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Emerging meta-organisations and adaptation to global climate change: Evidence from implementing adaptation in Nepal, Pakistan and Ghana

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ABSTRACT

As developing countries move from policy to implementing adaptation to climate change, formal operational structures are emerging that exceed the expertise of any one actor. We refer to these arrangements as 'meta-organisations' that comprise many autonomous component organisations tackling adaptation. The meta-organisations set standards, define purposes, and specify appropriate means-ends criteria for delivering adaptation. Using empirical data from the three cases, Nepal, Pakistan and Ghana, the study identifies and analyses six attributes of the meta and component organisational structures. We argue that organisational structures are crucial to understanding adaptation, specifying policy and implementation. Our analysis demonstrates that while each country promotes similar objectives, the emerging structures are quite distinct, shaped by country-specific attributes and issues that lead to different outcomes. Nepal's priority for a formal process has come at the cost of delayed implementation. Pakistan's devolved approach lacks legitimacy to scale up the process nationally. Ghana's use of existing decentralised structures and budgets relegates adaptation below other development priorities. These divergent structures arise from the different needs for legitimacy and accountability, and the relative priority attached to adaptation against other needs.

1. Introduction

Significant progress has been made since the Rio Earth Summit of 1992 in expanding our understanding of the adverse effects of climate change and the links between human and ecological systems (Adger, 2006; Berkes and Folke, 1998; Folke, 2006; IPCC, 2013). As policy moves from theory and diagnosis to implementation in developing countries, solutions that have been negotiated globally are unlikely to work well unless they are owned locally (Adger et al., 2005; Ostrom, 2010). Developing countries now have the added responsibility of designing effective national and local adaptation strategies consonant with local institutions and environments as well as meeting their substantial development deficits (Adger et al., 2003; Conway and Mustelin, 2014; Meyer and Rowan, 1977; Soysal, 1994). This responsibility is important and urgent because direct funding from international agencies, such as the Green Climate Fund, place developing countries in the driving seat for identifying and implementing solutions.

The adaptation response of developing countries is emerging slowly through a variety of formal and informal initiatives. Many of the least developed countries (LDCs) have formulated a National Adaptation Programme of Action (NAPA) under the guidelines of United Nations Framework Convention on Climate Change (UNFCCC) to meet their most urgent and immediate needs (UNFCCC, 2015). Some countries are taking longer term approaches by prioritising adaptation within existing development programmes (FAO, 2013; Mitchell and Maxwell, 2010) or by developing National Adaptation Plans (NAPs) exemplified by Bangladesh and Kenya. Others focus on stand alone, donor-funded projects that target specific problems.

Despite variation across countries, a characteristic common to all the adaptation initiatives is the uncertainty and complexity of

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climate change, which exceeds the expertise and capability of any one organisation, discipline, or policy authority. Tackling this 'wicked' challenge (Rittel and Webber, 1973) requires active participation from many diverse and autonomous actors, such as policy makers, government, private sector, international/local non-governmental organisations (I/NGOs), donors, local communities and researchers. To manage these actors along with their complex relationships, and to seek legitimacy for climate action amongst competing priorities, authorities are inclined to establish formal goal-driven implementation structures (Ahrne and Brunsson, 2011; Meyer and Rowan, 1977). These structures have many of the features that characterise formal organisations, such as aims, rules, reporting systems, monitoring and evaluation procedures, to align all their activities. Yet they rely on autonomous actors (typically other organisations) to implement these initiatives while each has a different organisational scope, agenda, measures of success, language, and approach. This paper refers to this operational arrangement as a 'meta-organisation' comprised of autonomous components.

This usage of meta-organisation starts from the premise that states are complex organisations (Evans et al., 1985), to emphasise that the intentions of national governments and their agencies are realised with difficulty through early prototype policy initiatives such as versions of NAPAs and NAPs. Our use of the meta-organisation concept in this paper, adapted from previously published work, displaces national government from the conventional starting point used most commonly. The meta-organisations often work by setting standards, defining purposes, and specifying appropriate means-ends criteria for inter-organisational and community design (Ahrne and Brunsson, 2005, 2011; Gulati et al., 2012). They seek effectiveness by encouraging the component actors to adapt to their objectives, structure and relations, whilst also striving for legitimacy with international and national agencies (Meyer and Rowan, 1977).

Gulati et al. (2012) suggest that these meta-organisations may be more formally and tightly-coupled through hierarchies and incentives. We argue that the meta-organisation is a looser arrangement of diverse organisational actors, often convened by a national government authority but extending beyond that authority. The meta-organisation is also a source of complexity because its overarching objectives may conflict with the usual internal goals and criteria of each component actor (Donaldson, 2001) and so provide both opportunities and incentives for actors to resist, co-opt the initiatives, or implement in ways that serve other agenda and that have unintended consequences (Selznick, 1949). For example, government agencies faced with budgetary concerns often prioritise programmes that meet short-term goals at the expense of better long-term initiatives. Sharing information is also time consuming and costly for many private sector actors, which may cause conflict. Country and project managers often fail to recognise these operational arrangements as organisations let alone meta-organisations. This lack of recognition further increases the difficulties of managing adaptation initiatives across agencies. This framework has important implications for policy and implementation as the meta-organisations invariably extend their influence to actors and activities well beyond those identified in any formal design (Scott, 2013).

This wider influence of meta-organisations may produce unforeseen responses and effects that are important when viewed in the large. These emergent patterns of behaviour are complex. Emergent in this sense means that they cannot be predicted by simply studying the individual parts of the system (Cilliers and Spurrett, 1999). Furthermore these patterns can arise without intent or overview. Analysing adaptation initiatives, without attending to the role and influence of the component actors limits the view of the implementation challenges. In many respects designing effective implementation presents a classic collective action problem (Imperial, 1999; Olson, 1965) and is well suited to analysis under the organisational lens.

1.1. Research gap

We have some research-based knowledge about the intend and aspirations of national initiatives (Conway and Mustelin, 2014). Despite the importance of such initiatives, there is little research on how emerging organisational structures in climate adaptation evolve and function, which is why we have integrated theory with empirical evidence against the background of published work. This includes the way diverse actors interact within a common framework, innovate, manage interdependency and information flow that produce capacity, develop aims and objectives, and recognise pivotal points (Pfeffer and Salancik, 2003; Scott, 2013). Contemporary literature characterises arrangements of actors much as we define meta-organisation; for example, loosely-coupled systems, networks, regimes, communities, ecosystem, co-management, clusters, ecologies and constellations (Agrawal, 2010; Berkes, 2009; Campbell, 1998; Folke et al., 2005; Haas, 1989; Moore, 1996; O'Riordan and Jordan, 1999; Ostrom, 2005; Scott and Carrington, 2011; Slater and Narver, 1995). Empirical research on these actor arrangements, however, is still preliminary, with scant systematic study from which to extract practical lessons (Gulati et al., 2012). At best the lessons learned, recommendations and advice offered from current adaptation practice and the development of national programmes are rudimentary (Conway and Mustelin, 2014; UNFCCC, 2014). Even where initiatives have been formally designed, their effectiveness is unknown because they are new (Huntjens et al., 2012) and need prolonged follow-up to allow considered responses (Pierson, 2004).

The meta-organisation represents a stronger structure than informal networks that have no hierarchy or organisational element (Ahrne and Brunsson, 2011) but not so strongly unified as to become a formal institution. They are the 'solutions' to new commitments and strategies for climate change interventions and hence are novel. Our attention on assemblies of active actors as an organisation or partial organisation (Ahrne and Brunsson, 2011) allows us to make use of the structural features of meta-organisations in a systematic way using established analytical methods. The research focus on these meta-organisations is also relevant and timely because their designs and impacts on implementation are still at an early stage. The structures tend to be ad hoc and contingent on complex contextual conditions, hence provide little data on their effectiveness.

In addition to the paucity of research, there is little consensus on what adaptation can or should mean, which highlights the complexity involved (Smit and Pilifosova, 2003; Smithers and Smit, 1997). This ambiguity about basic definitions, indicators, and 'what will count' as effective is common in complex policy fields (Haas, 1989; Young, 2002). However, as this process matures through repetition and iteration, a recognised field for adaptation is likely to emerge (Fligstein and Mcadam, 2012), leading to strong norms and conventions, to guide implementation strategies and outcomes (Dimaggio and Powell, 1983; Giddens, 1979). The meta-organisations are the site and focus for these developments. These early solutions and settlements have implications for a tipping point, when global norms and conventions for climate change adaptation are likely to consolidate and become widely adopted (Suárez and Utterback, 1995) without necessarily offering improved performance (Meyer and Rowan, 1977) or the best fit with the local institutions (Ostrom, 2005). However, once established the momentum of such policy conventions often persists, the modern equivalent of Weber's (1978) 'iron cage': Structures of

authority and accountability that remain after their intent, meaning, and purpose has shifted (Dimaggio and Powell, 1983).

1.2. Research approach

This study seeks to understand better the form and activities of these emerging meta-organisations by drawing on existing literature from organisation, strategy, and social network theories, confronted by empirical evidence from our research sites in Nepal, Pakistan and Ghana. Adapting to climate change is a recognised goal in these three countries, each of which is experiencing increasingly variable rains, flooding and droughts, with threats to the livelihoods and food security of their local populations (Aslam et al., 2011; Mcsweeney et al., 2010). Our analysis focuses on the planning and early implementation stage rather than the long-term outcomes; the observation period allowed for this initial study could not include long-term follow-up and so we emphasise the early stages.

We argue that organisational structures have recognisable impacts on how adaptation is understood, decides policy, and implementation at many levels. The assembly of organisations that comprise 'meta-organisations' each become small moments of structuring action that accumulate and affect the outcomes of any initiative. The three country cases illustrate that the emergent structures of meta-organisations vary, shaped by individual country governance, even when the underlying policy/programme environments are remarkably similar and that, in turn, lead to a variety of structures, alignment, and impact (Campbell, 1998; Pierson, 2004). Efforts to replicate successful adaptation initiatives, without analysing these structural dimensions within the local context, may be futile and costly for policy makers and disastrous for communities. In this way, we offer valuable insights on the challenges in organisational designs and implementation pathways for policy makers and project managers embarking on developing local initiatives

2. Organising adaptation initiatives

2.1. Organisations and institutions

In this paper, we distinguish between institutions and organisations as these terms are often used interchangeably, which can lead to confusion (Scott, 2013). Institutions, we define as the underlying rules or constraints that shape human interactions, hold society together and provide a sense of purpose (North, 1990; O'riordan and Jordan, 1999), whereas organisations are defined as social entities that have a collective goal and a deliberate structure to enable them to achieve objectives (Daft et al., 2010; Jones, 2004). Simply put, institutions comprise the rules of the game and ordering principles, while organisations are the players and locus of actions (North, 1990) that implement these actions within the rules. Our focus is on the organisational perspective of implementing adaptation.

To achieve their goals and objectives, organisations create intentional structures to bring many resources together, promote specialisation with clear divisions of labour, propose structures of authority and governance, strive for economies of scale, manage their external environment, economise on costs and exert power and control (Bolman and Deal, 2013; Daft et al., 2010; Jones, 2004). Although there is no ideal 'one size fits all' system in the dynamic landscape of adapting to climate change "if structure is overlooked, an organisation often misdirects energy and resources" (Bolman and Deal, 2013, p66). Ultimately the organisational structure enables and empowers the generation of solutions to problems by providing processes and cues that are legitimate (Campbell, 1998). However once established, these organisational structures often evolve beyond the planned design of a stand-alone means of coping with adaptation (Selznick, 1949). Hence, acknowledging organisational structures is imperative for effective implementation.

2.2. Three approaches in organisational analysis

The study of organisations is well established in theory and empirical study (Bolman and Deal, 2013; Scott, 2013). This rich approach creates three standard options for analysis depending on the scope and interest of the researcher: (a) analyses that start from a focal organisation: (b) from inter-organisational relationships: (c) from social networks. The first treats the stand-alone organisation as the unit of analysis. This highlights the intended goals, core technology, and strategies and structures of an organisation and how these effect performance and impact (Blau and Schoenherr, 1971; Daft et al., 2010; Dawson, 1996; Jones, 2004; Lawrence and Lorsch, 1967; Mintzberg, 1979).

The second approach moves beyond the single organisation to consider its direct relations with other organisations, described as inter-organisational relations (IOR). IOR is concerned with patterns and sources of interdependencies among organisation jointly implicated in common outcomes. This includes empirical attention to the properties, character, origins, rationale and consequences of relations among organisations that pursue a common interest, while also retaining separate interests (Cropper et al., 2008; Johnsen et al., 2008; Oliver, 1990). However, IOR as a research tradition is primarily concerned with the direct resource and authority relationships of an organisation (Johnsen et al., 2008).

The third approach starts from the structure of the network linkages that embed and configure the activities of organisations (Dacin et al., 1999), rather than examining a single organisation or even an organisation set. This approach explores kinds of direct and indirect linkages and the broader structuring of connections. The emphasis is on documenting and understanding the interconnectedness of the network actors and actions, focusing away from any single organisation to how network dynamics condition future action options of the other organisations (Ritter and Gemünden, 2003; Scott and Carrington, 2011; Wasserman, 1994).

We developed our analysis of adaptation initiatives using elements from all three approaches. Any one of the approaches provides partial insights. Meta-organisation as we are defining the concept directs attention to the organisational features of adaptation structures. For instance, focal organisation approaches directly attend to the internal structure of the organisation and the role of formal authority in holding the organisation together. Similarly, use of IOR and network perspectives allow us to evaluate linkages among the component actors and the use of informal authority to encourage action.

Firstly, we treat the designed initiative (whether a project, programme or a strategy) as the instrument for setting the scope of the activities and the boundary for including organisations in the adaptation agenda. Second, we are interested in the role and impact the actors have on how designed initiative develops and operates; such as how the architects, managers or funders and the diverse resource, political, and institutional relationships of these actors are encouraged by the initiative. Finally, because implementation has specific form, pacing, and impact within this inter-organisational space (Selznick, 1949), comparison across the three country cases is instructive.

2.3. Meta-organisations in early adaptation

We propose to view this complex interplay between assemblies of organisational actors linked through focal adaptation initiatives as a 'meta-organisation'. The meta-organisation is comprised

prominently of other organised actors. The authority and intent of any one actor is conditioned by the links among members of the meta-organisation. This is the core claim of work on meta-organisations and shifts from a focus on single autonomous organisations and their participants, to constellations of organisational actors (Ahrne and Brunsson, 2005; March and Simon, 1958). The concept of meta-organisation is gaining traction with several examples in manufacturing and services (Ahrne and Brunsson, 2005; Gulati et al., 2012). The meta-organisation makes more precise the classic Scott and Meyer (2012) concept of a 'societal sector' that includes all actors and actions within a particular field, such as adaptation. In contrast to formally self-organised systems, meta-organisations emerge when focal actors, referred to as 'architects', attempt to influence external actors despite absence of formal authority (Gulati et al., 2012). We incorporate this insight on meta-organisation in the case of climate adaptation initiatives where meta-organisations comprise members, hereafter called 'component organisations,' such as government entities, I/NGOs, private sector and community groups, which are considered key in facilitating implementation.

The position and role of the Gulati et al.'s (2012) 'architect' in our framed meta-organisation is dynamic rather than static. Architects may have many aims while the assemblage of organisations moves to implement using their various capabilities. The nature of adaption is uncertain and distributed therefore the goals of the adaptation initiative are likely to evolve and be influenced by the various interests of component organisations within the meta-organisation. For example, funding organisations may influence the sectors eligible for investments, such as urban versus agriculture adaptation. Accordingly actors that are on the periphery may become more influential and take on the role of the architect. Furthermore, while there is no formal authority or contract binding the component organisations within the meta-organisation, authority can be rooted through expertise, reputations, or control over resources (Gulati et al., 2012). In a hierarchical structure, government actors as architects, may be perceived to have greater control over component agencies through legislative authority, but the practice is that many such government agencies operate with relative autonomy, often with competing agendas (Evans et al., 1985).

We observed this in our studies where external funders would often choose to work with government ministries with aligned interests rather than those with a formal mandate. In this way the meta-organisation may incorporate some self-organisation, but within the boundaries drawn by the architects. Different actors may then assume the role of the architect and so the boundaries may change. Fig. 1 offers an illustration of a meta-organisation as an assembly of component organisations. The focal adaptation initiative, designed by the architects, encourages interaction between the component organisations through rules, policies and procedures to deliver the desired objectives. The members and their relationships therefore have an important affect on how the meta-organisation functions and its potential outcomes even at this early stage.

There is no ideal or necessary structure of the meta-organisation. In design terms, it may take on different structures depending on the purpose of action, but must include some procedure for linking the component organisations. For Gulati et al. (2012), self-selection, competition or incentives generally drive the participation of component organisations in the meta-organisation and offers a natural boundary for analysis. Often this entails some form of resource or knowledge dependency (Aldrich, 2008; Pfeffer and Salancik, 2003) between the component organisations and the meta-organisation. The participation by component organisations in our case studies is driven more by their expertise and capabilities in supporting the system level goals of planning and

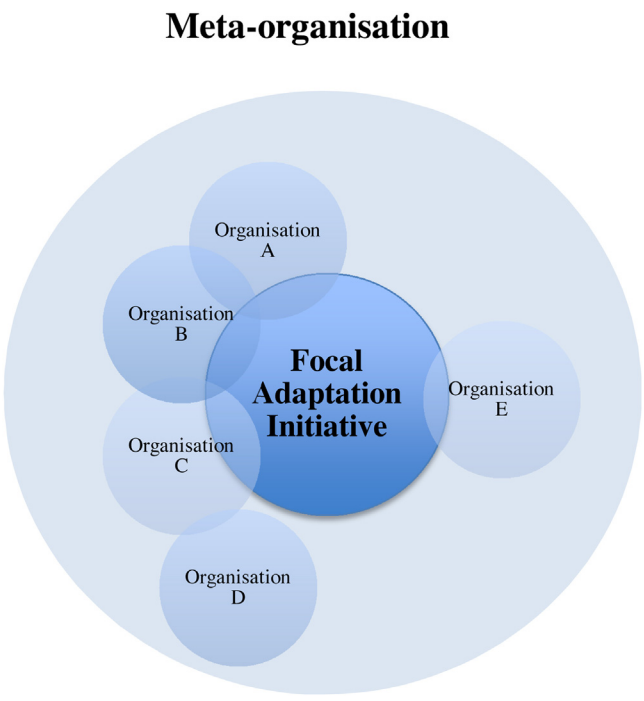

Fig. 1. The meta-organisation and its component organisations. Some component organisations interact directly with others outside the domain of the focal adaptation initiative (organisation D) while others have indirect relationships through sharing system level goals of the focal adaptation initiative (organisation E).

implementing adaptation. In this design, Gulati et al. (2012) proposes meta-organisations structures based on two dimensions of uncertainty: The boundaries of membership and internal stratification. For example open boundaries for membership and low stratification lead to open community meta-organisations. While closed boundaries and high stratification offers greater control to the architect and lead to extended organisations based on the architect's organisation. In dynamic, complex situations open system and heterarchical governance might be more appropriate, while in more predictable and structured environments a closed membership and more hierarchical form might be better.

Termeer et al. (2010) suggest establishing a diversity of institutional forms to deal with cross level issues such as policy networks, polycentric systems and institutional interplay, forming cross-level institutions. While these are expected to be more effective than top-down or bottom-up approaches, they need to deal with the complex behaviour of social-ecological systems that arise from uncertainties caused by unpredictable behaviour among component organisations. Challenges also arise in getting the relevant component organisations to participate, cooperate and coordinate in pursuit of common goals, especially against the backdrop of changes in central and local governments. Further epistemic uncertainties about the impact of climate change and trajectories, common in developing country adaptation plans, create ambiguity about the goals of policy and allow component organisations to diverge and pursue their own ends. Coordinating and aligning divergent organisations is a challenge for the architects of meta-organisations per Gulati et al. (2012).

We make use of inductive cases and a more 'natural history' approach, not to prescribe the work of a purposeful architect but to observe and report on the diversity of meta-organisation dynamics. In our cases for example, several agencies considered essential for encouraging adaptation, such as Nepal's agriculture ministry,

have a narrower focus that takes limited account of climate change and therefore do not seek an active role in adaptation. This tension between the formal structure and the actions of component organisations often leads to problems of capacity, duplication or complete inaction. The operational structure of emerging meta-organisations and component organisations are also shaped by numerous organisational attributes (discussed further in Section 3: Methodology) such as the prevailing laws, supporting institutions, the nature of vulnerability and operational processes, which add to the complexity (Donaldson, 2001; Woodward, 1980). This in turn influences the selection of participating component organisations, their roles, interactions and outcomes. This ultimately feeds back into the overarching meta-organisation to create a learning loop. The most effective organisational structural designs are considered to be those that display these attributes (Donaldson, 2001; Van de ven and Drazin, 1984). For example core organisational processes aid in managing complexity as "clear and well-understood roles and relationships and adequate coordination are essential to performance" (Bolman and Deal, 2013, p44).

This is one of the challenges of a 'design' approach to organisation: A structural fit in the meta-organisation may not translate into a fit among component organisations, the activities of which are also shaped by other structural factors and actors. This can cause misalignment that adversely affects outcomes. It is difficult to pinpoint exactly which organisational attribute is the most important in determining the structure or how the fit between attributes and structure may be the result of some explicit choices or other constraints (Dawson, 1996; Drazin and Van de ven, 1985; Schoonhoven, 1981). Detailed descriptive analysis of these early operational meta-organisations makes visible the ideas and assumptions behind their design and evolution.

3. Methodology

Our objective is to analyse the emerging meta-organisational structures of Nepal, Pakistan and Ghana adaptation initiatives through a common analytical lens. We do not seek a universal approach to emerge from this study. By using a common approach in Fig. 2, we can evaluate variations and establish general insights with wide applicability (Eisenhardt, 1989; Ostrom, 2005; Yin, 2009). Further, the adaptation initiatives in the three countries are at different stages, therefore a narrow comparison is not appropriate. Instead, we identify and examine the key organisational attributes that affect the meta-organisational structures of each country and their effects on the component organisations and planned outcomes. A descriptive and qualitative approach is used to introduce the focal initiatives in each country (Section 4) and to analyse the meta-organisation.

We collected empirical data on the meta-organisation and component organisations over several months of field research from 2012 to 2014 in Nepal and Ghana, through workshops, surveys and detailed semi-structured interviews. We conducted over 100 interviews in Nepal and 90 interviews in Ghana of key national, sub-national and local actors engaged in the adaptation process. For Pakistan, secondary data was secured through the project managers of the focal adaptation initiative on the project development process, stakeholder interactions, and documentation. (Refer to Supplementary data for interview details and structure).

The data obtained were transcribed and coded to identify the key attributes of the adaptation initiative in each country (Table 1). These data were supplemented with original work on network and content analysis of the adaptation framework and policy documents from each initiative (Chaudhury et al., 2016; Sova and Chaudhury, 2013; Sova et al., 2014). This list represents the first compiled set of attributes and features; further attributes may come from other countries.

The adaptation initiatives in each country are less than 5 years old and provide the start point for analysis. This is the basis of our focus on 'early moments' and accordingly we do not assess the effect of age and size on the meta-organisational structures or their long-term forms and impacts. Organisation literature typically shows that complexity and formality usually increase with size and age and lead to more rational and hierarchal legal structures (Blau and Schoenherr, 1971; Child, 1972; Gooding and Wagner, 1985; Greiner, 1997). How these findings inform meta-organisation is a further useful research question.

Fig. 2 illustrates a framework for analysing the implementation process of the adaptation initiatives. The meta-organisation, reflecting the focal adaptation initiative, and component organisations interact to implement the planned objectives. We focus on the impact of organisational attributes on the meta- and component organisation structures and their interactions in producing the desired objectives. Participant component organisations take on specific or indirect roles within the meta-organisational structure, such as managing, coordinating, implementing, supporting and funding the adaptation initiative.

4. Overview of case country and focal adaptation initiative

The three case countries of Nepal, Pakistan and Ghana were selected for analysis because they offer cultural and institutional

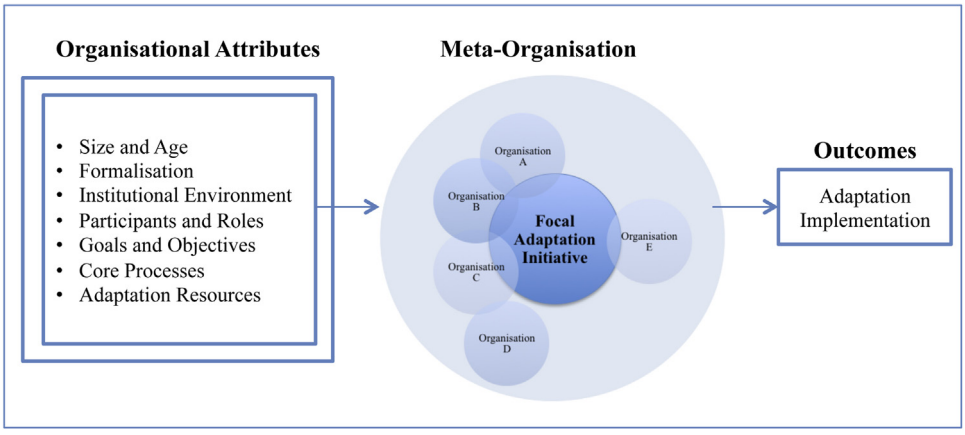

Fig. 2. Meta-organisation structure analysis framework.

Table 1
Common organisational attributes of the adaptation initiatives identified through case research.

Meta-Organisational Attributes	Impact Analysis of Organisational Attributes on Meta-Organisational Structure
Size and age of initiative	Early stage initiatives, less than 5 years—Impact not observable
Formalisation of initiative	Legal form of the initiative. Is it government or private backed
Institutional environment	Number of policies, initiatives and actors in adaptation field in country
Participant actors and their roles	Number of actors active in the initiative with roles
Goals and objectives of initiative	How adaptation is defined and perceived by actors across scales
Operational core processes	Formal processes designed for planning and implementing adaptation actions
Funding source and availability	Commitment of secure funding for the initiative and funding sources

similarities (in case of Pakistan and Nepal) yet with contrasting political, economic and geographic problems when planning for and implementing adaptation. The Gain Index (http://index.gain.org/ranking/vulnerability) ranks all three countries as highly vulnerable to climate change, especially with regard to agriculture. All have adopted some form of local adaptation planning and implementation strategies. Table 2 describes the focal adaptation initiatives in the three countries, along with specifics about relevant institutional elements suggested by our discussion about emerging meta-organisations. This section reports on original research by the lead author, based on extensive fieldwork, interviews, and observation from 2012 to 2014.

4.1. Nepal

In 2011 the Government of Nepal (GON) launched the Local Adaptation Plan for Action (LAPA) framework to activate the UNFCCC guided NAPA (GON, 2010). The LAPA, with support from international donors, United Nations Development Programme (UNDP) and I/NGOs, aims to integrate "climate adaptation activities into local and national development planning processes and to create a situation for climate-resilient development" (GON, 2011, p6). The LAPA framework focused initially on the 14 most vulnerable districts and deemed village and municipalities, the lowest official administrative unit, as the most appropriate units for planning and implementation. Fig. 3 illustrates the meta-organisational structure of the LAPA. The Ministry of Science, Technology and Environment (MoSTE) manages the LAPA process through the Nepal Climate Change Support Programme (NCCSP), with coordination responsibility lying with the Ministry of Federal Affairs and Local Development (MoFALD). Delivery of the LAPAs is vested in the autonomous local government units of District Development Committees (DDCs) and implementation with Village Development Committees (VDCs) with support from local agencies and private service providers. The government agencies of the National Planning Commission and Ministry of Finance provide policy and budget guidelines to DDC and VDC for prioritising adaptation in local development planning.

Nepal has been embroiled in persistent political conflict, with violence, frequent changes of leadership and delays in finalising the constitution. Proliferation of climate change policies and institutions, since 2010, has allowed multilateral donors and I/NGOs to fill the official void. In the LAPA framework, this has led to tension between the government and various I/NGOs, over their

Table 2
Overview of focal adaptation initiative and the institutional elements in the three case countries of Nepal, Pakistan and Ghana.

Features	Nepal	Pakistan	Ghana
Country status	Least Developed	Lower Middle Income	Lower Middle Income
Focal adaptation planning initiative	Local Adaptation Plan for Action (LAPA). Implementation of 100 LAPAs in 14 districts, covering 69 VDCs and 1 municipality in the least developed regions of Nepal	Local Adaptation Plan for Action (LAPA). Implementation of 13 LAPAs in the southern districts of Pakistan affected by flooding and drought	National Climate Change Adaptation Strategy (NCCAS). Implementation of NCCAS country-wide
Structure of adaptation planning initiative	Government-ratified national framework on LAPA, 2011, with focus on prioritising LAPA in official local and national development plans	Standalone donor-funded LAPA project, 2012 to develop proof of concept solution for inclusive and low cost adaptation and climate resilient interventions	Government programme, 2012, with focus on prioritising adaptation in country's existing national development structures
Funding commitment and source	USD 21.5 million—donor funded	USD 0.72 million—donor funded	Existing budgetary sources–No specified funding threshold
Duration	Perpetual (contingent on continuity of funding)	3.5-year project	10 years from 2010-2020
Framework architects	Developed by international and national organisations under Climate Adaptation Design and Piloting Project	Developed by Leadership for Environment and Development (LEAD) Pakistan—Local non-profit organisation	Developed by United Nations Environment Programme and United Nations Development Programme via Climate Change and Development—Adapting by Reducing Vulnerability Programme
Local adaptation planning framework	Seven-step process—sensitisation, vulnerability assessment, prioritisation of adaptation options, LAPA formulation, integration of adaptation plan in planning process, implementation and progress assessment	Six-step process—vulnerability assessment, capacity building, research, scientific verification, LAPA formulation (prioritisation of adaptation options), LAPA implementation and annual assessment	No specific framework but decentralised planning and implementation approach at district and community levels. Multi-sector adaptation strategy approach. Key elements include-sensitisation, capacity building, monitoring and evaluation
Rules linkage (Policy and governing rules)	The LAPA Framework, 2011 guided by National Climate Change Policy, 2011 and NAPA Framework, 2010. The LAPAs are integrated in local and national plans under Local Self Governance Act, 1999 and guided by principles of bottom-up, inclusive, responsive and flexible planning	Standalone project with informal policy linkage, but guided by priorities under First National Climate Change Policy, 2012 and reporting rules of bilateral funder, though not explicitly mentioned	Broad links to Ghana's commitments to UNFCCC, Hyogo Framework for Action and National Change Climate Policy, 2014

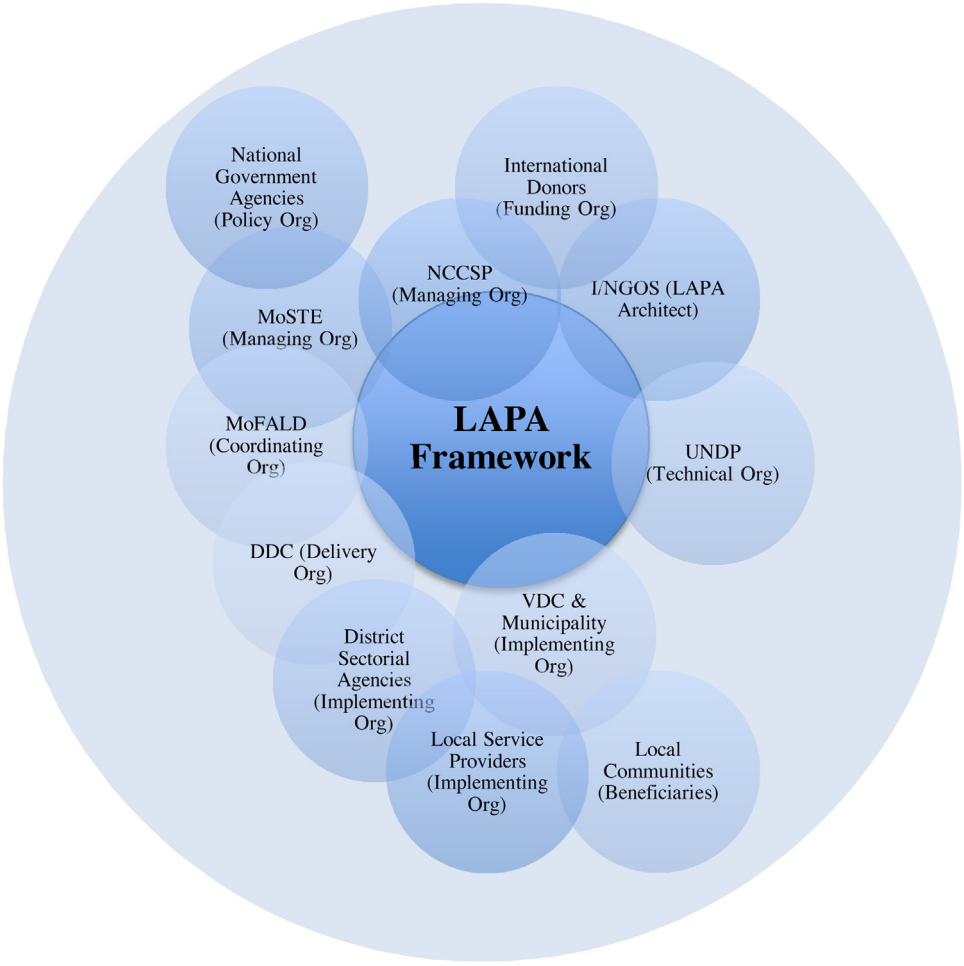

Fig. 3. NEPAL—Meta-organisation structure of LAPA and the component organisations involved in adaptation. The figure shows significant component organisations and their relationships. The component organisations also have independent relationships outside the scope of the LAPA.
Source: Nepal LAPA Framework (GON, 2011) and authors analysis 2015.

role in LAPA implementation. MOSTE, the central level coordinating body, has no bureaucratic or political representation beyond the capital city. Consequently, it relies on support of DDCs and VDCs, under the purview of MoFALD to deliver LAPA's financial and human resources. Yet the roles of such local bodies have never been clear in Nepal's constitution, which leads to power voids in local administration (Rai and Paudel, 2011). A critical assumption for the delivery of LAPAs is that sufficient capacity exists within, DDC and VDC offices, but spread thinly from lack of local elections (abolished in 2002) and interference from local politicians in selecting development projects, VDC staff are unable to deliver LAPA effectively.

4.2. Pakistan

Pakistan, a lower middle-income country, has yet to initiate a NAP encouraged under the UNFCCC guidelines for its medium to long-term adaptation responses. After the massive floods in 2010 and 2011, a multi-year private sector led LAPA project was initiated by LEAD Pakistan, a non-profit organisation with international donor support to fill the void left by government inaction. The LAPA project aims to create conducive policy, legislative and financial framework for communities that potentially can be scaled up to a national programme. The LAPA project operates through union councils, the lowest official administrative unit, in 13 vulnerable districts in the south that are most prone to floods, cyclones and drought. Fig. 4 illustrates the meta-organisational structure of the LAPA project. The LAPA is decentralised by engaging local Civil Society Organisations (CSO) as development and implementation partners, in collaboration with selective community beneficiaries and local government agencies. The CSO's presence in the LAPA districts and close proximity to communities helps capture local realities and cultural intricacies. LEAD manages the project and provides training and support to CSOs through a dedicated project management unit and guidance from project advisors focused on issues about policy, collaboration and performance. The national and local government agencies do not have formal ownership in the LAPA project but are engaged as consultative stakeholders to encourage collaboration and future uptake of LAPAs in official development structure.

Climate change ranks low on Pakistan's list of priorities in sustainable development because immediate returns appear low. Political tension from sectarian and religious conflict has led to divisions within the leadership that hinder progress and development. The passing of the 18th amendment (Article 140A) to the Constitution by the Government of Pakistan (GOP) in 2010 led 'environmental pollution and ecology' to become the legislative domain of the provincial assemblies. As a result the Ministry of Environment was cut to a division in 2013 (only to be reinstated as a Ministry of Climate Change in 2015) with a meagre funding

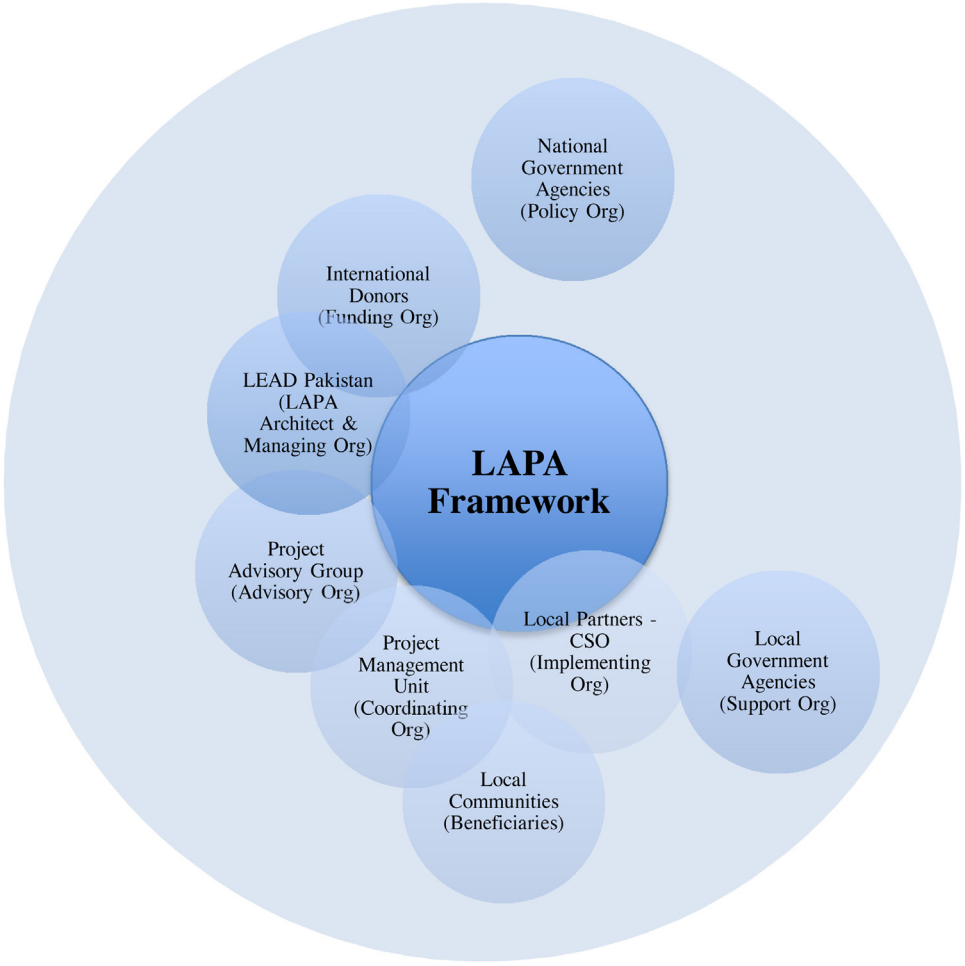

Fig. 4. Pakistan—Meta-organisation structure of LAPA and the component organisations involved in adaptation. The component organisations also have independent relationships outside the scope of the LAPA.
Source: Pakistan LAPA Framework 2012 and authors analysis 2015.

commitment of only USD 250,000 in 2014 (Shahid, 2014), which demonstrates the GOP's failure to recognise climate change as a serious threat. Disasters, particularly floods, that ravaged the country in 2010 and 2011, spurred the GOP to develop the National Climate Change Policy. Whilst this was a landmark event, the policy has yet to yield results, although plans are being formulated. Therefore the role of I/NGOs and donors in shaping climate change policy is important while government officials lack capacity and resources.

4.3. Ghana

Ghana, another lower middle-income country, has also yet to initiate the NAP process. In 2012, Ghana released the National Climate Change Adaptation Strategy (NCCAS) that outlines a multi-sector adaptation strategy, divided in ten principal working programmes. The basic goal of the NCCAS is to increase the country's resilience to current and future effects of climate change by enhancing infrastructure and knowledge systems, and to reduce vulnerability in key areas, ecosystems, districts and regions. Fig. 5 illustrates the meta-organisational structure of the NCCAS. The Ministry of Environment, Science, Technology and Innovation (MESTI) and the National Climate Change Committee (NCCC) jointly manage the NCCAS centrally, with the latter charged with day-to-day operation. However the NCCC has not met since 2012, creating a vacuum in coordination and implementation. The autonomous Metropolitan, Municipal and District Assemblies (MMDAs), the lowest official administrative unit, assisted by decentralised agencies, assume local responsibility for NCCAS development and implementation, based on priorities that emerge from the sub-district authorities. The Ministry of Local Government and Rural Development (MLGRD) supports the decentralised administration with coordination from the Regional Coordinating Council (RCC). The national government agencies of planning and finance provide detailed planning and budget guidelines to the relevant national Ministries, Departments, Agencies (MDAs) and MMDAs to prioritise adaptation into Ghana's national development structures.

Ghana has enjoyed over two decades of stable democracy with free, open elections. It has focused on decentralisation since early 1988, formalised in Article 240 (1) of the Fourth Republican Constitution, 1992. Of all prevailing factors, this decentralisation offers the greatest challenge and opportunity for its climate change adaptation initiative. Given the diversity of Ghana's environment and weather, local planning offers the specific responses required to protect rural livelihoods successfully in the face of climate change. This, however, depends on the effectiveness of decentralisation, and particularly fiscal decentralisation. Ghana's new budget has, in theory, fortified the MMDA's central planning and coordination by transferring funds directly through the MMDAs

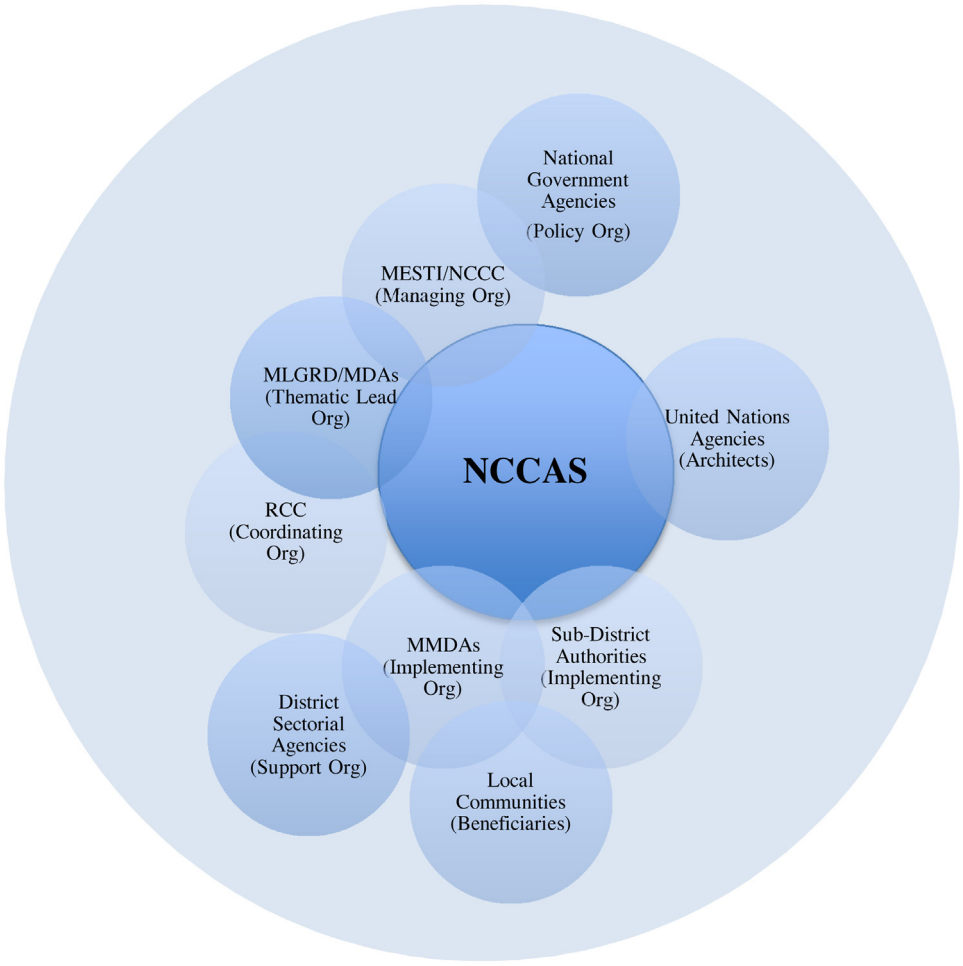

Fig. 5. Ghana—Meta-organisation structure of NCCAS and the component organisations involved in adaptation. The component organisations also have independent relationships outside the scope of the NCCAS.
Source: Ghana NCCAS (2012) and authors analysis 2015.

for distribution to agencies under their purview. Yet significant delays in the release of central funds to the MMDAs and the limited capacity of MMDAs to generate local funds (because of low income and development baselines) have reduced confidence in the whole system.

Table 2 describes the institutional variation in adaptation planning and implementation strategies across the three countries. We notice three things in a review of these comparisons: (1) Focus on local adaptation action, (2) Framework/strategies developed by non-governmental actors as architects, and (3) Decentralised implementation approaches. These and other aspects are discussed in more detail in Section 5.

5. Analysis and discussion

We report the empirical findings, organised in the six sets of attributes developed in Table 1 and Fig. 2, supported by the meta-organisational profile of the three cases in Section 4.

5.1. Organisational attribute I- formalisation of adaptation initiative

Formalisation refers to the legal structure or intent of the initiatives. How an initiative is formalised determines the types of component organisations attached to meta-organisation and the spectrum of the possible actions and outcomes.

All three countries have designed particular adaptation initiatives, with varied degrees of formalisation. The Nepal LAPA is a government led initiative under the formal LAPA framework 2011; the Pakistan LAPA has been organised as a stand-alone private project with engagement of local government agencies; while Ghana NCCAS is a more loosely organised overarching government initiative. Both Nepal and Ghana promote the use of existing official decentralised structures for local implementation.

Government organisations are generally more bureaucratic and hierarchal because they strive for order and control (Pugh, 1973). The government led meta-organisations in both Nepal and Ghana are indeed formal hierarchies that link the numerous government component organisations horizontally and vertically, from national to local levels, wherever relevant, such as the national ministries (e.g., environment, local development, agriculture, planning), local departments and agencies. Each participant component organisation operates with its own formal bureaucracy, mandate, reporting and accountability framework, which adds complexity. This, according to Young (2002), is the horizontal and vertical interplay that aims to reduce complexity by forging structural coordination linking independent units.

Embedding adaptation initiatives in the existing hierarchy, while avoiding the creation of parallel bureaucracies, means inheriting many deep-rooted structural, political and operational challenges. This may improve legitimacy in Nepal and Ghana by conforming to existing arrangements, but increases costs and complexity in managing the network of the component organisations. The challenges of integration and poor capacity at local levels means that adding climate change initiatives imposes an additional burden on local plans and budgets, which in turn means adaptation has a low priority. A survey in Nepal of representatives of I/NGOs, development agencies and government ministries, by one of the authors (Baral, 2013), on the key challenges in LAPA implementation (n = 33) identified serious gaps in the information captured by LAPA and its mismatch with the designed organisational structure. These include poor local knowledge about climate change, risks of implementation, political patronage, corruption and irregularities in the system.

The Pakistan LAPA's set-up, as a stand-alone project with fewer participants, results in a much flatter structure with few reporting lines. This 'simple configuration' (Mintzberg, 1979) is currently less complex than the Nepal and Ghana initiatives, because it delegates control and supervision to the project manager with relatively independent implementation control to the local partners. However, as the Pakistan LAPA project matures and scales up nationally, it will need to add horizontal and vertical layers to connect with other relevant official and local organisations. This is likely to increase operational and structural complexity and therefore, may no longer be suitable for these new national-level challenges.

5.2. Organisational attribute II- institutional environment

The Institutional environment comprises all institutions, laws, policies and forces that operate outside of the organisation structure but potentially impact the meta-organisation's performance and actions (Daft et al., 2010; Powell and Dimaggio, 1991). In a complex and broad field such as climate change adaptation, knowledge and action often reside outside individual organisational boundaries (Powell et al., 1996; Young, 2002). Hence, understanding the impact of the wider institutional environment is directly relevant for effective implementation.

Both Nepal and Ghana have a dynamic and evolving climate change environment involving many institutions, actors, projects and policies. Nepal and Ghana are signatories to many multilateral conventions, protocols and agreements and both have seen a host of environmental and climate change policies and programmes. As a result, adaption has gained significant attention, notably through its inclusion in the national and local development plans. In addition to government departments in both countries, there are official research units, I/NGOs, private sector, multi-stakeholder platforms, all active in climate change. These actors and initiatives interact and influence the meta-organisational structures, bringing in their own expertise. One NGO head in Nepal involved in the LAPA development described the environment as consisting of parallel and competing mechanisms from central government, local priorities and external development organisations, each pushing the LAPA structure to align with their own objectives and structures.

This complexity in the meta-organisation of managing and balancing all these competing interests has resulted in a push towards embedding adaptation in existing bureaucracies in Nepal and Ghana. While the formal structure provides legitimacy to both Nepal LAPA and NCCAS, more time is devoted to maintaining the ritual conformity within the institutions (Lawrence and Lorsch, 1967; Meyer and Rowan, 1977) than to action. This formality in structure also restricts entry of non-government actors and, as Gulati et al. (2012) describe, leads to a closed organisation structure with hierarchical decision making. However, to operate in a dynamic and complex environment, organisations need to be flexible (Robbins and Judge, 2010). This mismatch between the formal meta-organisation and the more organic approach of including and managing the many needs of all actors causes tension and delays in implementation. Thus, the closed meta-organisation may become increasingly unfit as implementation progresses. In Nepal, project managers initiated a further planning cycle of 30 LAPAs instead of moving towards implementation upon completing the start-up phase of 70 LAPAs. Although more recently some projects identified under the LAPAs have moved to implementation using local service providers and budgetary support of the government. This skewed focus on planning nonetheless risks impeding the LAPA momentum. Analysis of climate organisations in Nepal (n = 24) by the authors revealed that approximately 70% of stated objectives relate solely to policy, advocacy and planning.

Pakistan has few climate change actors, activities or policies and a weak climate change ministry, lacking status, power and resources, normally enjoyed by other national ministries (Shahid, 2014), which places adaptation programmes way behind other national priorities such as health and education. With little incentive to link up with any government department, the meta-organisation takes on a fragmented, donor-driven, project approach focused on particular people and places. The risk of expertise remaining restricted to few component organisations within the meta-organisation is high. While this allows the LAPA meta-organisation to become more proactive, it suffers from low legitimacy within government and will face integration challenges when scaled up.

One approach to offer a better fit with the institutional environment is to expand the boundary of membership to include non-government actors at strategic points within the implementation structure, especially locally. Non-government actors can offer expertise and resources missing in the official structures, without necessarily challenging government.

5.3. Organisational attribute III- participants and roles

A central element of the meta-organisational structure is approaching appropriate decision-making component organisations to participate in the initiatives and matching them with roles for effective action. This is a demanding task because climate change adaptation cuts across so many organisations with a stake in the process. It raises questions about who should be involved, whose interests match the objectives and at what stage should they be involved. A typical starting point is to build a collaborative model by involving all relevant stakeholders. However this can to lead to overcrowding, creating an unduly complex inter-organisational network riddled with conflicts, competition and bureaucratic turf wars. The meta-organisation architects greatly influence this participation structure. If governments are the architects than the meta-structure can be viewed as bureaucratic, formal and lacking balance. This, in turn, may inhibit participation by non-governmental actors, and reduce the legitimacy of the meta-organisation in the eyes of valuable non-government actors who may play critical roles.

Figs. 3 and 5 show that the bureaucratic control of the meta-organisation in both Nepal and Ghana has indeed resulted in overcrowding and domination by government organisations with limited entry points for NGOs that could offer strong support (Mandell and Keast, 2008). As one LAPA adviser (Rijal, personal communication, 2012) stressed, "we are also trying to convince the government that the definition of government [for LAPA] should

include other delivery agencies like civil society, NGOs and private sector." The alternative standalone meta-organisation in Pakistan has passive government organisations but attracts too few categories of participants therefore lacks legitimacy. Another challenge common to all three countries is the frequent inter-ministerial transfers of key personnel, which results in a disruptive loss of expertise.

Timing the inclusion of participants in the adaptation process is another key challenge identified by several interviewees in all three countries. The district officials in Nepal and Ghana complained about their lack of participation in developing the adaptation framework despite their central role in implementation and coordination. As a result the districts have little ownership of a process entrusted to them. Similarly the government entities in Pakistan have shown little interest in the LAPA, due to their lack of involvement, raising the question of the LAPA's sustainability. Finding space for all the component organisations to participate and engage usefully in the meta-organisation is challenging but imperative for effective implementation.

One possible approach to ensure fair inclusion, promoted by Mermet (2011) in his Strategic Environmental Management Analysis, is to identify and include only those stakeholders that offer benefit for promoting adaptation and have a direct interest. For example, the traditional system of chieftaincy in Ghana offers an additional layer of local governance and control, but is not represented in the official decentralised structures, which leads to underutilising a potentially important institution. There is the potential for encouraging an open system by incorporating strong coordinating actors and roles. These coordinators provide reputation, status, resource or knowledge that could cause I/NGOs and other civil society organisations to self-select. The LAPA project management unit in Pakistan works closely with local partners to train and empower them for effective implementation. This train the trainer approach encourages local organisations to proactively participate in the LAPA.

5.4. Organisational attribute IV—goals and objectives

Goals and objectives are purposes to be achieved and their methods set an organisation apart from others, (Galbraith, 1995). Design has important implications for the organisational structure (Robbins and Judge, 2010). High-growth-oriented organisations, for example, tend to be different from those oriented towards stable-growth. Hence, a major task for any meta-organisation is to have clear and consistent goals for implementing adaptation that fit its structure (Amburgey and Dacin, 1994; Chandler, 1990).

All three cases have defined explicit goals and objectives for implementing their adaptation initiatives. Although these initiatives have focused on urgent country priorities, it is unclear if these reflect the same urgency and consistency across different component organisations. Both Nepal and Ghana have made concerted efforts to further align these goals with the national development goals by setting up inter-ministerial committees and climate desks in key ministries. However, in both countries, the lead component organisation, the ministry of environment, is policy-setting only with no presence on the ground, hence it has to rely on others for implementation. Formal coordination of these decentralised bodies is often harder to achieve as local component organisations may be unwilling partners and their own goals, priorities and strategies may not always coincide with the defined adaptation goals.

This creates challenges in consistently translating goals and objectives into planned actions across all levels. Furthermore, in demand driven planning systems, immediate development needs of local communities, such as lack of infrastructure, generally take precedence over important long-term goals about climate risks, especially in the absence of knowledge about climate change. One VDC secretary in Nepal (Srisa, personal communication, 2012) aptly summed this limitation: "If the community does not demand adaptation interventions, how can we provide these in our plans".

Another associated challenge is the time pressure to complete the adaptation development process within official annual planning and budget cycles, which leads to short-term actions and often disregards the gradual consequences of climate change. As one government official in Nepal highlighted, that if not given enough time for the development process, solutions are limited to the capabilities of the facilitator, community and the technical team, which may not fulfil the long-term objectives of adaptation. Although adaptation has gained more attention and action in Ghana by being framed as a development challenge to fit within the existing national planning goals, it continues to be broadly treated as an environmental issue that lacks any link between planned activities and climate change. This undermines the attention and allocation of resources, articulated by a senior national planning official. The simple Pakistan LAPA project structure, overcomes some of these alignment challenges through close coordination and oversight of the implementing component organisations. Despite these efforts, there is a risk that expertise bias in the implementing organisations seeps into the LAPAs' goals. For example, if a component organisation has expertise in health, the chances are that health related adaptation actions might be prioritised unjustifiably. Accordingly the meta-organisations need to be aware of alignment challenges early in the implementation process to counter the risk of distorting goals and objectives.

5.5. Organisational attribute V—core processes

Core processes are the written documents, rules, procedures, communications and others that enable the emerging meta-organisations to translate inputs into actions and outcomes. These must align with the structure of the meta-organisation and component organisations to offer stability and enable them to deliver stated objectives (Christensen, 2013; Henderson and Clark, 1990). As adaptation is multi-scalar and multi-actor, output from one component organisation become input of another. These interactions increase complexity of information exchange, which may lead to formal hierarchical structures emerging to standardise and manage these interactions (Meyer and Rowan, 1977). However, better information flow and improved processes also reduce uncertainty, which allows for flatter, flexible and decentralised structures with fewer levels of management than traditional command and control systems (Pugh et al., 1969).

Both Nepal and Pakistan have developed detailed standardised core operating processes and toolkits for the meta-organisations, based on participatory approaches (Chaudhury et al., 2014) to capture the complex nature of local information and translate it into meaningful implementation (see Table 2). By contrast, Ghana promotes existing budget guidelines, specifically the Functional and Organisational Assessment Tool (FOAT), to drive local action. FOAT is a performance-based tool for securing district development funds, however only 5% weighting is assigned to climate change activities within the planning performance metrics, therefore action is insignificant.

As adaptation helps address risks and uncertainties, a high degree of flexibility of meta-organisation structure and core process is needed to find the best fit. The Nepal LAPA for instance, is termed a 'living document' that sees this realignment as an iterative learning process. However, the operational structure, core processes and participating components have been formalised under the government framework before roll out of the LAPAs. Flexibility is also often harder to incorporate in the "established

and locked in bureaucratic structures that are comfortable with the way things are done", according to an NGO head in Nepal (Dixit, personal communication, 2013). Tension and misalignment in meta-organisational structure and processes is evident during local implementation, where local administrative staff are expected to push the environment ministry's agenda for which they are not accountable. Ghana's transition from central to a decentralised fiscal and administrative system has also resulted in serious misalignment between the core processes and operational structure, especially in sector departments. The 2012 budget was the first attempt at a 'composite budget', in which the local government took a central role in coordinating and funding sector activity. However, the centre continues to exert control on the sector departments, such as agriculture, that results in multiple lines of authority between districts and the centre. This duplication, labelled by a district coordinator as 'having two bosses', results in competing structures that lead to misaligned and delayed outcomes. The FOAT performance requirement is also often met by mislabelling as adaptation many challenges, such as sanitation, that are already enacted. The stability and leanness expected of the meta-organisational structure is, paradoxically, managed by adding layers of oversight. The Pakistan LAPA's project on the other hand, with few component organisations, offers great flexibility and autonomy to the project manager without external influence. However, this flexibility and discretion is likely to reduce when the project scales up and links with other actors. Core processes need to incorporate periodic review, to maintain alignment with the objectives and operational structures of the meta-organisation and component organisations. The cases studied demonstrate that this is not simple but necessary for successful implementation.

Adoption of core processes by component organisations is also more likely when these are viewed as credible and legitimate (Cash et al., 2003). However, challenges arise in communicating and translating the objectives of the adaptation initiative among the many experts and decision makers. Here, role of bridging or transboundary organisations (Berkes, 2009; Cash et al., 2003) that interact with component actors to communicate, translate and mediate (Cash et al., 2003) information across levels is valuable for uptake of adaptation initiative. We see several potential bridging organisations in our cases that could improve information asymmetry, build confidence, and resolve issues, yet remain under utilised. In Ghana, the regional government agencies are well positioned to bridge between national and local levels, but lack resources and mandate to be effective.

5.6. Organisational attribute VI—adaptation resources

The distribution of global funding is viewed more as a political decision than one based on rational economic theory (Moore, 2012). Organisations, therefore, claim legitimacy by adapting their structures to meet the funding covenants of donor and global initiatives (Dimaggio and Powell, 1983).

The Nepal NAPA, despite securing dedicated UNFCCC and donor funding was termed superficial by several interviewees involved in its preparation because the funding was considered insufficient to develop a comprehensive national plan based on evidence. The LAPA, although better prepared, builds on the NAPA priorities and hence, incorporates many NAPA limitations in its design. The LAPA is also supported through international donor funding, which has influenced it to create structures in line with the stringent reporting covenants of foreign funders. However, the global funding for adaptation is a fraction of that required by developing countries (Schalatek et al., 2013). Despite this obvious gap, Nepal's continued dependence on foreign funding may adversely affect LAPA's momentum and may render the meta-organisation redundant should alternate funding sources (with separate reporting requirements) have to be sought.

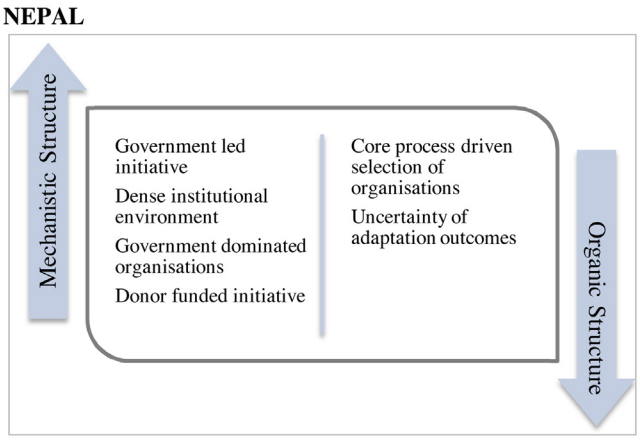

Fig. 6. Pressure of organisational attributes on the meta-organisation structure.

Conversely, the focus of global climate funding for non-LDCs, such as Pakistan and Ghana, is skewed towards mitigation with only 10–15% of the total committed to adaptation (Schalatek et al., 2013). Mitigation is justified by international agreements and national policies, but most adaptation is independent and privately financed and is driven by the interests of those most affected. This poses a challenge for Pakistan and Ghana in securing committed, adequate long-term global and local funding. Chronic delays in releasing annual district budgets by the Ghanaian government, and the low revenue base of poor districts have meant that climate measures are low priority. There is also the risk that adaptation initiatives in these countries lose direction and mould their structures to fit activities that attract greatest funding, rather than address the most pressing needs of vulnerable people.

Another challenge faced by the meta-organisations is the capacity and readiness of local component organisations to manage adaptation funding. The Nepal LAPA has committed 80% of the adaptation funding to local implementation. The estimated budget for LAPA activities ranges from USD 0.2 million to USD 1.1 million per VDC (UNDP, 2012), whereas the average annual government budget for each VDC is approximately USD 15,000–30,000 (GON's VDC Block Grant). VDCs managing budgets tenfold larger creates serious operational challenges and hence must be carefully managed to match the funding flows.

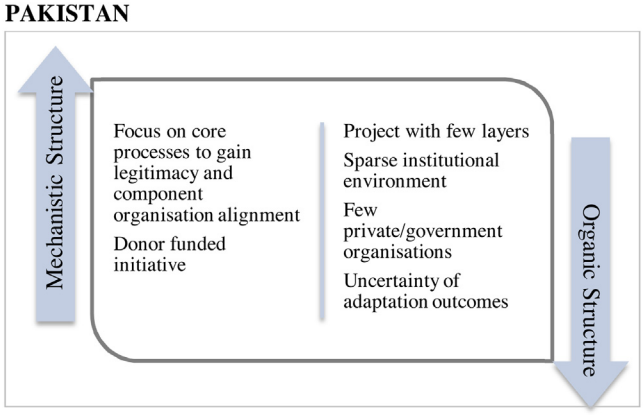

Fig. 7. Pressure of organisational attributes on the meta-organisation structure.

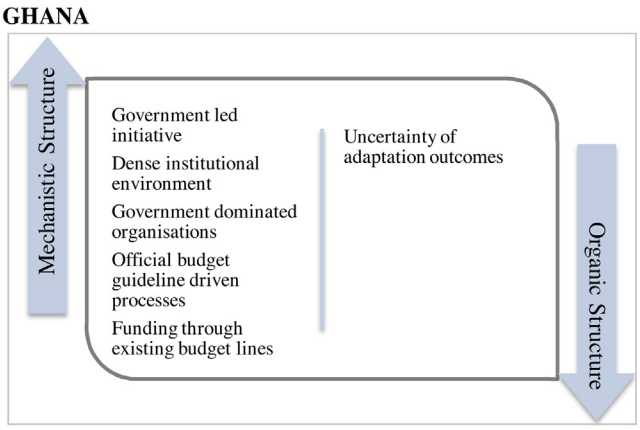

Fig. 8. Pressure of organisational attributes on the meta-organisation structure.

5.7. Organisational attributes and structural fit

We observe the structural tension exerted by each of the six organisational attributes on the meta-organisations in each country (Figs. 6–8). At one end of the spectrum is the formal, central, mechanistic structure, while at the other is the informal organic structure that is flexible and able to adapt to changes.

There is no single universally applicable structure, but several tailored to local and regional circumstances that produce effective outcomes. Governments, being bureaucratic, favour mechanistic structures linking the numerous government agencies so institutionalising the delivery of adaptation, which is the case in Nepal and Ghana. However, layering bureaucracies with rigid processes may be counterproductive because flexibility is needed to manage the needs of the many participants seen in Nepal. Formal organisations are too complex and a solution is to keep organisations loosely coupled by offering flexibility at the core, to manage any conflict between practical activity and institutional conformity.

Alternatively a void in the institutional arrangements narrows the organisational structure to the point that it loses legitimacy as observed in Pakistan. The Pakistan project appears flexible and impact driven, but has no official patronage and remains unnoticed, lacking credibility and scalability. In apathetic institutional environments, such as Pakistan, component organisations' show little interest and are motivated by routines, rituals and scripts (Campbell, 1998) embodied in LAPA's core, which leads to a mechanistic structure. Most noticeably, our analysis shows that organisational attributes do not act independently but act in combinations that complement or constrain emerging structures. This tension between mechanistic and organic structures in each country (Figs. 6–8), is the result of the different organisational attributes and pressures.

6. Conclusion

This study reports on the early stages in the development of adaptation initiatives in three countries. These initiatives take on different forms, structures and pathways and are therefore harder to analyse using standard tools for assessing mature operations. We develop the analysis of these meta-organisations with their component organisations, to propose a common analytic framework. This naming allows us to describe better the underlying complexity and their extensive relationships. We use the rich empirical evidence to identify six common organisational attributes to describe meta-organisations. Our analysis highlights the opportunities and constraints these attributes impose on their implementation structures.

The analysis also shows that all three countries start with similar objectives for climate adaptation; however, the organisational structures of these initiatives are distinct, which leads to different pathways. Nepal's priority for an official formal process comes at the cost of delayed implementation. Pakistan's devolved implementation- approach lacks legitimacy and official acceptance to scale up nationally. In Ghana, the use of existing decentralised development structures and budgets relegates adaptation below other development priorities. The layers of legitimacy and accountability account for these differences, as well as the priority attached to adaptation relative to other development and political needs in each case.

Furthermore the emerging meta-organisations have different characteristics, namely rational, process-driven or bureaucratic (Allison and Zelikow, 1999). Each of these can increase legitimacy, as well as allowing space for bargaining and negotiation. The Pakistan LAPA project adopts the rational approach as it operates through a central project developer (Fig. 4), with consistent preferences about the goals and actions to be taken by each component organisation. This is an attempt to gain legitimacy for its design by demonstrating implementation success in a country with weak institutions and where climate change is a low priority.

Ghana's reliance on the existing decentralised development structures aptly falls under the bureaucratic model made up of multiple official actors (Fig. 5) with different aims, who cannot deliver adaptation alone. This reinforces Ghana's efforts towards decentralised governance but means that action still requires much bargaining and negotiation by all the decentralised organisations. The unifying driver is the fiscal guidelines. However those implementing continue to be heavily reliant on the central government for finance, which results in trade-offs between the wishes of central organisations and local needs.

Finally, the Nepal's LAPA meta-organisation can be considered a hybrid between the process driven and bureaucratic models, with a mix of private and official organisations (Fig. 3). The procedures in the LAPA are guided by the appropriateness of participants and allocating roles. Nepal's attempt to drive action through the existing bureaucratic structures is to consolidate and centralise action and funding within the official system. There are many disparate streams for adaptation in Nepal, that operate through a network of I/NGOs and donor projects, which undermines the legitimacy of the official structures and leads to duplication. Private project managers justify this duplication as necessary to bypass the rigid and slow official systems to deliver desired results. These structures may have to become more open and flexible meta-organisations to cope better with complexity, goal ambiguity and provide greater participation.

The challenge for effective implementation lies in developing flexible, robust, systems that address complexity and uncertainty, the long-term nature of adaptation, and the variety of actors, roles, and local country dynamics. Our aim is not prescriptive. Indeed, we caution against prescription based on the evidence. Instead we propose the analytical approach as a starting point to explore the nuances required to implement climate change adaptation. Focusing narrowly on design, without considering the delicate relations among components of a meta-organisation, leaves any initiative vulnerable to misalignment, and other barriers to implementation. Our structural analysis approach offers another tool to support national policy makers and planners in designing effective means of adjusting to climate change. As the adaptation field matures, we are likely to see greater homogeneity and predictability in the designs and outcomes. However the challenge remains: how do we put in place the right incentives, measures, feedback and selection to ensure that adaptation initiatives are

responding to real needs? We invite fellow researchers and practitioners to take up this challenge.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.gloenvcha.2016.03.011.

References

Adger, W.N., Huq, S., Brown, K., Conway, D., Hulme, M., 2003. Adaptation to climate change in the developing world. Prog. Dev. Stud. 3, 179–195.
Adger, W.N., Arnell, W.N., Tompkins, L.E., 2005. Successful adaptation to climate change across scales. Global Environ. Change 15, 77–86.
Adger, W.N., 2006. Vulnerability. Global Environ. Change 16, 268–281.
Agrawal, A., 2010. Local institutions and adaptation to climate change. In: Mearns, R., Norton, A. (Eds.), Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World. World Bank, Washington D.C.
Ahrne, G., Brunsson, N., 2005. Organizations and meta-organizations. Scand. J. Manage. 21, 429–449.
Ahrne, G., Brunsson, N., 2011. Organization outside organizations: the significance of partial organization. Organization 18, 83–104.
Aldrich, H., 2008. Organizations and Environments. Stanford University Press, Stanford, CA.
Allison, G.T., Zelikow, P., 1999. Essence of Decision: Explaining the Cuban Missile Crisis. Longman, New York.
Amburgey, T.L., Dacin, T., 1994. As the left foot follows the right? The dynamics of strategic and structural change. Acad. Manage. J. 37, 1427–1452.
Aslam, M.A., Amir, P., Ramay, S.A., Munawar, Z., Ahmad, V., 2011. National Economic & Environmental Development Study (NEEDS). The Ministry of Environment of Pakistan, Pakistan. http://www.unfccc.int/files/adaptation/application/pdf/pakistanneeds.pdf.
Baral, P., 2013. Getting Planned Adaptation Right—A Case Study of Nepal's Local Adaptation Plan for Action (LAPA) MSc Dissertation. University of Oxford.
Berkes, F., Folke, C., 1998. Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience. Cambrige University Press, Cambridge.
Berkes, F., 2009. Evolution of co-management: role of knowledge generation, bridging organizations and social learning. J. Environ. Manage. 90, 1692–1702.
Blau, P.M., Schoenherr, R.A., 1971. The Structure of Organizations. Basic Books, New York, NY.
Bolman, L.G., Deal, T.E., 2013. Reframing Organizations: Artistry, Choice and Leadership. Jossey-Bass.
Campbell, J., 1998. Institutional analysis and the role of ideas in political economy. Theor. Soc. 27, 377–409.
Cash, D.W., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N., Guston, D.H., Jäger, J., Mitchell, R.B., 2003. Knowledge systems for sustainable development. Proc. Natl. Acad. Sci. 100, 8086–8091.
Chandler, A.D., 1990. Strategy and Structure: Chapters in the History of the Industrial Enterprise. MIT Press, Cambridge, MA.
Chaudhury, A.S., Helfgott, A., Thornton, T.F., Sova, C., 2014. Participatory adaptation planning and costing: applications in agricultural adaptation in western Kenya. Mitig. Adapt. Strateg. Global Change 1–22.
Chaudhury, A.S., Helfgott, A., Thornton, T.F., Ventresca, M.J. & Sova, C., Role of local networks in shaping community structures and adaptive capacity: evidence from rural agricultural community in Ghana, 2016 (unpublished ms).
Child, J., 1972. Organizational structure: environment and performance: the role of strategic choice. Sociology 6, 1–22.
Christensen, C., 2013. The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business Review Press.
Cilliers, P., Spurrett, D., 1999. Complexity and post-modernism: understanding complex systems. South Afr. J. Philos. 18, 258–274.
Conway, D., Mustelin, J., 2014. Strategies for improving adaptation practice in developing countries. Nat. Clim. Change 4, 339–342.
Cropper, S., Ebers, M., Huxham, C., Smith Ring, P., 2008. The Oxford Handbook of Inter-Organizational Relations. Oxford University Press, Oxford, UK.
Dacin, M.T., Ventresca, M.J., Beal, B.D., 1999. The embeddedness of organizations: dialogue & directions. J. Manage. 25, 317–356.
Daft, R.L., Murphy, J., Willmott, H., 2010. Organization Theory and Design. Cengage Learning.
Dawson, S., 1996. Analyzing Organizations. Macmillan Publishing.
Dimaggio, P.J., Powell, W.W., 1983. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. Am. Sociol. Rev. 48, 147–160.
Donaldson, L., 2001. The Contingency Theory of Organizations. Sage.
Drazin, R., Van De Ven, A.H., 1985. Alternative forms of fit in contingency theory. Adm. Sci. Q. 30, 514–539.
Eisenhardt, K.M., 1989. Building theories from case study research. Acad. Manage. Rev. 14, 532–550.
Evans, P.B., Rueschemeyer, D., Skocpol, T., 1985. Bringing the State Back in. Cambridge University Press, Cambridge, UK.
FAO, 2013. Cimate-smart Agriculture—Sourcebook. Food and Agriculture Organization of the United Nations, Rome. http://www.fao.org/docrep/018/i3325e/i3325e.pdf.
Fligstein, N., Mcadam, D., 2012. A Theory of Fields. Oxford University Press, Oxford, UK.
Folke, C., Hahn, T., Olsson, P., Norberg, J., 2005. Adaptive governance of social-ecological systems. Annu. Rev. Environ. Resour. 30, 441–473.
Folke, C., 2006. Resilience: the emergence of a perspective for social–ecological systems analyses. Global Environ. Change 16, 253–267.
GON, 2010. National Adaptation Programme of Action (NAPA). Ministry of Environment Science and Technology, Government of Nepal, Kathmandu, Nepal.
GON, 2011. National Framework on Local Adaptation Plans for Action (LAPA). Ministry of Environment Science and Technology, Government of Nepal, Kathmandu.
Galbraith, J.R., 1995. Designing Organizations: An Executive Briefing on Strategy, Structure, and Process. Jossey-Bass.
Giddens, A., 1979. Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis. University of California Press, Berkeley, CA.
Gooding, R.Z., Wagner, J.A., 1985. A meta- analytic review of the relationship between size and performance: the productivity and efficiency of organizations and their subunits. Adm. Sci. Q. 30, 462–481.
Greiner, L.E., 1997. Evolution and revolution as organizations grow: a company's past has clues for management that are critical to future success. Family Bus. Rev. 10, 397–409.
Gulati, R., Puranam, P., Tushman, M., 2012. Meta-organization design: rethinking design in interorganizational and community contexts. Strateg. Manage. J. 33, 571–586.
Haas, P.M., 1989. Do regimes matter? Epistemic communities and Mediterranean pollution control. Int. Organ. 43, 377–403.
Henderson, R.M., Clark, K.B., 1990. Architectural innovation: the reconfiguration of existing product technologies and the failure of established firms. Adm. Sci. Q. 35, 9–30.
Huntjens, P., Lebel, L., Pahl-Wostl, C., Camkin, J., Schulze, R., Kranz, N., 2012. Institutional design propositions for the governance of adaptation to climate change in the water sector. Global Environ. Change 22, 67–81.
IPCC, 2013. Summary for policymakers. In: Stocker, T.F., Qin, D., Plattner, G.-K., Tignor, M., Allen, S.K., Boschung, J., Nauels, Y.X.I.A., Midgley, P.M. (Eds.), Climate Change 2013. The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, IPCC, Cambridge, United Kingdom and New York, NY, USA. http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WGIAR5_SPM_brochure_en.pdf.
Imperial, M.T., 1999. Institutional analysis and ecosystem-based management: the institutional analysis and development framework. Environ. Manage. 24, 449–465.
Johnsen, T.E., Lamming, R.C., Harland, C.M., 2008. Inter-organizational relationships, chains and networks: a supply perspective. In: Cropper, S., Ebers, M., Huxham, C., Ring, P.S. (Eds.), The Oxford Handbook of Inter-Organizational Relations. Oxford: Oxford University Press.
Jones, G.R., 2004. Organizational Theory, Design, and Change: Text and Cases. Pearson/Prentice Hall, Upper Saddle River, NJ.
Lawrence, P.R., Lorsch, J.W., 1967. Differentiation and integration in complex organizations. Adm. Sci. Q. 12, 1–47.
Mandell, M., Keast, R.L., 2008. Voluntary and community sector partnerships: current inter-organizational relations and future challenges. In: Cropper, S., Ebers, M., Huxham, C., Smith Ring, P. (Eds.), The Oxford Handbook of Inter-Organizational Relations. Oxford University Press, Oxford.
March, J.G., Simon, H.A., 1958. Organizations. Wiley, Oxford, England.
Mcsweeney, C., New, M., Lizcano, G., 2010. UNDP Climate Change Country Profiles: Nepal, Pakistan and Ghana. . accessed 10.01.15 http://country-profiles.geog.ox.ac.uk/.
Mermet, L., 2011. Strategic environmental management analysis: Addressing the blind spots of collaborative approaches. Working Paper No 5. IDDRI.
Meyer, J.W., Rowan, B., 1977. Institutionalized organizations: formal structure as myth and ceremony. Am. J. Sociol. 83, 340–363.
Mintzberg, H., 1979. The Structuring of Organizations: A Synthesis of the Research. Prentice-Hall International.
Mitchell, T., Maxwell, S., 2010. Defining Climate Compatible Development. Climate & Development Knowledge Network, London. http://cdkn.org/wp-content/uploads/2012/10/CDKN-CCD-Planning_english.pdf.

Moore, J., 1996. The Death of Competition. Fortune, Time Inc..
Moore, F.C., 2012. Costing adaptation: revealing tensions in the normative basis of adaptation policy in adaptation cost estimates. Sci. Technol. Hum. Values 37, 171–198.
NCCAS, 2012. National Climate Change Adaptation Strategy. Climate Change and Development—Adaptating by Reducing Vulnerability. UNEP/UNDP, Ghana. http://www.undp-alm.org/sites/default/files/downloads/ghana_national_climate_change_adaptation_strategy_nccas.pdf.
North, D.C., 1990. Institutions, Institutional Change and Economic Performance. Cambridge University Press.
O'riordan, T., Jordan, A., 1999. Institutions, climate change and cultural theory: towards a common analytical framework. Global Environ. Change 9, 81–93.
Oliver, C., 1990. Determinants of interorganizational relationships: integration and future directions. Acad. Manage. Rev. 15, 241–265.
Olson, M., 1965. The Logic of Collective Action: Public Goods and the Theory of Groups. Harvard University Press, USA.
Ostrom, E., 2005. Understanding Institutional Diversity. Princeton University Press, NJ.
Ostrom, E., 2010. Polycentric systems for coping with collective action and global environmental change. Global Environ. Change 20, 550–557.
Pfeffer, J., Salancik, G.R., 2003. The External Control of Organizations: A Resource Dependence Perspective. Stanford University Press, Stanford CA.
Pierson, P., 2004. Politics in Time: History, Institutions, and Social Analysis. Princeton University Press, Princeton, NJ.
Powell, W.W., Dimaggio, P., 1991. The New Institutionalism in Organizational Analysis. University of Chicago Press, Chicago/London.
Powell, W.W., Koput, K.W., Smith-Doerr, L., 1996. Interorganizational collaboration and the locus of innovation: networks of learning in biotechnology. Adm. Sci. Q. 116–145.
Pugh, D.S., Hickson, D.J., Hinings, C.R., Turner, C., 1969. The context of organization structures. Adm. Sci. Q. 14, 91–114.
Pugh, D.S., 1973. The measurement of organization structures: does context determine form? Organ. Dyn. 1, 19–34.
Rai, J.K., Paudel, N.S., (2011). Discourses of Local Governance in Nepal: An Analysis of Legislation, Constitutional Processes and Civil Society Demands. In: Action, F. (eds.), Discussion Paper Series 11.
Rittel, H., Webber, M., 1973. Dilemmas in a general theory of planning. Policy Sci. 4, 155–169.
Ritter, T., Gemünden, H.G., 2003. Interorganizational relationships and networks: an overview. J. Bus. Res. 56, 691–697.
Robbins, S.P., Judge, T.A., 2010. Organizational Behavior. Pearson Education Limited.
Schalatek, L., Nakhooda, S., Barnard, S., Caravani, A., 2013. Climate Finance Thematic Briefing: Adaptation Finance. Climate Finance Fundamentals. Heinrich Boll Stiftung and ODI. http://www.climatefundsupdate.org/themes/adaptation.
Schoonhoven, C.B., 1981. Problems with contingency theory: testing assumptions hidden within the language of contingency theory. Adm. Sci. Q. 26, 349–377.
Scott, J., Carrington, P.J., 2011. The SAGE Handbook of Social Network Analysis. SAGE Publication, London.
Scott, R.W., Meyer, J.W., 2012. The organization of societal sectors: propositionsand early evidence. In: Powell, W.W., Dimaggio, P.J. (Eds.), The New Institutionalism in Organizational Analysis. University of Chicago Press.
Scott, W.R., 2013. Institutions and Organizations: Ideas, Interests, and Identities. Sage Publications, California.
Selznick, P., 1949. TVA and the Grassroots: A Study in the Sociology of Formal Organization. University of California Press, Berkeley, CA.
Shahid, J., 2014. Funding for environmental projects reduced to Rs 25 m Dawn Pakistan Newspaper, http://www.dawn.com/news/1110432, June 04, 2014.
Slater, S.F., Narver, J.C., 1995. Market orientation and the learning organization. J. Mark. 59, 63–74.
Smit, B., Pilifosova, O., 2003. From adaptation to adaptive capacity and vulnerability reduction. In: Smith, J.B., Klein, R.J. T. & Huq, S. (eds.), Climate change, adaptive capacity and development.
Smithers, J., Smit, B., 1997. Human adaptation to climatic variability and change. Global Environ. Change 7, 129–146.
Sova, C.A., Chaudhury, A.S., 2013. State of agricultural climate change adaptation policy in Nepal. http://hdl.handle.net/10568/29008. Working Paper No. 44. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security.
Sova, C.A., Chaudhury, A.S., Nelson, W.A., Nutsukpo, D.K. & Zougmoré, R., 2014. Climate change adaptation policy in Ghana: Priorities for the agriculture sector. http://hdl.handle.net/10568/51804. CCAFS Working Paper No. 68. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).
Soysal, Y.N., 1994. Limits of Citizenship: Migrants and Postnational Membership in Europe. University of Chicago Press, Chicago, IL.
Suárez, F.F., Utterback, J.M., 1995. Dominant designs and the survival of firms. Strateg. Manage. J. 16, 415–430.
Termeer, C., Dewulf, A., Van Lieshout, M., 2010. Disentangling scale approaches in governance research: comparing monocentric, multilevel, and adaptive governance. Ecol. Soc. 15.
UNDP, 2012. Nepal Climate Change Support Programme: Building Climate Resilience in Nepal. United Nations Development Programme. http://www.np.undp.org/content/dam/nepal/docs/projects/nccsp/UNDP_NP_NCCSP Project Document.pdf.
UNFCCC, 2014. Information Paper on Experiences, Good Practices, Lessons Learned, Gaps and Needs in the Process to Formulate and Implement National Adaptation Plans. United Nations Framework Convention on Climate Change. http://unfccc.int/resource/docs/2014/sbi/eng/inf14.pdf.
UNFCCC, 2015. Submitted NAPAs [Online]. Available: http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/4585.php (accessed 28.12.15.).
Van de ven A.H., Drazin, R., 1984. The concept of fit in contingency theory. DTIC Document.
Wasserman, S., 1994. Social Network Analysis: Methods and Applications. Cambridge University Press, Cambridge, UK.
Weber, M., 1978. Economy and Society: An Outline of Interpretive Sociology. University of California Press, Berkeley, CA.
Woodward, J., 1980. Industrial Organization: Theory and Practice. Oxford University Press, Oxford, UK.
Yin, R.K., 2009. Case Study Research: Design and Methods. Sage.
Young, O.R., 2002. The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale. MIT Press, Cambridge, MA.