Chapter 2. Nature of societal challenges

This chapter is the first of three chapters exploring the issue at the heart of this report: what is involved in systematizing the use of evidence, by the full range of decision-makers, in addressing societal challenges? Here we focus on the nature of societal challenges. Chapter 3 focuses on decisions and decision-makers, or the demand for evidence. Chapter 4 focuses on studies, syntheses and guidelines, or the supply of evidence.

Acting on behalf of the Evidence Commission, the McMaster Health Forum welcomes feedback about the report, as well as suggestions about pathways to influence for the report's recommendations. Please send your comments to evidencecommission@mcmaster.ca.

Global Commission on Evidence
to Address Societal Challenges

2.1 Ways of looking at challenges
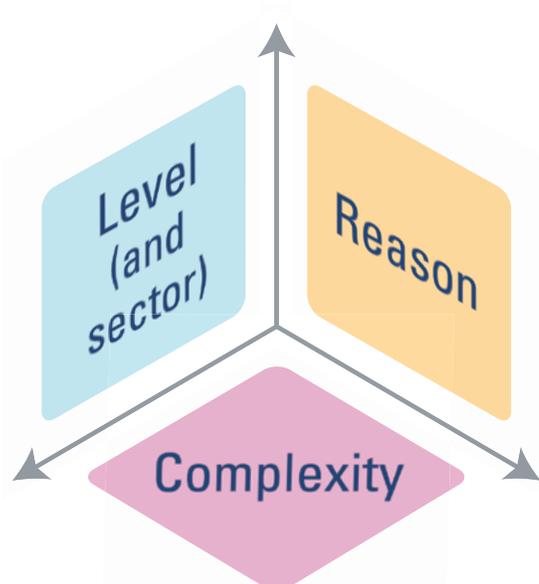
A challenge can be looked at by the level at which it is typically addressed, by the reason to label it a problem worth paying attention to,(1) or by the complexity of the underlying problem. Additional dimensions of a challenge can include the time horizon (e.g., effects of health and social services on experiences and outcomes can often be evaluated over weeks and months, whereas the effects of climate action are modeled over decades and centuries) and stakeholder complexity (e.g., some challenges can be discussed with a well-organized peak association of stakeholders, while others require engaging with a large number of differently sized and resourced groups, including civil-society groups).

A challenge can also be expressed negatively (as a problem) or positively (as a goal or strength to be built upon). The Sustainable Development Goals and the strengths-based approaches often advocated by Indigenous peoples are examples of the latter.

The label used to describe a challenge can appear neutral to some and politicized by others. For example, words like 'sustainable' have been used in countries like Brazil both by those seeking to preserve the Amazon rainforest and by those seeking to open it up for logging (under the label of 'sustainable forestry').

Level (and sector) at which a challenge is typically addressed	Domestic sectoral	• Health systems failing to improve health outcomes and care experiences • Schools struggling with virtual instruction • Declining living standards
	Domestic cross-sectoral	• Antimicrobial resistance • Gender-based violence • Growing levels of inequality • Lack of trust in institutions • Missed targets for the Sustainable Development Goals
	Global (or regional) coordination	• Inequitable patterns in COVID-19 vaccination • Climate change

Reason to label a challenge a problem worth paying attention to	Values	"This problem does not reflect who we are as a society"
	Past	"This problem is getting much worse"
	Other groups within jurisdiction	"This group is doing much worse than any other"
	Other jurisdictions	"This country is doing much worse than others like it"
	Other framing	"This is not an issue of insufficient numbers or an inequitable distribution of workers, but a problem of mis-aligned financial incentives"

Complexity of the underlying problem	Simple	Cause and effect can be easily identified and the solution can involve a single action
	Complicated	Causes can be identified and the solution can involve rules and processes
	Complex	Some causes can be identified, others are hidden, and some may be consequences of other causes, and the solution is multifaceted and may need to be adjusted as it is implemented
	'Complexity cubed' (or wicked)*	Causes are even more complex because symptoms can become causes and because feedback loops operate, so solutions are highly context specific, and wrong or mistimed solutions can make the problem worse

*Some commissioners questioned the value of distinguishing degrees of complexity and using the label 'wicked' that has sometimes been attached to problems of significant complexity. Here we use the term 'complexity cubed' to capture the greater degree of complexity and note that some refer to such problems as wicked. One commissioner observed that complexity often manifests itself as a balancing of trade-offs in outcomes across sectors (e.g., an intervention may improve educational outcomes and worsen health outcomes) and a need for appropriate sequencing of interventions. A second commissioner observed that others have called such challenges 'chaotic,' and that the chaotic nature of these challenges can mean that what you learned from solutions tried yesterday may not work today.(2)

Government policymaker, Soledad Quiroz Valenzuela

Government science advisor contributing her national experiences to regional and global efforts to improve the quality of government scientific advice

Some of my fellow commissioners are focused on improving on what's already in place, but in many countries in Latin America, we don't yet have the key building blocks in place to use evidence to address societal challenges. Some governments don't have advisory bodies, so we need to start by setting them up. Most governments don´t have staff who've been trained in how to use evidence routinely in their work. I don't think Latin America is alone in this regard. In my role as the vice-president for policy with the International Network for Government Science Advice (INGSA), I hear similar descriptions from colleagues in other regions. Networks like INGSA can play a key role in showing the relevance of an evidence-support system that works for their context.

2.2 Example of a transition in how a societal challenge is seen

Unsustainable fishing practices provide an interesting example of how the way we look at a societal challenge can change over time. Once seen as a complicated, domestic sectoral problem, unsustainable fishing practices are increasingly understood as part of a more complex or 'complexity cubed' problem, and as both a domestic cross-sectoral and global (or at least regional) coordination problem.(3)

Level	Domains where challenges need to be understood					Management framework
Single-species fisheries management	Single species					Fishery management plan
Ecosystem approach to single-species fisheries management	Single species	Climate	Ecology	Habitat		Fishery management plan
Ecosystem-based broad fisheries management	Multi-species	Climate	Ecology	Habitat		Fisheries management plan
Ecosystem-based whole-ocean management	Aquaculture, Fisheries	Conservation, Marine	Development, Oil and gas	Ecotourism, Sanctuaries	Energy, Other	Regional ocean plans

2.3 Ways of addressing challenges
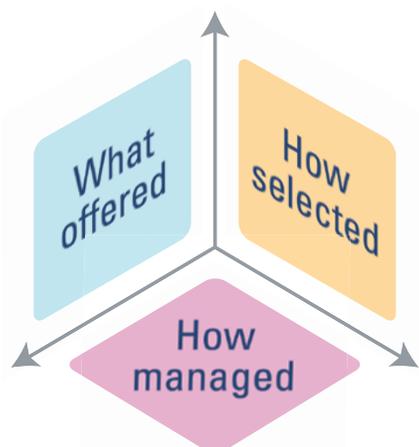
Societal challenges can be addressed in many ways. Here we describe three ways, some of which can be combined. For example, a team of research and innovation professionals may partner with community leaders to co-design a single intervention to address a societal challenge. Alternatively, a group of researchers may use a combination of data analytics, cost-effectiveness analysis and modeling to identify what combination of evidence-based interventions will have the greatest impacts in jurisdictions with a given profile, as was done with Disease Control Priorities 3, a periodic review to address the burden of disease in low-resource settings.(4)

Ways of addressing challenges		Descriptions
What is being offered	Single intervention	An intervention (e.g., a policy, program, service or product) is selected based on the certainty of the evidence that benefits outweigh harms, and that the intervention is affordable to those who will pay for it and acceptable to those who will receive it
	Package (or bundle) of interventions	An optimal package of interventions is selected based on the interventions that will give the greatest improvement in outcomes within a fixed budget
	Synergistic combination of interventions	An optimal combination of interventions is selected based on the likelihood that some interventions will interact with other interventions in ways that the 'whole is greater than the sum of the parts,' or that they simultaneously achieve multiple targets

How it is selected or developed	Evidence-based intervention selected	An intervention is selected from among interventions that have been shown to work for the same problem being experienced locally
	New intervention developed	An intervention is designed by researchers, innovators and others
	Co-designed intervention	An intervention is co-developed by those who will receive it and/or those who will offer it, as well as researchers, innovators and others
	Community-led action	An intervention is developed by representatives of the community who recognized the need for the intervention and who will receive it

How it is managed over time	Portfolio management	An optimal portfolio is selected that achieves strategic objectives, reflects capacity to deliver, and balances the implementation of change initiatives and the maintenance of business-as-usual while optimizing return on investment
	Systems thinking (5)	Interventions are combined, adapted and replaced based on an understanding of patterns in their interrelationships and interactions within complex adaptive systems that are themselves constantly changing in unpredictable ways

2.4 Examples of approaches to prioritizing challenges to address

Many approaches can be used to prioritize societal challenges. They can vary by the breadth of challenges and the time frame they address, and by the degree to which they can inform priority setting. Priority setting may be for evidence-related global public goods (which we return to in chapter 6) or for the strategies used by evidence intermediaries (which we return to in chapter 5 and again in chapter 6). Below we outline five of the general approaches that can be used to prioritize action on societal challenges. The first considers all possible sectors and the remaining four are drawn from the health sector. For each example, we suggest some of the pros and cons of the approach.

Focus	Examples	Pros	Cons
Broad societal challenges operating over the long term	Global Priorities Institute approach to setting a research agenda (6)	Attention to the very long term, including the many generations that will come after us, and to existential risk, such as the extinction of the human species	Focus on the 'buckets' where evidence is needed, without also focusing on the specific questions to be answered or the forms of evidence to answer them within each bucket
Mid-range challenges operating over the short term	Approaches to allocating resources, such as program budgeting and marginal analysis, technology assessment, and multiple-criteria value assessment*(7)	Attention to how financial and human resources can best be allocated within a sector to achieve the greatest value for money	Same as for the rows above and below, as well as the tendency to do these episodically and not as living processes
Specific research questions where new primary research is needed now	James Lind Alliance approach to engaging patients, caregivers and professionals in prioritizing the top 10 unanswered questions (or evidence uncertainties) on a specific topic	Research priorities being set by those who need to use the resulting evidence and with a check that best evidence doesn't already exist for each potential priority	Tendency to focus on products and services, without also focusing on how to get the right mix of many different products and services to those who need them
Specific research questions where a synthesis of the best evidence globally is needed now	SPARK tool for engaging government policymakers and stakeholders in prioritizing questions for evidence syntheses about the health-system arrangements and implementation strategies needed to get the right mix of products and services to those who need them (8)	Same as for the row above, as well as the focus on evidence synthesis to complement primary research	Lack of anticipation of future needs, which can include both issues that tend to recur with political and economic cycles and issues for which preparedness will be essential
Specific decisions where locally contextualized evidence is needed now, typically on very short timelines	COVID-END approach to prioritizing urgent requests from national and sub-national policymakers for rapid evidence syntheses to be prepared in one-to-10 days and funded out of a common pool over a one-year period	Use of proxy indicators for likelihood of impact (high-level request and interest from multiple jurisdictions), a check that best evidence doesn't already exist or isn't already being synthesized, and checks that the work can be completed in the timeline requested and within bi-monthly spending targets	Potential for duplication in the production of new global public goods and for such goods to be of lower quality than if a living evidence synthesis had been prepared by methodologically strong teams that anticipated a future need and made available updates in ways that can be easily contextualized

An alternative to MCVA is the incremental cost-effectiveness ratio based on quality-adjusted life years, which is a single-criterion value assessment

2.5 Global-commission reports by challenge type

Global-commission reports provide an interesting window into how challenges are viewed by the 'eminent persons' who often fill the ranks of commissioners. Our analysis of the 70 commission reports published since January 2016 found that:

- most commission reports (46) address both domestic and global levels
- only three sectors have been the focus of more than seven commission reports, namely health, public safety and justice, and food safety and security, with 22, 17 and 12 reports, respectively
- only four Sustainable Development Goals (SDGs) have been the focus of more than six commission reports, Good health and well-being (SDG 3), Peace, justice and strong institutions (SDG 16), Zero hunger (SDG 2), and Decent work and economic growth (SDG 8) with 25, 16, 10 and seven reports, respectively
- nearly half of the commission reports (33) labeled the problem they were addressing as complex and none used the labels simple, complicated or wicked
- the most common reasons used to justify calling a challenge a problem worth paying attention to were values (59) and comparisons to the past (52)
- most challenges were framed positively as goals or targets (39) rather than negatively as problems (31)
- most commission reports (43) propose a package (or bundle) of interventions, albeit not with the rigour of a report like Disease Control Priorities 3, but don't speak to how the interventions were developed or how they should be managed over time.

Note that a commission report can address more than one sector and SDG so the numbers do not always add up to the total number of reports we analyzed.

Challenge types		Number of commission reports
Ways of looking at challenges		
Level at which a challenge is typically addressed	Both domestic and global	47
	Domestic (e.g., national or sub-national)	17
	Global coordination	6
Sector addressed	Health	23
	Public safety and justice	17
	Food safety and security	12
	Economic development and growth	7
	Natural resources	5
	Infrastructure	4
	Climate action	4
	Culture and gender	3
	Education	3
	Employment	2
	Energy supply	2
	Environmental conservation	1
	Government services	1
	Children and youth services	1
	Community and social services	1
	Housing	1
	Recreation	0
	Transportation	0
	Citizenship	0

SDG addressed	**3** Good health and well-being	26
	16 Peace, justice and strong institutions	16
	2 Zero hunger	10
	8 Decent work and economic growth	7
	6 Clean water and sanitation	5
	10 Reduced inequalities	5
	12 Responsible consumption and production	5
	4 Quality education	4
	9 Industry, innovation and infrastructure	4
	17 Partnerships for the goals	4
	5 Gender equality	3
	1 No poverty	3
	13 Climate action	3
	7 Affordable and clean energy	2
	14 Life below water	2
	11 Sustainable cities and communities	1
	15 Life on land	1
	Not stated explicitly	1
Complexity of the underlying problem	Complex	33
	Simple	0
	Complicated	0
	Complex cubed (or wicked)	0
	Not stated explicitly	37
Reason to label a challenge a problem worth paying attention to	Values	60
	Past	52
	Other groups within jurisdiction	12
	Other jurisdictions	7
	Other framing	3
	Not stated explicitly	1
Framing	Positive	39
	Negative	31
Ways of addressing challenges		
What is being offered	Package (or bundle) of interventions	43
	Synergistic combination of interventions	20
	Single intervention	1
	Not stated explicitly	6
How it is developed	Co-designed intervention	14
	Evidence-based intervention selected	4
	New intervention developed	1
	Community-led action	1
	Not stated explicitly	50
How it is managed over time	Systems thinking	12
	Portfolio management	5
	Not stated explicitly	53

2.6 References

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Government policymaker, Fitsum Assefa Adela
Committed policymaker striving to bring a whole-of-government perspective to cabinet-level planning and development

As a cabinet member and a key player in my country's macroeconomic team, I and my team bear the huge responsibility of offering the best recommendations for effective development plans and policy designs aimed at solving societal challenges. This makes the office I lead one of the key users of evidence, both to provide a foundation on which plans and policies are based, as well as for alternative policy recommendations.

My participation in the Evidence Commission, as well as my engagement over the last three years at the apex of policymaking where we strive to make policies in a complex environment, have given me an ideal opportunity to re-emphasize the need for synthesizing the many forms of evidence pertinent to the issue at hand.

To support the use of evidence in policymaking and monitor our impacts, my team has been developing a new monitoring and evaluation metrics to better track progress in achieving the Sustainable Development Goals. Furthermore, we have been working with stakeholders to develop a national multidimensional poverty index (MPI) to complement existing measures of poverty. While global MPIs can set the stage for global comparisons, national MPIs can provide the sensitivity to local contexts that we need.

Thus, I strongly support the insights provided in chapter 3 about decisions and decision-makers, particularly those provided in **section 3.3** about the demand for evidence among government policymakers and the context for their use of evidence. I also wholeheartedly support the insights provided about the evidence-support system in **section 6.2**, where the need for basing it on local (national or sub-national) contexts has been emphasized. The insights about the need for global public goods and equitably distributed capacities in **section 6.1** are also important, given the lack of global equity in this regard. This report will be instrumental in guiding us in the best ways for using evidence to properly understand and effectively solve societal challenges.