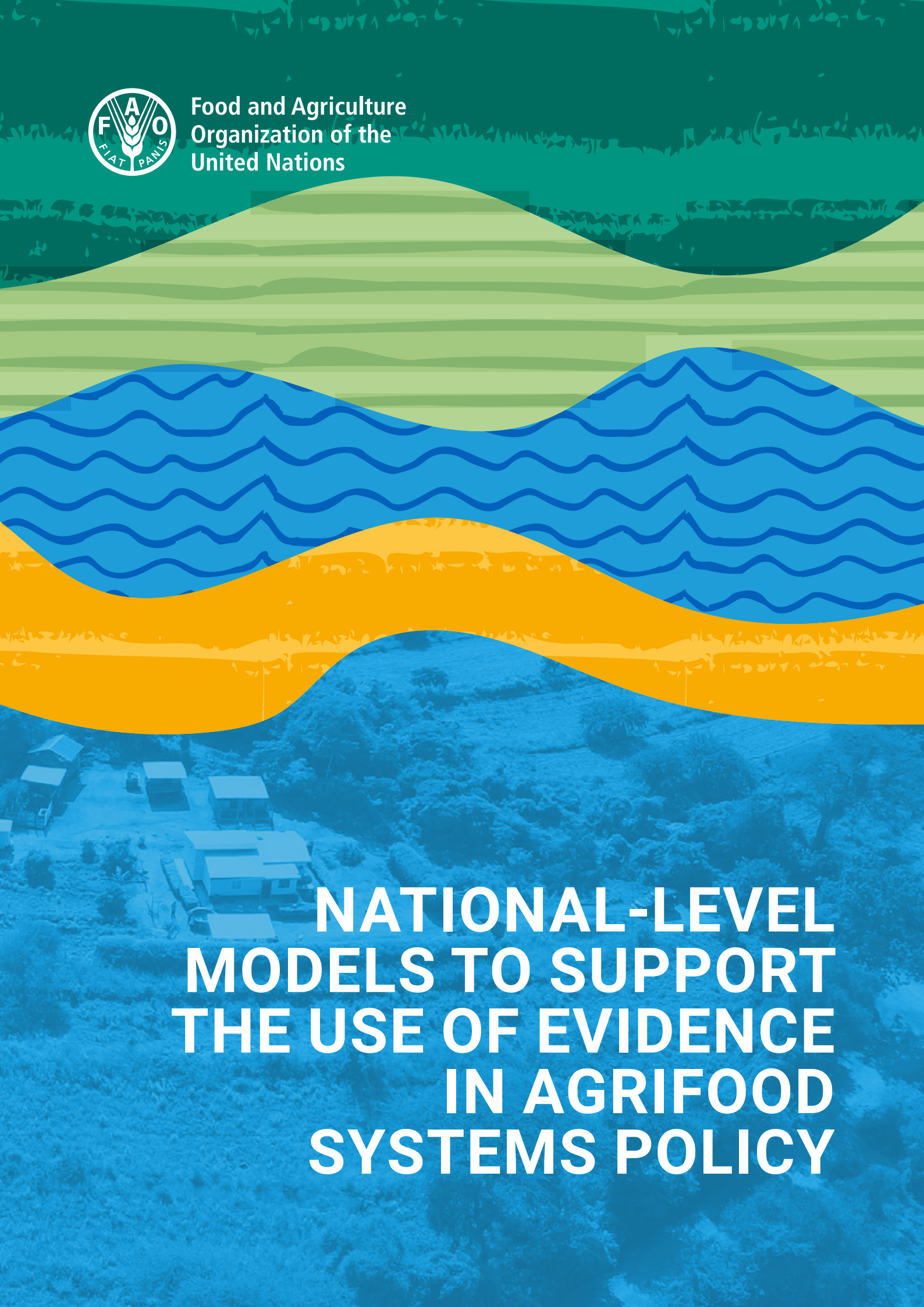
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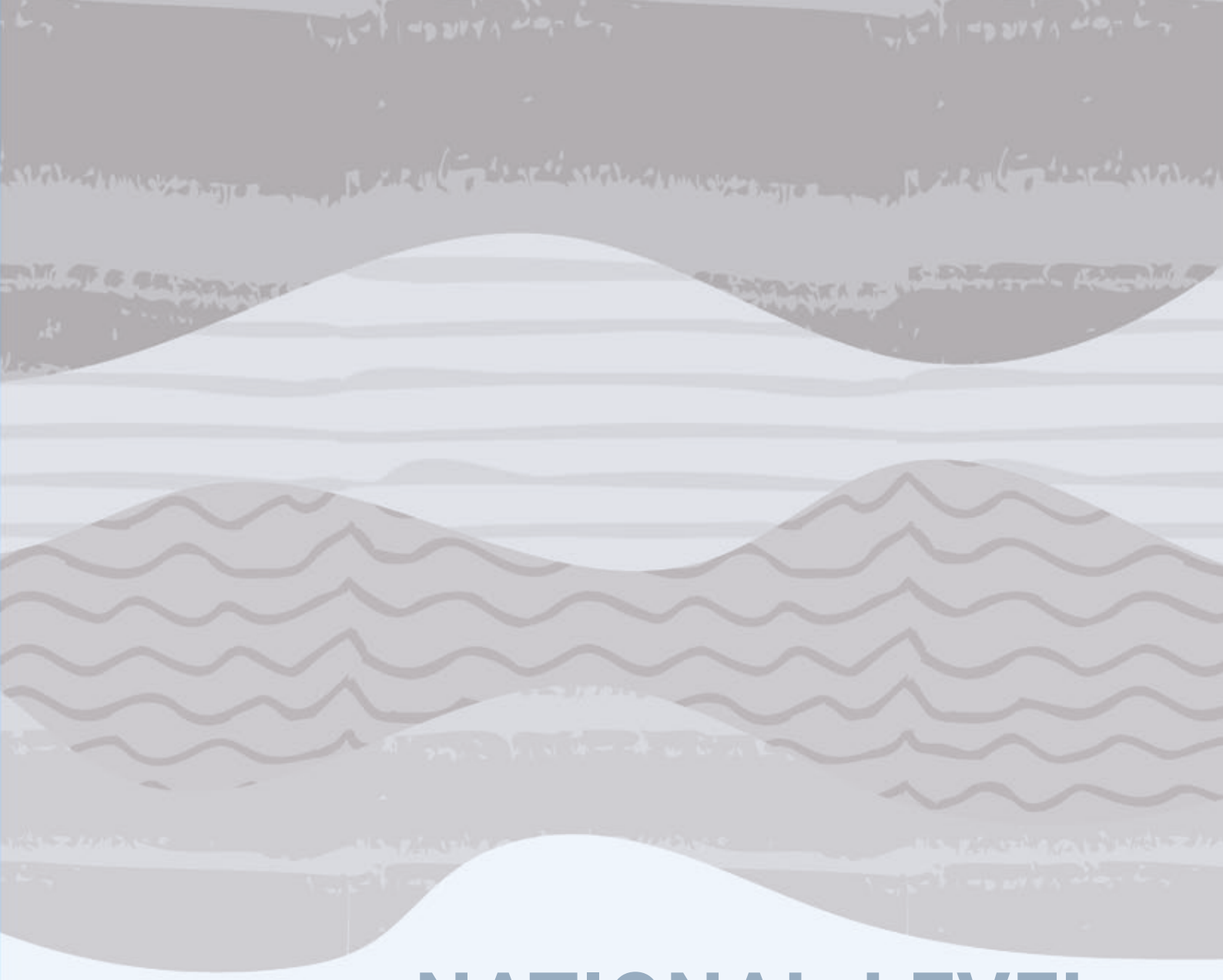

NATIONAL-LEVEL MODELS TO SUPPORT THE USE OF EVIDENCE IN AGRIFOOD SYSTEMS POLICY

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ABBREVIATIONS

3ie	International Initiative for Impact Evaluation
AAAS	American Association for the Advancement of Science
AEN	Africa Evidence Network
AUB	American University of Beirut
BSE	bovine spongiform encephalopathy
CEEDER	Collaboration for Environmental Evidence Database of Evidence Reviews
CHSRF	Canadian Health Services Research Foundation
CIHR	Canadian Institutes for Health Research
COVID-END	COVID-19 Evidence Network to support Decision-making
CNRS	National Council for Scientific Research of Lebanon
Defra	Department for Environment, Food, and Rural Affairs (The United Kingdom of Great Britain and Northern Ireland)
EASAC	European Academies' Science Advisory Council
EBM	evidence-based medicine
EIDM	evidence-informed decision-making
FAO	Food and Agriculture Organization of the United Nations
INRAE	National Research Institute for Agriculture, Food and the Environment (France)
IPBES	Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services
IPEI	Inclusive Economic Development Index (Indonesia)
IPCC	Intergovernmental Panel on Climate Change
IRS	Industrial Research Institute (Lebanon)
ISC	International Science Council
IT	information technology
KSCDP	Kibale and Semuliki Conservation and Development Project (Uganda)
KSI	Knowledge Sector Initiative (Indonesia)
KTP	knowledge translation platform
K2P	Lebanese Knowledge to Policy Center
LACHub	Latin American and Caribbean Hub
LAN	National Institute of Public Administration (Indonesia)
LARI	Lebanese Agricultural Research Institute
LMICs	low- and middle-income countries
NGO	non-governmental organization
NHO	National Health Observatory (Colombia)
NIDS	National Income Dynamics Study (South Africa)
NSI	National System of Innovation
OECD	Organization for Economic Cooperation and Development
PAHO	Pan American Health Organization

POST	Parliamentary Office of Science and Technology (The United Kingdom of Great Britain and Northern Ireland)
RISE	Rapid-Improvement Support and Exchange (Canada)
SCAR	European Commission Standing Committee on Agricultural Research
SDGs	Sustainable Development Goals
SEIAS	Socio-Economic Impact Assessment System (South Africa)
SINERGIA	The National Management and Results Evaluation System (Colombia)
SPARK	Centre for Systematic Reviews on Health Policy (Lebanon) and Systems Research
SPI	science–policy interface
STI	science, technology, and innovation
UNED	Unit for Evidence and Deliberation for Decision Making (Colombia)
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHO	World Health Organization

EXECUTIVE SUMMARY

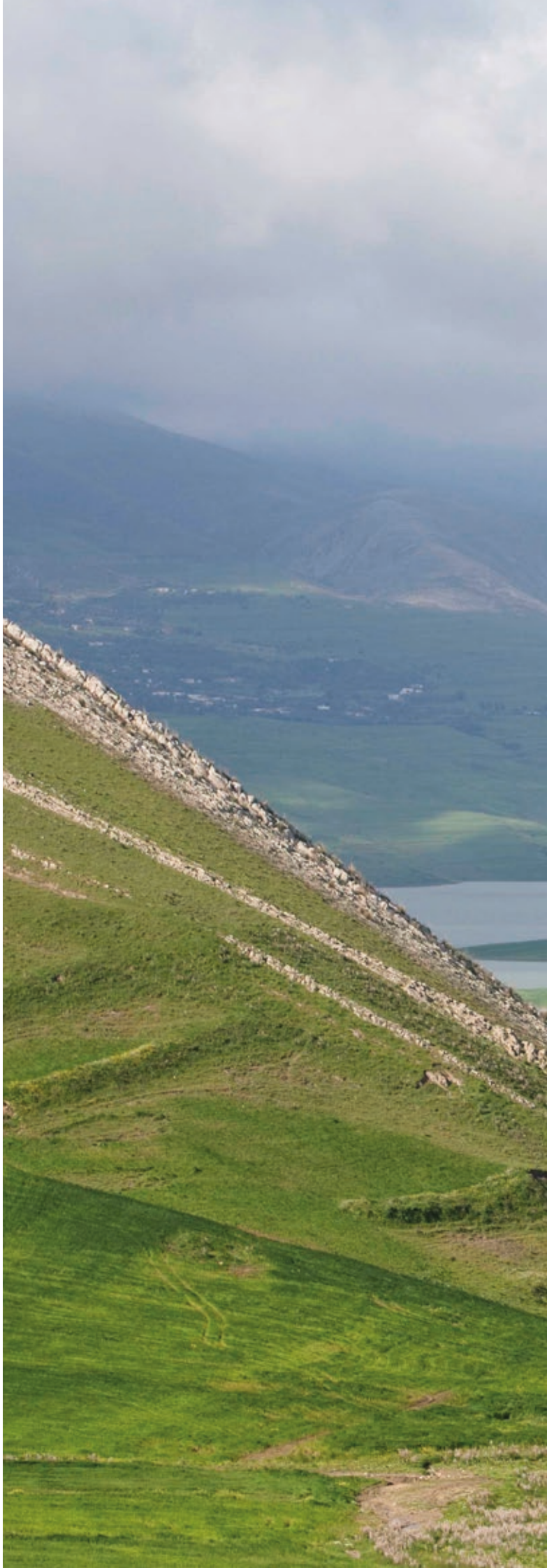
Agrifood systems provide food, nutrition, employment and economic security to millions of people around the globe. They are, however, under increasing pressure from a range of natural and human-induced forces, including climate change, pandemics, migration and civil unrest. This worsening situation requires that agrifood systems be reconfigured and transformed. Application of science and innovation is generally held to be key to fortifying agrifood systems so that they are better able to cope with the pressures they face now and will face to an even greater extent in the future. If successfully transformed, agrifood systems will continue to provide the essential goods and services on which humankind depends.

Agrifood systems are shaped by changing environmental pressures, social and biological threats and demands in providing safe and nutritious food, ensuring animal welfare, minimizing negative environmental impacts, and promoting livelihoods, and are therefore evolving continuously. To evolve productively, they require innovative inputs from developments in science and technology. Science is an important source of the required knowledge and to generate the evidence that is used by policymakers. The mechanisms that support the use of scientific evidence by policymakers need to be strengthened because there is often discontent with the quality and effectiveness at the science–policy interface. Consequently, it is necessary to establish improved networks among science researchers and policymakers, to build capacity in how to inform policy optimally with scientific evidence and to institutionalize systematic, participatory and transparent processes that address current and future challenges. This report sets out to provide an overview of existing approaches to strengthen the science–policy interface at the national level and support the use of evidence, to transform global agrifood systems that secure food supply and livelihoods for small-scale producers and benefit the environment.

The evidence-informed policy field, and approaches to strengthen the science–policy interface, are cross-cutting, with some variation in specific sectors. For this reason, lessons can be learned from approaches used in other policy areas for application to agrifood systems.

This report details models and activities used for developing and operating science–policy systems. Emphasis is placed on low- and middle-income countries, but examples from high-income countries are also included. The report draws on literature that addresses conceptual and theoretical issues and which describes activities that have been used internationally. It also summarizes, where available, lessons arising from empirical examples. Thirty-nine examples of national models are described, and evaluation lessons are drawn from 17 countries. Six detailed case examples are also provided. Accounts are included from numerous reports and academic papers published during the last decade. Further insights are drawn from 20 years of practical experience working in this field in North America, Latin America, Europe, Asia and Africa, and are enhanced by drawing on the experiences documented by numerous international networks.

Three high-level models are presented: the production-focused model, the policy-oriented model and the integrated model. The breadth of the identified national activities within the models is substantial and the scale of potential lessons to be learned from around the world cannot be underestimated. Findings from the empirical cases and the evaluation data are distilled into lessons for strengthening each model, as well as suggesting ten priority recommendations for national science–policy engagement for agrifood systems: i) Agility must be built into programmes to strengthen science–policy interfaces. ii) Systematic, participatory and transparent programmes that build and strengthen relationships among researchers and policymakers are needed. iii) Lack of integration of Indigenous Peoples' knowledge and limited community engagement in all aspects of the science–policy interface must be addressed. iv) Multidimensional approaches, models and programmes, with integrated funding systems, need to be developed for incorporation into national evidence systems so that they are informed by the best available evidence and are based on well-developed theories of change. v) Investment is needed in national infrastructures, including in national science and innovation infrastructures. vi) Incentives and drivers are needed for researchers to conduct policy-relevant agrifood research at a systems level, including the adoption and development of methodological approaches to assess causal relationships within complex agrifood systems. vii) Approaches for effectively balancing local and global realities and the evidence from each require development, testing and adoption across national systems. viii) Structures and systems are needed for collating evidence bases on which decision-makers can draw in transparent and accountable ways, as well as evidence support services to draw on those systematically collated evidence bases to provide timely and appropriate science advice for governments. ix) There is an ongoing need for advocacy for the value of science and evidence-informed decision-making. x) More in-depth country assessments must be the starting point for future national-level investment in science–policy engagement for agrifood systems.

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1 INTRODUCTION

Agrifood systems provide food, nutrition, employment and economic security to millions of people around the globe. However, poverty, hunger and inequality are increasing on a global scale as agrifood systems come under increasing pressure from a range of natural and human-induced forces, including climate change, pandemics, migration and civil unrest (IFAD, FAO, UNICEF, WFP and WHO, 2021). The capacity of agrifood systems to provide essential goods and services in line with global requirements, particularly food security and nutrition as well as livelihoods, is under threat, especially in many low- and middle-income countries (LMICs) and for vulnerable communities living in marginal areas. This worsening situation requires that agrifood systems be reconfigured and transformed. Application of science and innovation is generally held to be key to fortifying agrifood systems so that they are able to cope with the pressures they face now and will face to an even greater extent in the future and if hunger and famine, among various potential catastrophes, are to be averted and the Sustainable Development Goals (SDGs) realized. Successful transformation of global agrifood systems will ensure that they continue to provide the essential goods and services on which humankind depends.

Innovative applications of science and technology are key to strengthening agrifood systems, providing better information for better policies, and ensuring that such policies can be evaluated effectively to inform strategies and practices at farm, national and international levels. However, generation of scientific knowledge does not equate with successful and useful application. Nor does it ensure timeliness of application. Edler, Karaulova and Barker (2022) emphasized the frequent dissatisfaction with the quality and effects of science–policy interactions in theory and practice. Social, economic and political forces shape how scientific evidence is understood and valued and there is an inherent relationship between scientific knowledge and moral values (Carrier, 2022). There exists, moreover, an intrinsic balance between public faith in politicians, the decision-makers and policymakers, and scientists, the providers of scientific evidence. Science-based decision-making invariably generates significant political and ethical debate (Cooper, Dimitriou and Arandjelovíc, 2021).

Decision-making processes vary among individuals, communities, organizations and governments, and are informed by scientific knowledge that derives from numerous sources. What constitutes high quality scientific knowledge for policy differs among researchers and policymakers but is important because high quality science is the foundation of trust and success in adapting scientific knowledge to useful policymaking. However, there is no clear and unambiguous guidance on how researchers and policymakers might gain the skills needed to work collaboratively to inform the policymaking process better. Therefore, for those who advocate greater use of evidence in policymaking, the challenges are considerable.

Efforts have been made to increase the use of scientific evidence in policymaking over many decades, with a range of strategies employed across various sectors, in many ways led by, but not limited to, environmental considerations, particularly with respect to the consequences of climate change. The field of evidence-informed decision-making has strengthened science–policy engagement and supported the integration of the best available scientific evidence into policy, although much still needs to be done. The scientific community has acknowledged that addressing challenges successfully requires participation of numerous actors and that policymakers and policymaking structures, as well communities, play important roles. Adequately funded national evidence systems that connect national research groups and ensure that they produce timely, policy-relevant research are critical. National research groups generate, contextualize and synthesize scientific evidence and systematically and transparently incorporate research evidence into the decision-making process. Such national systems require strengthening.

The justification for increasing the use of scientific evidence in decision-making is convincing (Langer and Nduku, 2019). Evidence-informed policy has the potential to improve accountability and transparency in decision-making processes (Oliver and Pearce, 2017), improve the effectiveness, efficiency and equity of the decisions that are made (Langer and Nduku, 2019) and reduce research waste (Chalmers *et al*., 2014). Evidence helps policymakers to understand issues and causes, select possible policy options to address issues, identify implementation considerations and evaluate the impacts of decisions. However, research evidence is only one of the factors that can influence the policymaking process because it always occurs within institutional constraints, according to interest group pressures and ideas about "what is" (e.g. facts, research evidence, data analytics) and "what should be" (i.e. values) and it is shaped by external events, such as the COVID-19 pandemic.

While public support for science might be high and that for politicians (as policymakers) often low (Cooper, Dimitriou and Arandjelovíc, 2021), science is not immune from criticism (Proctor, 1991). Many major policies have relied on, and continue to rely on, science that the public questions. This includes science-based policies related to militarization and medicine, among other domains, but most importantly also to agriculture and agrifood systems. Intensive agriculture, based on agrochemicals and geared almost solely towards increased productivity, is questioned for its effects on the environment as well as on its dominance by large multinational corporations and the inequalities it often engenders in rural populations. It is also questioned for its effects on the quality of food that derives from it. Biotechnology applications for the improvement and transformation of agrifood systems have also been critiqued (Goldberg *et al*., 1990) for similar extrinsic reasons and for many intrinsic, ethical reasons. Although reliable scientific evidence has the potential to underpin good policymaking, it does not automatically follow that evidence-based decision-making necessarily equates with advancement.

Research activities to support the use of evidence in decision-making aim to inform political decision-making by identifying the type of evidence that can help to understand a problem (e.g. data analytics, modelling, evidence synthesis), understand the potential impacts of various policy options (e.g. systematic reviews, cost-effectiveness analysis), identify implementation considerations (e.g. qualitative research) and evaluate the results of those choices (e.g. evaluation studies) (Oakley *et al*., 2005). The intention in these activities is to provide the evidence needed to inform decisions. In addition to such evidence production activities, there are other activities from across the evidence-informed policy field that focus on either or both of the interface between science and policy, and the policy sphere. Together these aim to create the structures and processes that are needed to assist policymakers to use evidence in a systematic and transparent way, as a tool to address societal challenges, recognize the interaction of research evidence with other factors like institutional constraints, reconcile interest group pressures, and align with policymakers' and researchers' values.

The FAO Science and Innovation Strategy (FAO, 2022), a key tool for the implementation of the FAO Strategic Framework 2022–31, focuses on three pillars, including one on "*Strengthening science and evidence-based decision-making*". Three desired outcomes are grouped under this pillar: agrifood systems knowledge and evidence enhanced, science–policy interfaces for agrifood systems strengthened, and research for development strengthened. Recognizing the need for stronger support for the use of evidence in transforming agrifood systems, and the challenges of harnessing science and innovation at this level, there is much that can be learned from existing models that support the use of evidence in policymaking at the national level.

1.1 Terminology

Definitions of key terms used in this report are included in Box 1, followed by a brief history of the concepts.

Box 1. Key definitions concerning evidence, science and policy

Science is used to refer to the generation of knowledge to address questions using accepted methods to investigate an issue or test a theory. It has been defined in the following way: *Science signifies the enterprise whereby humankind, acting individually or in small or large groups, makes an organized attempt, by means of the objective study of observed phenomena and its validation through sharing of findings and data and through peer review, to discover and master the chain of causalities, relations or interactions; brings together in a coordinated form subsystems of knowledge by means of systematic reflection and conceptualization; and, thereby furnishes itself with the opportunity of using, to its own advantage, understanding of the processes and phenomena occurring in nature and society* (FAO, 2022).

Evidence (including, but not limited to **research evidence**) is used to describe the knowledge generated through a research (or scientific) process. There are many other types of evidence (e.g. evidence that individuals derive from their own experiences, and experiences of their communities, and evidence considered in a court of law) (Global Commission on Evidence to Address Societal Challenges, 2022).

Evidence synthesis is the *systematic process of identifying, selecting, appraising and synthesizing the findings from all studies that have addressed the same question in order to arrive at an overall understanding of what is known, including how this may vary by groups (e.g. racialized communities) and contexts (e.g. low socioeconomic neighbourhoods)* (Global Commission on Evidence to Address Societal Challenges, 2022). It is also *the review of what is known from existing research using systematic and explicit methods in order to clarify the evidence base* (Gough *et al*., 2020).

Science–policy interface, also **science–policy relations**, **science–policy engagement**, and **science–policy practices,** are all terms used to describe the interactions between science and policy, usually within national or international spheres and involving institutions and systems (Funtowicz and Ravetz, 1993). This is consistent with the FAO definition of Science–Policy Interface as *organized dialogue between scientists, policymakers and other relevant stakeholders in support of inclusive science-based policymaking* (FAO, 2022).

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Evidence-informed decision-making (EIDM) is a term used to describe the use of knowledge generated through scientific or research approaches. It encapsulates the science–policy interface, while adding a sense of purpose: that of informing decisions. EIDM recognizes that decisions are informed by other types of evidence, like tacit evidence that includes experiential evidence or judicial evidence, and by other factors such as institutional constraints, pressure from interest groups and ideas about facts and values.

Evidence-informed policy is a term that is used interchangeably with evidence-informed decision-making, while focusing specifically on policy decisions.

Evidence support systems are processes and structures that support the use of evidence in decision-making.

Agrifood systems cover *the journey of food from farm to table – including when it is grown, fished, harvested, processed, packaged, transported, distributed, traded, bought, prepared, eaten, and disposed of. They also encompass non-food products that constitute livelihoods and all of the people as well as the activities, investments and choices that play a part in getting us these food and agricultural products. In the FAO Constitution, the term "agriculture" and its derivatives include fisheries, marine products, forestry, and primary forestry products* (FAO, 2022).

FAO. 2022. *FAO Science and Innovation Strategy*. Rome. **https://www.fao.org/3/cc2273en/cc2273en.pdf**

Funtowicz, S.O. & Ravetz, J.R. 1993. The Emergence of Post-Normal Science. In: R. von Schomberg, ed. *Science, Politics and Morality*. Springer, Dordrecht, Netherlands. [cited 2023 Feb 27]. p. 85–123. **http://link.springer.com/10.1007/978-94-015-8143-1_6**

Global Commission on Evidence to Address Societal Challenges. 2022. *The Evidence Commission report: A wake-up call and path forward for decision-makers, evidence intermediaries, and impact-oriented evidence producers*. Hamilton: McMaster Health Forum. **https://www.mcmasterforum.org/docs/default-source/evidence-commission/evidence-commission-report.pdf**

Gough, D., Davies, P., Jamtvedt, G., Langlois, E., Littell, J., Lotfi, T. *et al*. 2020. Evidence Synthesis International (ESI): Position Statement. *Systematic Reviews*, 9(1): 155. **https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-020-01415-5**

1.2 Brief history of the development of science–policy systems

The interaction between science and policy has long been a subject of interest and the impact of scientific knowledge on policy development is widely recognized. It became a topic of increasing importance during the 1960s and 1970s, with growing interest in the diffusion of ideas and adoption of innovations (Rogers, 1963). More recent focus has been on how to support the use of evidence in policy and its implementation (Nutley, Walter and Davies, 2007), focusing on ways to bridge the gap between policy and science, with notable developments across several sociological fields in the United Kingdom of Great Britain and Northern Ireland, for instance (Gough, Maidment and Sharples, 2018).

Evidence-informed health, for example, has become increasingly important over recent decades, alongside the promotion of experimental designs, randomized control trials and systematic review methods (Gough, Stewart and Tripney, 2012; Gough, Oliver and Thomas, 2013), and is reflected in the formation of the Cochrane Collaboration, and related evidence-support systems (Nutley, Walter and Davies, 2007).

Drives for stronger policy informed by science, have in turn led to drives for better and more relevant science (Cooper, Dimitriou and Arandjelovíc, 2021; Oakley, 2020; Smaldino and McElreath, 2016). In economics there has been parallel use of experimental models and meta-analysis methods (Banerjee and Duflo, 2011). Similar shifts have been seen in international development, driven in part by the 'aid effectiveness' agenda, which has questioned investment in aid budgets without evidence of impact on the communities whose lives it purports to improve (Stewart, 2019). The environment has been at the centre of many developments, with drives to ensure that policy and practice are informed by the best available science (Cooke *et al*., 2017; Sutherland *et al*., 2004). There has also been wide ranging investment at global and government levels in science–policy engagement, from the work of the Collaboration for Environmental Evidence to generate relevant systematic reviews (Bernes *et al*., 2013), to the Intergovernmental Panel on Climate Change (IPCC) and the formation in 2012 of the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Science advice systems are increasingly evident in agriculture and environmental policy settings, as well as broader policy forums (Carrier, 2022). Science is recognized to have, not only substantive contributions to make to policy content, but also scope to influence the process of policymaking. While these developments have varied in emphasis and timeframe, they are all essentially part of the same movement to strengthen the use of scientific knowledge for better policy and practice and better outcomes for people and the environment (Boaz *et al*., 2019; Stewart, 2019).

1.3 Purpose of this report

In the context of global challenges such as climate change, conflict and environmental crises, all of which are exacerbating poverty and hunger around the world, there is a need for urgent action informed by the best available science. The reaction of scientists and policymakers around the world to the COVID-19 pandemic serves as an example of how evidence-informed decision-making can function at both global and national levels. The Global Commission on Evidence to Address Societal Challenges[1] described it as a once-in-a-generation instance of witnessing a focus on evidence among governments around the world, coupled with an awareness of the potential to improve outcomes and the implications of failure (Global Commission on Evidence to Address Societal Challenges, 2022). This message was echoed in the work of the European Commission's Standing Committee on Agricultural Research (SCAR), the French National Research Institute for Agriculture, Food and the Environment's (INRAE) recent investment in science for policy (Flamamarion, 2023), and the establishment of the Ghent Group. In the context of substantial investment in agrifood systems, and a potential climate change crisis, the question of how to increase the use of evidence in agrifood systems at national level is of great interest (FAO, 2022). This report sets out to extrapolate from existing models to support the use of evidence in agrifood policy.

[1] https://www.mcmasterforum.org/networks/evidence-commission

2 CONCEPTUALIZING NATIONAL-LEVEL MODELS

The need for national level systems to support the use of evidence in policymaking is well established. To strengthen such systems, they need to be understood better. Three broad models stand out in the conceptual literature, which combine a wide range of activities and can be described using several key dimensions (see Box 2 for definitions). While the three models are neither discreet nor uniformly described in the literature, they represent a useful frame for understanding national evidence systems and how they might be strengthened.

Box 2. Key definitions in considering support for evidence-informed decision-making

Models: The term is used to refer to a framing of science–policy interface under which several activities are delivered in combination over a period of time with a common stated purpose. While the specific activities vary across contexts and depend on available resources, some common combinations are apparent, allowing description of the key models in broad terms.

Activities: The term is used to refer to distinct actions such as training, mentoring, writing and meeting that take place within models.

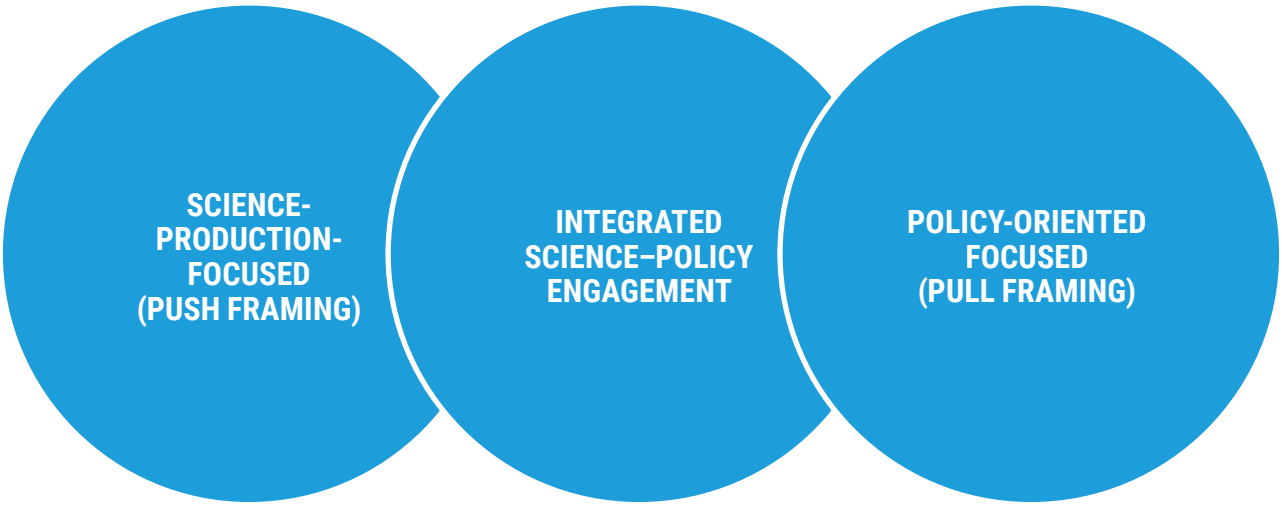
Dimensions: The term is used to refer to characteristics of models, such as the geographical dimension (e.g. national level), the sector (e.g. agriculture), level of engagement (e.g. individual vs institutions), knowledge system (e.g. scientific knowledge, Indigenous Peoples' knowledge) and impact dimension.

2.1 Beyond push and pull framing

Perhaps the most commonly used description of the science–policy interface is of 'two worlds', one of production of evidence and the other of its use, with a focus on ways of bridging the gap between the two. The standard, science-driven push framing gives science primary place and suggests that scientific knowledge should be pushed into policy in a linear fashion (Stewart and Oliver, 2012). The policy-oriented pull framing acknowledges that decision-makers have agency (although scientific knowledge is still given primacy over policy knowledge) and focuses on encouraging policymakers to demand more evidence.

Over time, there has been a recognition that neither of these two conceptualizations are sufficient, and a more complex, integrated approach is required that moves beyond the dichotomy of production and use of evidence, and beyond science as the primary, supposedly value-free, knowledge system, also to consider the importance of policy production processes and knowledge (see Figure 1). This middle ground integrates both the science and policy realms and has space for the generation of shared understanding and of new knowledge. Activities within this middle ground tend to focus on getting individuals and teams, and sometimes organizations and systems and the funding programmes that underpin them, to engage more closely, to network, gain trust, and collaborate in generating research evidence and/or policy together. It is in this additional integrated space, also known as boundary work or knowledge brokerage, that stakeholder collaboration (Haddaway *et al.*, 2017) and co-production become possible (Reddel and Ball, 2022).

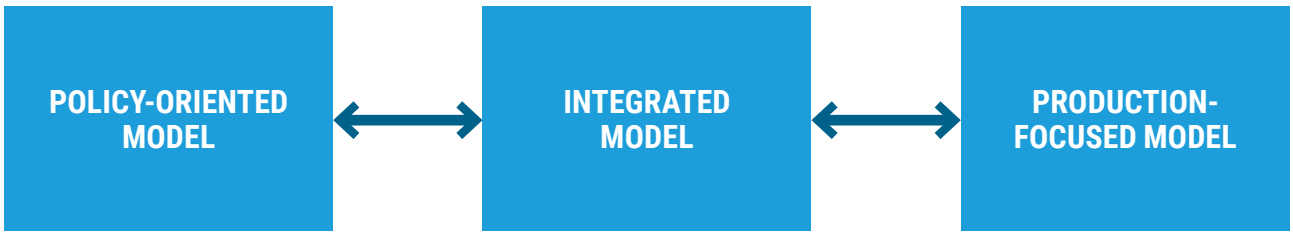
Figure 1. Beyond two worlds



2.2 Three conceptual models

The three ways of framing the science–policy interface (see Figure 1) can be conceptualized as three high-level models. These not only encapsulate ideas within the available literature, but also reflect practical experience of working in this field. Each of the three models is described in more detail below, and then described in terms of how each is used in various countries (see Section 3). How the models are viewed and described in the literature and among practitioners varies depending on the perspectives of those involved. Although advocates of each model argue strongly for the benefits of a model's specific contribution to the science–policy interface, all have weaknesses and blind spots and any national system requires multiple models to be at play at any one point in time (Stewart, Langer and Erasmus, 2019). The three broad models are: the policy-oriented model, the integrated model and the production-focused model (see Figure 2). They are not static, and their application can shift over time. Knowledge and actors can also move between them. More than one of the models can be in place in any single setting at the same time.

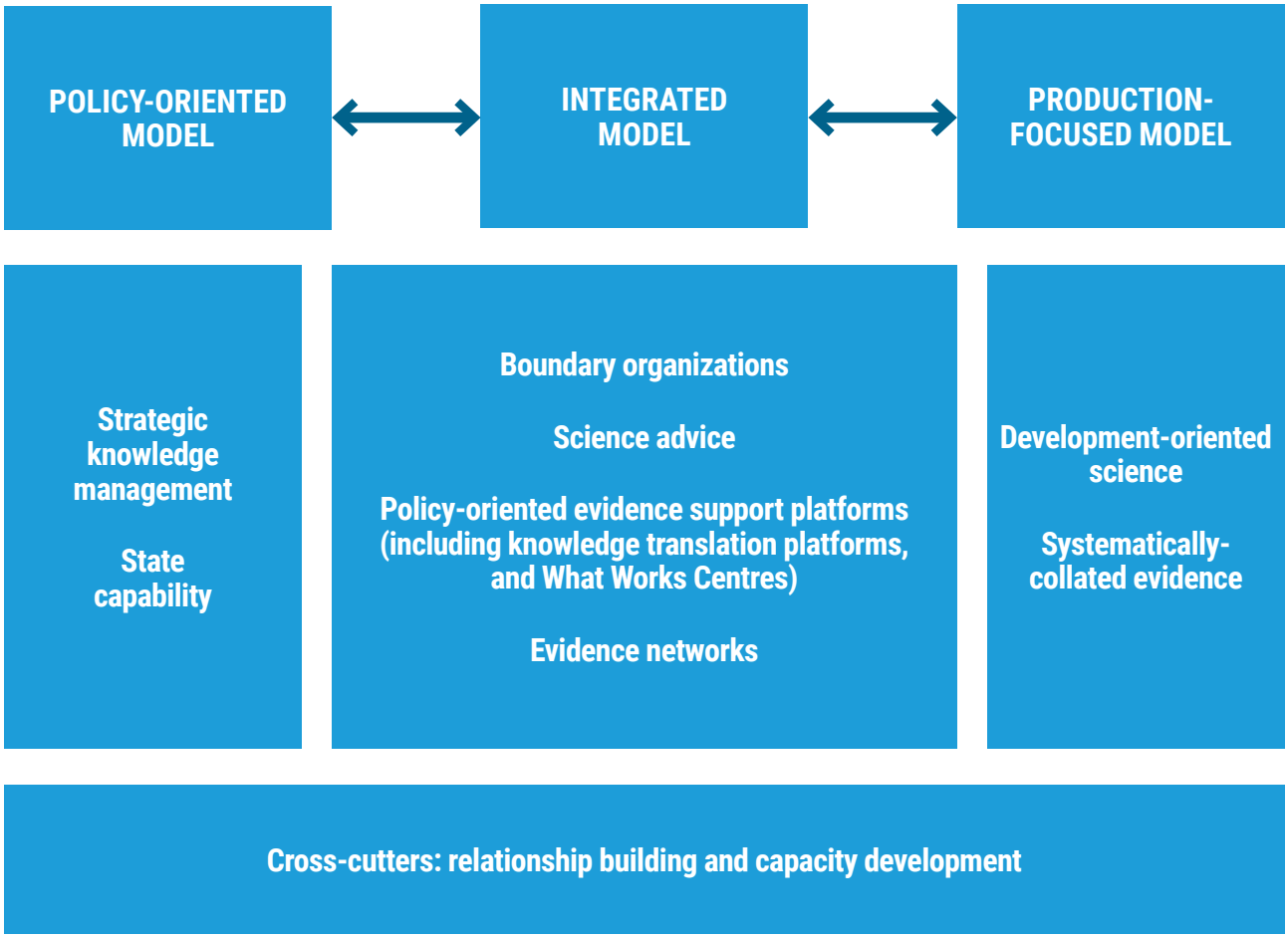
Figure 2. Three high-level models for strengthening the science–policy interface



There are several key approaches that can be taken under each of the three high-level models (see Figure 3). The policy-oriented model includes approaches for strategic knowledge management and for strengthened state capacity. The integrated model encompasses approaches for boundary organizations, science advice, for policy-oriented evidence support systems and for evidence networks. The production-focused model includes science–production development agendas and evidence synthesis. Approaches for relationship building and capacity development cut across the three models.

Activities within each of the three models are included and a detailed overview provided in Table 1.

Figure 3. An overview of the three science–policy interface models



2.2.1 The production-focused model

The production-focused model is based on the generation of evidence that aids all aspects of decision-making. Evidence that is useful for policymaking includes primary studies using approaches such as modelling, implementation, evaluation and cost-effectiveness. It also includes synthesis of primary studies, encompassing systematic reviews, meta-analyses, evidence gap maps, scoping reviews, rapid evidence synthesis and living evidence synthesis, as well as evidence products such as guidelines and evidence briefs for policy (Graham *et al*., 2006).

In the context of agrifood systems, there are challenges in providing useful and reliable evidence of the effectiveness and impacts of actual policies and practices (or bundles thereof). Establishing the best methods for evaluation of complex agricultural policies requires approaches for establishing causal relationships, as well as the management of multiple variables, including social, economic and environmental factors, engagement of a wide range of actors, challenges such as spillover effects from one farm to another, and the need to unpack the interrelated influences of decisions from farm to national, continental and global levels (El Benni, Grovermann and Finger, 2023). While several methodologies are applied, from modelling, to various experimental approaches, none are without biases (White and Raitzer, 2017). These methodological challenges are all also found in other fields, including social policy areas such as education, as well as in the medical sciences (see Boaz *et al*., 2019 for wider discussion of challenges across sectors). They are essentially about how best to unpack the causal relationship between a policy intervention (or interventions) and potential impacts, understand the relationship between the findings of that research and the application of that knowledge in a range of contexts (across different farms, for example), and how best to integrate other factors such as cost, human behaviour and political climate into the knowledge base. Methodological challenges in the generation of rigorous agrifood science are covered elsewhere (White and Raitzer, 2017). Here we consider approaches for strengthening systems for knowledge generation to increase their usefulness in making policy decisions.

The production-focused model values strong scientific knowledge, sometimes to the exclusion of other forms of knowledge, and not always with sufficient consideration of the challenges mentioned above. Activities tend to be focused on universities and research organizations, and on elements such as research agendas, research commissioning and the dissemination of findings. They focus on methodological developments, and the skills and capabilities for generating high quality evidence, as well as its dissemination. Important national-level approaches to strengthen the science–policy interface within this production-focused model (as opposed to strengthening the science in and of itself) are ensuring development-oriented research agendas and approaches for evidence synthesis for decision-makers.

2.2.1.1 Development-oriented science

Scientists as individuals and teams, and as members of organizations and institutions, are able to decide how they spend their research funding and shape research agendas. Development-oriented agendas for scientific research are driven mostly from within national systems for innovation that focus on ensuring that applications of scientific knowledge are relevant to national and international development priorities. Efforts focus on improving integration of development agendas, from the SDGs to national development plans, into research agendas and ensuring policy-relevant science is generated. There are several exemplary collections (El Benni, Grovermann and Finger, 2023; Environmental Evidence for the Future, 2019) that not only provide useful evidence for policy but also showcase methodologies for policy evaluation. Examples include the evaluation of indicator-based systems for farm payments (Gilgen *et al*., 2022), and the role of Italian policy changes for crop insurance (Santeramo, Russo and Lamonaca, 2022).

Structural activities include incentive systems for scientists to conduct policy-relevant research, to engage in participatory action research, produce research evidence syntheses, disseminate research findings on open access platforms, and communicate findings to policy audiences. Training for scientists is also common, for example to shift orientation and research plans towards greater consideration of research impact, to improve communication outputs, and to enable engagement with policymakers. While orientation of research activities towards development priorities can ensure that the scientific knowledge is potentially useful, activities that promote communication can be problematic because they can result in promotion of selective scientific findings, rather than communicating the entire evidence base available. An example is urban agriculture approaches, which are widely advocated on the basis of a few individual studies, and yet systematic reviews suggest that there is not sufficient evidence of either positive or negative impacts (Siegner, Sowerwine and Acey, 2018).

2.2.1.2 Systematically-collated evidence

Evidence synthesis aims to collate all available knowledge on a specific issue in a comprehensive and transparent way, avoiding the pitfalls of less structured literature reviews (International Science Council, cited 2022; Haddaway *et al.*, 2020). A wide range of examples is available on the application of evidence synthesis in environmental policy (Environmental Evidence for the Future, 2019; Ricciardi *et al.*, 2020; Dicks *et al.*, 2014). The outputs, however, usually only focus on knowledge generated from published research outputs. The resulting bodies of knowledge have the potential to provide decision-makers with a complete overview of the available research evidence (see for example this collation of evidence on climate change by Berrang-Ford *et al.*, 2021); however, to be effective, these need to be tailored to viable policy options. Systematic reviews in agrifood may be limited to specific regions however, due to specific environmental factors – see, for example, the systematic map by Randall and James which looks at the effectiveness of integrated farm management, specifically limited to temperate Europe (Randall and James, 2012).

The methods used in evidence synthesis vary according to the research question, and often include mixed methods. The most common outputs are systematic reviews that focus on development priorities and are published (usually open access) as global goods. Production of systematic reviews is primarily focused on policy priorities and is often informed by a group of key stakeholders. The importance of engagement with a range of actors is recognized and a range of tools is available from within the environmental sector (Haddaway and Crowe, 2018). The emphasis is on methodological rigour, transparency of methods and the completeness of the evidence base (Gough *et al.*, 2020). Other evidence synthesis methodologies include rapid evidence synthesis, and living systematic reviews, and increasingly evidence mapping (Haddaway *et al.*, 2016; O'Leary *et al.*, 2017). The contextualization of findings and their integration into policy is considered a separate activity from evidence synthesis. Training activities focus mainly on supporting the capacity of scientists to produce systematic reviews, although they can also include training for policymakers in their interpretation and use. Methods for engaging agricultural policymakers in systematic reviews are available (Collins, Coughlin and Randall, 2019). This approach relies on the availability of published research evidence, which due to biases in publishing sometimes results in outputs being oriented towards high income settings and well-resourced national systems. This exacerbates challenges related to the lack of availability of rigorous evidence to inform decisions for agrifood systems discussed above.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Nevertheless, the systematic identification of gaps in the available evidence through evidence synthesis (for example, Roe *et al*., 2014 on the relationship between biodiversity and poverty) can be used to commission new research to fill these gaps. The quality of primary research largely determines the conclusions of reviews, and the potential for policymakers to make use of any research conclusions. In just one example, a systematic review (Jones-Hughes *et al*., 2013) on how to reduce the impact of arsenic contamination of groundwater on human health found such mixed quality studies that their strongest recommendation was about the production of more high-quality research, rather than recommendations relevant to policy. Researchers and journal editors play an important role in maintaining the methodological rigour of published research findings.

2.2.2 The policy-oriented model

The policy-oriented model centres on policymakers and policymaking and considers what evidence is needed for, and how it can be integrated into policy and planning processes. It does not start with methodologies for research and approaches for increasing the relevance and quality of research outputs, but with systems for policymaking and how, through increased integration of the best available evidence, they can make a valid contribution to outcomes for people and the planet. The two key approaches in the policy-oriented model are: strategic knowledge management and strengthened state capacity.


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2.2.2.1 Strategic knowledge management

Enhanced knowledge management is important when considering the science–policy interface from within policy structures. The framing is unfamiliar to scientists who have perhaps focused primarily on the generation of specific research outputs, systematic reviews, or even structured policy advice. However, from within government, the management of knowledge, including scientific evidence, represents a major challenge, which when addressed has the potential to support integration of various evidence types into policy and planning. Support activities include investment in information technology (IT) and other management systems, review of mandates and clarity on roles, as well as relationship-building within, across and beyond government departments. Greater transparency of policy processes plays a role (El Benni, Grovermann and Finger, 2023). In some cases, evidence mapping is used to collate evidence systematically. Processes for tapping into knowledge production systems in integrated ways can further strengthen such efforts.

2.2.2.2 Strengthened state capacity

Strengthening state capacity, including providing public servant training, shaping incentive structures, developing infrastructure, and establishing or reorienting policy and legislative frameworks and influencing budgeting, have the potential to impact the use of evidence in policy and practice. This aspect of science–policy engagement is often not reported because it lies outside the sphere of control of scientists and knowledge brokers and relies on government actors to take the lead. This lack of control often feels unfamiliar to scientists and requires a shift in thinking about policymakers and policymaking, but it is important to recognize that governments have agency, expertise and motivation to tackle the challenges and ensure that decisions are based on the best available evidence. Examples of this include the South African government's Socio-Economic Impact Assessment System, which hardwires consideration of evidence into the policy review process (DPME, 2015), and the European Commission's competency frameworks, which include not only competencies for researchers but also competencies for policymakers (Schwendinger, Topp and Kovacs, 2022). More detail of the work within the United Kingdom is provided in the case example later in this report.

2.2.3 The integrated model

The integrated model for strengthening science–policy operates in the middle ground between evidence generation and policymaking, and actively unites scientists and policymakers so that they can work together towards shared goals and better development outcomes. These approaches rely on the availability of data and other research evidence relevant to policy, which is a challenge in complex areas such as agrifood systems with multiple interrelated variables, settings, etc. (El Benni, Grovermann and Finger, 2023). There are four important approaches within the integrated model, which are not mutually exclusive but share the aim of mobilizing evidence to inform policymaking. They are: boundary organizations, science advice, policy-oriented evidence support platforms and evidence networks.

2.2.3.1 Boundary organizations

Boundary organizations represent a concept that is used to describe organizations that exist at the frontiers of science and policy to promote and facilitate collaboration between researchers and policymakers. They do this by advocating for the interests of each or by promoting co-production of mutual interest (Guston, 2001). Boundary organizations engage in various activities (e.g. dialogues, workshops) to build trust and relationships among stakeholder communities that have different values and viewpoints. In doing so, they promote the translation of knowledge and mediate relationships and networks among scientists and policymakers. Boundary organizations also facilitate the integration of different types of research and expertise into products such as evidence synthesis reports that can be used by science advisors (Kennedy, 2018).

2.2.3.2 Science advice

The provision of science advice to governments involves government employees (chief scientific advisors), with or without the support of scientific offices, science advisory boards or science councils. Key activities include providing advice in response to government requests, contributing to foresight planning, mobilizing knowledge during crises and supporting science diplomacy (International Science Council, cited 2022). Science advice tends to depend on solid relationships among scientists and the policymakers with whom they work. There can be bias if the advice provided relies on single individuals, or groups of scientists. The most rigorous approaches to science advice include structural integration, which ensures that the scientist providing advice and other inputs can tap into the best available systematically-collated evidence bases for the issues to be addressed.

2.2.3.3 Policy-oriented evidence support platforms

Policy-oriented evidence support platforms are also referred to as responsive evidence services, rapid evidence services or knowledge translation platforms. They operate between the production of research and its application to policy and are usually led by knowledge broker teams that are neither producers of primary research nor policymakers. The platforms can take the form of a helpdesk through which requests are channelled. Teams respond to requests from policymakers for evidence from across relevant government departments by drawing on the best available synthesized evidence, from libraries of global goods, systematic reviews or rapid reviews. The strength of the evidence provided depends on the methods used for collation – key databases used for these services in agrifood policy are still relatively new: see for example the CEEDER evidence service (Collaboration for Environmental Evidence Database of Evidence Reviews, Konno *et al.*, 2020). Such platforms can engage in citizen panels or stakeholder dialogues to contextualize the information from evidence synthesis and to elicit citizen values and stakeholder interests in a particular policy issue. The balance between the demand for evidence services and their provision can represent a challenge. Success depends on maintaining trust

and relationship-building and is essential for the model to work. Activities for such platforms tend to be externally funded and donor contributions are usually time-bound. Several externally funded initiatives have aimed to provide a proof of concept that is then integrated into government operations before becoming institutionalized (and government funded). It is acknowledged that there are strengths and weaknesses in employing such an approach both inside and outside government.

Another manifestation of this approach is the What Works Centre Model used in the United Kingdom (Gough, Maidment and Sharples, 2018). This consists of a network of independent sector-specific organizations whose activities generate evidence (usually evidence syntheses, but can include primary research), translate evidence for policy audiences, and support its use, whether through developing capacities, providing advice or facilitating engagement. By focusing on specific sectors, each centre can develop methodological and topic expertise. Through the connections across the centres, with government and with other key organizations, they provide an institutional structure that supports evidence-informed policy.


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2.2.3.4 Evidence networks

While relationship- and trust-building are important cross-cutting activities in all science–policy engagement, network-building warrants particular attention. Activities include hosting networking events, citizen panels, facilitation of partnerships and advocacy for evidence (Collins, Coughlin and Randall, 2019). Such networks for agrifood need to be multidisciplinary and span local and international spheres. Examples include the European Nature and Health Network (Keune *et al*., 2019), and the One Food Community (One Food, cited 2023). Open access publication of evidence resources and skill sharing are also important. Care is taken to be inclusive, avoid value judgements and consider differing perspectives on science and on policy. This inclusivity needs to be balanced with rigorous methodological debate to ensure the best science is available to inform decisions, whether that is evidence on causal relationships, or on the acceptability of interventions to farmers and local communities. It is generally important to adopt a broad definition of evidence, including forms of knowledge that are often excluded, such as Indigenous Peoples' knowledge, including traditional storytelling. An example includes the University Policy Engagement Network (www.upen.ac.uk), which unites universities and policymakers with the aim of increasing the impact of research on policy.

2.2.4 Cross-cutting themes

Relationship-building and capacity development are cross-cutting approaches known to apply to the three models described. Related activities can focus on individual, team, organizational or institutional levels. The strength of the relationships and their capacities can determine sustainability and impact.

Table 1 maps the main activities in each model. While this is not a comprehensive list of all scientific activities, it provides a useful starting point for understanding how activities are combined in evidence support systems.

Table 1. Overview of models and activities

MODELS	APPROACHES	ACTIVITIES				
		Activities to ensure that the production of research is relevant for policy	Activities to synthesize evidence	Activities to support engagement between researchers and decision-makers	Capacity development activities	Activities to ensure that policy processes are oriented towards the use of evidence
PRODUCTION-FOCUSED MODEL	DEVELOPMENT-ORIENTED SCIENCE	Co-creation of research priorities. Integration of development agendas into research agendas to produce more development-oriented science.	The emphasis on producing original research in some national evidence systems, and the lack of incentives for conducting evidence synthesis is problematic.	Creation of incentives to communicate research findings to decision-makers (policymakers and communities).	Training scientists to consider research impact, to improve their communication outputs, and to enable engagement with policymakers.	
	SYSTEMATICALLY COLLATED EVIDENCE		Production of systematic reviews relevant for different contexts (i.e. global goods). Emphasis is on methodological rigour, transparency of methods and the completeness of the evidence base.		Training on supporting the capacity of scientists to produce systematic reviews, although it can also include training for policymakers in how to design research questions, and in making sense of and using systematic reviews.	
POLICY-ORIENTED MODEL	STRATEGIC KNOWLEDGE MANAGEMENT		Use of evidence mapping to collate evidence systematically.	Building relationships within, across and beyond government departments.		Promote the routine integration of a range of evidence types into policy and planning. Investment in IT and other knowledge management systems.
	STATE CAPABILITY	Shaping incentive structures. Development of infrastructure. Influencing budgeting.			Providing public servant training.	Shaping incentive structures. Development of infrastructure. Influencing budgeting. Establishing or reorienting policy and legislative frameworks.

MODELS	APPROACHES	ACTIVITIES				
		Activities to ensure that the production of research is relevant for policy	Activities to synthesize evidence	Activities to support engagement between researchers and decision-makers	Capacity development activities	Activities to ensure that policy processes are oriented towards the use of evidence
INTEGRATED APPROACHES	BOUNDARY ORGANIZATIONS	Facilitating integration of different forms of research and different forms of expertise in research outputs to increase their use by science advisors.		Facilitating collaboration between researchers and policymakers with an emphasis on activities that build trust and relationships among communities that have different values and viewpoints.		
	SCIENCE ADVICE	Individuals (chief scientific advisors) or groups of individuals (advisory boards or councils) embedded within government that provide advice in response to government requests.	Structural integration to ensure scientists providing advice can tap into the best available systematically-collated evidence bases on the issues at hand.	Trusting relationships among scientists and the policymakers with whom they work.		
	POLICY-ORIENTED EVIDENCE SUPPORT PLATFORMS	Creating institutional structures for supporting evidence-informed policies in several sectors (e.g. What Works Centres).	Producing: • Rapid response services • Evidence briefs for policy • Citizen briefs • Living rapid evidence synthesis • Evidence maps	Engaging stakeholders through: • Citizen panels • Policy dialogues	Training for policymakers to enable them to input into research question setting, and in making sense of and using systematic reviews. Training scientists in evidence synthesis methods and policy and political analysis.	
	EVIDENCE NETWORKS	Supporting open access publication of relevant evidence resources.	International networks of researchers skilled in systematic review methodology (e.g. Campbell collaboration).	Hosting of networking events to share skills and experiences. Facilitation of partnerships, and advocacy for evidence. International networks that map and bring together producers of policy-relevant evidence with policymakers (e.g. COVID-END, AEN, LACHub).	Workshops on producing relevant evidence for policymakers.	

2.3 Dimensions

In describing the three models, it is important to note that they operate across several dimensions – geography, sector, engagement level and knowledge systems. They also have the potential to impact policy and planning in various ways. Each dimension is likely to influence effectiveness of the model and needs to be considered when evaluating existing programmes and when planning new ones.

2.3.1 Geography

This report focuses on models that operate at a national level, and occasionally at a subnational level. It is however acknowledged that there are models that operate at regional (sometimes continental) and global levels.[2] In almost every case, activities focused at one level are influenced by current or previous activities at other levels. In the context of agrifood systems, despite the focus of this report on national systems, continental and global environmental factors, and both governance and policy processes, cannot be ignored.

2.3.2 Sectors

Valuable lessons can be learned from many sectors with respect to strengthening evidence-informed decision-making for agrifood systems. These naturally include agriculture, forestry and fisheries, as well as nutrition, health and education. Context matters, and the sector in which activities are employed can be significant. For example, many healthcare policies are implemented at individual patient level, while those for climate change can be considered at a community level. In the same way, evidence synthesis has been widely used in the health sector while prediction models have been used in the climate sector. Although agrifood systems are both complex and face challenges in the generation of science to inform policy (El Benni, Grovermann and Finger, 2023), there is much to learn by studying efforts to strengthen science–policy engagement in other sectors (Boaz *et al*., 2019).

2.3.3 Levels of engagement

Activities can also focus on various levels, from engaging individuals to teams, organizations, institutions and systems (see Figure 4). Institutional and system-level change is often considered more sustainable and wide reaching and therefore more desirable, although activities aimed at individuals and teams are often considered the entry point to change. Programmes can move between levels, so, for example, activities might focus on training senior managers, and then invite them to bring their teams for training or mentoring (Jordaan *et al*., 2018). They can also skip some levels, so teams working together can help to shape new systems, without having won full organizational or institutional support for the changes. The organizations and institutions might only engage with the change following a top-down drive from within the system. Because agrifood systems span multiple levels of stakeholders from citizens to farmers, and national and multi-national agencies, engagement at all levels is the desired goal. This is similar in healthcare, where policy and practice affect everyone, and are shaped by decisions made at multiple levels.

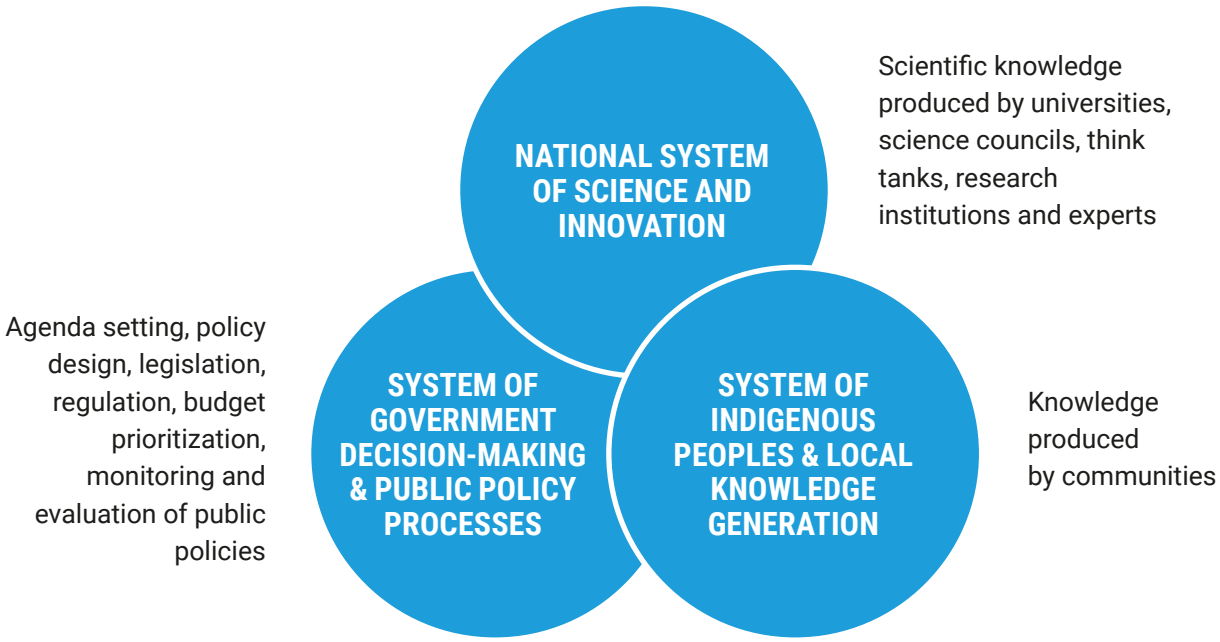
2.3.4 Knowledge systems

There are at least three different interdependent knowledge systems required for effective science–policy engagement, as summarized in Figure 5.

[2] While this report does not focus on the role of multilaterals, such organizations play an important role in evidence systems. They can shape the evidence that is generated and how it is used, as well as use the evidence themselves. Their role in shaping national systems is discussed further in Section 5.

Figure 4. Levels of engagement

Figure 5. Knowledge systems



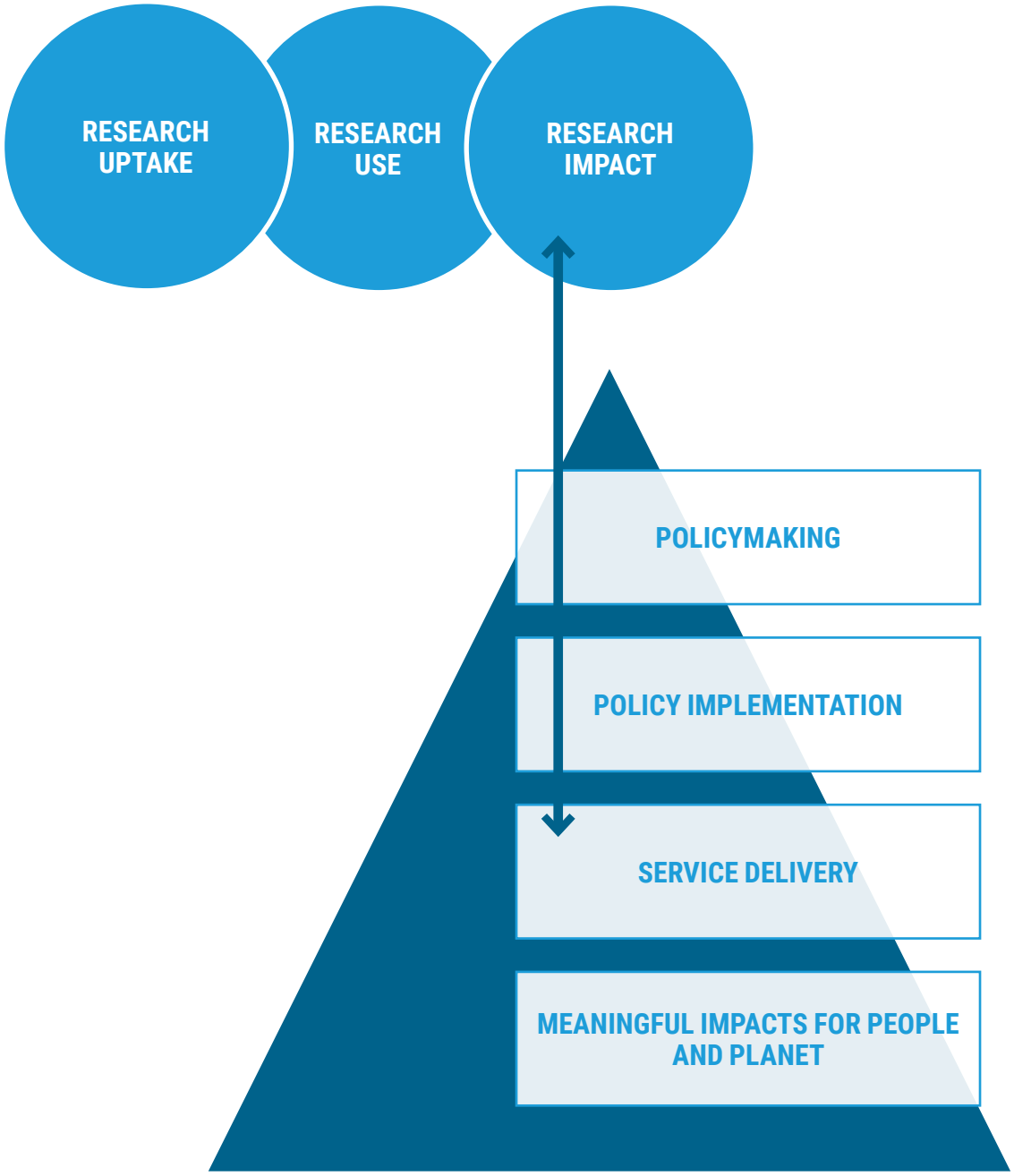
Source: **DPME Research and Knowledge Management Unit**. 2022. *Expanding evidence synthesis through coproduction. DPME approach and methodology*. [cited 2022 Nov 28]. **https://www.dpme.gov.za/publications/research/Documents/Expanding%20evidence%20synthesis%20through%20coproduction.pdf**, modified by the authors.

While many countries may have knowledge generation systems in place as part of a National System of Innovation (NSI), to be relevant to the agrifood sector, such systems need the flexibility of cross-sectoral working, to allow for the complex integration of economic, environmental, nutritional, agricultural and other forms of knowledge. Support systems for coordinating collection and management of local and Indigenous Peoples' knowledge for government policymaking are less common, and yet have particular importance when decision-making takes place at multiple levels and the interactions between communities, farmers, and national and multi-nationals governance systems are all at play. Ideally, countries have evidence support systems to bring these forms of knowledge together in coordinated, transparent and systematic ways (Global Commission on Evidence to Address Societal Challenges, 2022). The area of Indigenous Peoples' knowledge is poorly defined and approaches for integrating it with other forms of evidence are underdeveloped. Given the complex relationship between indigenous food systems, agricultural systems and environmental sustainability, this is a gap that needs urgent attention (Vijayan *et al*., 2022).

2.3.5 Dimensions of impact

Accessing evidence and reading it, sometimes termed research uptake, is not the same as using it. Four types of using research evidence have been described – instrumental, conceptual, symbolic and tactical (Amara, Ouimet and Landry, 2004; Weiss, 1979). Instrumental use involves using research in specific and direct ways to solve a particular problem. Conceptual use refers to a more indirect approach, for instance when research evidence stimulates ideas that affect the way policymakers think about a problem or options for addressing it. Symbolic or political use of research evidence justifies a position that has already been taken for reasons not linked with the research findings. Tactical use refers to when the lack of evidence is used to justify an action or inaction. Even when evidence is used and changes knowledge or skills, it does not necessarily mean that it has an impact on behaviour, or makes a contribution to a final outcome (Gough, Stewart and Tripney, 2012). Only in some circumstances will evidence directly change a policy decision. Even then, there is recognition that strong and effective science–policy interfaces are not necessarily equivalent to meaningful implementation of policy or high quality service delivery. Where policies and their implementation are informed by evidence, there are not necessarily meaningful impacts. Consideration of impacts that go beyond policymaking are important (see Figure 6).

Figure 6. Areas of impact



These dimensions provide a structure for describing the complexity of models and activities across sectors within national evidence systems. This structure is applied in a light touch approach to a range of examples in Section 3 and could provide a framework for more in-depth analysis of national systems in the future.

2.4 Integrated conceptual thinking about national evidence systems

The models for supporting evidence-informed decision-making outlined above provide insights into the ways in which such support is conceptualized. When these are applied at national level, it is helpful to think beyond models and consider national evidence systems. National evidence systems can include combinations of the three models. For example, within one country there might be a national focus on the production of health evidence, combined with subregional activities to integrate evidence into social policy.

The most recent and comprehensive thinking about national systems comes from the Global Evidence Commission (Global Commission on Evidence to Address Societal Challenges, 2022). The Commission report provides extensive information on science and policy and how policymaking through greater use of evidence can be strengthened. See Box 3 for an overview of the report.

Box 3. An overview of the Evidence Commission report

The Evidence Commission report provides clear guidelines to support decision-makers to use evidence to address societal challenges. It provides a framework linking decisions and decision-makers, types of evidence and intermediaries.

Decision-makers such as government policymakers, organizational leaders, professionals and citizens, can approach decision-making in four steps:

1. Understanding a problem and its causes.
2. Selecting an option for addressing the problem.
3. Identifying implementation considerations.
4. Monitoring implementation and evaluating impacts.

Each of the steps can benefit from one or more of the eight types of research evidence that pertain to decision-makers:

1. Qualitative studies
2. Technology assessment/cost effectiveness studies
3. Guidelines
4. Data analytics
5. Modelling
6. Evaluation studies
7. Behavioural/implementation studies
8. Evidence synthesis

Intermediaries are individuals or organizations that work on the boundaries between decision-makers and evidence producers. They provide support by:

1. Promoting a better climate for evidence prioritizing and co-producing evidence.
2. Packaging evidence for, and 'pushing' it to decision-makers in the form of evidence briefs for policy or rapid evidence synthesis.
3. Facilitating 'pull' by decision-makers by developing research databases designed for decision-makers.
4. Engaging with decision-makers in policy dialogues or citizen panels.

Of the eight types of research evidence that the Commission identifies, evidence syntheses are relevant in all the decision-making steps to summarize what is known (and unknown) based on available studies. In addition, data analytics and qualitative studies help understand a problem and its causes. Evaluation and cost-effectiveness studies aid selection of an option to address the problem. Qualitative studies and behavioural/implementation research are important in identifying implementation considerations and data analytics studies are pertinent for monitoring implementation and evaluating impacts. These eight types of research evidence need to be distinguished from other types of evidence, such as that provided by a single study, expert opinion, an expert panel or a jurisdictional scan.

As the Commission report explains, evidence synthesis usually involves summarizing local and global evidence into a single study such as a systematic review, a rapid review, critical interpretive synthesis or evidence (gap) map. Decision-makers also need local evidence, including national and subnational data analytics, local evaluation studies and local implementation research. Some of these different types of evidence are now available as 'living' evidence products (i.e. they are updated as new data are added or new studies are published).

In integrating conceptual thinking (see Figure 7) with the conclusions of the Evidence Commission, several factors need to be considered in strengthening national models. When focusing on the production of policy, there needs to be meaningful consultation across stakeholders. Advice for decision-makers must be formulated in ways appropriate to their working realities. Evidence must be contextualized and issues of (the limited nature of) the proximity of evidence to the needs of decision-makers must be communicated. Governmental and parliamentary processes need to be carefully considered and outcomes of any policy decisions must be evaluated.

Focusing on the production of evidence, attention needs to be paid to methodological rigour and consistency of the evidence base and the social appropriateness of research and associated programmes. The legitimacy and credibility of the evidence base for all audiences must be established regarding how it is constructed and how it is communicated. Transdisciplinary approaches are required that overcome barriers and hierarchies. Issues of trust in science and scientists need to be addressed, and questions about what science is and whose values and systems science reflects need to be taken seriously. For example, research from Argentina shows how the local public production of knowledge about rice, soybeans, and quinoa benefits big international private firms, and leads to the exportation of these products. These papers question the private and international appropriation of local knowledge. In all instances there are likely to be discrepancies between the global evidence base and local knowledge (Gárgano, 2018; Gárgano, 2020; Juarez and Zavala, 2017).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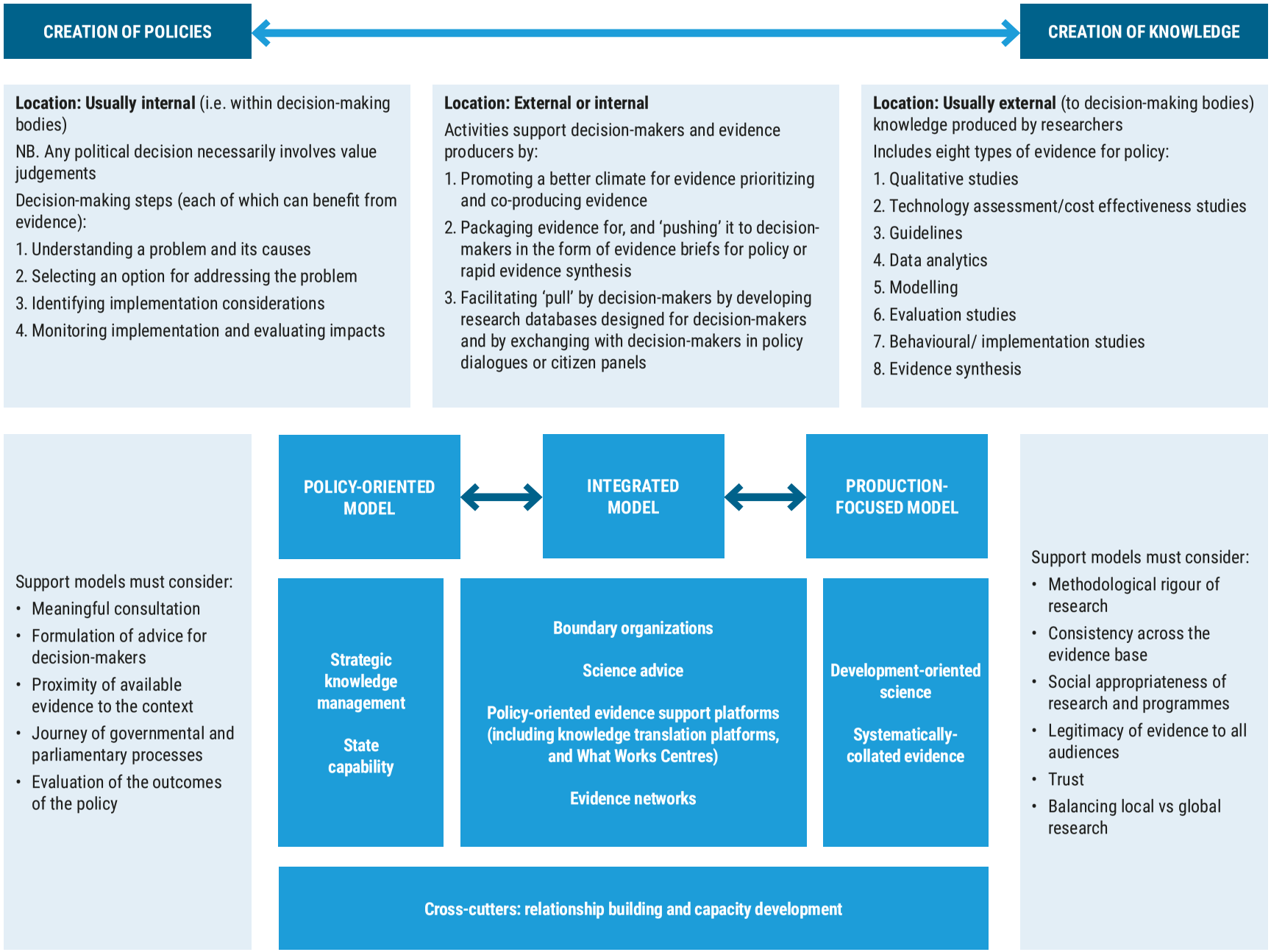

Figure 7. Integrated conceptualization of national models

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3 MAPPING THE EMPIRICAL LANDSCAPE

With the shift from conceptual models for national evidence support systems to actual activities in countries, particularly across the agrifood sector, the models operate in various ways (see Annex 1 for details of the methods used in this report and Annex 2 for details of activities identified in specific countries and sectors). Trends are evident however. This section maps out examples of how and where activities have been used and identifies major trends and patterns. It also presents six country case examples, one from each of six geographical regions (Africa, Asia, Near East and North Africa, Europe, North America and Latin America), with extra detail on evidence support systems.

Data are drawn from 39 countries across a range of sectors (see Table 2). To ensure geographical balance across all six selected regions a 'globetrotting' approach was used to select the 39 countries. The selection of the 39 countries, as well as the six case studies, was informed by knowledge of national science–policy sectors and prioritization of those most likely to be useful examples that could provide lessons.

Most examples come from the health sector, with several examples from education, as well as some from agriculture, climate change, environmental management, fisheries, forestry and nutrition. In some countries multiple examples from different sectors were identified, as well as more generic examples of science–policy activities that did not apply to any specific sector. Although not a comprehensive analysis, most of the examples were from Africa and Asia.

Table 2. Mapping national examples of science–policy activities across sectors

REGION SECTOR	AFRICA	NEAR EAST & NORTH AFRICA	ASIA	EUROPE	LATIN AMERICA	NORTH AMERICA
No specific sector	South Africa Uganda	Lebanon	Indonesia Myanmar		Brazil Chile Colombia	
Agriculture	Burkina Faso		Indonesia	Italy Switzerland	Argentina Brazil Colombia	
Climate change	Burkina Faso Cameroon					Canada
Education			Australia Viet Nam	Albania Belgium Germany Sweden	Brazil Chile Colombia	
Environment	South Africa		Sri Lanka	United Kingdom	Mexico	
Fisheries			Indonesia			
Forestry						Canada
Health	Benin Ethiopia Ghana Malawi Mozambique Nigeria Uganda	Egypt Jordan Lebanon	Australia Bangladesh Cambodia China Indonesia Iran (Islamic Republic of) Thailand	Georgia United Kingdom	Brazil Chile Colombia	Canada
Nutrition			Indonesia	United Kingdom		
Other		Iraq (road safety)	Nepal (disaster management) Philippines (tourism)		Brazil (public security) Chile (public security) Colombia (public security)	

The examples do not necessarily represent the combinations of activities as conceptualized in the previous section. The variety is greater but the activities were reported over the past ten years and they did not necessarily take place simultaneously – some may no longer be in place.

A range of activities was reported across these examples, the most common being research agenda setting and research commissioning, as well as evidence synthesis and capacity development. This emphasis is likely to be due, in part, to the drive from researchers for greater use of evidence by decision-makers. It may also be a symptom of the tendency for academics to publish their results, while investment in state capacity from governments is less likely to be reported in the public arena. A full overview of activities identified globally is available in Annex 2. Contextualizing the combination of activities across countries and sectors is challenging. Six cases were selected for closer examination (Table 3) describing the models and activities applied, as well as providing more context on the country and the history of science–policy engagement in that country.[3] Each

[3] Future exercises could provide greater detail for each case, for example mapping out the actors and their relationships.

focusses on work in a specific sector, whilst also describing the more generic science–policy interface within the country when applicable. An overview of each case is described below, and full summaries are contained in the six case examples.

The specific activities identified and the models they are most commonly associated with are included. The dominant models (bolded in the case examples) were identified from additional factors such as investment over time, and strength (rather than range) of current activities.

Table 3. An overview of the six selected case examples

AFRICA	NEAR EAST & NORTH AFRICA	ASIA	EUROPE	LATIN AMERICA	NORTH AMERICA
South Africa	**Lebanon**	**Indonesia**	**United Kingdom**	**Colombia**	**Canada**
Focus: environment, food and forestry (within a broader system) **Dominant models:** production-focused, policy-oriented, integrated	**Focus:** across sectors **Dominant models:** production-focused, integrated	**Focus:** food security **Dominant model:** production-focused	**Focus:** environment, food and rural affairs (within a broader system) **Dominant model:** policy-oriented	**Focus:** food production (within a broader system) **Dominant models:** production-focused, integrated	**Focus:** health **Dominant model:** integrated

The example of South Africa has a focus on the environment, forestry and fisheries, while also describing the broader, more centralized science–policy system within the country. In South Africa there are activities that match each of the three conceptual models described in Section 2. Under the production-focused model was a development-oriented agenda setting. This included mapping the evidence–policy landscape and encouraging applied research among academics through commissioning and awarding prizes to ensure that research evidence was relevant to policymaking. Investment in systematically collating evidence is clear, with several teams producing systematic reviews, evidence maps and rapid reviews for policy needs, spanning health and social services. Activities within the policy-oriented model include the co-production of evidence maps driven from inside government and produced to respond to policy demands as part of their mandated policy review system. This has included the generation of a rapid evidence map and evidence overviews produced in response to requests from policymakers. South Africa also has examples of the development of evidence strategies and evidence budgeting by national government departments, initially developed by the department focused on environmental affairs, and then taken up by other departments. These examples of science–policy engagement through enhanced knowledge management approaches include activities led by the Department for Environment, Forestry and Fisheries and the Department for Health. Learning across these departments, and other social policy areas, has fed into the strengthening of state capability for evidence use. State capability was strengthened by developing infrastructure, including a centralized system for policy development incorporating a review of policy options supported by evidence. South Africa also encourages activities that support engagement between researchers and decision-makers. This embraces evidence-focused engagement meetings and conferences, which include research producers and users and knowledge brokers, as well as capacity development for using evidence in policymaking by senior government officials.

The Lebanese example draws on a number of sectors including, but not limited to, health. Two models dominate (the production-focused model and the integrated model) with activities to support development-oriented science agendas and policy-oriented evidence support platforms. It covers building capacity for using evidence in policy, knowledge translation and evidence communication methods among researchers, policymakers and the media, and development of evidence strategies by national government departments. Lebanon also has activities focused on policy tracing of research and the development of models for knowledge translation that are context-specific, culturally appropriate and effective for the region. There are activities to synthesize evidence into evidence maps, rapid reviews and full systematic reviews, as well as their communication in policy briefs. Lebanon also supports engagement between researchers and decision-makers, including the engagement of citizens to enhance their involvement in decision-making and policymaking processes and engagement of stakeholders in policy dialogues and citizen panels.

The Colombian case example focusses on food production, in the context of a broader science–policy interface. Production-focused and integrated models dominate in Colombia. Science–policy engagement activities originated from a drive among researchers for greater use of evidence by decision-makers. Emphasis is consequently on a development-focused science agenda and delivery of policy-oriented evidence support platforms. There are examples of activities that ensure production of research evidence is relevant to policy development by encouraging applied research among academics, with grants provided by the Ministry of Science Technology and Innovation (STI) and by commissioning policy-relevant evidence synthesis by the Ministry of Health. The Ministry of STI has also supported engagement between researchers and decision-makers by promoting policies of social appropriation of knowledge and networks incorporating various government sectors and academic research institutes. Examples relevant to agrifood systems include projects that integrate scientific knowledge and local farmers knowledge to improve food security in Colombia in the production of yellow potatoes (IDRC, 2018; IDRC, 2016) and improving coffee production (IDRC, 2017).

The Canadian case example focuses on their health sector, where many relevant innovations in navigating the science–policy interface have been documented. In Canada the integrated model dominates in the health sector. The evidence-informed decision-making infrastructure in health is well established. It developed as an integrated approach termed a 'knowledge translation platform'. Such policy-oriented evidence supports organizations to develop activities that promote research relevant to policymaking by working with policymakers to identify policy needs and priorities. They also create repositories of pre-appraised evidence relevant to policymakers. Furthermore, the Canadian knowledge translation platform conducts activities that support engagement between researchers and decision-makers in dialogues to contextualize the research evidence for a policy issue and to discuss options for addressing problems and designing implementation strategies. Increasing the capacities of researchers to generate better evidence, and of policymakers to identify and use research evidence, is widely practised.

The United Kingdom case example focuses on the environmental sector, while also describing the broader science–policy interface within the country. The policy-oriented model supports evidence use in policy in the United Kingdom's Department for Environment, Food and Rural Affairs (Defra). Investment in state capacity includes capacity development activities to support social, economic and scientific government research and activities to ensure that policy processes are oriented towards use of evidence, including supporting structures in the policy arena. Routinely collected evidence should be useful and used.

The Indonesian case example focuses on the food security sector, in which a production-focused model dominates. Investment in development-oriented research agendas increasingly ensures that research evidence is relevant to policy. This includes development of a collaborative national Master Plan for National Research that focuses on national policy priorities. Incentives are in place to promote participatory approaches to support development of procurement reform that shapes future commissioning of knowledge products. In terms of capacity development activities, the model builds demand for data and research among policymakers. For example, the Knowledge Sector Initiative (KSI) collaborated with the National Institute of Public Administration on training modules for policy analysts. It also worked with the National Planning Ministry in support of a policy analysis centre. There has, in addition, been media training to support reporting science to the public, and the facilitation of working groups, including research producers and users, which span government and academia.

CASE EXAMPLE 1: SOUTH AFRICA

COUNTRY: SOUTH AFRICA

FOCUS

Environmental, forestry and fisheries, within a broader science–policy system

Source: United Nations Map No. 4170 Rev. 18.1, February 2020

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MODEL(S):

Production-focused model:

- Initiatives for encouraging policy-relevant research
- National System of Innovation

Policy-oriented model:

- Government system for ensuring all new policies consider socioeconomic outcomes and present the options with detailed reference to the available evidence: Socio-Economic Impact Assessment System (SEIAS) (DPME Research and Knowledge Management Unit, 2022)
- Policy development framework that specifically recommends the systematic consideration of evidence in the policy process (DPME The Presidency, Republic of South Africa, 2015)
- Government approach of facilitated 'war rooms' that focus on tackling key issues in collaborative ways, informed by evidence.

Integrated model:

- Government system for evaluating national programmes: National Evaluation System (Goldman *et al.*, 2019)
- Boundary organizations focused on relationship building
- Co-production for generation of policy-relevant responsive evidence bases (DPME Research and Knowledge Management Unit, 2022)
- Government driven training for senior officials delivered in partnership with academics and other science producers, which is then brought back by the attendees for implementation in their departments
- Provincial Data Offices with collaborative applied ways of working

ACTIVITIES INTEGRATED WITHIN THE COUNTRY MODEL(S)	**Activity 1**: Mapping the evidence–policy landscape
	Activity 2: Capacity development for the use of evidence in policy among senior government officials, including courses and mentoring
	Activity 3: Encouraging applied research production among academics (through commissioning, and prizes/ recognition)
	Activity 4: Exploration of a research impact assessment system driven from the National Research Foundation
	Activity 5: Development of research and evidence strategies by national government departments in central government, and in key sector departments, in particular Department for Environment, Forestry, Fisheries and the Department for Health
	Activity 6: Application of evidence-informed approaches within government departments and planning for on-going reflection and dialogue on these issues
	Activity 7: Co-production of evidence maps driven from within government and produced to respond to policy demands (increasingly linked into the SEIAS system). As these co-produced evidence maps accumulate, the knowledge base available is also accumulating, leading to discussions about central knowledge management processes, including technology solutions
	Activity 8: Innovations in commissioning of evidence products to enable government led teams to collaborate with a range of partners with varying expertise (match-making)
	Activity 9: Provision of rapid response services based on systematically-collated evidence bases
	Activity 10: Central system for evaluation of national government programmes, with capacity to conduct a range of evaluations, including impact
	Activity 11: A number of teams producing systematically-collated evidence bases for policy needs, including systematic reviews, spanning health and social policies
	Activity 12: Evidence-focused engagement meetings and conferences that span research producers and users, including those facilitated by knowledge brokers, and those led from government departments
	Activity 13: National research infrastructure with strong structural relationship with government that include StatsSA and the National Income Dynamics Study (NIDS) longitudinal study
	Activity 14: Centralized system for policy development that includes review of policy options supported by evidence (SEIAS and the National Policy Development Framework)
BRIEF HISTORY OF SCIENCE–POLICY ENGAGEMENT IN COUNTRY:	There is a commitment to strengthening systems for national policy and planning, increasingly driven from within government in support of evidence-informed policies. The systems for cascading national policy and its implementation to provincial and local levels are less reliable and service delivery in some areas remains poor. Increasingly integrated approaches for a strong science–policy engagement have great potential for meaningful improvements in development outcomes. As well as notable developments in science–policy engagement in central government, which are largely cross-cutting, the environment sector has taken a lead in developing the science–policy (and practice) space. This has included the national Department of Environment, Forestry and Fisheries establishing national evidence strategies and implementation plans (Wills *et al.*, 2016), as well as hosting annual evidence conferences (Department of Environmental Affairs, cited 2022), but has also shaped the work of agencies such as the South African National Biodiversity Institute, which provides advice to the government on key issues. South Africa has provided the focal point for the regional IPBES assessments, contributing to debates at international levels.
DESCRIPTIVE SUMMARY OF IDENTIFIED MODEL(S) CURRENTLY BEING USED:	Over the last ten years, the evidence ecosystem in South Africa has matured significantly, moving from externally time-bound activities to models that are integrated into national infrastructures for both evidence production and use (Stewart, Langer and Erasmus, 2019). Furthermore, activities that originated in the health sector have been taken up, adapted and expanded across areas of social and economic policy, and are perhaps most advanced in environmental policy. Striking features of the models and activities outlined above include the leadership provided from within government for evidence use, and the gradual institutional shifts that have strengthened the structural systems for evidence use. While much still needs to be done, science–policy engagement has benefitted from a clear national development agenda, a growing capacity for using evidence from a range of sources, including national datasets, modelling, and systematically collated evidence bases. Government drivers for better evidence to meet their needs have led to growth in the generation of evidence for policy. While the university infrastructure still needs incentives to contribute policy-relevant and timely evidence outputs, there are shifts towards increasing research impact led by the National Research Foundation.

CASE EXAMPLE 2: LEBANON

COUNTRY: LEBANON

FOCUS

Cross-sectoral

Source: United Nations Map No. 4170 Rev. 18.1, February 2020

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MODEL(S):

Production focused model:

- Initiatives for policy-relevant research production (K2P, SPARK)
- Initiatives to build capacity of individual scientists to produce evidence synthesis (K2P)
- Initiatives to build capacity of policymakers and other stakeholders in evidence-informed decision-making, including production of various knowledge translation products to inform decisions (K2P)

Integrated model:

- Co-production for generation of policy-relevant responsive evidence bases (CNRS-L, LARI, IRI, K2P)

ACTIVITIES INTEGRATED WITHIN THE COUNTRY MODEL(S)	**Activity 1**: Capacity development for the use of evidence in policy among different stakeholders (CNRS-L, K2P)
	Activity 2: Build the capacity of researchers, policymakers and media in knowledge translation and evidence communication methods (K2P)
	Activity 3: Encouraging applied research production among academics (through commissioning, and prizes/ recognition) (CNRS-L)
	Activity 4: Agenda-setting and commissioning (CNRS-L, LARI, SPARK)
	Activity 5: Development of evidence strategies by national government departments in central government, and in key sector departments (CNRS-L, LARI)
	Activity 6: Engage with citizens to enhance their involvement in the decision and policymaking process (K2P)
	Activity 7: Conduct scientific research (K2P, CNRS-L, LARI, IRI)
	Activity 8: Produce evidence synthesis (policy briefs, evidence maps, rapid reviews, full systematic reviews) (K2P, SPARK)
	Activity 9: Engage with stakeholders in policy dialogues and citizen panels (K2P)
	Activity 10: Conduct evidence-informed advocacy and support implementation in policy and practice (K2P)
	Activity 11: Conduct policy tracing research and develop models for knowledge translation that are context specific, culturally appropriate, relevant, and effective for the region (K2P)
	Activity 12: Involve in teaching and supervising, Lebanese and foreign students who contribute to ongoing research activities (LARI, K2P)
	Activity 13: Involvement in collaborative research agreements with international agencies (LARI, K2P, IRI, SPARK)
BRIEF HISTORY OF SCIENCE–POLICY ENGAGEMENT IN COUNTRY:	There is a government effort to support evidence-informed policy in Lebanon, but political instability, economic constraints and multiple conflicts diminish possible impact. For example, there is no ministry in charge of the national science and technology policymaking in Lebanon, but in 1962 the government recognized the increased role of science and technology in the country's socioeconomic development by creating the National Council for Scientific Research (CNRS), a public agency to advise government and society on the impact and repercussions of the application of science and technology. The law that established the CNRS stipulated that one percent of the national budget would be allocated to scientific research. However, this part of the law has never been fully implemented. Since the creation of the CNRS, science policy has moved from capacity building to targeted research programmes and objectives, with the increasing role of large scientific networks, investment in R&D, public and private and overall change of research scale.
DESCRIPTIVE SUMMARY OF IDENTIFIED MODEL(S) CURRENTLY BEING USED:	The evidence ecosystem in Lebanon is composed of CNRS, other ministry-affiliated research institutes and university-based initiatives that promote the use of research by policymakers. The CNRS supports the formulation of the National Science Policy and carries out surveys and inventories of on-going research activities in private and public institutions in the country. It also promotes efforts to link identified socioeconomic needs and qualified human resources capable of finding relevant responses to the needs. As an example of a research institute, the Lebanese Agricultural Research Institute (LARI) conducts scientific research for the development and advancement of the agricultural sector in Lebanon and keeps close ties with the farmers in an attempt to develop research activities aimed at addressing their problems. The university-based Knowledge to Policy Center (K2P) makes research evidence more accessible to a broader range of stakeholders, convening national deliberative dialogues, building institutional capacities for evidence-informed policymaking, and seizing opportunities to advocate and influence policy outcomes (Yehia and El Jardali, 2015). The centre integrates multiple types of knowledge to inform decision-making, including global research evidence, local data, and expertise of stakeholders. It seeks to bridge the research–policy divide by synthesizing, packaging and actively sharing relevant up-to-date knowledge in an objective manner, based on current and emerging policymaking priorities (K2P, cited 2022). The Centre for Systematic Reviews on Health Policy and Systems Research (SPARK), also located at the American University of Beirut (AUB), produces high-quality systematic reviews and other evidence syntheses that respond to health policy needs and systems priority issues at national and regional levels.

CASE EXAMPLE 3: COLOMBIA

COUNTRY: COLOMBIA

FOCUS

Food production (within a broader system)

Source: United Nations Map No. 4170 Rev. 18.1, February 2020

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MODEL(S):

Production-focused model:

- Initiatives for policy-relevant research production in academic institutions
- Initiatives to build capacity of individual scientists to produce evidence syntheses
- Initiatives to support the social appropriation of research results by communities

Policy-oriented model:

- Government system, led by the Department of National Planning, to evaluate the outcomes of public policies
- Use of evidence mapping to collate evidence systematically by the Government Department of National Planning
- Initiatives for policy-relevant data production and gathering at National Observatories

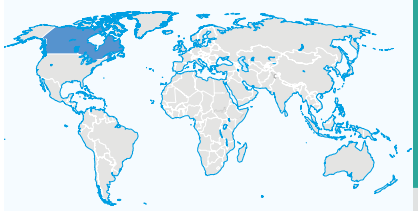
Integrated model:

- Co-production for generation of policy-relevant responsive evidence products

ACTIVITIES INTEGRATED WITHIN THE COUNTRY MODEL(S)	**Activity 1**: Capacity development for the use of evidence in policy among different stakeholders and building capacity of individual scientists to produce evidence syntheses
	Activity 2: Encouraging applied research production among academics through grants awarded by the Ministry of Science, Technology and Innovation and international agencies
	Activity 3: Commissioning policy-relevant evidence synthesis by the Intersectoral Commission on Food and Nutrition Security
	Activity 4: Development of research and evidence products, like gap maps, by the National Planning Department
	Activity 5: Promoting networks among different government sectors and academic research institutes
	Activity 6: Engaging stakeholders in policy dialogues and in citizen panels for evidence-informed policymaking processes and health technology assessment
BRIEF HISTORY OF SCIENCE–POLICY ENGAGEMENT IN COUNTRY:	There is collaboration among various actors, working both for the state and academia that contributes to the use of evidence and its integration into policies. Such initiatives have emerged in universities that help decision-makers to make evidence-informed decisions. Government has actively participated through creation of information systems, the systematic use of data and improvement of investigation processes. Relevant to this case are the creation of The National Management and Results Evaluation System (SINERGIA) created to monitor and evaluate the country's strategic public policies, especially those stipulated in the National Development Plan (DNP, cited 2023a) and the creation in 2019 of the Ministry of Science, Technology and Innovation. The links between government entities and national and international organizations that produce scientific evidence synthesis to inform policymakers indicate the political will to strengthen strategies for using evidence to inform political decisions. An example of this was the understanding agreement signed between the National Planning Department and 3ie (International Initiative for Impact Evaluation) to work together on the production and use of evidence from impact evaluations and a way of generating information so that it can be used by decision-makers to modify public interventions (DNP, cited 2023b). In addition, research and university institutions have engaged in exercises on evidence-informed policymaking. An example of this is the policy dialogues that the Unit for Evidence and Deliberation for Decision Making (UNED) organized around issues of intersectoral problems of microbial resistance (Hub LAC, 2022a).
DESCRIPTIVE SUMMARY OF IDENTIFIED MODEL(S) CURRENTLY BEING USED:	The evidence ecosystem in Colombia comprises activities and actors from the three models for national evidence support systems. From the science production model, the Ministry of Science, Technology and Innovation and international organizations promotes generation of evidence that is relevant for decision-makers and creates incentives to communicate and disseminate research findings with stakeholders. Examples from agrifood systems include projects that integrate scientific knowledge and local farmers knowledge to improve food security in Colombia in the production of yellow potatoes (IDRC, 2016; IDRC, 2018) and improving coffee production (IDRC, 2017). From the policymaking model, there are government organizations such as the National Planning Department that uses evidence gap maps to systematically collate evidence on priority issues, such as programmes for food security of children (DNP, 2023c). This department is also in charge for the evaluation of public policies including the agrifood related policies. From 2018–2022 the department has assessed the impact of agricultural policies related to the National Agricultural Credit System and the impact of the Land Restitution Policy (Sanabria-Pulido and Mojica Muñoz, 2022). Integrated approaches are also common where different policymakers can draw on significant capacity and expertise from universities and research institutes that undertake knowledge generation and evidence synthesis for the government on a consultancy basis. There are also policy-oriented evidence support platforms like UNED that seek to contribute to the development of tools and create a culture of the use for evidence in policies in Colombia by developing evidence briefs, evidence gap maps and various evidence syntheses.

CASE EXAMPLE 4: CANADA

COUNTRY: CANADA



FOCUS

Health

Source: United Nations Map No. 4170 Rev. 18.1, February 2020

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MODEL(S):

Production-focused model:

- The Canadian health research system (e.g. Canadian Institutes of Health Research) has a mandate that includes knowledge translation, although it has few programmatic mechanisms to support this (Government of Canada CI of HR, 2005)
- Many groups and networks support knowledge translation, some with a specific emphasis on producing and making accessible evidence syntheses (e.g. ACCESSS for clinical decisions; Health Evidence for public-health decisions; McMaster Health Forum and its Health System Evidence for health-system decisions; and COVID-END for decisions related to COVID-19)

Policy-oriented model:

- Provincial government initiatives use synthesized evidence to support their decisions and the implementation of these decisions. For example, the Ontario Health Teams programme of the Ontario Ministry of Health receives evidence-informed support from the Rapid-Improvement Support and Exchange (RISE) initiative (RISE, cited 2022)

Integrated model:

- Initiatives like the McMaster Health Forum have promoted the integration of research and policy communities in an organized effort by combining strategies such as: building capacities of policymakers to find and use evidence, facilitating access to evidence syntheses, maintaining a rapid response service and convening stakeholder dialogues and citizen panels

ACTIVITIES INTEGRATED WITHIN THE COUNTRY MODEL(S)	**Activity 1**: Building capacity of policymakers, stakeholders and researchers to find and use evidence (McMaster Health Forum, cited 2022a)
	Activity 2: Repositories of pre-appraised, synthesized research evidence for policymakers, stakeholders, researchers, and citizens (McMaster Health Forum cited, 2022b). Rapid response services to provide decision-makers with timely access to the best available evidence (McMaster Health Forum, cited 2022a)
	Activity 3: Citizen panels and stakeholder dialogues to elicit citizen values and stakeholder views and experiences about policy issues (Boyko *et al*., 2012)
	Activity 4: Support for the institutionalization of approaches for making the use of evidence in decision-making processes routine
	Activity 5: Build networks such as the RISE initiative (RISE, cited 2022) and COVID-END (McMaster Health Forum, cited 2022c)
BRIEF HISTORY OF SCIENCE–POLICY ENGAGEMENT IN COUNTRY:	The practice of policy advice in the Canadian health sector, as described in this case, has its origins in the emergence of evidence-based medicine (EBM). EBM was defined in 1996 as "the conscientious, explicit, and judicious use of the current best evidence in making decisions about the care of individual patients" (Healthcare Excellence Canada, cited 2022). This idea of using the best available evidence to inform health-related decisions was rapidly adopted by health-related organizations like the Canadian Health Services Research Foundation (CHSRF) that had a mission to "support evidence-informed decision-making, management and delivery of health services through funding research, capacity building and knowledge transfer"(Healthcare Excellence Canada, cited 2022). In 2000, the Government of Canada created the Canadian Institutes for Health Research (CIHR), with the mandate to create new health research and translate that research for real world use (Ackerley, 2017). Currently the concept of knowledge translation continues to be fundamental to CIHR´s mandate (Government of Canada CI of HR, 2005).
DESCRIPTIVE SUMMARY OF IDENTIFIED MODEL(S) CURRENTLY BEING USED:	The models can be summarized as what is known as a knowledge translation platform (KTP), which enables the integration of efforts that support evidence informed policymaking activities (Lavis *et al*., 2006). 1. Identifying policy needs and priorities 2. Harvesting local evidence and experience (e.g. by building a database of locally produced evidence) and harmonizing it with global knowledge to guide policy development and implementation 3. Brokering among policymakers and researchers on key issues 4. Packaging evidence for target audiences 5. Strengthening the capacities of researchers to generate better evidence, and of policymakers to better find and use research evidence

CASE EXAMPLE 5: UNITED KINGDOM

COUNTRY: UNITED KINGDOM

FOCUS

Environment, food and rural affairs, within a broader system

Source: United Nations Map No. 4170 Rev. 18.1, February 2020

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MODEL(S):

Production-focused model:

- Research is valued within government: for example the government research profession has several professional research strategies (Government Office for Science and Cabinet Office, 2022)
- The Department for Environment, Food, and Rural Affairs (Defra) relies on a network of linked public sector organizations to provide evidence and has a centrally driven process for commissioning further policy relevant research

Policy-oriented model:

- Valuing evidence through structural roles for both individual scientists and science in policy spheres. Examples include the Parliamentary Office of Science and Technology (POST), which supports parliament in accessing the best available evidence, including that for agrifood related issues (Evidence Based Conservation, 2011), and the appointment of chief scientific advisors, chief statisticians and chief analysts, including within Defra, who advise the department's ministers and manage the cadres of evidence specialists

Integrated model:

- Ensuring that policymakers and evidence specialists within government are well networked with one another, and with colleagues outside government. For example, Defra has a Scientific Advisory Council made up of 11 senior academics who advise the Chief Scientific Advisor
- Government departments are encouraged to produce areas of research interest to indicate their research priorities and foster engagement with academia (Government Office for Science and Cabinet Office, 2022)

ACTIVITIES INTEGRATED WITHIN THE COUNTRY MODEL(S)	**Activity 1**: Commissioning policy-relevant research evidence
	Activity 2: Supporting social, economic and scientific research within government
	Activity 3: Creating key roles within the policy sphere for senior scientists, including chief scientific advisors
	Activity 4: Integrated systems for science–policy engagement in health policy, from commissioning to the use of evidence in national clinical guidelines, at national and local levels (Kneale, Rojas-García and Thomas, 2019)
	Activity 5: Evidence gathering in the policy process through reviews/advisory reports (Levidow and Papaioannou, 2016)
	Activity 6: Having structures within the policy sphere that support the use of evidence (POST, the Defra Scientific Advisory Council, etc.)
	Activity 7: Ensuring that routinely collected evidence within government is useful and used (Defra evidence strategy)
	Activity 8: Implementing dedicated 'evidence investment strategies' in government
	Activity 9: Ensuring evidence activities are centralized in terms of budgeting and planning in Defra
BRIEF HISTORY OF SCIENCE–POLICY ENGAGEMENT IN COUNTRY:	The United Kingdom has a strong science base and over the past 20 years there has been a consistent emphasis on improving the use of evidence in policymaking, led by the Government Office of Science. Different departments have designed tailored approaches to access rigorous evidence for policymaking, risk management and adherence to international obligations. The Cochrane Collaboration has a well-established office in Oxford, and similar centres for evidence synthesis exist across health, education and the environment. A network of What Works Centres on a range of priority areas provide evidence support to policymakers. The United Kingdom has a strong science–policy framework with established systems for science–policy advisors in government, strong research teams in government departments and a National Audit Office which, in addition to financial audit, conducts regular value-for-money audits of government programmes that concentrate on monitoring and evaluation of government funded interventions. Defra only works directly in England but is closely connected to the devolved administrations in Wales, Scotland, and Northern Ireland. It has a history of engagement with evidence and policy, as outlined below. Defra's use of evidence during the bovine spongiform encephalopathy (BSE) or 'mad cow' crisis in the 1980s (O'Brien, 2000) and the Foot and Mouth outbreak in 2001 was heavily criticized. Together with significant downward pressure on public sector budgets this encouraged Defra to embark on a long-term process of realigning its evidence base with its policy needs and developing a more strategic approach to identifying the full range of evidence it requires (Parker, 2016).
DESCRIPTIVE SUMMARY OF IDENTIFIED MODEL(S) CURRENTLY BEING USED:	Defra is a ministerial department, supported by 33 agencies and other public bodies ('the Defra Group') that provide evidence and advice for policymaking. Its work includes statutory obligations for monitoring, surveillance and evaluation in key areas, as defined by UK legislation and international obligations, as well as non-statutory policy priorities. Defra has a Chief Scientific Advisor, supported by a Science Advisory Council, which gives independent advice to help guide Defra's scientific priorities and planning (Defra's Science Advisory Council, cited 2022). A Chief Analyst provides a similar function for non-scientific evidence professions such as economics, social research and operations research. Defra has a central strategy for 'making the most of our evidence', which includes evidence provided by the Defra Group as well as commissioned research in both applied and strategic research areas. This includes proactive and collaborative scoping of research questions to ensure the evidence generated is relevant to the needs of the policy teams; assembling existing evidence in systematic and reliable ways; procuring new evidence to fill gaps; and interpreting the evidence in collaborative ways to inform policy. Defra also has strong relationships with research councils through the Strategic Priorities Fund, which enables it to co-design academic research programmes to improve their policy relevance.

CASE EXAMPLE 6: INDONESIA

COUNTRY: INDONESIA

FOCUS

Food security

Source: United Nations Map No. 4170 Rev. 18.1, February 2020

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MODEL(S):

Production-focused model:

- Financial and skills support for the knowledge production sector

Policy-oriented model:

- Advocacy and capacity support to increase demand for and use of evidence by policymakers

Integrated model:

- Development of Master Plan for Research
- Procurement reform to shape future research commissioning by government
- Relationship and collaboration building efforts through boundary organizations and networks

ACTIVITIES INTEGRATED WITHIN THE COUNTRY MODEL(S)	**Activity 1**: Participatory approaches led from government for a national Master Plan for Research
	Activity 2: Processes in government for integrating different forms of knowledge into decision-making
	Activity 3: Participatory approaches to support development of procurement reform, to shape future commissioning of knowledge products
	Activity 4: Research production focused on the impact of government programmes
	Activity 5: Introduction of a collaboratively produced development index (the Inclusive Economic Development Index – IPEI), which is tailored to the Indonesian context and measures development at national, provincial and local levels (KSI, cited 2022)
	Activity 6: To build demand for evidence among policymakers, KSI (Knowledge Sector Initiative) collaborated with the National Institute of Public Administration (LAN) on training modules for policy analysts as well as with the National Planning Ministry in support of a policy analysis centre
	Activity 7: Media training to support reporting of science to the general public
	Activity 8: Facilitated working groups that include research producers and users and span government and academia, as well as other actors
BRIEF HISTORY OF SCIENCE–POLICY ENGAGEMENT IN COUNTRY:	Under previous leadership (President Suharto 1966–1998) scholarship was controlled and used to reinforce the state. The right to independent knowledge creation was curtailed, including close control of universities (Jackson, Pellini and Prasetiamartati, 2020). This has ongoing consequences for science–policy engagement. Although Indonesia's reform period is over 20 years old, the restrictions on knowledge generation of the previous era are still felt. There is underinvestment in research infrastructure combined with a lack of demand for evidence by government, and limited skills for making sense of evidence and integrating it into policy. Research investment is low, and processes restrictive, for example with one-year grants and inflexible and onerous reporting. There have however been significant shifts in the last 5–10 years, supported by externally funded initiatives such as KSI, which has attempted to support the generation of useful evidence outside government, and to tackle government procurement processes for commissioning policy research. There are examples of evidence-informed policymaking and implementation in the area of public health and nutrition (Purwaningrum, McDonald and Short, 2020), but the use of evidence in food policy is still nascent. There is a need, not only for effective integration of evidence into policy, but also for monitoring and evaluation systems to monitor the effectiveness of those policies and oversee their implementation (Muhafidin, 2022). Nevertheless, significant shifts are underway: specifically relating to food security, and as part of UN-encouraged processes, Indonesia hosted a number of Food System Summit Dialogues in 2021, bringing together stakeholders to share experiences and solutions, as well as building crucial relationships among role players.
DESCRIPTIVE SUMMARY OF IDENTIFIED MODEL(S) CURRENTLY BEING USED:	The development of a national Master Plan for National Research was collaborative with a range of stakeholders involved, and a focus on national policy priorities. There are examples of processes in government for integrating different forms of knowledge into decision-making at different levels of government, for example local policy on the utilization of land (Purwawangsa *et al.*, 2022). The KSI is an example of long-term investment through a donor-funded programme to support the development of an enabling environment for evidence-informed policy. Their work has included strengthening policy-focused evidence production and dissemination, including supporting scientists to engage with policymakers and the public. Following work to understand the context in which policymakers work, they have built relationships with government colleagues and supported their engagement with researchers and research through working group facilitation. Furthermore, they have engaged with the regulations, policies and procedures governing government commissioning of research to break down structural barriers at the science–policy interface (Jackson, Pellini and Prasetiamartati, 2020). Capacity support initiatives include collaboration between KSI and the National Institute of Public Administration to provide training for both policy analysts and the National Planning Ministry to strengthen planning processes and increase demand for both data and research (Hertz *et al.*, 2020). Relationships between research producers and users have been reinforced through facilitated working groups, which have not only advanced solutions to challenges at the science–policy interface, but also built invaluable relationships among stakeholders. These groups are increasingly government-led, increasing the impact of and legitimacy of their outputs (Hertz *et al.*, 2020) .

Each of these case examples provides different insights into the context within the countries, in particular an overview of science–policy engagement activities in that country. The Canadian example is centred on the knowledge translation platform model, an approach applied in the health sector. This work in Canada is well known and has directly influenced the development of knowledge translation platforms in other countries, as reflected in a number of other examples that were identified. Countries such as Lebanon, which is the focus of another of the case examples, have adopted and adapted the Canadian approach, broadening the activities to other models and sectors. Similarly, the work conducted in Colombia, includes, but is not limited to, the health-focused knowledge translation activities influenced by Canada.

The United Kingdom's environmental sector work to support the integration of evidence in government has also been influential around the world. This case example shows how activities develop when driven from within the government policy sphere, as opposed to the research production arena. The models and activities used within the United Kingdom's Defra are, in many cases, more structural and potentially more long-lasting as a result. The influence of this work in the South African example is evident, which has a similar emphasis on government-owned, government-driven activities. The developments within the policy-development systems and processes in South Africa are some of the most integrated activities that were identified. Interestingly, the Indonesian case shows how strategic systems-focused engagement can enable similar levels of structural change, in this case to the ways in which research agendas are established and research is commissioned and funded. The Indonesian context, to an extent the 'starting point' for the science–policy activities described, was much more challenging than that in the United Kingdom or Canada. Nevertheless, the sustained activities show clear shifts over time. Indeed, the length of time over which activities have been underway in all six countries (in all cases over 15–20 years at least), suggests that long-term investment is important. Similarly, a commitment is evident in all examples from both researchers and policymakers, ensuring that activities are not only research-production focused or policy-oriented, but include integrated models for supporting evidence use.

In the Indonesian, South African, Lebanese and Colombian examples, it is clear that the countries' own development agendas and political economies have created an expectation for policy impact that has been a lever for increasing the demand for and use of evidence. All four countries operate in resource-poor and/or resource-unequal settings, providing an incentive for change among the scientific and policy communities.

The maturity of national evidence systems and the models within them vary across countries and among fields and sectors. This is not to say that lower income countries are necessarily lagging behind better resourced ones. While the strength and influence of models developed in countries such as the United Kingdom and Canada should not be denied, innovation in evidence support systems across LMICs over the last ten years has been marked. The world has much to learn from what is happening in countries such as Colombia, Indonesia, Lebanon and South Africa, as the case examples illustrate.

Understanding from the empirical cases across 39 countries, and from the six in-depth case examples, fed into reflections on the strengths and weaknesses of the various models in Section 4 and the identification of lessons for future work in Sections 4 and 5.

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4 REFLECTING ON STRENGTHS AND WEAKNESSES OF THE MODELS

4.1 Learning from the available evidence base on what works

The evidence base for strengthening the science–policy interface is steadily growing. While the available literature describes development impacts, such as increased crop production, reduced mortality and higher educational attainment, many studies focus on outcomes related to capabilities, motivations and opportunities to use evidence in decision-making.

The most comprehensive body of evidence that evaluates the effectiveness approaches is the Science of Using Science Report (Langer, Tripney and Gough, 2016). It explores the effectiveness of six mechanisms for strengthening the use of evidence in policy, drawing both on impact evaluations and social science literature. The mechanisms explored are: awareness for and attitudes towards EIDM; agreement on what constitutes fit-for-purpose evidence, communication and access; interaction and relationships; skills to access and make sense of evidence; and structures and processes for decision-making. The effectiveness of the mechanisms is mapped on to the three high-level models. Table 4 provides an overview of the implications of the evidence for each of the three high-level models. Their relevance to agrifood systems is then discussed and specific lessons drawn out in the following section.

The Science of Using Science Report suggests that some approaches are more effective than others.

4.1.1 Within the production-focused model:

- There is reliable evidence for the effectiveness of activities that combine provision of better access to evidence, such as through repositories, with activities that increase decision-makers' opportunities and motivations to use evidence (Langer, Tripney and Gough, 2016). Support for maintaining and/or developing national repositories for evidence that include quality assured, easy to access local agrifood data and science are supported by the evidence.

- There is reliable evidence for the effectiveness of models that combine decision-makers' skills to access and make sense of evidence, with activities to increase decision-makers' opportunities and motivations to use evidence (Langer, Tripney and Gough, 2016).

4.1.2 Within the policy-oriented model:

- There are no key findings from a policy-oriented approach, which has only recently been documented. More work to engage with government colleagues on the internal systems and initiatives that they have in place and to document them for wider learning is needed.

4.1.3 Within the integrated model:

- There is some evidence (the authors describe this as 'cautious evidence') of the effectiveness of models that foster changes to decision-making processes and structures; examples include responsive evidence services that integrate push, pull and exchange approaches (Langer, Tripney and Gough, 2016). There is a case for national responsive evidence services for agrifood to be established where not already in place.

- There is reliable evidence for the effectiveness of models that use 'highly intense and complex programme design', although a case is made for simpler and more defined approaches that have a greater likelihood of success (Langer, Tripney and Gough, 2016). The balance between focusing on evidence for specific interventions vs evidence for complex policy options needs to be debated further as part of the design of national responsive evidence services to ensure they meet the needs of national agrifood decision-makers.

- There is evidence, from a systematic review of 39 studies about the evaluation of knowledge translation platforms, that suggests they offer promise in promoting the use of research evidence in policymaking processes in LMICs. Evidence briefs and deliberative dialogues were viewed as helpful. None of the evaluations included in the review used formal effectiveness designs (Partridge *et al.*, 2020).

Table 4. Overview of the implications from systematically collated evidence bases on evidence use

APPROACHES TO STRENGTHEN EVIDENCE USE	WHAT IS KNOWN ABOUT THEIR EFFECTIVENESS	RECOMMENDATIONS
Relevant to the production-focused model:		
Interventions that support the communication of and access to research evidence.	Effective to increase evidence use only if the intervention design simultaneously attempts to enhance decision-makers' opportunities and motivation to use evidence.	Future research and practice should focus on how to design and tailor interventions that combine activities for improving communication of and access to research evidence and enhance decision-makers' opportunities and motivation to use it.
Interventions building decision-makers' skills.	Effective to increase evidence use only if the intervention design simultaneously attempts to enhance capability and motivation to use evidence.	Future programmes should combine activities for building decision-makers' skills with activities for enhancing their capability and motivation to use it.
Relevant to the policy-oriented model:		
Changes to decision-making structures and processes.	May possibly be an effective mechanism to increase evidence use.	The need to understand better shifts in decision-making structures and processes.
Relevant to the integrated model:		
Structured interactions between decision-makers and researchers.	Unstructured interactions are ineffective at improving decision-makers' evidence use, although they may be useful for symbolic and tactical use of evidence.	Current practice and future research need to focus on engagement activities based on well-developed theories of change.
Single vs multi-mechanism interventions.	Evidence is lacking but simpler and more defined interventions may have an increased likelihood of success.	Both practice and research are needed to understand interventions promoting the concept of EIDM, as well as those working towards mutual understanding of policy-relevant questions and agreement on what constitutes fit-for-purpose evidence needed to answer them. Research into simpler interventions is needed to help understand their contributions before larger multi-mechanisms studies are conducted.

It is also known that there are social and behavioural approaches that can reinforce the activities that are used across all models:

- By creating behavioural norms through activities such as social marketing and social incentives, the formation of social and professional norms around using evidence can be supported. Advocacy and awareness-raising activities promoting both the value of using evidence and the risks of not doing so, support behavioural change.

- There is a wide range of approaches for enhancing communication of science, including better design of repositories and other resources to improve user experience.

- Establishing common practices and standards among those working at the science–policy interface can help to increase social influence and group interaction, which in turn makes activities to support evidence use more effective, and builds the relationships needed to break down barriers among different actors. Activities such as building communities of practice, mentoring and interprofessional education all contribute to establishing a common professional identity.

- Adult learning theories and practices provide useful insights to strengthen evidence capacities and enhance the success of activities that support decision-makers' skills over longer timeframes. The need for a skills framework that drives a core curriculum of training and learning materials is recognized. Institutional approaches such as certification and accreditation may also be helpful.

- At an organizational level, techniques for strengthening learning, management and leadership can all contribute to the effectiveness of activities for increasing evidence use.

- Those working to strengthen the science–policy interface could further benefit from behavioural science techniques, and consideration of how choices can be influenced might play a role in shaping how decision-makers integrate evidence into their choices.

- Online and mobile technologies play a role in strengthening other activities, from communication approaches to capacity-building and decision aids.

The body of evidence on the effectiveness of science–policy engagement strategies has been updated by the Africa Evidence Network, looking at the evidence from Africa on the same topic (Nduku *et al.*, 2021). The report on the Art and Science of Evidence Use in Africa clearly shows that:

- Interventions to increase awareness of evidence and its value in decision-making occur in Africa, but are rarely evaluated, representing an important knowledge gap that needs addressing.

- There is a limited evidence base from Africa on activities that promote mutual understanding and agreement on policy-relevant questions and the evidence needed. The activities appear to be most successful when combined with activities that promote access to and interaction with evidence, and support skills for making sense of it. The models emphasize trust and diverse value systems and support the development of structures for sustained priority setting and forward planning to ensure the production of evidence that meets policy needs.

- Interventions to improve access to evidence for decision-makers are useful when combined with activities that build relationships between evidence producers and users, in addition to skill building activities. The collaborative activities for developing knowledge repositories, producing evidence outputs tailored to decision-making, and which deliver responsive evidence services, appear to be key.

- Activities to support relationships and collaboration among role players are rarely delivered in isolation. Longer term impacts occur when sustained over time.

- Capacity building initiatives tend to include activities that support interactions between researchers and decision-makers, either before or during workshops, and they tend to include access for decision-makers to evidence. Studies report improvements in knowledge and understanding of the use of evidence, as well as capacity to produce evidence. Some go further and report integration of evidence into policy.

- Interventions to establish structures and processes for decision-making that integrate evidence use within them have the potential for long-term and sustained impacts, as does the use of evaluative tools such as national evidence assessments. Successful models integrate consultative processes to build consensus for the institutionalization of these structures and processes in organizations.

4.1.4 What this indicates about drivers for increased use of evidence

Research suggests that agreement on a common goal, often a national development target, or similar value-based motivations to reduce hunger, poverty, and inequality within a country, can provide the driver for change. Engagement by stakeholders on common issues of importance is a crucial first step towards working together to find solutions. Associated approaches for building trusted relationships and establishing networks and communities of practice provide the mechanism to increase the use of evidence to improve outcomes towards achievement of this common goal.

Motivation within governments to improve outcomes for their countries, and to do so through better informed policy processes was noted in several cases. Drivers within national governments can lead to improved processes for integrating evidence into policy, particularly when coupled with appropriate capacity support and evidence services.

International systems for tracking progress such as performance assessment can help to drive change. Mutilateral bodies also have a significant role to play, simultaneously applying external pressure on countries and supporting internal development, leading to increased use of evidence in decision-making.

The implications drawn from these bodies of evidence are summarized in Table 4. They suggest that programmes are needed that are based on carefully considered theories of change, that are informed by the best available evidence, and that integrate activities to target more than one mechanism at a time. While these systematically collated evidence bases provide the best available evidence from within the published literature about how to strengthen science–policy engagement, there are numerous examples of national models and activities that have not been formally evaluated. While the evidence base arising from these empirical cases is not as reliable, there is much to learn from the practical experiences of people working in national systems.


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4.2 Learning from the empirical examples identified

The wide-ranging overview of national models for supporting science–policy engagement in Section 3 details activities employed in various countries. Evaluations of empirical cases are limited in scale and scope. Nevertheless, observations on the activities have been recorded, and in some cases evaluation data are available. A summary of the issues identified within the empirical literature across 17 countries is provided and a more complete overview is provided in Annex 3.

- Accounts of national models inform that strengthening science–policy interfaces takes a long time (Wills *et al*., 2016) and sustainability of activities and their outcomes requires human and financial investment (Rodríguez *et al*., 2015).

- Policymakers are often seen as having a deficit in their appreciation and understanding of science and so initiatives to strengthen science–policy interfaces are often driven by scientists with policymakers as the target group for activities such as capacity building. This study found that some of the most innovative and sustained initiatives for strengthening the science–policy interface are driven by policymakers and their leadership role should therefore not be underestimated. Governments provide the drivers for change. They can and do support the use of evidence in decision-making (Sula, 2019). The evidence-informed approach can nevertheless be challenging because it potentially calls for governments to change the way they make decisions (Schomerus and Seckinelgin, 2015).

- Attitudes and perceptions of evidence-informed decision-making vary among stakeholders (Pervin and Hagmayer, 2022).

- Multiple interrelated collaborative programmes allow for relationships to be built and for programmes to feed into one another (International Institute for Environment and Development, cited 2022). The importance of trusted relationships and the need to establish them is underscored throughout the examples (Stewart and Oliver, 2012; Environmental Evidence for the Future, 2019; Wills *et al*., 2016; Stewart *et al*., 2019).

- Funding for research and its source are important. It is suggested that access to domestic funding through government planning and budget allocation is preferable and represents a valuable driver for meaningful change (Environmental Evidence for the Future, 2019; Wills *et al*., 2016; Yehia and El Jardali, 2015). Research outputs need to be relevant to national priorities and international funding is not always aligned with national agendas (Environmental Evidence for the Future, 2019; Wills *et al*., 2016). International donors can help the process by influencing research agendas to align with national priorities (K2P, cited 2022), or hinder it (DPME The Presidency, Republic of South Africa, 2015; K2P, cited 2022; DNP, 2023a). Flexibility in funding is important (WHO and Alliance for Health Policy and Systems Research, 2021a).

- Capacity development to improve research quality, including research design and methodology, as well as the quality of research communication, is invariably recognized as being important. Capacity development for evidence-informed policy and practice designed and delivered from within government is a helpful approach to increase demand for evidence and its use (Lukey, cited 2022).

- Structures that allow policymakers and other stakeholders to come together are key (Vilas-Boas, Klerkx and Liea, 2022). Even in settings where relationships already exist among researchers and decision-makers, convening stakeholders is a priority (Wills *et al*., 2016; Department of Environmental Affairs, cited 2022). Facilitation of engagements is important (WHO and Alliance for Health Policy and Systems Research, 2021b), as is an awareness of competing demands on participants' time (WHO and Alliance for Health Policy and Systems Research, 2021b).

- When stakeholders who may not usually work together, such as researchers and policymakers, are able to identify and take shared ownership of a common problem in their communities that needs tackling, this common focus provides the anchor for an effective working relationship going forward (Weiss, 1979; K2P, cited 2022). By focusing initially on the problem(s) that needs addressing, different actors can build a common framework for collaboration (Weiss, 1979; Department of Environmental Affairs, cited 2022). Agreement on the importance of solutions to the problem provides the driver for change. The framing of the problem needs careful consideration (WHO and Alliance for Health Policy and Systems Research, 2021b). Using broad definitions of knowledge and of evidence-informed decision-making can be helpful (Environmental Evidence for the Future, 2019; DNP, 2023c).

- Policymakers are more likely to contact trusted advisors or researchers for information than search for evidence. When decision-makers are persuaded of the value of evidence and go to look for relevant research but find nothing, it is off-putting (Asad, 2017). Despite the value of identifying research gaps to inform future research, there is a very real danger of raising capacities and demand among decision-makers and then failing to provide the evidence and evidence services they need (Evidence Based Conservation, 2011; Kneale, Rojas-García and Thomas, 2019). Getting the balance between raising demand for evidence and providing the evidence sought by decision-makers is therefore crucial to a successful science–policy interface. Furthermore, research agendas need to be focused on local policy priorities (Kneale, Rojas-García and Thomas, 2019). Knowledge exchange mechanisms and co-production approaches can be helpful (Environmental Evidence for the Future, 2019; Government of Canada CI of HR, 2005; RISE, cited 2022), and are particularly effective when the co-production of evidence bases is driven from inside government and is focused on delivering usable outputs that meet policy priorities (Africa Evidence Network, cited 2022).

- Development of indicators to drive alignment between research agendas and policy and practice gaps, and to assess the impact of research outputs on meeting these needs, is needed (Ricciardi *et al*., 2020; Yehia and El Jardali, 2015).

- Formal policies and processes, such as formation of advisory groups for science–policy engagement activities, and inclusion of teams with broad technical skills, can enable evidence support services to operate smoothly (McMaster Health Forum, 2022a). Intermediaries have an important role to play (Purwawangsa *et al*., 2022).

Reflecting on the body of empirical evidence, it is apparent that the three models are useful at different phases in development of a national evidence system. For example, systems where research production is oriented towards the academic community, without any engagement in policy agendas, require work engagement with national development agendas. Understanding the status quo is therefore important to prioritize models for further investment/effort. Countries that do not consider evidence in the policy space would benefit from the policy-oriented approaches. In settings where the two communities are entirely separate, it is necessary to integrate them at individual and institutional levels.

5 DISCUSSION AND IMPLICATIONS

5.1 Overview of findings

This report set out to learn from existing models for supporting the use of evidence in policy at the national level. It has mapped out the latest conceptual thinking about science–policy engagement. It also describes which activities have been used around the world and, where available, summarizes lessons arising from these empirical examples. Examples of national models from 39 countries are included. Evaluation lessons are drawn from 17 of these countries. Six detailed case examples are also provided from across the six regions. Accounts are included from 90 reports and academic papers all published in the last decade.[4] Further insights are drawn from 20 years of practical experience of working in this field in North and Latin America, Europe, Asia and Africa, and enhanced by drawing on the experiences of many colleagues in the field.

Three high-level models were identified: the production-focused model, the policy-oriented model and the integrated model. The breadth of the identified national activities within the models was substantial and the scale of potential lessons to be learned from around the world cannot be underestimated. The study identified several key approaches that can be taken under each of the three high-level models. The production-focused model includes science-production development agendas and evidence synthesis. The policy-oriented model includes approaches for strategic knowledge management and for strengthened state capacity. The integrated model encompasses approaches for boundary organizations, science advice, for policy-oriented evidence support systems and for evidence networks. Approaches for relationship-building and capacity development cut across the three models.

Mapping out the use of these approaches across 39 countries and taking a deeper dive into approaches used in six countries (South Africa, Lebanon, Colombia, Canada, the United Kingdom and Indonesia) allowed greater understanding of how approaches to strengthen the science–policy interface are combined at a national level both within and beyond agrifood sectors. The study identified an emphasis on the generation of more and better policy-relevant evidence for agrifood decision-making, with some emphasis on integrated science and policy activities, particularly on building cross-cutting networks, and much less attention on the policy sphere. With regards to the latter, lessons can be drawn from across other policy areas to strengthen government-level knowledge management and strengthen state capacity for evidence-informed policy and implementation.

The science–policy interface for agrifood systems is a broad landscape that includes numerous important potential partners. No single stakeholder group or organization covers the whole landscape, nor does any constituent provide all the pieces of the necessary support infrastructure either internationally or nationally. While there is currently an understandable focus on national systems, international role players are key: strengthening national systems alone will not be enough. National evidence support systems require access to international norms and standards, and libraries of global good evidence syntheses, to give just one example. It is not surprising that countries cannot deliver internally all that is needed for strong and sustained science–policy engagement.

[4] The authors broadened the searches from English, to include Spanish and Portuguese databases and studies to ensure as many cases as possible were identified. The languages chosen were defined by the authors.

The challenges facing the agrifood sector are both global and local, as is the science on how to address these challenges.

This work suggests that in the application of the three models, there is a prioritization of the science sphere over the government policy sphere with greatest investment in science production-focused approaches rather than in policy-oriented ones. The apparent reluctance to put these on an equal footing is not helpful. Neither are debates that focus solely on methods and/or methodological hierarchies. The jigsaw imagery of multiple players, all of whom have a role to play, and who need one another to complete the picture, is a helpful one for resetting traditional ideas of status and of 'whose voice counts'. Different players, who often do not even know each other, need to be well networked. It should also be recognized that citizens and communities are almost entirely missing from national science–policy landscapes, whether as producers or users of evidence. They are also missing as part of the governance and accountability processes. There is also a gap in the governance of national systems with many activities still ad hoc, externally funded and timebound. The lack of cohesion between research agendas and policy and planning priorities is a serious barrier to change. This lack of cohesion is reflected in the funding of research and the sometimes problematic relationship between international funders and government investment in research.

Models and activities at national level vary in their level of engagement from engagement with individuals to activities that focus on systems change. There is a fundamental weakness in activities that rely on engaging only with individuals without the scope to engage at team or organizational levels, nor the understanding that individual experience and expertise is a source of bias. Approaches require engagement with the full array of stakeholders, as well as the use of systems that systematically collate evidence bases and provide timely and reliable evidence support services. It is important to move beyond advocacy for the findings of individual research studies, to advocacy for consideration of complete evidence bases and the development of support services to reinforce links between these evidence bases and the decision-makers who need them.

Multilateral organizations have potential to strengthen national science–policy interfaces because of their roles across evidence production and policy generation, and their ability to convene players between both these spheres (Global Commission on Evidence to Address Societal Challenges, 2022). How they view evidence, and how they invest in strengthening support for evidence use, can shape what their member states put in place. As such they occupy a unique position for driving systems-level change within and across countries for science–policy interfaces for agrifood systems.

5.2 Discussion

Much can be learned from investigating national models for strengthening the science–policy interface. This report has only scratched the surface, and yet the number and nature of the insights available are substantial. Not only is there a clearer understanding of the range of activities taking place in different sectors around the world, but there are also lessons for future planning.

Before discussion of the findings and identification of implications for future strengthening of national science–policy systems, it is important to recognize that this report is reliant largely on publicly available reports and academic papers, supplemented by the practical experience and expertise of the authors, and validated through engagement with additional experts. The rapid review of the literature has been structured and systematic but not comprehensive. Furthermore, much of the conceptual thinking in this field is generic and not specific to agrifood systems. The empirical accounts of activities and models for supporting the use of evidence in policy are wide-ranging across countries and sectors of relevance to agrifood systems. The available evidence on the effectiveness of approaches is limited mostly to the Science of Using Science report published in 2016, with some updated evidence available from the African literature. Most evaluation findings and reflections reported are drawn from written accounts of the experiences and reflections of teams working within countries, and not from rigorously conducted evaluations. Despite these limitations, this report

represents a useful overview of national-level approaches, models and activities used across the agrifood sector and provides insights for future work. It is also consistent with, and adds to, the work of the Evidence Commission.

There is a temptation in the evidence field to argue that each sector is unique and that cross-sectoral lessons cannot be drawn. However, those who work to strengthen national evidence systems, within and outside of governments, argue otherwise. This is not only because of the relationship between, for example, health, nutrition and agriculture (Patterson *et al*., 2020), but also because the national policy systems are often cross-cutting, both generally (see the example of South Africa) (DPME The Presidency, Republic of South Africa, 2015), and increasingly in relation to the environment more specifically (Pettorelli *et al*., 2021). Particularly in centralized government systems, policy processes cut across sectors, and therefore policy-oriented systems for supporting the use of evidence are cross-cutting: this is clear from the six cases presented.

In addition, different sectors have struggled with similar methodological challenges in understanding what works, why and how. In Ann Oakley's Experiments in Knowing, she highlights the commonality of the questions that methodologists have struggled to solve in trying to understand complexity, causality and context, clearly demonstrating how so many of the challenges faced are not new nor unique to one sector. Solutions for methodological challenges have advanced in different ways across different sectors (Oakley, 2020). This means there is much to learn from other areas of work (Boaz *et al*., 2019; Boaz, Oliver and Hopkins, 2022), and a great opportunity for sharing challenges and experiences in strengthening the science–policy interface for agrifood systems (Stewart *et al*., 2022; Sutherland, 2022).

While the shift with the evidence-informed policy field towards the middle ground between science production and policymaking is strongly advocated in the literature, and the focus of this report is on the interface between science and policy, there may be a danger in prematurely moving the focus away from the production of high quality and relevant science on agrifood systems, and rigorous and systematic synthesis of this science (Stewart *et al*., 2022). The complexity of agrifood systems and the challenges of unpacking causal relationships and impacts of programmes at the necessary local, national and international levels, means that investment in agrifood system science is a crucial foundation for strengthening the science–policy interface (Finger and El Benni, 2021).

The role of research funders is crucial in both financing and empowering the approaches for strengthening the science–policy interface (Nutley, Walter and Davies, 2007). Their role includes not only the shaping of and prioritization within research agendas, but the reduction of research waste (Chalmers *et al*., 2014) through investment in replication studies and evidence synthesis. Initiatives such as the Collaboration for Environmental Evidence have started the considerable task of collating the best available evidence on several key issues of importance to agrifood systems, and yet the library of synthesized evidence is still small (see **https://environmentalevidence.org/**). Methodological challenges for agrifood systems include challenges in evidence synthesis due to the wider range of evidence types (Oliver *et al*., 2005), and the scientific approaches used across the agrifood sector (Dicks *et al*., 2018). While this report advocates for more synthesis of agrifood science, the capacity among agrifood scientists to conduct policy-relevant evidence syntheses remains limited and needs addressing (Downey *et al*., 2021). These issues are being addressed but are not yet resolved. For example, guidelines for systematically synthesizing the available evidence are relatively recent (James, Randall and Haddaway, 2016; Pullin *et al*., 2022). Investment in the necessary evidence to inform policy is not yet available at the scale seen in the health sector, for example.

It is known that some of the most sustained efforts to integrate evidence into policy have been led from within governments (Langer, Tripney and Gough, 2016) with the noted example in this report of the work of South Africa's government (Stewart, 2023) including the Department for Environment, Forestry and Fisheries (Wills *et al.*, 2016; Stewart *et al.*, 2019). Resilience and institutionalization of science–policy systems have been associated with ownership and leadership coming from within national governments (Stewart *et al.*, 2019). However, agrifood systems are complex and by definition are multi-sectoral and international – see the One Food initiative (One Food, cited 2023) as just one example to recognize the need for multi-dimensional solutions. Working with one government department can similarly be problematic when related sectors such as agriculture, environment, forestry, food and health are likely to fall under different ministries. The complexity of agrifood itself, requires complex solutions. As a result, and supported by the available literature, collaboration based on trusted relationships supported by multi-disciplinary networks are crucial to strengthening agrifood science–policy interfaces.

As agrifood systems thinking has required the 'reimagination and re-creation' of food, agriculture and its interrelationship with nature (McGreevy *et al.*, 2022), there is a need to move away from considering primarily science-for-policy, and shift towards a stronger recognition of the agency of policymakers in shaping the science–policy interface for the transformation of agrifood systems. The importance of integrated approaches for strengthening national policy systems and the need for greater investment in national infrastructure, including boundary organizations, evidence networks, and evidence-informed policy support systems, including agrifood helpdesks that can tap into the best available science to inform policymakers in timely and relevant ways, cannot be underestimated. Moving beyond science provision and towards national evidence services for agrifood is key. Even with investment and implementation of all three high-level models, there will always remain a need for ongoing monitoring, evaluation and learning. Each country context is different and varies over time, with a range of influential factors shaping the science–policy interactions (Cairney, 2015; Edler, Karaulova and Barker, 2022).

5.3 Recommendations

The following actions are recommended for strengthening each of the three models. These are followed by ten prioritized steps for strengthening national science–policy systems as a whole.

5.3.1 Strengthening the production-focused model:

- Ensure national research agendas, and associated investment in evidence production, are aligned with national development agendas and international development priorities with close consideration of national and global agrifood challenges. The evidence produced must employ the methodologies necessary to understand and evaluate the complexity of agrifood policies and contexts, and include methodological innovation where necessary. Funders, both national and international, have a key role to play in this process.

- Establish and/or strengthen national systems for evidence synthesis that cut across disciplines and sectors and focus on the generation of evidence bases that are relevant for current and anticipated policy priorities. These need to: actively support publication of local research outputs and datasets, irrespective of whether they are available in English or not, or whether they have positive results; and, drive improvements in the quality of primary research and advocate for the conduct of evidence synthesis.

5.3.2 Strengthening the policy-oriented model:

- Recognize the importance of policy actors, institutions and systems, the funding structures that underpin them, and the role they play in strengthening the science–policy interface for agrifood systems. Given the cross-cutting nature of agrifood, these need to encompass national government departments that span (at least) agriculture, rural affairs, the environment, forestry, fisheries, nutrition, health, water, climate and trade.

- Support investment in strategic knowledge management within governments as a key mechanism for increasing evidence use in policy while ensuring that work to support the use of evidence in policy and planning is integrated within wider efforts for strengthening state capacity through greater transparency and accountability. Ideally, such knowledge management should be overseen centrally for greater sustainability, and to ensure silos do not limit access to knowledge for this broad cross-cutting field.

5.3.3 Strengthening the integrated model:

- Invest in cross-sectoral evidence networks to facilitate the common ground among role players that is the essential foundation for establishing a shared understanding of priorities and the generation of new co-produced evidence and policy. These networks must span key stakeholder groups from citizens to farmers, as well as relevant national policy stakeholders. Scientists from relevant national research bodies should be included.

- Establish and/or strengthen national evidence support services that are integrated into systems for generating trusted evidence synthesis and systems for providing science advice for policy and which emphasize the need for transparency and accountability throughout. Where these do not yet exist, lessons can be drawn from other countries' national agrifood systems and/or those in place in the same country within other sectors.

5.3.4 Cross-cutting recommendations:

The following steps that cut across the three models are recommended to strengthen national science–policy interfaces for agrifood systems.

1. Current challenges affecting agrifood systems require agility and transparency to produce knowledge and feed it into policy and practice. Initiatives for strengthening science–policy interfaces for agrifood systems should be reliable and flexible in planning and implementation and build flexibility into the systems they support.

2. Programmes that build and strengthen relationships between researchers and policymakers are essential to the success of science–policy engagement in agrifood, as in other sectors. These need funding and facilitation. Engagements need to be sustained over time. Connections and collaborations need to be enabled among individuals, organizations and ultimately, systems.

3. Indigenous Peoples' knowledge and community engagement in all aspects of the science–policy interface are missing from most national evidence systems. This gap needs to be recognized and addressed. This is particularly important given the known value of indigenous knowledge to food and farming systems.

4. Multidimensional approaches, models and programmes need to be developed so that national evidence systems are informed by the best available evidence. These need to be based on well-developed theories of change, with robust and transparent monitoring and evaluation processes embedded within them to allow for adaptive management to take place. Where cross-cutting services are in place, their scope to deliver effective evidence systems for agrifood need review and strengthening. Where no such services are in place, systems for agrifood need to be funded and developed.

5. Investment is needed in national agrifood infrastructure, including in national science and innovation infrastructure and national research agendas; in policy systems for integrating different forms of knowledge in systematic, timely and responsive ways; and in evidence support systems to ensure policy is designed using up-to-date evidence transparently.

6. Incentives and drivers are needed for researchers to conduct policy-relevant agrifood research. This needs to dovetail with national research evaluation frameworks that value evidence synthesis. Domestic national research funders have an important role to play in funding, and in monitoring the alignment of this evidence to national priorities. International funders need to align themselves more closely with national priorities to ensure they contribute to, and do not disrupt, efforts to produce policy-relevant evidence.

7. Processes for contextualizing global evidence and balancing it with local evidence are urgently needed and largely lacking from evidence-informed decision-making models. Approaches for effectively balancing local and global realities and the evidence from each need development, testing and adoption across national systems in transparent and accountable ways. For agrifood this includes understanding the local status quo across relevant research and data systems from nutrition, hunger, productivity, food supply and demand and more, and how they relate to international and global systems. Processes for the integration of relevant global evidence with the relevant local datasets are needed. Experiences and learning can be exchanged with other fields, such as health, in which solutions for this challenge are also being sought.

8. Paradigm shifts in thinking are needed so that scientists recognize that research evidence is only one form of knowledge relevant for decision-making, and that individual research outputs should not be pushed into policy. What is needed are structures and systems for collating evidence bases on which decision-makers can draw, as well as evidence support services to draw on those systematically collated evidence bases to provide timely and appropriate science advice for governments. Methodologies and pockets of expertise exist around the world for the systematic collation of agrifood system evidence. Investment is needed to support capacity development of a wider number of agrifood synthesis specialists and to support their synthesis activities.

9. There is an ongoing need for advocacy for the value of science and of evidence-informed decision-making across agrifood sectors at all levels, from inclusion into undergraduate curricula to integration into public service training agencies. For this to be accepted and adopted by decision-makers and their systems, this needs to be framed in ways that make sense in the policy sphere and that recognize the expertise and knowledge frameworks, and the planning and funding instruments of governments.

10. While it is possible to identify broad recommendations for those seeking to strengthen national level evidence systems, there is a need for each country to assess its existing infrastructure, activities, actors and contexts. Here the work of the Evidence Commission may be useful: the Commission advocates investment in formalizing and strengthening domestic evidence support systems and enabling rapid learning in different sectors within countries, starting with country assessments. Such country assessments must be the starting point for future national level investment, to understand both generic evidence infrastructure, and agrifood-specific systems and processes in place.[5, 6]

[5] The Commission's recommendations and tools provide useful next steps for strengthening science–policy interfaces for agrifood systems at a country level. See **https://www.mcmasterforum.org/networks/evidence-commission/domestic-evidence-support-systems**

[6] The work of the European Commission may also be valuable: see **https://op.europa.eu/en/publication-detail/-/publication/b673ed06-751f-11ed-9887-01aa75ed71a1/language-en** and **https://knowledge4policy.ec.europa.eu/projects-activities/developing-evaluation-framework-science–policy-ecosystems_en**

REFERENCES

Ackerley, C.R. 2017. What's in a word? Unpacking the communicative implications of knowledge translation as a term. *Stream: Interdisciplinary Journal of Communication*, 9(2): 26–44.

Africa Evidence Network. *Policy-relevant evidence maps: DPME leading innovation in evidence-informed decision-making*. [cited 2022 Nov 29]. **https://africaevidencenetwork.org/fr/learning-space/article/210/**

Amara, N., Ouimet, M. & Landry, R. 2004. New evidence on instrumental, conceptual, and symbolic utilization of university research in government agencies. *Science Communication*, 26(1): 75–106.

Asad, F.H.A. 2017. Road traffic accidents in Iraq: a review of evidence-based literature. *International Journal for Traffic and Transport Engineering*, 7(2): 256–275. **http://ijtte.com/uploads/2017-06-12/5d576de2-f38a-6be1ijtte.2017.7(2).09.pdf**

Banerjee, A. & Duflo, E. 2011. Poor economics: a radical rethinking of the way to fight global poverty. *Population and Development Review*, 34(4): 796–797. **https://doi.org/10.1111/j.1728-4457.2011.00462.x**

Bernes, C., Mulder, M., Stewart, R., Felton, A., Frampton, G., Gusset, G. *et al*. 2013. *Collaboration for Environmental Evidence: Guidelines for Systematic Review and Evidence Synthesis in Environmental Management*. Version 4.2. [cited 2023 May 10]. **https://environmentalevidence.org/wp-content/uploads/2014/06/Review-guidelines-version-4.2-final.pdf**

Berrang-Ford, L., Siders, A.R., Lesnikowski, A., Fischer, A.P., Callaghan, M.W., Haddaway, N.R., *et al*. 2021. A systematic global stocktake of evidence on human adaptation to climate change. *Nature Climate Change*. 11(11): 989–1000.

Boaz, A., Davies, H., Fraser, A. & Nutley, S. 2019. *What works now? Evidence-informed policy and practice*. [cited 2022 Nov 29]. **https://policy.bristoluniversitypress.co.uk/what-works-now**

Boaz, A., Oliver, K. & Hopkins, A.N. 2022. *Linking research, policy and practice: learning from other sectors*. [cited 2023 May 10]. **https://www.oecd-ilibrary.org/education/who-cares-about-using-education-research-in-policy-and-practice_70c657bc-en**

Boyko, J.A., Lavis, J.N., Abelson, J., Dobbins, M. & Carter, N. 2012. Deliberative dialogues as a mechanism for knowledge translation and exchange in health systems decision-making. *Social Science and Medicine*, 75(11): 1938–1945.

Cairney, P. 2015. *The politics of evidence-based policy making*. Palgrave Pivot, London; XV, 137. **https://doi.org/10.1057/978-1-137-51781-4**

Carrier, M. 2022. What does good science-based advice to politics look like? *Journal for General Philosophy of Science*, 53(1): 5–21.

Chalmers, I., Bracken, M.B., Djulbegovic, B., Garattini, S., Grant, J., Gülmezoglu, A.M. *et al*. 2014. How to increase value and reduce waste when research priorities are set. *The Lancet* 383(9912): 156–165.

Collins, A.M., Coughlin, D. & Randall, N. 2019. Engaging environmental policymakers with systematic reviews: challenges, solutions and lessons learned. *Environmental Evidence*, 8(1): 2.

Cooke, S.J., Johansson, S., Andersson, K., Livoreil, B., Post, G., Richards, R. *et al*. 2017. Better evidence, better decisions, better environment: emergent themes from the first environmental evidence conference. *Environmental Evidence*, 6(1): 15.

Cooper, J., Dimitriou, N. & Arandjelovíc, O. 2021. How good is the science that informs government policy? A lesson from the U.K.'s response to 2020 CoV-2 outbreak. *Journal of Bioethical Inquiry*, 18(4): 561–568.

Defra's Science Advisory Council. 2022. [cited 2022 Nov 29]. **https://www.gov.uk/government/organisations/science-advisory-council**

Department of Environmental Affairs. 2022. *3rd Annual research and evidence indaba.* [cited 2022 Nov 29]. **https://www.dffe.gov.za/3rd_annual_research_and_evidence_indaba**

Dicks, L., Failler, P., Ferretti, J. & Haddaway, N. 2018. *What does the science say? The diversity of methods to synthesize knowledge*. 5th European Congress of Conservation Biology. **https://doi: 10.17011/conference/eccb2018/107806**

Dicks, L.V., Hodge, I., Randall, N.P., Scharlemann, J.P.W., Siriwardena, G.M., Smith, H.G. *et al*. 2014. A transparent process for "Evidence-Informed" policy making. *Conservation Letters*, 7(2): 119–125.

DNP. 2023a. Departamento Nacional de Planeación. *Sistema Nacional de Evaluación de Gestión y Resultados SINERGIA ¿Qué es?* [cited 2023 May 10].

DNP. 2023b. Departamento Nacional de Planeación. *Sinergia: Trabajo con otras entidades.* [cited 2023 May 10].

DNP. 2023c. Departamento Nacional de Planeación. *Sinergia: Mapas de evidencia*. [cited 2023 May 10]. **https://sinergiapp.dnp.gov.co/#MapasEvidencia**

Downey, H., Amano, T., Cadotte, M., Cook, C.N., Cooke, S.J., Haddaway, N.R., *et al.* 2021. Training future generations to deliver evidence-based conservation and ecosystem management. *Ecological Solutions and Evidence*, 2(1): e12032.

DPME The Presidency, Republic of South Africa. 2015. *DPME Research Strategy (2015–2018).* [cited 2022 Nov 29]. **https://www.dpme.gov.za/publications/research/STRATEGIES%20RESEARCH%20GUIDES%20AND%20METHODOLOGIES/2015-2018_DPME%20Research%20Strategy.pdf**

DPME Research and Knowledge Management Unit. 2022. *Expanding evidence synthesis through coproduction. DPME approach and methodology.* [cited 2022 Nov 28]. **https://www.dpme.gov.za/publications/research/Documents/Expanding%20evidence%20synthesis%20through%20coproduction.pdf**

Edler, J., Karaulova, M. & Barker, K. 2022. Understanding conceptual impact of scientific knowledge on policy: the role of policymaking conditions. *Minerva*, 60(2): 209–233.

El Benni, N., Grovermann, C. & Finger, R. 2023. Towards more evidence-based agricultural and food policies. *Q Open*, qoad003.

El-Jardali, F., Akl, E.A., Bou-Karroum, L. & Fadlallah, R. 2018. *Policy-responsive systematic reviews: the case of Syrian refugees in Lebanon*. Evidence Synthesis for Health Policy and Systems: A Methods Guide. WHO. [cited 2022 Nov 29]. **https://www.ncbi.nlm.nih.gov/books/NBK569575/**

Environmental Evidence for the Future. 2019. *Special Collection: Synthesising environmental evidence to inform policy challenges*. **https://environmentalevidencejournal.biomedcentral.com/articles/collections**

Evidence Based Conservation. 2011. *Houses of Parliament*. (379): 4.

FAO. 2022. *FAO Science and Innovation Strategy*. Rome.

Finger, R. & El Benni, N. 2021. Farm income in European agriculture: new perspectives on measurement and implications for policy evaluation. *European Review of Agricultural Economics*, 48(2): 253–265.

Flamamarion, P. 2023. We need to develop more opportunities for science and policy makers to interact. *Knowledge for Policy*. [cited 2023 Feb 27]. **https://knowledge4policy.ec.europa.eu/blog/%E2%80%9Cwe-need-develop-more-opportunities-science-policy-makers-interact%E2%80%9D-0_en**

Gárgano, C. 2018. Ciencia, tecnología y mercado: investigaciones en arroz en el INTA Argentino. *Journal of Technology Management and Innovation*, 13(1): 75–83.

Gárgano, C. 2020. Estado y ciencia empresarial en la Argentina del agronegocio. Implicancias políticas del conocimiento ¿útil?, un estudio de caso. *Sociohistórica*, (46): e107–e107.

Gilgen, A., Drobnik, T., Mann, S., Flury, C., Mack, G., Ritzel, C. *et al*. 2022. Can agricultural policy achieve environmental goals through an indicator-based direct payment system? *Q Open*, qoac034.

Global Commission on Evidence to Address Societal Challenges. 2022. *The Evidence Commission report: A wake-up call and path forward for decision-makers, evidence intermediaries, and impact-oriented evidence producers*. Hamilton: McMaster Health Forum.

Goldberg, R., Rissler, J., Hasselbrook, C. & Shandm, H. 1990. *Biotechnology's Bitter Harvest: Herbicide-tolerant crops and the threat to sustainable agriculture. A Report of the biotechnology working group*. Washington, DC.

Goldman, I., Deliwe, C.N., Taylor, S., Ishmail, Z., Smith, L., Masangu, T. *et al*. 2019. Evaluation2 – Evaluating the national evaluation system in South Africa: what has been achieved in the first 5 years? *African Evaluation Journal*, 7(1): 11.

Gough, D., Stewart, R. & Tripney, J. 2012. Using research findings. In: *An Introduction to Systematic Reviews*. 2nd ed. Sage, pp. 279–296.

Gough, D., Oliver, S. & Thomas, J. 2013. *Learning from research: Systematic reviews for informing policy decisions*.

Gough, D., Maidment, C. & Sharples, J. 2018. EPPI-Centre, Social Science Research Unit, UCL Institute of Education, University College London. UK what works centres. *Aims, methods and contexts*. [cited 2022 Nov 28]. **https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/UK%20what%20works%20centres%20study%20final%20report%20july%202018.pdf?ver=2018-07-03-155057-243**

Gough, D., Davies, P., Jamtvedt, G., Langlois, E., Littell, J., Lotfi, T. *et al*. 2020. Evidence Synthesis International (ESI): Position Statement. *Systematic Reviews*, 9(1): 155.

Government of Canada CI of HR. 2005. *Knowledge mobilization - CIHR*. [cited 2022 Nov 29]. **https://cihr-irsc.gc.ca/e/29529.html**

Government Office for Science and Cabinet Office. 2022. *Areas of research interest*. GOV.UK. [cited 2022 Nov 28]. **https://www.gov.uk/government/collections/areas-of-research-interest**

Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E., Tetroe, J., Caswell, W. *et al*. 2006. Lost in knowledge translation: time for a map? *Journal of Continuing Education in the Health Professions*, 26(1): 13–24.

Guston, D.H. 2001. *Boundary Organizations in Environmental Policy and Science: An Introduction*. [cited 2023 Feb 27]. **https://journals.sagepub.com/doi/10.1177/016224390102600401**

Haddaway, N.R., Bernes, C., Jonsson, B.G. & Hedlund, K. 2016. The benefits of systematic mapping to evidence-based environmental management. *Ambio*, 45(5): 613–620.

Haddaway, N.R., Bethel, A., Dicks, L.V., Koricheva, J., Macura, B., Petrokofsky, G. *et al*. 2020. Eight problems with literature reviews and how to fix them. *Nature Ecology & Evolution*, 4(12): 1582–1589.

Haddaway, N.R. & Crowe, S. 2018. Experiences and lessons in stakeholder engagement in environmental evidence synthesis: a truly special series. *Environmental Evidence*, 27(1): 11.

Haddaway, N.R., Kohl, C., Rebelo da Silva, N., Schiemann, J., Spök, A., Stewart, R. *et al*. 2017. A framework for stakeholder engagement during systematic reviews and maps in environmental management. *Environmental Evidence*, 6(1): 11.

Healthcare Excellence Canada. 2022. *Canadian Foundation for Healthcare Improvement* [cited 2022 Nov 29]. **https://www.cfhi-fcass.ca**

Hertz, J.C., Brinkerhoff, D.W., Bush, R. & Karetji, P. 2020. *Knowledge systems: Evidence to policy concepts in practice*. [cited 2022 Nov 28]. **https://www.rti.org/rti-press-publication/knowledge-systems**

Hub LAC. 2022a. *Hub de Evidencia para Latinoamérica y el Caribe. Informe de país Colombia*.

Hub LAC. 2022b. *Hub de Evidencia para Latinoamérica y el Caribe. Informe Piloto de PIE Chile*.

IDRC. 2016. *Science, plus farmers' know-how, equals improved food security in Colombia* [cited 2023 May 10]. **https://www.idrc.ca/en/research-in-action/science-plus-farmers-know-how-equals-improved-food-security-colombia**

IDRC. 2017. *Saving coffee*. [cited 2023 May 10]. **https://www.idrc.ca/en/stories/saving-coffee**

IDRC. 2018. *Scaling up production of more nutritious yellow potatoes in Colombia*. [cited 2023 May 10]. **https://www.idrc.ca/en/research-in-action/scaling-production-more-nutritious-yellow-potatoes-colombia**

IFAD, FAO, UNICEF, WFP & WHO. 2021. *The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. Rome, Italy. [cited 2023 May 10]. 240 pp. **https://www.fao.org/documents/card/en/c/cb4474en**

International Institute for Environment and Development. 2022. *EbA Evidence and Policy: Burkina Faso*. [cited 2022 Nov 29]. **https://www.iied.org/eba-evidence-policy-burkina-faso**

International Science Council. 2022. *Principles and Structures of Science Advice: An outline* [Internet]. [cited 2022 Nov 29]. **https://council.science/publications/principles-and-structures-of-science-advice/**

Jackson, E., Pellini, A. & Prasetiamartati, B. 2020. Improving the enabling environment for evidence-informed policymaking: an example from Indonesia. *Evidence & Policy*, 16(3): 503–514.

James, K.L., Randall, N.P. & Haddaway, N.R. 2016. A methodology for systematic mapping in environmental sciences. *Environmental Evidence*, 5(1): 7.

Jones-Hughes, T., Peters, J., Whear, R., Cooper, C., Evans, H., Depledge, M. *et al*. 2013. Are interventions to reduce the impact of arsenic contamination of groundwater on human health in developing countries effective? A systematic review. *Environmental Evidence*, 2(1): 11.

Jordaan, S., Stewart, R., Erasmus, Y., Maluwa, L., Mitchell, J., Langer, L. *et al*. 2018. Reflections on mentoring experiences for evidence-informed decision-making in South Africa and Malawi. *Development in Practice*, 28(4): 456–467.

Juarez, P. & Zavala, Y.C. 2017. Dinámicas de cooperación y apropiación del conocimiento. Análisis sociotécnico de agendas públicas de investigación para la soberanía alimentaria en la Argentina y México. *Redes Revista de Estudios Sociales de la Ciencia y la Tecnología*, 23(44): 133–163.

K2P. 2022. *Knowledge to Policy Center (K2P)*. [cited 2022 Nov 28]. **https://www.aub.edu.lb/registrar/Documents/catalogue/undergraduate17-18/k2p.pdf**

Kennedy, E.B. 2018. Supporting scientific advice through a boundary organization. *Glob Chall.*, 2(9): 1800018.

Keune, H., Friesenbichler, K., Häsler, B., Hilgers, A., Jäppinen, J.P., Job-Hoben, B. *et al*. 2019. European Nature and Health Network Initiatives. In: M.R. Marselle, J. Stadler, H. Korn, K.N. Irvine & A. Bonn, eds. *Biodiversity and Health in the Face of Climate Change,* pp. 329–360. Springer International Publishing. [cited 2023 May 10]. **https://doi.org/10.1007/978-3-030-02318-8_15**

Kneale, D., Rojas-García, A. & Thomas, J. 2019. Obstacles and opportunities to using research evidence in local public health decision-making in England. *Health Research Policy and Systems,* 17(1): 61.

Konno, K., Cheng, S.H., Eales, J., Frampton, G., Kohl, C., Livoreil, B., *et al*. 2020. The CEEDER database of evidence reviews: An open-access evidence service for researchers and decision-makers. *Environmental Science & Policy*, 114: 256–262.

KSI. 2022. Knowledge Sector Initiative. *SMERU's Active Role in Promoting Evidence-Based Policy - Wawasan*. [cited 2022 Nov 28]. **https://www.ksi-indonesia.org/en/wawasan/detail/2482-smerus-active-role-in-promoting-evidence-based-policy**

Langer, L. & Nduku, P. 2019. South Africa's "new dawn" should be built on evidence-based policy. *The Conversation*. [cited 2022 Nov 28]. **http://theconversation.com/south-africas-new-dawn-should-be-built-on-evidence-based-policy-118129**

Langer, L., Tripney, J. & Gough, D. 2016. *The Science of Using Science Researching the Use of Research Evidence in Decision-Making*. EPPI-Centre, Social Science Research Unit, UCL Institute of Education, University College, London. [cited 2022 Nov 29]. **http://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/Science%20Technical%20report%202016%20Langer.pdf?ver=2016-04-18-142648-770**

Lavis, J.N., Lomas, J., Hamid, M. & Sewankambo, N.K. 2006. Assessing country-level efforts to link research to action. *Bulletin of the World Health Organization*, 84(8): 620–628.

Levidow, L. & Papaioannou, T. 2016. Policy-driven, narrative-based evidence gathering: UK priorities for decarbonisation through biomass. *Science and Public Policy,* 43(1): 46–61.

Liverani, M., Chheng, K. & Parkhurst, J. 2018. The making of evidence-informed health policy in Cambodia: knowledge, institutions and processes. *BMJ Global Health*, 3(3): e000652.

Lukey, P. 2022. The Promotion of Evidence Based Policymaking. Presentation to the 11th Annual Air Quality Governance Lekgotla, Emnotweni Arena and Conference centre, Mbombela. [cited 2022 Nov 29]. **https://saaqis.environment.gov.za/Lekgotla%20Proceedings/2016/2016_1.2_presentation_on_government_evidence_based_policy_making_initiative.pdf**

Manzano, P. 2012. Shaping policies. Science–policy interface in Natural Resources Management. In: *Conservation and sustainable development linking practice and policy in Eastern Africa.* pp. 107–126. J. Davies, ed. Routledge [cited 2022 Nov 29]. **https://www.researchgate.net/publication/260309825_Shaping_policies_Science-policy_interface_in_Natural_Resources_Management**

McGreevy, S.R., Rupprecht, C.D.D., Niles, D., Wiek, A., Carolan, M., Kallis, G. *et al*. 2022. Sustainable agrifood systems for a post-growth world. *Nature Sustainability*, 5(12): 1011–1017.

McMaster Health Forum. 2022a. *Evidence >> Insight >> Action*. [cited 2022 Nov 29]. **https://www.mcmasterforum.org/**

McMaster Health Forum. 2022b. *Health Systems Evidence*. [cited 2022 Nov 29]. **https://www.healthsystemsevidence.org/**

McMaster Health Forum. 2022c. *COVID-END - COVID-19 Evidence network to support decision-making*. [cited 2022 Nov 29]. **https://www.mcmasterforum.org/networks/covid-end**

Muhafidin, D. 2022. Development of Food Security Policy Implementation in Indonesia. *Journal of Positive School Psychology*, 6(3): 9961–9969.

Munoz-Pizza, D.M., Villada-Canela, M., Rivera-Castaneda, P., Osornio-Vargas, Á., Martínez-Cruz, A.L. & Texcalac-Sangrador, J.L. 2022. Barriers and opportunities to incorporate scientific evidence into air quality management in Mexico: A stakeholders' perspective. *Environmental Science & Policy*, 129: 87–95.

Nduku, P., Tshabalala, N., Putuka, S., Madonsela, A. & Langer, L. 2021. *The art and science of using evidence in Africa: an evidence map of what we know about evidence-use.* [cited 2022 Nov 29]. **https://abstracts.cochrane.org/2019-santiago/art-and-science-using-evidence-africa-evidence-map-what-we-know-about-evidence-use**

Nutley, S.M., Walter, I. & Davies, H.T.O. 2007. *Using evidence: how research can inform public services*. Bristol University Press. [cited 2022 Nov 29]. **https://www.jstor.org/stable/j.ctt9qgwt1**

Oakley, A., Gough, D., Oliver, S. & Thomas, J. 2005. The politics of evidence and methodology: lessons from the EPPI-Centre. *Evidence & Policy*, 1(1): 5–31.

Oakley A. 2020. *Experiments in Knowing*. The New Press. [cited 2023 May 10]. **https://thenewpress.com/books/experiments-knowing**

O'Brien M. 2000. Have lessons been learned from the UK bovine spongiform encephalopathy (BSE) epidemic? *International Journal of Epidemiology*, 29(4): 730–733.

O'Leary, B.C., Woodcock, P., Kaiser, M.J. & Pullin AS. 2017. Evidence maps and evidence gaps: evidence review mapping as a method for collating and appraising evidence reviews to inform research and policy. *Environmental Evidence*, 6(1): 19.

Oliver, S., Harden, A., Rees, R., Shepherd, J., Brunton, G., Garcia, J. *et al.* 2005. An emerging framework for including different types of evidence in systematic reviews for public policy. *Evaluation*, 11(4): 428–446.

Oliver, K. & Pearce, W. 2017. Three lessons from evidence-based medicine and policy: increase transparency, balance inputs and understand power. *Palgrave Communications*, 3(43). **https://www.nature.com/articles/s41599-017-0045-9**

One Food. 2023. [cited 2023 May 10]. **https://onefoodcommunity.org/**

Parker, M. 2016. *The Rothschild Report (1971) and the Purpose of Government-Funded R&D — A Personal Account*. Rochester. [cited 2022 Nov 29]. **https://papers.ssrn.com/abstract=2817841**

Partridge, A.C.R., Mansilla, C., Randhawa, H., Lavis, J.N., El-Jardali, F. & Sewankambo, N.K. 2020. Lessons learned from descriptions and evaluations of knowledge translation platforms supporting evidence-informed policymaking in low- and middle-income countries: a systematic review. *Health Research Policy & Systems*, 18(1): 127.

Patterson, G.T., Thomas, L.F., Coyne, L.A. & Rushton, J. 2020. Moving health to the heart of agrifood policies; mitigating risk from our food systems. *Global Food Security*, 26: 100424.

Pettorelli, N., Graham, N.A.J., Seddon, N., Maria da Cunha Bustamante, M., Lowton, M.J., Sutherland, W.J. *et al.* 2021. Time to integrate global climate change and biodiversity science–policy agendas. *Journal of Applied Ecology*, 58(11): 2384–2393.

Pervin, M. & Hagmayer, Y. 2022. Attitudes towards evidence-based practice of professionals working with children and adolescents with autism spectrum disorder in Bangladesh. *Administration and Policy in Mental Health and Mental Health Services Research*, 49(5): 861–880.

Proctor, R.N. 1991. *Value-Free Science? Purity and Power in Modern Knowledge*. Cambridge, MA, Harvard University Press, 344 pp.

Pullin, A.S., Cheng, S.H., Jackson, J.D., Eales, J., Envall, I., Fada, S.J. *et al.* 2022. Standards of conduct and reporting in evidence syntheses that could inform environmental policy and management decisions. *Environmental Evidence*, 11(1): 16.

Purwaningrum, F., McDonald, F. & Short, S.D. 2020. The right to health in evidence-based policymaking. *Journal of Southeast Asian Human Rights*, 4(1): 168–199.

Purwawangsa, H., Nurrochmat, D., Kartodihardjo, H. & Rustiadi, E. 2022. Assessing integration of science in policymaking process of the utilization of abandoned lands in Indonesia: case of Bogor Regency. *Forest and Society*, 6: 639–658.

Randall, N.P. & James, K.L. 2012. The effectiveness of integrated farm management, organic farming and agri-environment schemes for conserving biodiversity in temperate Europe - a systematic map. *Environmental Evidence*, 1(1): 4.

Reddel, T. & Ball, S. 2022. Knowledge coproduction: panacea or placebo? Lessons from an emerging policy partnership. *Policy Design and Practice*, 5(2): 183–196.

Ricciardi, V., Wane, A., Sidhu, B.S. & Godde, C. 2020. A scoping review of research funding for small-scale farmers in water scarce regions. *Nature Sustainability*, 3: 836–844.

RISE. 2022. Learn about RISE. *RISE overview*. [cited 2022 Nov 29]. **https://www.mcmasterforum.org/rise/learn-about-rise/overview**

Rodríguez, D.C., Mariano, A., Mondlane, E. & Juma, P.A. 2015. Evidence-informed policymaking in practice: country-level examples of use of evidence for iCCM policy. *Health Policy and Planning*, 30(suppl. 2): ii36–45.

Roe, D., Fancourt, M., Sandbrook, C., Sibanda, M., Giuliani, A. & Gordon-Maclean, A. 2014. Which components or attributes of biodiversity influence which dimensions of poverty? *Environmental Evidence*, 3(1): 3.

Rogers, E.M. 1963. Diffusion of innovations. *Journal of Pharmaceutical Sciences*, 52(6): 612.

Sanabria-Pulido, P. & Mojica Muñoz, K. 2022. *Una mirada panorámica a las evaluaciones hechas por la dirección de seguimiento y evaluación de políticas públicas del Departamento Nacional de Planeación en el periodo 2018–2022*. DSEPP-DNP.

Santeramo, F.G., Russo, I. & Lamonaca, E. 2022. Italian subsidised crop insurance: what the role of policy changes. *Q Open*, qoac031.

Schomerus, M. & Seckinelgin, H. 2015. *Evidence-based policymaking in Myanmar? Considerations of a post-conflict development dilemma*. [cited 2022 Nov 29]. **https://pdfslide.net/documents/evidence-based-policymaking-in-myanmar-evidence-based-policymaking-in-myanmar.html**

Schwendinger, F., Topp, L. & Kovacs, V. 2022. Competences for policymaking. *JRC Publications Repository*. [cited 2023 Feb 27]. **https://publicationstest.jrc.cec.eu.int/repository/handle/JRC129623**

Setiadarma, E.G. 2018. *Understanding the Evidence-Based Policy Making (EBPM) Discourse in the Making of the Master Plan of National Research (RIRN) Indonesia 2017–2045.* (1):25.

Sharma, M., Teerawattananon, Y., Luz, A., Li, R., Rattanavipapong, W. & Dabak, S. 2020. Institutionalizing evidence-informed priority setting for universal health coverage: lessons from Indonesia. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 57: 004695802092492.

Siegner, A., Sowerwine, J. & Acey, C. 2018. Does urban agriculture improve food security? Examining the nexus of food access and distribution of urban produced foods in the United States: a systematic review. *Sustainability*, 10(9): 2988.

Smaldino, P. & McElreath, R. 2016. The natural selection of bad science. *Royal Society Open Science*, 3(9): 160384.

Stewart, R., Langer, L., Wildeman, R., Erasmus, Y., Maluwa, L., Jordaan, S. *et al*. 2017. Building capacity for evidence-informed decision making: an example from South Africa. *Evidence & Policy: A Journal of Research, Debate and Practice*. **DOI:10.1332/174426417X14890741484716**

Stewart, R. 2019. Using evidence in international development. In: *What works now? Evidence-informed policy and practice*. Bristol, Policy Press. [cited 2022 Nov 29]. **https://policy.bristoluniversitypress.co.uk/what-works-now**

Stewart, R., Aronson, J.K., Barends, E.G.R., Boruch, R., Brennan, M.L., Chislett, J. *et al*. 2022. Lessons from working across fields to develop a framework for informed choices. *Research for All Journal*, 6(1): 5–12.

Stewart, R. & Oliver, S. 2012. Making a difference with systematic reviews. In: *An Introduction to Systematic Reviews*. 2nd ed. Sage, pp. 227–244.

Stewart, R., Langer, L. & Erasmus, Y. 2019. An integrated model for increasing the use of evidence by decision-makers for improved development. *Development Southern Africa*, 36(5): 616–631.

Stewart, R., Dayal, H., Langer, L. & van Rooyen, C. 2019. The evidence ecosystem in South Africa: growing resilience and institutionalisation of evidence use. *Palgrave Communications*, 5(1): 1–12.

Stewart, R., Dayal, H., Langer, L. & van Rooyen, C. 2022. Transforming evidence for policy: do we have the evidence generation house in order? *Humanities and Social Sciences Communications*, 9(1): 1–5.

Stewart, R. 2023. How evidence, implementation, policy, and politics come together within evidence systems: lessons from South Africa. *Development Policy Review,* 41(2): e12657.

Sula, G. 2019. Effects of evidence-based professional development for preschool teachers in Albania. *Early Years an International Journal of Research and Development*, 39(6): 1–14.

Sutherland, W.J. 2022. *Transforming Conservation: A Practical Guide to Evidence and Decision Making*. Open Book Publishers. [cited 2023 May 10]. **https://www.openbookpublishers.com/books/10.11647/obp.0321**

Sutherland, W.J., Pullin, A.S., Dolman, P.M. & Knight, T.M. 2004. The need for evidence-based conservation. *Trends in Ecology and Evolution*, 19(6): 305–308.

Vijayan, D., Ludwig, D., Rybak ,C., Kaechele, H., Hoffmann, H., Schönfeldt, H.C. *et al*. 2022. Indigenous knowledge in food system transformations. *Communications Earth and Environment*, 3(1): 1–3.

Vilas-Boas, J., Klerkx, L. & Liea, R. 2022. Connecting science, policy, and practice in agrifood system transformation: the role of boundary infrastructures in the evolution of Brazilian pig production. *Journal of Rural Studies*, 89: 171–185.

Yehia, F. & El Jardali, F. 2015. Applying knowledge translation tools to inform policy: the case of mental health in Lebanon. *Health Research Policy and Systems*, 13(1): 29.

Weiss, C.H. 1979. The many meanings of research utilization. *Public Administration Reiew*, 39(5): 426–431.

Wills, A., Tshangela, M., Bohler-Muller, N., Datta, A., Funke, N., Godfrey, L. *et al*. 2016. Evidence and policy in South Africa's Department of Environmental Affairs.

WHO and Alliance for Health Policy and Systems Research. 2021a. *Health policy and systems research in sub-Saharan Africa*. [cited 2022 Nov 29]. **https://ahpsr.who.int/publications/i/item/health-policy-and-systems-research-in-sub-saharan-africa**

WHO and Alliance for Health Policy and Systems Research. 2021b. *Health policy and systems research in Mozambique: current trends and key lessons on how to improve the use of evidence in health policy*. [cited 2022 Nov 29]. **https://apps.who.int/iris/bitstream/handle/10665/342846/9789240030329-eng.pdf?sequence=1&isAllowed=y**

WHO and Alliance for Health Policy and Systems Research. 2021c. *Health policy and systems research in Ghana: current trends and key lessons on how to improve the use of evidence in health policy*. [cited 2022 Nov 29]. **https://apps.who.int/iris/bitstream/handle/10665/342845/9789240030282-eng.pdf?sequence=1&isAllowed=y**

White, H. & Raitzer, D.A. 2017. *Impact Evaluation of Development Interventions: A Practical Guide*. Manila: Asian Development Bank. [cited 2023 May 10]. **https://www.adb.org/publications/impact-evaluation-development-interventions-practical-guide**

Annex 1 METHODS

A.1 Combining experience, expertise and the best available evidence

This report draws heavily on two decades of the authors' personal experiences of strengthening the science–policy interface in countries around the world, including in Europe, Asia, North America, Latin America and Africa. This background of practical experience brings with it broad formal and informal networks with many others working in the field of evidence-informed decision-making. It also draws on dedicated research activities. These have centred around systematically collating the best available evidence rapidly to provide a broad understanding of national-level science–policy activities relevant to agrifood systems (see A2). Experts on specific countries were invited to validate each of the six case examples through an open peer review process.

A.2 Systematically collating the available evidence

The body of literature related to the science–policy interface is diverse, represented by theoretical and commentary work, empirical studies using qualitative and quantitative research, and diverse disciplines and sectors. The goal of this work was to map the most representative models to inform development of guidance for science- and evidence-informed policy processes for agrifood systems. This aim requires synthesizing a diverse and broad body of evidence to comprehensively identify, describe and integrate models and concepts. The authors' searches were not aimed at being comprehensive, but to allow for as many relevant national examples of science–policy engagement to be identified.

A.3 Search strategy

A bibliographic search was employed while also allowing sources to emerge according to the authors' experiences. The authors conducted specific strategies in bibliographic databases, regional and institutional repositories and in international agencies (Table 5). The search strategy terms used were: "scientific advi*", "science advi*", "scientific-policy advi*", (Evidence based AND policy). The authors searched for literature in English, Spanish and Portuguese published in the last 10 years.[7] Additional relevant literature was identified through reference chaining, the authors' prior knowledge, internet searches, and suggestions from colleagues. The authors also conducted searches specifically for world regions: North America, Near East, Latin America, Europe, Asia and Africa. In some cases, key informants were contacted to gain further understanding of models described in the report.

[7] The authors broadened the searches from English to include Spanish and Portuguese databases and studies to ensure as many cases as possible were identified.

Table A1.1. Databases and institutional sources consulted

BIBLIOGRAPHIC DATABASES	Google scholar, Medline/Pubmed, Biblioteca Virtual de Salud BIREME, Science Direct, Taylor & Francis, SAGE, y LENS.
REPOSITORIES AND REGIONAL AND INSTITUTIONAL COLLECTIONS	Iberoamericanas: LAReferencia, Latindex, Redalyc, Dialnet. Colombia: Universidad Nacional de Colombia, Universidad Javeriana, Universidad de Antioquia, Universidad Externado de Colombia, Universidad Bolivariana.
INTERNATIONAL AGENCIES	WHO, PAHO, UNESCO, OCDE, AAAS, IAS, ISC, ESAC, EMBS, EASAC, FAO, United States Department of Education, US Health & Human Services, Worldwide Cancer Research.

The grey literature searches were done using both Google and Google Scholar. The search terms included "science policy interface" and related terms, and /or "evidence-based practice" and related terms. The authors also used terms relating to agrifood systems and the environment and searched for specific countries. In order to ensure balance in the examples identified across all six selected regions (Africa, Asia, Near East and North Africa, Europe, North America and Latin America), a 'globetrotting' approach was used to select which countries were searched for. This involved searching for one country on one continent, then one country on the next continent, and so on around the world, before starting back at the same continent. The selection of countries was also informed by the authors' own knowledge of the global science–policy sector, prioritizing those most likely to have examples to learn from. The authors scrolled through the first four pages of search results, and potentially relevant studies were downloaded and added to the folder of search hits for screening. The authors also used the backward snowballing method to search references within each primary study to be further explored for relevance.

A.4 Eligibility criteria and study selection

Articles were included for review if they focused on the science–policy interface, including articles about knowledge transfer, evidence-informed policy or science advice. Specifically, articles were included that: 1) described high-level conceptual or theoretical models for strengthening the science–policy interface; 2) described how the models were applied in specific countries; and 3) if they provided empirical information on the evaluation of the models. Articles were excluded from review if they did not meet the above criteria for inclusion, were not full text articles, were not available in English, Spanish or Portuguese, were published before 2012, and reported only one activity and not a model or a combination of activities.


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A.5 Data extraction and analysis

Data were extracted following a pre-established data extraction form that captured information regarding: 1) the general description of the articles such as the study design, the focus (i.e. high-level conceptual description vs description of real-life activities) and the organization or journal that published the article/report; 2) the characteristics of the high-level conceptual models like the sector or field of scope (e.g. food safety, agriculture, health), activities listed within the conceptual model, the type of model described (i.e. production-focused model, policy-oriented model or integrated model) and the strengths and weaknesses of the models as described by the authors; 3) the characteristics of the real-life models and activities taking place within named countries. In this section, data was extracted regarding the political, infrastructure and research system context where the models were used. Finally, the authors extracted information from the evaluations of real-life activities. Each article was reviewed by one of the authors. Authors met regularly to discuss emerging issues and create summary tables and to produce a narrative summary of the information.

Annex 2

FULL EMPIRICAL DATA TABLE

COUNTRY AND SECTOR IN WHICH THE SCIENCE-POLICY ENGAGEMENT ACTIVITIES ARE TAKING PLACE		SECTOR(S)	ACTIVITIES															
			RESEARCH AGENDA SETTING	RESEARCH COMMISSIONING	RESEARCH DISSEMINATION / COMMUNICATION	POLICY BRIEFS	EVIDENCE SYNTHESIS (EVIDENCE MAPS, RAPID REVIEWS, FULL SYSTEMATIC REVIEWS)	RAPID EVIDENCE SERVICES / HELP DESKS	COPRODUCTION OF EVIDENCE	NETWORKS	POLICY PLANNING	POLICY DIALOGUES	CAPACITY DEVELOPMENT	INFRASTRUCTURE DEVELOPMENT	EVIDENCE BUDGETS	CITIZEN PANELS	OTHER
National level																		
Albania		Education		X									X				X
Argentina		Agriculture	X								X	X					
Australia		Health			X			X									
Subnational level	Australia	Education					X			X		X					
Bangladesh		Health					X						X				X
Belgium		Education	X														
Benin		Health		X	X						X		X				X
Brazil		Agrifood	X	X						X	X		X	X			
		Economy											X				X
		Mobility			X												
		Health					X	X		X	X	X	X				X
		Education				X	X	X			X	X	X				X
		Public security							X	X			X				X
		Generic / cross-cutting								X			X				X
Burkina Faso		Agriculture, climate change			X								X	X		X	
Cambodia		Health		X					X			X					
Cameroon		Climate change		X								X					X
Canada		Health			X	X	X	X	X	X		X	X			X	X
		Health systems						X									
		Climate change							X	X							
Subnational level	Toronto, Canada	Forestry		X													

COUNTRY AND SECTOR IN WHICH THE SCIENCE-POLICY ENGAGEMENT ACTIVITIES ARE TAKING PLACE		SECTOR(S)	ACTIVITIES														
			RESEARCH AGENDA SETTING	RESEARCH COMMISSIONING	RESEARCH DISSEMINATION / COMMUNICATION	POLICY BRIEFS	EVIDENCE SYNTHESIS (EVIDENCE MAPS, RAPID REVIEWS, FULL SYSTEMATIC REVIEWS)	RAPID EVIDENCE SERVICES / HELP DESKS	COPRODUCTION OF EVIDENCE	NETWORKS	POLICY PLANNING	POLICY DIALOGUES	CAPACITY DEVELOPMENT	INFRASTRUCTURE DEVELOPMENT	EVIDENCE BUDGETS	CITIZEN PANELS	OTHER
National level																	
Chile		Generic / cross-cutting								X	X						X
		Health	X	X	X		X	X	X		X	X	X				X
		Education								X	X		X				X
		Public security					X			X	X		X				X
Subnational level	Taizhou, China	Health	X														
Colombia		Education					X				X						X
		Agriculture					X				X						X
		Health	X			X	X	X		X	X	X	X			X	X
		Public security															
		Generic / cross-cutting	X			X	X	X		X	X	X	X			X	X
Georgia		Health		X													X
Germany		Education		X													X
Ghana		Health	X	X	X		X					X	X				
Italy		Agriculture	X	X	X												
Egypt		Health		X									X				
Ethiopia		Health	X		X		X			X			X				
Subnational level	Amhara Region, Ethiopia	Health		X									X				X
Indonesia		Health		X													X
		Forestry									X						X
		Generic / cross-cutting	X	X								X					
		Food security (inc. agriculture & fisheries)	X	X							X	X	X	X	X		
Iran (Islamic Republic of)		Health		X	X		X										X
Iraq		Road safety		X													X

COUNTRY AND SECTOR IN WHICH THE SCIENCE-POLICY ENGAGEMENT ACTIVITIES ARE TAKING PLACE		SECTOR(S)	ACTIVITIES														
			RESEARCH AGENDA SETTING	RESEARCH COMMISSIONING	RESEARCH DISSEMINATION / COMMUNICATION	POLICY BRIEFS	EVIDENCE SYNTHESIS (EVIDENCE MAPS, RAPID REVIEWS, FULL SYSTEMATIC REVIEWS)	RAPID EVIDENCE SERVICES / HELP DESKS	COPRODUCTION OF EVIDENCE	NETWORKS	POLICY PLANNING	POLICY DIALOGUES	CAPACITY DEVELOPMENT	INFRASTRUCTURE DEVELOPMENT	EVIDENCE BUDGETS	CITIZEN PANELS	OTHER
National level																	
Subnational level	Irbid in the northern part of Jordan	Health		X													X
Lebanon		Health	X		X	X	X					X	X				X
Malawi		Health		X	X												
Mexico		Environment								X			X				
Mozambique		Health	X			X	X										
Myanmar		Generic / cross-cutting	X	X							X		X				
Nepal		Disaster management		X													X
Subnational level	Southwest Nigeria	Health		X								X					
Philippines		Tourism		X												X	X
South Africa		Environment	X	X						X	X		X	X			
		Generic / cross-cutting	X	X	X	X	X	X	X	X	X	X	X	X			X
Sri Lanka		Environment	X							X							
Switzerland		Agriculture	X	X	X	X											
Sweden		Education		X													X
Thailand		Health							X								
Uganda		Health			X		X	X		X						X	
		Generic / cross-cutting		X									X	X			
United Kingdom		Environment									X	X					X
		Health/nutrition			X		X										X
Viet Nam		Education														X	

Annex 3 LESSONS FROM THE EMPIRICAL ACCOUNTS ON NATIONAL MODELS

COUNTRY	ACTIVITIES	LESSONS (including strengths and weaknesses of the model/activities reported by authors, and any evaluation results)
Albania (Sula, 2019)	Research commissioning, Capacity development	Policymakers can support evidence-informed practice, in this case aiding teachers to improve professionally Activities have led to significant policy changes, as well as improved planning for resources across the sector, have been influenced by the study.
Bangladesh (Pervin and Hagmayer, 2022).	Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Capacity development	The study found that various professionals within different settings had different attitudes and perceptions toward evidence-informed practice, with most professionals showing a positive attitude. Evidence based practice is viewed with high esteem in academic training programmes in Bangladesh.
Brazil (Vilas-Boas, Klerkx and Liea, 2022)	Research agenda setting, Research commissioning, Networks, Policy planning, Capacity development, Infrastructure development	The boundary infrastructure was crucial to fostering a strong foundation for science–policy engagement and to enable the strong relationships needed for collaborative work. It enabled convenings of stakeholders and funders to legitimize visions and values.
Burkina Faso (International Institute for Environment and Development, cited 2022).	Research dissemination / communication, Capacity development, Infrastructure development, Citizen panels	Through stakeholder engagement and a series of interrelated research and advocacy programmes, stakeholders were able to: build relationships, contribute to research, and use research findings in their policy advocacy work, and in implementing community-based ecosystem adaptations for climate resilience.
Cambodia (Liverani, Chheng and Parkhurst, 2018)	Research commissioning, Co-production of evidence, Policy dialogues	The study shows that institutional and structural developments can assist in supporting effective evidence-use to plan and produce health policy in Cambodia. Barriers also exist including limited relationships, gaps between research and policy priorities, and the (unhelpful) influence of donors on research agendas.
Chile (Hub LAC, 2022b)	Research agenda setting, Research commissioning, Research dissemination / communication, Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Policy planning	Having an independent and reliable advisory group with a transparent conflict of interest policy and a strong administration can help to ensure evidence services for govt run smoothly. Committed staff, and the ability to draw on a large technical team is key to allow responses to the wide-ranging requests for evidence and technical support.
Colombia (Hub LAC, 2022a)	Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Policy planning	Indicators are needed to assess the impact of academic research to encourage the production and use of evidence that fills gaps in policy and practice, and ultimately improves the quality of education.

COUNTRY	ACTIVITIES	LESSONS (including strengths and weaknesses of the model/activities reported by authors, and any evaluation results)
Ethiopia (WHO and Alliance for Health Policy and Systems Research, 2021a)	Research agenda setting, Research dissemination / communication, Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Networks, Capacity development	Domestic funding for policy research organizations and projects can improve quality and dissemination of locally produced research. Communication of research needs to be focused on policymakers' language. National and sub-national forums can help to break down barriers amongst researchers and users. Advisory groups drive up research quality.
Ghana (WHO and Alliance for Health Policy and Systems Research, 2021c)	Research agenda setting, Research dissemination / communication, Evidence synthesis (evidence maps, rapid reviews, Full systematic reviews), Capacity development	Even in settings where there are relationships between research producers and users, convening these stakeholders should be a priority. Training in research, and in particular research communication, needs to be provided routinely. More domestic funding for evidence production is needed, and international funders need to align their funding towards national policy priorities.
Indonesia (Purwawangsa *et al.*, 2022)	Policy planning, Integration of a range of evidence / knowledge in policymaking	The different actors, whether researchers or policymakers, need to have a common interest in working together, and trust for collaboration to be effective. Policy change is most likely to happen where it is supported by organizational mandates and performance indicators. Intermediaries play an important role in providing understanding of policy contexts and access to policymakers and can successfully promote evidence to policymakers.
Indonesia (Sharma *et al.*, 2020)	Research agenda setting, Research commissioning, Policy dialogues	Identifying common problems that matter to different actors is key. Research evidence needs to be complemented with knowledge about the local context, and with stakeholders' preferences. Relationships and leadership are key.
Indonesia (Setiadarma, 2018)	Research agenda setting	Budget allocation is important which means there is often a need to review how research is funded. Indicators are needed to drive and assess the production of policy-relevant research.
Iraq (Asad, 2017)	Research commissioning, Literature reviews	There is a need to be mindful of how off-putting policymakers find it when they search for research evidence, and nothing is available.
Lebanon (Yehia and El Jardali, 2015)	Research agenda setting, Research dissemination / communication, Policy briefs, Policy dialogues	Evidence briefs and policy dialogues help to inform policymaking at the government level by triggering or supporting multiple actions by stakeholders. They can prepare the ground for the decision-makers to continue doing activities and discussing the issue after the dialogue. Knowledge translation tools can also strengthen the relationships among policymakers, researchers and stakeholders and increase stakeholders' awareness about the importance of evidence-informed policymaking initiatives. In preparing policy briefs and facilitating dialogues around them, the framing of the problem is critical. The dialogue can then help to contextualize the elements. Skilled facilitation of policy dialogues is crucial to their success. Attitudes and perceptions also need to be addressed not only at the policymakers' level but also within the public. It is important to be cognisant of participants' busy schedules and time constraints when planning engagement activities.

COUNTRY	ACTIVITIES	LESSONS (including strengths and weaknesses of the model/activities reported by authors, and any evaluation results)
Lebanon (El-Jardali *et al.*, 2018)	Research agenda setting, Research dissemination / communication, Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Policy dialogues	Using a broad definition of knowledge and of evidence-informed decision-making can be helpful when facilitating engagements. There is a challenge in developing capacity for evidence use, and raising demand amongst policymakers, and then having to respond to their needs in a timely way.
Mexico (Munoz-Pizza *et al.*, 2022)	Networks, Capacity development	Fostering relationships based on trust amongst stakeholders and across sectors was seen as important. There was a need for knowledge exchange mechanisms, as well as co-production approaches. The study showed limited institutional capacity, and varying priorities across sectors can be a challenge.
Mozambique (WHO and Alliance for Health Policy and Systems Research, 2021b)	Research agenda setting, Policy briefs, Evidence synthesis (evidence maps, rapid reviews, full systematic reviews)	The inclusion of all relevant stakeholders in the development of national research agendas is key. Relationships between policymakers and research institutions can contribute to ensuring research output is relevant, of high quality and credible. The production of research data and outputs in user friendly formats by research institutions is also important. Monitoring of the performance of research entities is important. International funders need to align their funding towards national policy. The formation of a stronger relationship between researchers and policymakers would have a significant impact. Policymakers and researchers should convene often. Domestic funding from the government should be appropriated toward government priorities with an emphasis on capacity development of the research institutions. Advocacy, although essential, has proved ineffective for research institutions because substantive policy dialogue rarely creates a space for research results to be shared and discussed. Another barrier is lack of domestic funding as flagged by the research institutions. This leads to the Mozambican research organizations seeking external funding which more likely leads to a shift in focus away from national policy priorities. This negatively affects the trust between researchers and policymakers.
Myanmar (Schomerus and Seckinelgin, 2015)	Research agenda setting, Research commissioning, Policy planning, Capacity development	Most funding comes from international sources and is currently being used to produce socio-economic research. The research orientation of Myanmar is mostly characterised by the international policy actors and the non-governmental organizations (NGOs) providing funding. There is a lack of credible quantitative work, while qualitative work tends not to go beyond superficial focus group approaches. The reference system of the national archive is outdated, although it provides the history of planning and investment, it makes accessing historical information difficult. Evidence-informed decision-making provides a challenge for the government as it calls for changes in how they make decisions.

COUNTRY	ACTIVITIES	LESSONS (including strengths and weaknesses of the model/activities reported by authors, and any evaluation results)
South Africa (Stewart *et al*., 2017)	Research agenda setting, Research commissioning, Research dissemination / communication, Policy briefs, Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Rapid evidence services, Co-production of evidence, Networks, Policy planning, Capacity development, Infrastructure development, government monitoring and evaluation systems	Policymakers do not have time to conduct in-depth searches for evidence and so will use quick alternatives which may not be as thorough, such as asking lobbyists or friends. Researchers may not be trusted, and outputs are not always focused on priority issues, nor timely for policy decisions. There is a general divide between researchers, policy users /makers and the scientific community. Most policymakers end up not using some of the information they attain due to problems of quality, accessibility, communication, simplicity, and relevance. Despite the growing gap between supply and demand there are efforts to overcome the knowledge gap.
South Africa (Lukey, cited 2022)	Research agenda setting, Policy planning, Policy dialogues, Capacity development, Using language of knowledge and information management	Training on evidence-informed policy and practice designed and delivered from within government appears a helpful approach for increasing demand for evidence and capacity for its use.
South Africa (Africa Evidence Network, cited 2022)	Research commissioning, Evidence synthesis (evidence maps, rapid reviews, full systematic reviews), Coproduction of evidence	A successful model of collaboration between government officials and researchers is found in the co-production of evidence maps to inform national policy in South Africa. Their success is largely in the fact they are driven by and led from within government. They facilitate multi-purpose application in the public sector including short-term and long-term decision-making needs, supporting organizational structures and processes, stakeholder engagement, and more. They are led and co-produced by public servants for public servants. They facilitate debate and discussion between different policy actors and institutions. The output is an interactive visual evidence base which decision-makers can engage with directly.
South Africa (Wills *et al*., 2016)	Research agenda setting, Research commissioning, Policy planning, Capacity development, Infrastructure development,	Strengthening an evidence-informed approach to policy is a long-term process. Use a broad definition of 'robust' evidence. Link evidence needs to policy priorities. Link an evidence-informed approach with business planning, reporting, and budgeting. Adopt inclusive and participatory policy processes. Co-design and co-produce evidence and policy.
Uganda (Manzano, 2012)	Research agenda setting, Policy briefs, Policy dialogues	Monitoring and evaluation of the Kibale and Semliki Conservation and Development Project (KSCDP) in Uganda revealed that if applied together with additional income-diversifying initiatives the CRM was effective. Long-term sustainability of initiatives requires human and financial resources. One of the strengths of the pilot was participation of the locals as well as the Uganda Wildlife Authority, at a national scale, and the parks' authorities, at a local scale.

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