requiring detailed, fixed sets of activities with associated rigid budget lines.

Such an approach makes interventions more adaptive, flexible and realistic, because responsibility for implementing (and modifying) plans is transferred to those best placed to identify the challenges and opportunities created by changes in circumstance. The approach also promotes buy-in from partners and improves ownership for development activities. And it is in line with one of the key lessons gained from the experience with performance management approaches: that those who are expected to manage for results must be given the autonomy to do so, through flexibility on activities, resources and outputs. If they aren't offered this

flexibility, they will only manage for outputs. In an example from the private sector, ‘Total Quality Management’ principles adopted in manufacturing and service industries cast the ‘quality’ of a product or service as the responsibility of all employees. This is implemented by empowering employees with mechanisms for solving problems and improving performance distributed across a variety of levels rather than simply the domain of supervisors or inspectors (Reid and Sanders 2007).

Achieving coherence

Coherence is the prime challenge for decentralised management. One way to accomplish this is through **leadership styles** that strike a balance between direction and self-organisation. If agreement between partners is high, a laissez-faire style can be applied, that delegates everything within certain boundary conditions (e.g. timely reporting, warning about problems). If agreement is less pronounced or if decentralised actors change course swiftly, a visionary style is most appropriate, whose goal is to move people in a new direction. Visionary leaders articulate where a group should be going, but not how it will get there – setting people free to innovate, experiment and take calculated risks. Coaching would be another option in such a situation, a one-on-one style that focuses on developing individual actors, showing them how to improve their performance, and helping to connect their logic to the overall goals.

Another way to improve coherence is **quality assurance**, which defines criteria or factors in order to guide actors in their operations. Section 3 contains an outline of Capacity WORKS, GIZ’s management model for sustainable development, which adapts the principles of quality management from corporate business to the needs and requirements of development interventions. **Adequate distribution of tasks and efficient information flows** are other important factors for the proper functioning of decentralised management. A suitable framework for designing them, the Viable System Model, is described in Section 3.

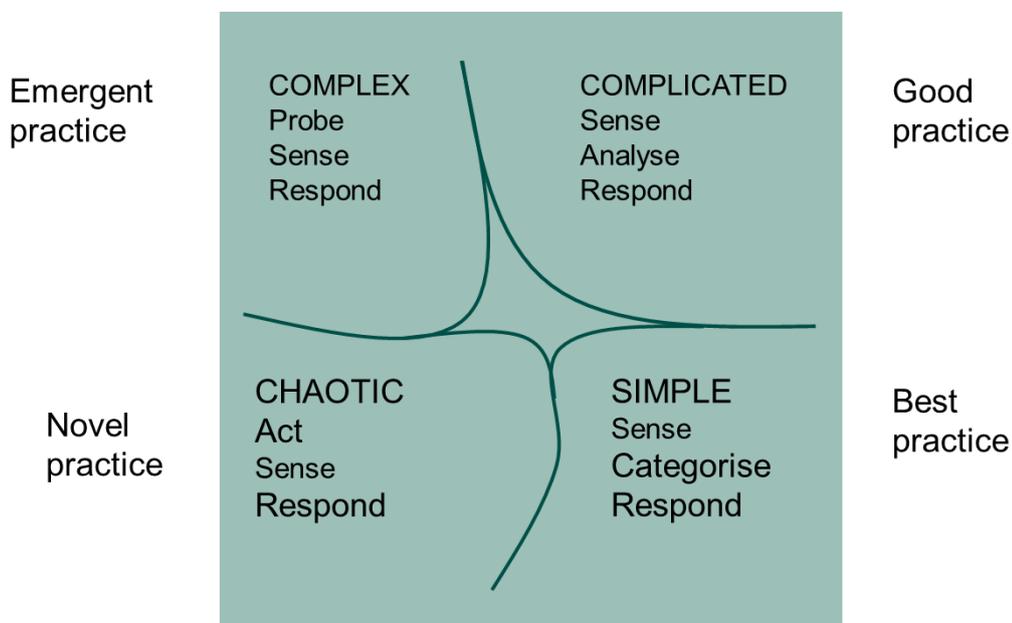
Section 3: Appropriate approaches

This section outlines specific methods that can be used for managing in the face of complexity. Most of these approaches were originally developed in corporate business, where the shortcomings of centralised ‘command and control’ models were first noted, but have since spread into public sector management. These approaches are aligned with the general principles for managing complex interventions outlined above, but each has a specific focus and is tailored for particular circumstances or purposes.

1. Cynefin framework

Widely discussed in international development, this is probably the most refined contingency approach to management. Developed by Snowden and Kurtz (2003), it offers a framework for deciding on the appropriate managerial style and is based on the distinction between simple, complicated and complex situations outlined in Box 1; it also adds ‘chaotic’ as a fourth dimension. Figure 1 summarises the management responses to each different level of complexity.

Figure 2: Cynefin framework



Source: Williams/ Hummelbrunner, 2011

Simple situations:

Simple situations correspond to low uncertainty and low divergence. The management style most appropriate to simple situations is to:

- *Sense*: collect sufficient data to identify the core characteristics of a situation (e.g. what is required to carry out a specific task)
- *Categorise*: identify whether these characteristics apply to the given context (e.g. are the known requirements for action in place in the current situation)
- *Respond*: pick the best practice response to that category.

Since simple situations are largely independent of context, copying ‘best practice’ (i.e. applying solutions from one situation to another) is the most effective and efficient way to manage them.

Complicated situations:

Complicated situations correspond to high uncertainty and low divergence. The management style most appropriate to complicated situations is to:

- *Sense*: collect sufficient data to identify the core characteristics of the situation
- *Analyse*: deliberate on the information collected and use expertise from other contexts to choose appropriate responses (e.g. identify additional people, information or skills needed to carry out the task)
- *Respond*: apply this knowledge to the current situation and pick the most appropriate option.

Because situations are context sensitive and can be framed from different perspectives, careful analysis and comparison of characteristics is key. ‘Good practice’ (i.e. modifying the application of approaches from one situation to another context) is the most appropriate approach.

Complex situations:

These correspond to high uncertainty and high divergence. The most appropriate management style is to:

- *Probe*: design a few small-scale actions to test out ideas before taking full-fledged action
- *Sense*: collect sufficient data to identify the patterns of behaviour that could be a consequence of the probe and select what seems to be the right thing to do
- *Respond*: enhance the patterns that are desirable and dampen those that are leading the situation into undesirable behaviours.

Before adopting a course of action, you need first to better understand behaviour patterns over time. Emergent practice (i.e. practice that is gained from experimenting within a situation) is the most effective and efficient management approach, even though it can be quite demanding in terms of resources and time.

Chaotic situations:

These correspond to low uncertainty and high divergence faced. The most appropriate management style is to:

-
- *Act*: implement a strong response designed to shock the situation back into some form of order, or at least quickly curb negative consequences
 - *Sense*: collect sufficient data to identify the patterns of behaviour that could be a consequence of that first action
 - *Respond*: based on the results of the first action, enhance the patterns that are desirable and dampen any patterns that are leading the situation in the wrong direction.

In a chaotic situation there are neither observable patterns nor previous experience to rely on: anything can happen for almost any reason. Novel practice is required, often fast, but it must be developed from experience based on the observed outcomes of a determined action (one that has hopefully moved the situation in a positive direction).

It is important to note that these four dimensions are not distinct, mutually exclusive categories: they are located along a continuum with imprecise and permeable boundaries. Different perceptions of the degree of complexity of a situation may arise from disagreement on where the boundaries between simple, complicated, complex and chaotic situations lie. This has several important implications for working with this framework:

- Since managing simple situations is less resource intensive than managing more complex ones, it can be useful to consider moving a situation into an adjacent, less resource intensive domain (complex to complicated; complicated to simple). So instead of figuring out the most suitable way of managing the situation in terms of its existing zone it might actually be more effective to **cross the boundary** and manage a complicated process *as if* it were simple. This is something that we are already accustomed to in other areas, either by learning routines and rules (e.g. driving a car) or by using ‘checklists’ to guide us through complicated procedures (e.g. vehicle maintenance).
- Using these dimensions in collaborations can help **understand different perspectives**: for instance, when two actors locate the same situation in two different domains it reveals something about their underlying mental models. In this way, you can generate insight into how to manage such a situation across a partnership.
- It is not helpful to view a situation as entirely complex, or entirely simple. Most situations demonstrate features of all three (sometimes four) and while subcomponents of an issue may be simple, collectively they could add up to a complex problem. Therefore these distinctions should **be used to understand certain aspects of a situation rather than the entire intervention**. Think of an immunization program in rural areas that has already been carried out several times: there will be things that are quite certain (simple), like how many people clinic staff can immunise per day; and others that are rather uncertain (complicated or complex), such as other factors that may affect local people’s ability to attend clinics. And if crucial conditions change dramatically (e.g. an outbreak of violence) some things might turn chaotic.

2. Problem-Driven Iterative Adaptation (PDIA)

This adaptive managed approach was recently proposed by Andrews et al (2012) as a way to avoid the capability traps created by ‘isomorphic mimicry’, the overarching and still dominant theory of change in international development, characterised by inappropriate transfers of best practice that fail to improve the performance of institutions in developing countries. PDIA consists of four core principles, which fit a wide range of implementation options adaptable to a variety of modalities and country contexts:

- *Aim to solve particular problems in specific local contexts:* The starting point for an intervention should be locally defined problems, not the selling of externally determined solutions (often in the disguise of ‘best practice’). Problem-focused processes put the onus on performance, not compliance and can get agents to work through the complexity of these problems and identify possible entry points for solutions (e.g. de-construct problems, identify root causes, reflect on structural weaknesses). These processes can become the basis of coalition building across networks and generating action and change. They also provide an open space for novelty and put the emphasis on improved functionality.
- *Create an ‘authorising environment’ for experimentation and ‘positive deviance’:* To be genuinely useful, problems must offer local agents a pathway to find solutions - which is not the case with pre-fabricated solutions imported from outside, because those are unlikely to address all the dimensions needing attention. Instead solutions need to emerge from an incremental process consisting of small steps of experimenting with potential remedial actions and identifying ‘positive deviations’ from extant realities. Such steps have the prospect of early success, help flush out contextual challenges, and frequently result in hybrid combinations of elements that are aligned to operate in new ways. Such a process is only possible when innovation is encouraged and rewarded by the authorising environment within which key decisions are made.
- *Create active learning mechanisms and iterative feedback loops:* A stepwise change process has its greatest impact when connected with learning mechanisms that ensure the dynamic collection and immediate feedback of lessons about what works and why. Such learning is active and based on real-world experimentation, which is different from the field experiments used in randomised trials. And these dynamic learning mechanisms also differ significantly from traditional monitoring and evaluation mechanisms that focus on compliance with a predefined route and allow lessons only at the end of an intervention.
- *Engage broad sets of agents for assuring viability, legitimacy and relevance:* Processes of change and development are most effective when they simultaneously take place top-down and bottom-up, making use of distributed agency. The involvement of front line agents is particularly important as they are less embedded in extant rules, which makes them more open to criticizing incumbents and entertaining change. But since they lack the power to make change happen, something must bridge those with ideas to those with power. Such links could be provided by individuals, organisations or networks that

facilitate transition. Broad engagement in developing solutions can also lead to better diffusion of these changes.

PDIA shares similarities with other new approaches. For instance, ‘Cash on Delivery’ aid, a mechanism by which donors deliver resources for achievements against a benchmark, freeing up the recipient to achieve results however it wishes (Birdsall and Savedoff, 2010). Organisations like Innovations for Scaled Impact (iScale) are based on similar principles of bringing together local control over the problem nomination and definition stage, with support to innovations built within tight feedback loops of evaluation and embedded in communities of practice (see www.scalingimpact.net). The World Bank is attempting support to various types of ‘results-based financing’ (see Brenzel 2009 on World Bank supported health projects) and has introduced a new Program-for-Results lending.

3. Strategic Assumption Surfacing And Testing (SAST)

This well-established approach is particularly suited for dealing with messy problems or problems that conceal deep divisions between those addressing it. For instance, in situations where there are two opposing views on options, with different assumptions about key stakeholder beliefs and behaviours, each faction will likely consider their option to be superior to the other. SAST relies on dialectic rather than discussion and forces people to explore their underlying assumptions, which normally remain ignored or hidden. It thus relies on openness to self-analysis and debate from the different groups involved. Rather than looking for ‘solutions’ to problems, it seeks to find ways that people can resolve, reframe and ‘dissolve’ them. It uses a mixture of multiple stakeholder perspectives, strategic questioning and dialectic and is carried out in four distinct stages (Flood/Jackson 1991):

1. *Group Formation*: All those who have a potential bearing on the definition - or solution - of the ‘problem’ should be brought together, articulating as many possible perceptions as can be found. These individuals are then divided into small groups with those with similar perspectives in the same group, with the aim of maximising difference of perspectives between groups. Each group’s perspective should be clearly challenged by at least one other group.
2. *Assumption Surfacing*: Each group develops a preferred solution to the problem and analyses the assumptions for each key stakeholders needed for the solution. Then these assumptions are rated with respect to their importance (for success or failure of a solution) and their degree of certainty. Only the most significant assumptions should be retained, i.e. those that are both important and are the most uncertain.
3. *Dialectical Debate*: The groups are brought together and each group makes the best possible case for its favoured solution, while clearly identifying the most significant assumptions it is making. Each solution is then debated from two opposing viewpoints, after the debate each group is invited to adjust their assumptions.
4. *Synthesis*: Assumptions continue to be negotiated and modified until a list of agreed assumptions can be drawn up. The new synthesis solution should be more stable and widely accepted, bridging gaps between the initial proposals or going beyond them. If no synthesis can be achieved, points of disagreement are noted and discussed to see what might be done to resolve the differences.

4. Solution Focus

This technique was originally developed in family therapy and has later on been used in organisational development to induce positive change within people, teams or organisations. It is based on two fundamental assumptions: there is not necessarily a logical connection between problem and solution; and that the route to the solution depends on the solution, not the problem. Therefore, attention is placed on identifying a different ‘ideal’ situation that will ‘dissolve’ the problem and on the changes required to arrive at this new situation, which are usually differences in behaviour and interaction of the people involved.

Solution Focus involves a set of questions, principles and tools (Jackson/Kergow 2002). The focus on solutions (instead of problems), the future (instead of the past), and what is going well (rather than what went wrong) leads to a pragmatic - and often very rapid - way of making progress. Problems are ‘dissolved’ by directly exploring solutions that have occurred in the past, presence and future, which helps to overcome states having previously been considered problematic.

Solution Focus is a powerful and proven approach to bring about change that avoids becoming locked in a problem-focused mode of thought. It is a minimalist approach, advocating as little change as possible (which has benefits in terms of time, cost and effort) and takes the path of least resistance. But it requires skilled facilitators or consultants who are capable of engaging in - and maintaining - a solution-focused conversation. It is particularly recommended for situations marked by negative experiences from the past or emotional burdens weighing on the relationship between the involved parties. It is also valuable in cases where detailed analysis of causes is either unfeasible (e.g. due to lack of time or information) or too cumbersome.

5. Deliberative processes

‘Deliberation’ should be a central process guiding decision-making, by mobilising and combining various perspectives and drawing on many types of knowledge. This involves carefully designed processes where different types of evidence are combined and weighed up in a reasoned fashion, through an inclusive and transparent dialogue (Lomas et al., 2005). The aim is to make decisions that are relevant, feasible and implementable by combining different perspectives and building consensus prior to a decision (Culyer and Lomas, 2006). Key stakeholders should be brought together to discuss and consider appropriate action and policy responses: sharing knowledge, considering different perspectives on an issue and reaching reasoned, consensual decisions where possible. Another characterisation of this kind of process is ‘collaborative learning’ (Daniels and Walker, 1996), or a process of ‘collective inquiry’ – a kind of collaborative action research working towards a shared ideal and collective governance and decision-making (Brown, 2007). Dialectical methods of inquiry - e.g. Contradiction Analysis, Circular Dialogue – can also be applied in the framework of deliberative approaches (Williams/Hummelbrunner, 2011).

There are some practical considerations in implementing deliberative approaches. Generally, they require face-to-face meetings, typically combinations of workshops, consultations and roundtables, at which actors convene to discuss and debate pressing issues. They require detailed and in-depth discussion and carefully structured and managed processes, allowing groups of people to engage in reflection, interaction and learning. Deliberative processes must be action-oriented rather than functioning as just a ‘talking shop.’ Not only should they be aimed at producing an explicit decision on an important issue, (Cash et al., 2003), but if

possible participants should also have a role in ‘doing’ as well as discussing, to ensure that new possibilities are explored and reflected on immediately.

A number of areas of good practice in how to manage constructive deliberation are emerging from the various on-going efforts. The following characteristics are important (Brown and Tyler, 2009):

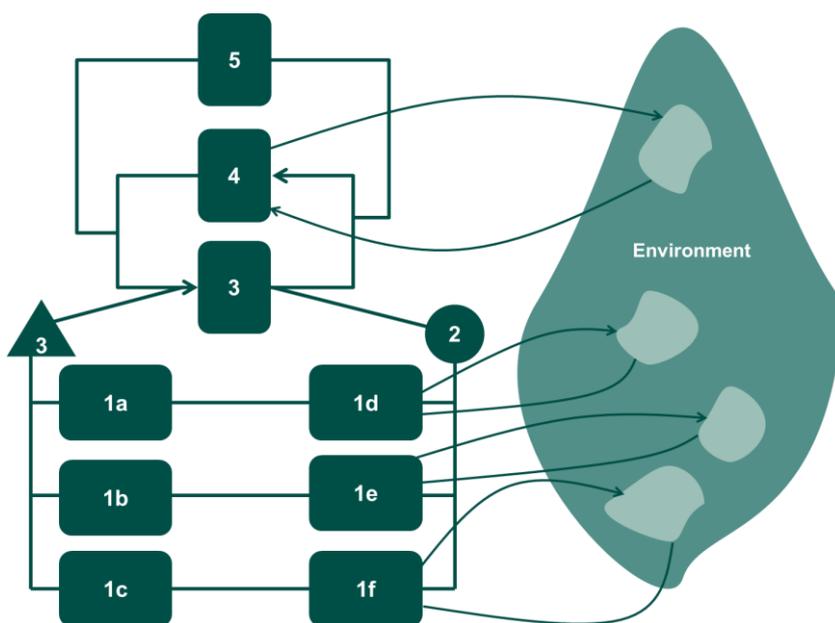
- Participation must be voluntary, including a broad range of stakeholders affected by the decision who must be committed to the process.
- Discussions must be structured and led by skilled facilitators, and guided by explicit rules and procedures.
- All participants have an opportunity to speak, with all contributions respected, and with speakers identifying their own and others’ values and judgements and balancing enquiry and advocacy.
- In order to facilitate the learning process, participants must engage on the basis of communication and open discussion. As far as is possible, proceedings need to be transparent and accessible.

6. Viable System Model (VSM)

This long-established method drawn from the cybernetics tradition (Stafford Beer, 1979) identifies the core organisational requirements for social systems to be viable, i.e. sustainable and capable of development. It may be particularly useful for decentralised management. It should enable organisations to reach optimum performance and adapt appropriately to context changes. VSM has three elements that interact: the operation system (that does the basic work), the meta-system (that holds the different units of the basic work together) and the environment (within which the system should remain viable).

Viability depends on the successful integration of five generic and interconnected systems present in every purposeful organisation (Espejo et al, 1996).

Figure 3: the Viable System Model



Source: Hummelbrunner, 2013

System 1 ('day-to-day management'): the operational units that actually produce what the system is supposed to do (e.g. teams carrying out a specific task), in response to their environment (e.g. clients)

System 2 ('coordination'): provides information, communication, and coordination processes for issues common to Systems 1 (e.g. monitoring systems, conflict resolution mechanisms, standards or rules for aligning the work of the operational units).

System 3 ('control'): ensures that the practice of Systems 1 and 2 complies with the 'policy' functions of Systems 3 and 4 (e.g. performance monitoring; audit) and assures adequate resources in return.

System 4 ('future development'): acts as an intelligence function that monitors the environment and helps to adapt and plan for the future.

System 5 ('policy'): establishes policy in light of competing demands between the present and future and between internal and external perspectives.

VSM describes the information requirements and necessary interrelationships between these five systems. As a diagnostic tool as well as a design tool, it has been used in management for designing the distribution of tasks within an organisation, identifying appropriate information flows and specifying performance measurement issues. It is applicable for both non-profit and profit-making organisations, and can also be used to reflect public governance structures.

7. Capacity WORKS (GIZ 2009)

GIZ has developed Capacity WORKS as a management model for sustainable development. This was intended as a response to changes in the aid architecture and stakeholder landscapes, for example delivery via programmes (instead of projects) and the need to steer them in supra-organisational cooperation systems: in short, to better handle the increasing complexity of development work. In order to assure the quality of development interventions, the model operates with five success factors. These are based on the European Foundation for Quality Management (EFQM) model, adapted to meet the specific demands for steering development interventions:

Success factor	What?	Why?
Strategy	Negotiate and agree on the strategic orientation.	A clear and plausible strategic orientation leads to positive results.
Cooperation	Network people and organisations to facilitate change.	A clear definition of who the intervention will be cooperating with and how, leads to positive results.
Steering structure	Negotiate the optimal structure.	An effective steering structure leads to positive results.
Processes	Manage processes for social innovation.	A clear understanding of the key strategic processes leads to positive results.
Learning and Innovation	Focus on learning capacity from the outset.	Individual and organisational learning capacities in all success factors lead to positive results.

The key points of reference for Capacity WORKS are the objectives and results jointly agreed with partners: it should help to identify, focus and work through the processes required to achieve negotiated, agreed and measurable results. The concept and action in each success factor are guided by key questions and the model includes an extensive management toolbox, with each of the 40 tools assigned to one of the five success factors and their key questions. Capacity WORKS serves as a methodological guide for contract and cooperation management during implementation, but is also suitable for the project appraisal and preparation phases, as well as the concluding phase.

8. Networked management and co-management

A network approach to management, which has improved cost-effectiveness, timeliness and productivity in some contexts, involves granting considerable individual autonomy and integrating various channels for participation in key decision-making processes (Heller et al., 1998). Research shows the importance of defining roles sharply but giving teams latitude on approach, or ‘role clarity and task ambiguity’ (Gratton and Erikson, 2007). There needs to be strong relationship management to strengthen social capital and institutional links between actors as the need for their coordination or collaboration emerge. Experiences with organisational participation shows that attempts to tackle problems in a decentralised manner must be supported by training in relationship skills, such as communication and conflict resolution (Harvard Business review, 2009).

Managers may find themselves working with a variety of institutions, engaging service providers and other organisations, and collaborating with a variety of actors who have the capacity, knowledge and legitimacy to address a particular problem (Kamarck, 2007). It is important, where possible, for relationships with these different players to be fair partnerships based on shared principles, values and aims rather than contractual arrangements (Roche, 1999).

Principles from networked management have been integrated into ‘co-management’, an approach for managing natural resources. This involves government agencies sharing powers and responsibilities with local organisations and groups (Carlsson and Berkes, 2005). It emerged organically in response to many natural resource management problems in which government officials have the authority to take decisions but lack the requisite local knowledge and also the capacity to ensure compliance with their decisions (Brondizio et al., 2009). Co-management allows the policy response to a complex problem to capitalise on the effectiveness of various organisations, proceeding through cooperation between those with authority and representative organisations.

Box 3: integrating approaches with existing tools and frameworks

The **Logframe approach** popular with many development programmes can be adapted to complex situations by using different formats or styles: either by making changes to the matrix (e.g. modifying the rows and columns) or by abandoning the matrix altogether, allowing for better visualization while retaining the basic elements (e.g. moving from a tabular structure to diagrams, like the increasingly popular Logic Models). Stakeholder perspectives can be captured by working with Logframes in a more participatory manner and by representing the different logics at play (e.g. through separate or nested Logframes). ‘Planning and strategy development in the face of complexity’ (Hummellbrunner and Jones, 2013) contains proposals for capturing the actor

dimension in Logframes and rendering them more responsive, so they can also be used in complicated or complex situations.

Project management tools can be expanded to show the multiple inter-relationships within projects and with their respective context (e.g. through the use of mapping techniques or Social Network Analysis). The dynamics in a project and its context can be captured through a process view that connects the various tasks and levels in a coherent manner. Process-oriented project management combining hard and soft factors (e.g. culture, mental models), allows us to identify supportive factors as well as obstacles and can be used to structure appropriate communication and information flows.

Conclusions

This paper set out to help practitioners become aware of when they are facing complex situations; point out which precautions to take; outline some principles to consider when undertaking the task of managing in the face of complexity; and show that a variety of approaches could be applied to managing complex situations or interventions in international development. Readers who are interested in exploring new methods and techniques, can draw on the sources of further information given at the end of the paper. We also recommend that experiences with applying tools, whether successful or not, should be shared more widely and be publicised.

However, improved management in the face of complexity relies on more than awareness and knowledge of tools. There are at least three other barriers and enablers to more appropriate management practices.

First, there **needs to be a shift in the mind-set of key decision-makers** (e.g. donors, programme directors) to cope with the uncertainties of more complex tasks or realities, particularly in dealing with shared responsibilities foreseen by new aid architectures such as those promoted by the Paris Declaration. Decision-makers should depart from ‘command and control’ management traditions and be more open to adaptive approaches that are responsive to contextual changes and lessons learned from implementation. They should accept the need to deal more appropriately with messy situations and wicked problems and should not expect – nor demand - clear-cut solutions or ‘guaranteed’ routes. Instead of attempting to avoid risk and clinging to rigid plans, they should engage in risk management, because a limited and well-calculated approach to risk-taking during implementation can prove more effective. Last but not least, they should acknowledge the limited insights for individual decision-making in a cooperation system, embracing collaborative management approaches and building on the self-organising capacities of partners.

Second, such a shift in mind-sets must be translated into **new procedures and more adaptive management tools**. At the top level, there needs to be increased attention on the management tasks involved in delivering aid, recognising that the need for sustained, expert input does not end with the disbursement of funding. In addition, there needs to be an increased use of the tools suggested above, as appropriate to circumstances. This does not necessarily mean a complete break with current practice: many of the approaches or techniques outlined above can be integrated into existing management systems to render them more flexible (see box 3, above). Agencies will need to accommodate greater variation across management and performance frameworks in order to allow tools to be chosen according to the challenges faced. For example, there should be different expectations of departments dealing with fluid or uncertain contexts (e.g. working in fragile states), or reconciling divergent goals and interests in change processes (e.g. promoting political settlements for good governance), to those dealing with more simple or static situations (e.g. working in a country with a stable government that has clearly articulated long-term priorities).

Finally, **prevailing incentives and agency systems need to alter**, particularly on resource allocation and accountability. As a rule of thumb, a more adaptive approach in management should be complemented by more flexibility. Decentralisation of decision-making should give those who are expected to manage for outcomes the autonomy to do so, including flexibility on activities, resources and outcomes. Current practice and rules with respect to **performance / results-based management** should be revised to counteract their often perverse effects in complicated or complex situations (e.g. through delegating decision-making on budgeting or modifying activities). And quality control should be understood in a sense that is broader and more compatible with the realities of cooperation systems, providing tools and incentives that allow effective management for results in collaborative development interventions. For example, they should ensure that there are incentives for technical staff to give sustained inputs to programmes throughout implementation.

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Additional useful resources

Additional useful resources on management approaches

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Wauters, B. (2013) 'Sourcebook on results based management in the EU Structural Funds', *Community of Practice on RBM in EU Structural Funds*, <http://www.coprbrm.eu/?q=node/630>

Useful websites

<http://www.giz.de/en> - contains material on GIZ's Capacity WORKS model and other management related tools.

http://www.esrad.org.uk/resources/vsmg_3/screen.php?page=home - a manual by Jon Walker for applying the Viable System Model in co-operatives and social economy enterprises.

<http://www.cognitive-edge.com/> - the website of the network of practitioners working with the Cynefin framework, which contains case studies, papers and other material.

<http://www.sfwork.com> - the website of the Centre for Solutions Focus at Work, with a range of publications on the Solution Focus approach and material for related tools

<http://adaptiveaction.org> - contains a detailed description of the approach, publications, a blog and additional resources.

<http://mande.co.uk> - this website managed by Rick Davies contains a list of useful documents in the Archive for the 'The Logical Framework' Category.



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