BEST PRACTICES IN STRENGTHENING EVIDENCE USE BY GOVERNMENT IN EDUCATION POLICY AND BEYOND

A Rapid Research Scoping Review for the Queen Rania Foundation and the Jordanian Ministry of Education

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This project is part of the Evidence-Driven Results in Learning (EDRiL) initiative, which is a partnership between the Jordanian Ministry of Education (MoE), the Queen Rania Foundation for Education (QRF), the UK Government (Department for International Development (DFID)) and Canada.

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Contents

1 Conceptual framework and design

This rapid research scoping review has been prepared by IDS and is designed to respond to the following questions:

a. What are the intrinsic and extrinsic characteristics which encourage the use of evidence in government ministries?
b. How do governments mandate for an enabling environment around evidence and the decentralisation of decision making?
c. Where do effective research departments tend to be positioned within government departments/ministries and how are their relationships with other units established and maintained?
d. What best practice exists with respect to strategies, tools and techniques, and policies for evidence uptake?

In order to respond to these questions, we searched for both academic literature and grey literature relating to: (1) strengthening evidence use by government; and (2) strengthening research systems. We define the first of these two areas as pertaining to government agencies and ministries operating at the national level. We define the second (research systems) as pertaining to research organisations (public or private) such as universities, government researchers, and researchers operating at both national and international levels, as well as research intermediaries such as thinktanks. The literature on improving evidence use by governments and on strengthening national research systems overlaps, so we have treated the research questions as equally relevant to both areas.

Purpose: We are primarily interested in literature concerned with learning from attempts to improve evidence use in policy formulation by governments or theoretical work underpinning this. The research on policy implementation and practice is somewhat separate to this field and is more closely linked to public administration and management at a local and regional level.

Scope: We have reviewed a broad literature from the emerging field of evidence use in policy formulation that cuts across sectors and geographies. We have also looked for useful references in the much narrower education policy field and in the even narrower literature on education reform in the Middle East and North Africa (MENA) region.

Topics: The review is shaped by the main instruments identified in the literature as being commonly utilised to support better evidence use. These instruments or strategies are generally focused on government capacity or the broader research and policy ecosystem. These instruments are defined as:

- raising awareness and political support for evidence production and use;
- supporting legal and institutional frameworks and structures;
- strengthening linkages between higher education, research organisations, knowledge intermediaries, and government;
- building research capacity in government and beyond;
- incentivising the use of evidence;
- strengthening knowledge exchange systems.

1.1 Steps in the review

1. Draft search protocol
2. File assets in Zotero/EndNote
3. Quantitative analysis using NVivo (e.g. word and phrase searches)
4. Qualitative analysis in NVivo, inductive coding based on the initial set of topics
5. Synthesis and report writing

1.2 Search protocol

The scoping review combined a systematic search of key research databases with other search methods, drawing on the subject expertise of the research team. These alternative methods included reference snowballing, citation searches in Google Scholar, and targeted searches of grey literature sources.

A detailed description of the search process, inclusion/exclusion criteria, search terms and results is set out in the Annexe.

2 Results

The search found that the topics dealt with in the literature (both academic and grey) can be grouped under four main headings, along with associated sub-headings. Our results are organised accordingly:

1. Theories and concepts
2. Education reform
3. State capacity and research governance
4. Ecosystem support

2.1 Relevant theories and concepts on evidence use in policy

During the 1970s and 1980s, there was growing recognition in the academic literature that there is no simple linear relationship between research knowledge and policy change. Alternative models ranged from theories suggesting that policy was just as likely to determine research agendas as the other way around, or that social science gradually percolates into public consciousness (Weiss 1979), to a more complex interdependency between science and society (Jasanoff 2004). Despite these advancements, commitment to linear instrumentalist models of research use remained dominant in the public domain, in both low- and middle-income countries (LMICs). In this field, conceptualisations of a gap between research communities on the supply side and policy networks on the demand side have tended to result in recommended practices to bridge this gap that are largely technical in nature (Cairney 2016). In particular, communication tools and training for researchers and policy actors have become commonplace, as have the development of digital initiatives to increase the accessibility and availability of research (Georgalakis *et al.* 2017). However, these more technical approaches to achieving research uptake have come under increasing critique from those who argue that policy processes tend to be messy and require ongoing engagement (Cairney 2016; Parkhurst 2017). Evaluating the impact of research on policy is also an emerging field and has been reviewed (Boaz, Fitzpatrick and Shaw 2009).

2.1.1 A complexity systems approach to evidence production and use

Complexity science and systems thinking has increasingly been applied to socioeconomic policy despite its roots in the biological sciences, cybernetics, physics and engineering. Complexity social scientists regard open systems that are affected by human behaviours and values-based perceptions (such as education policy reform) as requiring a holistic approach (Prigogine 1980). At the very core of complexity science is the assumption that any system is more than the sum of its parts (Byrne 2002). In policy, the planned approaches of decision makers may have limited impact on the system (such as the implementation of policy) because the network of schools, decision makers, influencers, learners and parents are, to some degree, ‘self-organising’ and the system itself is affected by its interaction with the wider socioeconomic environment (Boulton, Allen and Bowman 2015). Policy environments are also vulnerable to external shocks such as a sudden influx of refugees (*ibid.*). Meanwhile, individual decision makers and other evidence users have limited capability to make optimal decisions based on the research evidence. A lack of time, cognitive limitations and political pressures result in ‘bounded rationality’ (Simon 1962; 1972). However,

complex policy environments are not chaotic and random; patterns do emerge and systems-level factors do manifest themselves, sometimes with dramatic consequences, such as a sudden change in policy direction. In the past few years, the response to complexity science has been the recommendation for policy adaptation. Micro-level innovation, experimentation and learning is encouraged, as are feedback loops that connect the central decision making structure with local agent-based approaches (Boulton *et al.* 2015; Steven 2011; McFadgen and Huitema 2018). This is a far cry from traditional positivist, centralised institutional approaches to policy formulation and implementation, which rely on centrally held, mostly quantitative data and the top-down application of evidence of 'what works'.

2.1.2 Current recommended approaches

Interactive, complex aware systems-level models are perhaps one of the most useful tools in navigating complex policy and practice environments (Nutley, Walter and Davies 2007). Rather than focusing on autonomous streams of problems, policy and politics that collide at key moments (Kingdon 1984), these models set out what Huberman (1994) calls 'sustained interactivity'. This approach recognises the blurring of boundaries between research producers, intermediaries and users (*ibid.*). This social and interactive process is also supported by well-established theories such as the role of policy and epistemic communities (Haas 1992) and the power dynamics of knowledge (Lukes 2003; Gaventa 2006). There is also some very practical advice available on systems and structures that support evidence use in Breckon and Dodson (2016) and INASP (2018).

2.2 Education reform

The literature on education reform is heavily weighted towards high-income countries, including the United Kingdom (UK) and the United States of America (USA), and is much smaller overall than that on other sectors, especially health. The learning on the use of evidence in education is also weighted towards policy implementation rather than policy formulation at the national level. Demand for evidence to inform education policy has grown globally in recent years. Education ministers from across the world are 'on a quest to identify policies and programmes that could be applied in their country contexts to improve learning outcomes for all children' (Hinton, Bronwin and Savage 2019: 43). Efforts to synthesise research evidence on education have also primarily focused on high-income countries – for example, the What Works Clearing House maintained by the US Department for Education (Malouf and Taymans 2016). Best practice guidelines have been published for application in LMICs as part of the global health movement. However, these either focus on the design and use of impact evaluations to inform policy (Hinton *et al.* 2015) and frameworks for assessing the strength of evidence (Patrinos and Cross 2007), or take a highly pragmatic approach to specific policy issues, such as private schooling (Andrabi, Das and Khwaja 2015). They are produced primarily by a group of donors, including the World Bank and the United States Agency for International Development (USAID) (Building Evidence in Education), and have not been tailored to the socio-political context of the MENA region.

Education researchers have raised the same doubts about simple linear evidence-based change models in their field as have been raised in other sectors. However, the literature and learning still tends to focus on relatively basic models of 'knowledge transfer' that are not located in the interactive, systems-level theories of evidence and policy set out above (Becheikh *et al*. 2010). Although learning around the politics of evidence-based policy is dominated by the health sector, there is some literature on how education reform has benefited from intermediary organisations that broker research between multiple evidence producers and users. Challenges include weak systems for tracking the impact of policy interventions and the degree to which research evidence is only one small part of change processes (Lubienski, Scott and DeBray 2014).

2.2.1 Evidence from the MENA region

Evidence from Arab countries is somewhat out of date, with most studies focusing on previous periods of reform in the late 1990s and early 2000s. At this time, most initiatives to improve

education were focused on top-down national plans and used Western models and approaches. Initiating and conducting reform was regarded as solely the responsibility of national government. Like most developing and middle-income countries in that period, there was a weak knowledge base to build on (Akkary 2014). El Amine observed that 'building a knowledge base that is grounded in cultural realities to inform practice and policy making is widely viewed as a priority in the Arab region' (El Amine 2009, cited in Akkary 2014: 256). The absence of such a culturally grounded theoretical and empirical base, and the consequences this has on decision making processes both at school and national levels, is viewed as 'one major impediment to the success of educational reform in the Arab world' (Mazawi 2010, cited in Akkary 2014: 16).

Most reforms in the region have attempted to engineer changes in the education system: building schools, hiring teachers, developing curricula and investing in ed-tech. A World Bank report claims that future reforms will instead require changes in the behaviour of key education actors – teachers, administrators, and educational authorities (Galal *et al*. 2008; Bhanji 2012). Another barrier to successful use of evidence for reform in the region includes failure to consult stakeholders such as parents, students, and teachers (Sakarneh 2014; El-Sheikh Hasan 2000). For Jordan, there has been some more positive analysis, including Al-Hassan's study of Jordanian early childhood care and education (ECCE) reform, which takes us right up to the current strategy period. Al-Hassan notes that: 'Jordan realizes the significant social and economic benefits of investing in ECCE for both individuals and societies. Over the last three decades, Jordan has taken important steps in the improvement of ECCE, recognizing that the early childhood stage is a fundamental part of the whole educational spectrum' (Al-Hassan 2018: 360). This study not only provides detailed descriptions of the steps taken by the Jordanian government over the past three decades to promote early years education but also emphasises the future challenges. It argues that engagement with stakeholders –including communities, parents, and school administrators – will be central to successful reform of ECCE (*ibid.*).

Another concern across the region is the poor links, or 'rupture', between research and policy. Hanafi and Arvanitis claim that policymakers rarely call on professional academics when developing policies. They argue that the main problem is not a lack of rigorous scholarship or research, but how that knowledge is used: 'Produced knowledge is constrained within a small elite group and rarely translates to policy or public awareness' (Hanafi and Arvanitis 2009, cited in Shuayb 2019: 3). However, a preliminary literature search finds policy-relevant studies quite few and far between. Examples include Faour (2012), Al-Hassan (2018), Maani (2017), Sakarneh (2014), Eman (2016), and Abu Naba'H *et al*. (2009).

2.3 State capacity and research governance

Much of the literature that focuses on how central government builds research capacity is concerned with the strengthening of research systems. A number of systematic reviews identify core competencies that support evidence use and broadly categorise these as falling under knowledge, skills, and attitudes (Mallidou *et al*. 2018; INASP 2016; Breckon and Dodson 2016). Meanwhile, some clear patterns have been identified as favoured by different types of state. Liberal market economies with centralised states tend to have knowledge regimes with fewer scholarly and advocacy research units. These types of knowledge regimes support state research units. Like its decentralised, open state counterpart, this knowledge regime will be a partisan, adversarial, and competitive marketplace for ideas. However, the importance of the competitive marketplace for ideas will be tempered by the significant role that state research units play, particularly within the well-established civil service. As a result, this is called the politically tempered knowledge regime (Datta 2018). This goes some way to explain the tendency of Arab states to follow the top-down approach to policy formulation noted earlier (Akkary 2014).

In the field of education, mechanisms to improve the use of research tend to fall under one of the following categories: pushing, pulling, and mediating research. The most common approach seeks to improve the use of research-informed evidence by making the process of producing research

more efficient, which can thus be categorised as a 'push activity' (Wollscheid, Stensaker and Bugge 2019). In contrast, 'pulling' consists of increasing the demand for evidence and responding to evidence users' needs. The decision to locate the focus on research capacity centrally in government may reflect a desire to safeguard specialised sectoral/disciplinary interests rather than societal concerns beyond individual sectoral policy areas. However, other models are also common, including support for clearing houses, semi or fully independent research centres, and other modes of brokerage. These are explored further in section 2.4.1.

2.3.1 Democracy and evidence use

Levels of democracy and the role and power of national actors outside central government can affect the use of evidence. However, there is no clear link between democracy and use of evidence in decision making. For example, one comparative observational study examines evidence use in India and Vietnam, finding that the levels of democracy or autocracy were not necessarily a key factor in influencing the use of evidence in policymaking. Developing patrimonial states (for example, Ethiopia and Rwanda) are characterised by strong centralised leadership with limited scope for the influence of external actors. There is also a relatively high demand for evidence, based on incentives to achieve developmental outcomes in order to maintain the legitimacy of government. In addition, ministries were generally technocratic in nature, with some (albeit limited) capacity to appraise and use evidence (Sumner and Harpham 2008, cited in Punton 2016).

2.3.2 Evidence use culture in government

Another challenge relates to the way evidence use can be influenced by the nature of relationships within government organisations. An observational study of UK civil servants and ministers found that civil servants were often reluctant to use evidence to challenge ministers, 'conscious of the need to create and maintain a "good relationship"' (Hallsworth *et al.* 2011, cited in Punton 2016: 45). The study suggests that this reluctance is partly a result of limitations in support structures (systems and processes to enable civil servants to challenge their ministers without compromising relationships), without which the easiest way to keep everyone happy is to 'give the minister what they want' (*ibid.*). This finding was echoed in a recent observational study of how the UK Department for International Development (DFID) learns, in which some interview respondents said they have been told they 'can't say that' about particular pieces of fact-based advice because it would be unacceptable higher up the organisation (ICAI 2014, cited in Punton 2016: 45).

The most commonly cited barrier to evidence use by central government is lack of time to access and appraise research. It has been argued that this partly reflects an organisation's 'culture' of evidence use (Cairney 2016). Some studies suggest that lack of time may link to organisational values and norms around evidence use – for example, whether individuals are given permission and dedicated time to review and synthesise research (Punton 2016).

Hierarchical management of information, organisational silos, and poor organisational memory can all limit access to research and evidence use. A case study from Mexico found that the hierarchical management of information within centralised government organisations prevented research from arriving at relevant organisational levels, making it difficult for policymakers to access evidence (Trostle *et al.* 1999, cited in Punton 2016). Job boundaries can also make it very difficult to engage with ideas beyond a person's immediate area of responsibility or consider multidisciplinary evidence and engage in horizontal thinking across different sectors (Liverani *et al.* 2013, cited in Punton 2016). Finally, Waldman's study of DFID advisers found that high staff turnover and trends of decreasing staff-to-funding ratios were believed to result in poor institutional memory, which was believed to reduce effective use of evidence (Waldman 2014, cited in Punton 2016).

Surprisingly few studies have looked at the role of ministers and government officials specifically. Those that have (mostly in the global North) highlight the linear views of officials around evidence use, which assume that research can be used at fixed points to improve decision making. However, in his study of UK education policy, Brown (2014) recommends: '… that policy makers, as an

essential element of their role, move to more continuous engagement with research and researchers'. This concept of 'evidence as learning' is echoed in the broader evidence into policy literature, especially in relation to adaptive approaches to policymaking (Ramalingam *et al*. 2008) (see section 2.1.1).

2.3.3 Case study – Lebanon and the Center for Educational Research and Development

Of particular relevance to this review is the 2019 paper by Maha Shuayb on the Lebanese model implemented in the mid-to-late 1990s. The Lebanese cabinet established a committee of ten ministers representing the various political and sectarian groups to oversee education reform in the country, following the 1989 Taif Accord after the civil war. The Center for Educational Research and Development (CERD), a parallel entity to the committee, was tasked with education research and planning in Lebanon. CERD drafted an education sector development plan, which was then shared with the ministerial committee. The ministers had their own advisers as well. The very detailed plan dedicated a section to dealing specifically with research. It highlighted the studies used in developing the plan; these included data, research, and statistics gathered by CERD and other public institutions, as well as local and international institutes. However, developing the curriculum and textbooks served as the main priority during this period. Empirical research did not play a significant role in the design of the education reforms.

Later, the Lebanese Association for Educational Studies (LAES) produced a report that analysed the main gaps in the current education system through a desk review of available research and statistics. LAES did not conduct new empirical research but reviewed published studies. This work eventually informed what became known as the National Educational Strategy in Lebanon.

One of the main challenges around policymakers using research was the lack of a collaborative research culture at the ministry level. Even though the role of research in education reform and planning was assigned to CERD, the absence of a research culture at the Ministry of Education (among other political reasons) resulted in diminishing CERD's role for over 15 years. This structure had the potential to bridge the gap between research institutes and policymaking in Lebanon (Shuayb 2019). No new empirical research was undertaken, although the plan highlighted the existing studies used in its development including data, research, and statistics. However, developing the curriculum and textbooks served as the main priority during this period (Mohamed 2012, cited in Shuayb 2019).

2.3.4 Decentralisation

System-wide change in evidence use requires a focus on the 'top-down' as well as the 'bottom-up' (Vogel and Punton 2018). A systematic review found evidence that a concentration of power in centralised systems (e.g. the UK's National Health Service (NHS) prior to 1990 reforms) can prevent pluralistic debate, and therefore the need for evidence to support competing views. Conversely, in decentralised political systems, there may be more need for research to legitimise or justify political decisions (Liverani *et al*. 2013, cited in Punton 2016). However, evidence use may not emerge upon decentralisation. Limited budgets for local research, few links between academic institutions and local decision making bodies, and the persistence of national policies can all prevent bottom-up approaches (Pellini *et al.* 2013, cited in Punton 2016). In education, in particular, there has been a recent movement seeking to grow 'grass-roots' research that values the experiential knowledge of educators. There has also been a growing trend in OECD (Organisation for Economic Co-operation and Development) countries for educator- or practitioner-led research (Nelson and Campbell 2017).

Education reform in the MENA region and beyond raises particular challenges around bringing together two different communities of discourse: policymakers, and educators at school level. While policymakers advocate for reform models that stress regularities of process and organisational structures as sources of stability for the system, educators see the problems of everyday functioning, and demand organisational action that is responsive to the peculiarities of their context, and that welcomes unpredictable and autonomous initiatives by individual practitioners. Reformers

face the challenge of bridging the acute divide between the macro top-down goals typically set by policymakers, and the micro realities of practitioners at the school level. A promising direction for Arab educators is one which involves adopting a reform approach, following a model where top-down policymaking is congruent with, and supportive of, school-based, bottom-up initiatives for change (Abi-Mershed 2010 and Bashshur 2005, cited in Akkary 2014).

2.4 Ecosystem support

Given the limited success of focusing solely on governmental structures and capacities to improve evidence use, there has been increasing interest in the wider knowledge ecosystem and how to create a more enabling environment. These systems include: researchers and the outputs they produce; research managers and the institutions they work for; funders and governments who support research; policymakers who use the research to drive change to achieve better outcomes; engagement and communication specialists who share and discuss the findings with the public; and the private sector (Becheikh *et al.* 2010). Furthermore, what research is produced and how it is received is affected by the overall political and economic situation of a country, including leadership at the national level, governance and regulatory frameworks, quality assurance, financial resources and incentives, and digital infrastructure (Datta 2018).

A whole series of skills have been identified as necessary across the individual and institutional members of this ecosystem. They include monitoring and evaluation (M&E), research synthesis, policy analysis, interpersonal skills, and managing expert communities and research communications (Brown *et al.* 2018). It has been claimed that the MENA region, with its limited interaction between researchers and policy actors and the absence of structured processes for decision making, presents a particular opportunity for moving towards more evidence-informed policymaking (El-Jardali *et al.* 2014). The learning from large-scale, multi-country attempts to strengthen knowledge use in policy recommends a systems-level approach (Punton 2016) (see also section 2.1.1).

Another approach to transforming evidence use within knowledge ecosystems has been the large-scale training of policy actors. The Building Capacity to Use Research Evidence (BCURE) programme attempted to train Pakistani civil servants on a large scale. It was hoped this would lead to a broad cohort of trained officials with an awareness of the value of evidence-based policy and tools to put this into practice. Over time, this would contribute to a 'critical mass' of people working differently, which would catalyse a broader shift towards a culture of evidence use in the civil service. However, evidence suggests that, while trainees may have a more favourable attitude towards evidence use and improved skills, many have been unable to apply their learning or influence the practices of colleagues or managers. Evidence from across the BCURE portfolio and the wider literature also suggests that achieving a critical mass is unlikely without addressing the incentives and organisational structures that inhibit evidence access, appraisal and use (Vogel and Punton 2018; Punton 2016).

Finally, determining a research agenda based on country needs does not appear to be a job for central government alone. Ideally it involves input from key national and local stakeholders, such as funders, national authorities, and researchers. However, government buy-in and clarity in national priority-setting are key, to prevent misalignment of donor interventions and to bolster the long-term impacts (Fosci *et al*. 2019). A collaborate and inclusive approach to developing a research agenda involves both building networks and strengthening research and evidence use capacity at all levels (Vogel and Punton 2018; Datta 2018).

2.4.1 Networks and brokers

Policy network approaches have become a broadly accepted and frequently adopted practice in modern state governance, especially in the public sector. Global education policymaking has changed, and the three most prominent changes observed in middle-income countries such as China are: (1) the transition from a government dominant practice to one primarily driven by a

combination of central government and decentralised networks; (2) the enhanced role of higher education institutions and scholars as a 'professional interest group'; and (3) the increasing participation of non-governmental actors (Han and Ye 2017). Improving relationships between evidence producers, decision makers and other interest groups requires long-term linkages between research, evidence and decision making, and strategic interpersonal relationships to support this. To help create stronger connections between evidence and decision makers, third parties such as knowledge brokers and advocacy groups can play an important role (Lugo-Gil, Jean-Baptiste and Jaramillo 2019). These networked relationships require partners to identify areas of mutual interest (despite different core agendas and institutional mandates), sustaining interactivity, and a flexible and adaptive approach to policy engagement (Georgalakis and Rose 2019; Fosci *et al*. 2019). A useful model for facilitating evidence as learning in government is through the establishment of 'learning communities' that are delinked from immediate policy implementation priorities and engage with research on an ongoing basis. These communities or groups need to include both policy actors and researchers (Stoll 2008). Related to this is the establishment and sustainability of research–policy partnerships around mutual agendas (Edelstein 2016).

Networks play a role in facilitating the mechanism of 'social learning'. This theory suggests that learning happens through opportunities to discuss ideas with and observe the behaviour of others, resulting in increases in individual or collective knowledge and understanding. When decision makers and technical experts or practitioners interact, you may get an improved understanding and communication between decision makers and technical experts (Pappaioanou *et al*. 2003, cited in Punton 2016). In health policy, this approach has supported decision makers to understand research and its relevance to their policies, and has helped researchers to understand the importance of framing an issue for a specific policy area. This is less about research directly informing policy and more about a network co-producing evidence to inform a decision making process (*ibid.*). This requires 'soft skills', including the ability to engage beyond familiar networks and to build trust (Wilkins and Cooper 2019). However, intermediaries that help join up networks of diverse actors are rarely neutral and may subscribe to a particular policy agenda. This remains the case even when organisations, such as research institutions, are genuinely committed to supporting evidence-based decision making. They may broker research evidence in ways that filter out politically undesirable options or frame the evidence for the preconceived ideas of practitioners (Galey 2015).

Decisions around the locations and structure of brokerage and research capacity are closely linked to local context and historical trends in governance. Although highly centralised quasi-government research capacity can very successfully inform policy, as is the case for the UK DFID Education Research team (Hinton *et al.* 2019), there is a risk of allowing the activities performed by the knowledge-brokering functions to be too heavily dictated by (sector-specific) political priorities and normative values. This may undermine practical and experience-based evidence and societal needs (Wollscheid *et al.* 2019). Such a detachment of the knowledge production endeavour from the practice field may seriously undermine attempts to improve education policy processes through evidence and learning (Sarewitz 2016).

Most BCURE projects involved activities designed to promote dialogue and collaboration. In Kenya, Pakistan, Zimbabwe, Bangladesh, and South Africa, the projects held workshops, 'knowledge cafes' or 'policy dialogues' to bring together participants from different sectors or parts of government (e.g. researchers, experts from industry, civil society, the media, and the general public). These were generally one-off events, each involving different participants and with different topics and aims. In South Africa, BCURE housed and funded the Africa Evidence Network – a platform for professionals working in evidence production and use – to engage with one another and share knowledge and resources. This network is still going strong (Vogel and Punton 2018).

In a MENA context, there is evidence to support a more networked approach that builds on professional associations of education practitioners, university researchers, and local and central

government officials (Akkary 2014). This approach certainly suggests there is a solution to the perceived gap between the 'supply' side and the 'demand' side of evidence identified in studies of Lebanon's education reform (Shuayb 2019).

Individual champions within government and partner institutions may act as 'gatekeepers' to institutional partnerships. This may be especially crucial working across government ministries. These champions also frequently act as 'cheerleaders', helping to bring other senior stakeholders on board and identifying further opportunities for partnership (Vogel and Punton 2018). This also relates to developing a culture of evidence-informed policy in government (Hinton *et al.* 2019). Effective champions and knowledge brokers appear to possess specific interpersonal skills, vision and commitment, and an appropriate level of seniority in an organisation. The evidence on networks suggests they may lead to change through the mechanism of 'social processing' – in which beliefs within a group shift towards a consensus (Punton 2016).

2.4.2 Centres of excellence and innovation

A common modality for developing long-term capacity to conduct advanced research, particularly in the health sector in LMICs, is 'centres of excellence'. These generally concentrate investment within a few institutions that show potential to excel and become high-quality, self-sustaining sites (also known as 'islands of high capacity'). Centres of excellence can bring about transformative change because they increase the likelihood of high-quality research and renewed investment in an otherwise challenging environment (Franzen *et al.* 2017, cited in Datta 2018). They are beacons of good practice in relation to strengthening research systems, which focus on research management. These include health-focused initiatives such as the University of Ghana's Office of Research Innovation and Development (ORID) and the Research Support Centre at the University of Malawi's College of Medicine. Although these initiatives have produced models of excellence, none appear to have been widely replicated in education (Fosci *et al*. 2019).

Innovation systems are defined as networks of agents whose interactions with each other and the broader environment help condition their behaviour and performance with respect to generating, exchanging, and utilising knowledge (Spielman 2006, cited in Datta 2018). The whole is seen as more than the sum of its parts, while the interaction between actors is as important for processes and outcomes as the actors themselves. The approach underlines the importance of understanding the history and trajectory of interactions between actors and the evolution of institutions, which have led to current organisational arrangements. As such, each (national) system may be expected to develop its own unique dynamics. The innovation systems perspective presents a shift from the conventional, linear approach to research and development. It provides an analytical framework that explores complex relationships among diverse actors, social and economic institutions, and technological and institutional opportunities (Ramalingam *et al.* 2008). This is explored further in complexity science and systems thinking (see section 2.1.1) and the benefits of networks which facilitate knowledge exchange in order to strengthen evidence use in policy (Wilkins and Cooper 2019; Boulton *et al.* 2015).

3 Summary of learning

3.1 Evidence use is not a simple linear or technical process

Strengthening evidence use in policy requires multiple strategies and not just technical fixes such as information and communications technology (ICT) for knowledge management and the communication of research in briefings. Evidence use is a social and political process that requires a supportive organisational culture, strong networks, and leadership.

3.2 Build a relevant knowledge base

A culturally grounded, relevant knowledge base is essential and the uncritical adoption of models and evidence from other regions should be avoided. This also means not overly relying on secondary data and a totally centralised process for gathering evidence. The evidence base for education reform needs to be diverse and not overly positivist. Evidence from all levels, from top to bottom, is required. This evidence may need to be co-produced by government officials, researchers, practitioners, and other stakeholders to generate policy-relevant practical learning. Build a national research agenda in an inclusive way that values diverse perspectives and different types of evidence.

3.3 Decentralise evidence production and learning

Education reform benefits from a decentralised approach that allows learning and evidence to flow up and down. This may involve supporting professional associations of education practitioners, university researchers, donors and international partners, and local and central government officials to work together cohesively in a sustained dialogue.

3.4 Support skills and capacities

Evidence use in policy and practice requires a whole range of skills in government, universities and research centres, and elsewhere. These can be supported, although large-scale training is unlikely to have a big impact unless it is taking place in an enabling environment. Capacity building has to happen at an institutional as well as an individual level. Identify senior knowledge brokers who can act as evidence champions within their departments.

3.5 Use a networked approach

Build and strengthen networks of evidence producers, intermediaries, and users. Focus on policy and research dialogue rather than simply knowledge translation. Consider supporting semi-independent or fully independent centres of excellence, research organisations, and knowledge brokers in specific fields. Support the wider knowledge ecosystem and consider how to take a systems-level approach. Research policy partnerships can be built on overlapping agendas and sustained interactivity. The production and use of evidence in policy requires building trust and relationships.

3.6 Embrace complexity

Education systems are not chaotic, but they are complex and cannot be understood simply by breaking them down to their constituent parts. Avoid a reductionist approach that assumes evidence need only be mobilised at key policymaking moments. Build feedback loops that allow an adaptive policy formulation approach. Create a culture of ‘evidence as learning’ in which context-appropriate policy experimentation is possible, in which innovations can emerge, and in which path dependency does not prevent a change in policy direction when it is required.

Annexe: Search protocol and results

Research question
The research question for this study was defined as follows: what can we learn from the experience of education and other sectors about best practice in stimulating evidence uptake in government ministries?

a. What are the intrinsic and extrinsic characteristics which encourage the use of evidence in government ministries?
b. How do governments mandate for an enabling environment around evidence and the decentralisation of decision making?
c. Where do effective research departments tend to be positioned within government departments/ministries and how are their relationships with other units established and maintained?
d. What best practice exists with respect to strategies, tools and techniques, and policies for evidence uptake?

Population
The primary focus was on studies relating specifically to the effective use of research and evidence in education sector reform, policy design, and implementation by government ministries (national and local/decentralised) in the MENA region and/or Arab states.

Search strategy
The scoping review combined a systematic search of key research databases with other search methods drawing on the subject expertise of the research team. These alternative methods included reference snowballing, citation searches in Google Scholar, and targeted searches of grey literature sources.

Systematic search
Based on an initial assessment by the research team, the following databases of research publications were identified as likely to contain relevant materials:

- Campbell Collaboration
- DFID R4D
- Education Resources Information Center (ERIC)
- Google Scholar
- Scopus
- University of Sussex Library
- Worldwide Political Science Abstracts
- Web of Science

In addition, the following institutional and programme websites were identified as likely to contain high-quality grey literature:

- 3ie
- Alliance for Useful Evidence
- BCURE programme
- Evidence Informed Policy and Practice in Education in Europe (EIPPEE) Network
- EPPI-Centre
- Harvard Kennedy School
- INASP
- IDRC Digital Library
- IDS OpenDocs

- Research and Policy in Development (RAPID) programme
- Research to Action
- UNICEF Innocenti
- UNESCO

Search terms
For the systematic search, a query was compiled based on key terms and their synonyms identified from the research question and a list of intervention and outcome types identified in the concept note:

- raising awareness and political support for evidence production and use;
- supporting legal and institutional frameworks and structures;
- strengthening linkages between higher education, research organisations, knowledge intermediaries, and government;
- building research capacity in government and beyond;
- incentivising the use of evidence;
- strengthening knowledge exchange systems.

This was refined after some initial testing using Scopus. The comprehensive list of search terms used was expressed as a Boolean search string as follows:

("Education policy" OR "Education" OR “Education reform”)

AND

("Evidence for policy" OR "evidence informed policy" OR "evidence based policy" OR "evidence use" OR "research capacity" OR "research management" OR "research uptake" OR "research partnerships" OR "research policy partnerships" OR "knowledge partnerships" OR "research information systems" OR "research systems" OR "knowledge management" OR "knowledge mobilisation" OR "knowledge mobilization" OR "knowledge translation" OR "knowledge networks" OR "coordinated funding" OR "capacity building" OR "capacity strengthening" OR "systems strengthening")

AND

("government" OR "ministry" OR "ministries" OR "civil service" OR "local government" OR "regional government" OR "decentralised government" OR "government bodies" OR "government institutions" OR "central government")

AND

("middle east" OR "north africa" OR "middle east and north africa" OR "MENA region" OR "Algeria" OR "Bahrain" OR "Djibouti" OR "Egypt" OR "Iran" OR "Iraq" OR "Israel" OR "Jordan" OR "Kuwait" OR "Lebanon" OR "Libya" OR "Malta" OR "Morocco" OR "Oman" OR "Qatar" OR "Saudi Arabia" OR "Syria" OR "Tunisia" OR "United Arab Emirates" OR "Palestine" OR "Yemen")

Depending on the volume and quality of results returned and, in some cases, restrictions in the length and format of search queries, modified search strings were sometimes used to improve results.

Other inclusion/exclusion criteria

Languages: English only

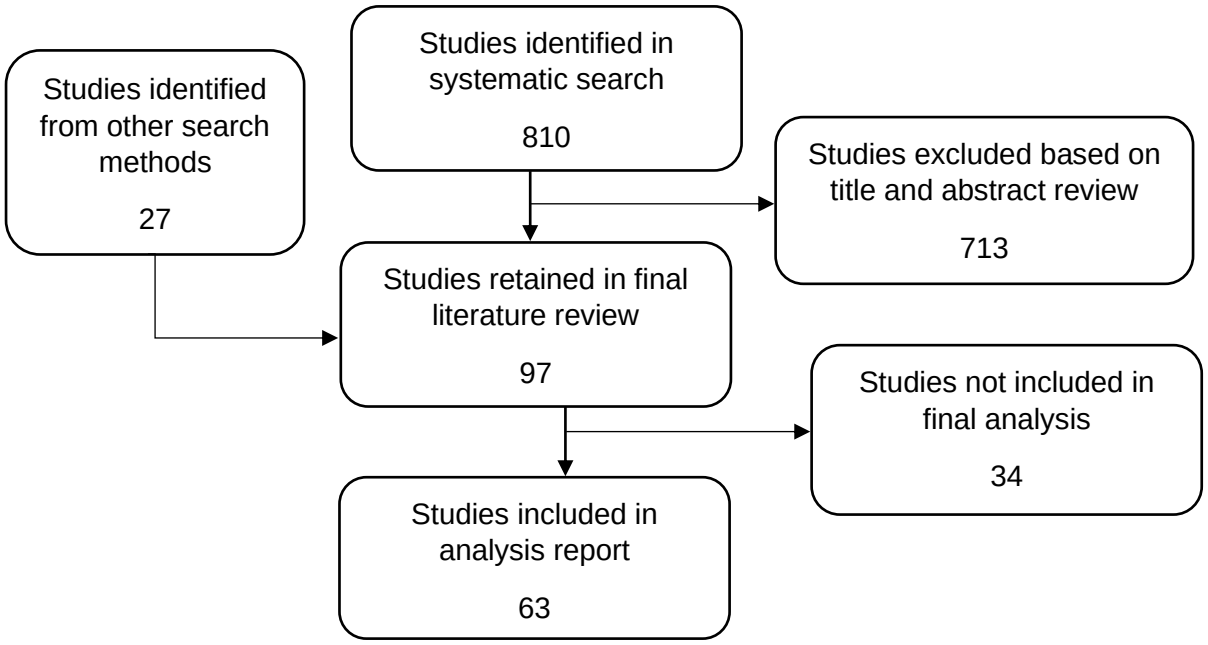
Date range: 2014 to present (exceptions made for some classic or regionally relevant texts)

Types of study:

- peer-reviewed journal articles;
- published literature reviews and syntheses;
- toolkits and capacity development resources;
- programme design and strategy documents;
- programme evaluations;
- case studies and learning papers;
- book chapters.

Results
Results were then filtered and coded in two rounds of sorting, based on an initial review of the study titles and abstracts and then a more detailed assessment of relevance and coding against the interventions and outcomes described in the research question and Terms of Reference.

Figure A1 Search filtering and exclusions



Source: Authors' own.

Coding
The final set of documents included in the literature review were coded according to their potential relevance for the sections of the analysis report, using the following tags:

- ecosystem support;
- culture of evidence use;
- state capacity and governance;
- shortlist;
- education reform;
- networks and brokers;
- Concepts;
- Case study;
- Decentralisation;

- Centres of excellence and innovation;
- MENA;
- Jordan.

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