Australian Government

Department of Agriculture and Water Resources

Strategic foresight for international trade in animals and animal products

Choosing a method to link foresight to policy advice

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November 2015

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Highlights

Research on improving strategic decisions when issues are complex suggests there are a range of alternative strategies which could lead to different futures.

Working with qualitative methods allows decision-makers and social actors to be more aware of the directions their decisions could lead.

- It also highlights key variables important for the implementation of public policies so that they to achieve the desired outcome.

This paper discusses *six different strategic foresight methods*, often used when there is no or little quantitative information available.

The paper shows how these strategic foresight methods line up against a *policy process* as used by policy analysts.

The paper also assesses how these methods stack up against a set of *strategic policy choice* criteria.

Summary of six strategic foresight methods

This table summarises the main points made in the paper about the results of methods used to explore how foresight informs policy-making. The methods are explained in detail from **page 19** onward.

Table 1: Choosing between different foresight techniques

Criteria ↓	**PEST Analysis** (over time)	**Three Horizons Thinking** (modified)	**Futures Wheel**	**Assumption Testing**	**Backcasting**	**Change Causes & Effects Analysis** (new)
Description	3 horizons + PEST	3 horizons + DRC[3]	1st – 3rd order consequences	Spelling out assumptions	Back-casting	Understanding links, relationships & interdependencies
Strategic thinking component (Mintzberg model / Liedtka model)	'What if' (Seeing above, Seeing below / hypothesis driven, thinking-in-time)	'What if' (Seeing above, Seeing below / hypothesis driven, thinking-in-time)	'So what' (Seeing below)	Assumption testing (Seeing beside)	'Where do we want to be?' (Visioning) (Seeing ahead, Seeing beyond / intent focus)	Understanding interdependencies Systems perspective
Focus	This method focuses on the point of origin of the change (on drivers of change)	This method focuses on the point of impact of change (on people)	This method focuses on the consequences / implications of change ('knock on' or downstream effects)	This method focuses on questioning assumptions (cognitive biases) of analysts and decision-makers	This method focuses on starting at the 'end' i.e. where you want to be then assessing what helps and hinders achievement of the outcome	This method focuses on comparing where change starts to where it hits.
Nutshell	Establish a loose understanding, or hypothesis, of the	State a proposition about the future – pretend it has	Choose a decision and pretend it has been taken – then	State a proposition about the future – then **identify what**	This method focuses on starting at the 'end' i.e. where you	Start with a hypothesis about a significant change –

Criteria ↓	PEST Analysis (over time)	Three Horizons Thinking (modified)	Futures Wheel	Assumption Testing	Backcasting	Change Causes & Effects Analysis (new)
	patterns or conditions shaping the problem then speculate how the **drivers of change** might be play out over time	happened – then speculate how it might **affect the way people behave** over time	**explore the consequences** over time (without categories in mind)	**must be true** for this to occur This method helps analysts and decision-makers identify blind spots	want to be then assessing what helps and hinders achievement of the outcome	pretend it has occurred – then explore how where change comes from affects a specific stakeholder group's behaviour
Advantages	This method is easily understood and already used by policy-makers in a number of central agencies	This method focuses on a key concern amongst policy-makers & politicians – how a decision affects people	This method is a mind mapping tool that focuses on consequences, hence it is familiar to policy analysts	This method helps analysts and decision-makers identify blind spots	Imagine that a policy succeeded, and then work backward to determine what lead to success This has similarities to pre-mortem analysis	This method will show links between ideas about the future and highlight concerns of stakeholders that matter to policy issues
'I get it' (understandable)	√		√		√	**Untested**
'I like it' (familiar)	√		√		√	**Untested**
Pragmatic (informs a practical response to a particular public	√	√	√		√	**Untested**

Criteria ↓	PEST Analysis (over time)	Three Horizons Thinking (modified)	Futures Wheel	Assumption Testing	Backcasting	Change Causes & Effects Analysis (new)
policy issue)						
Reveals blind spots		√		√		Untested
Captures pace of change (dynamism / volatility)	√	√	√	√		Untested
Results in new thinking		√		√		Untested
Drawbacks	This method requires a broad understanding of how change occurs in politics, the economy and, technology (social change is usually an afterthought) People might think in large, structural, and abstract terms (i.e.	This method requires an understanding of how people might behave (i.e. evokes imagery of daily life, imagery that helps make the future more real) In practice the danger is that a researcher with a strong set of categories in mind	This method does not always discriminate between first & second order implications of change (i.e. 'what' and 'why') At times, using this method fails to evoke original thinking	This method requires an ability to identify underlying assumptions (reflecting values, attitudes & beliefs) policy-makers hold It is often a challenge to get people to identify implicit assumptions	This method constrains creative thinking (about possible discontinuities / disruptions from trend) [1] People can be subject to an optimism bias even when working 'backwards'	This method is unproved, but it does draw on the proved method of cross-impact analysis and systems thinking – which evoke insights about policy design and delivery (links between areas of concern)

[1] This is one of the faster ways to be forward thinking but it is also focused on completing the task. As an approach it has some speed advantages but the disadvantage of this approach is that we often overlook alternatives because of our predisposition to focus – this will unconsciously and rapidly deselect any information that does not 'fit' what we expect to see.

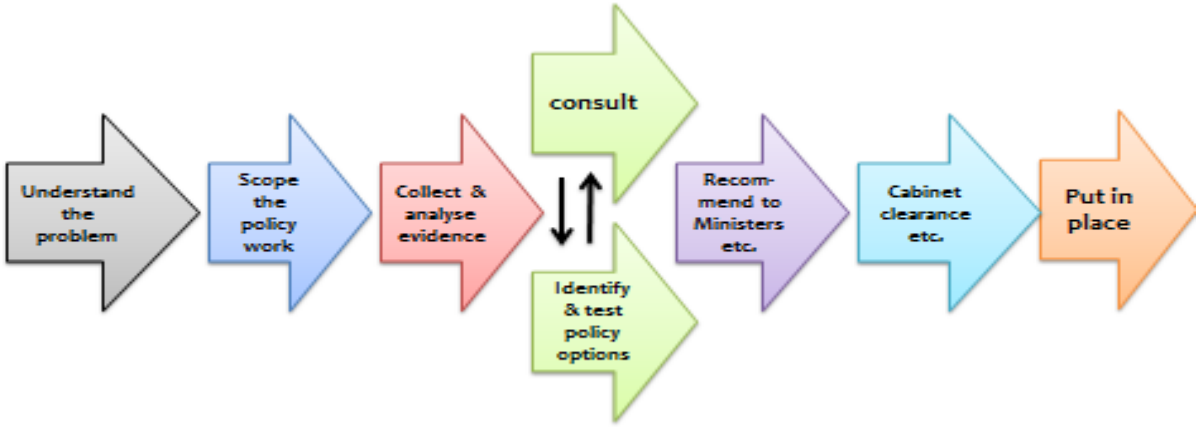
Criteria ↓	PEST Analysis (over time)	Three Horizons Thinking (modified)	Futures Wheel	Assumption Testing	Backcasting	Change Causes & Effects Analysis (new)
	difficult to relate to specific policies) The results are not sufficiently focused to capture policy attention	won't see weak signals.	about the future			
Too broad (focus)	√		√			Untested
Too narrow (focus)		√		√	√	Untested

Policy – making

There are a wide variety of policy-making models – most are descriptive. These policy process models (like **Figure 1**) offer ways to understand how policy is made and how strategic foresight might enter into that process.

One thing that most models agree on is that policy choices are context dependent. Another area of agreement is that, currently, policies are crafted to operate within a certain range of conditions and are often faced with unexpected challenges outside of that range. Hence, traditional policy-making approaches are increasingly questioned.

Figure 1: Simple overview of the policy process (adapted T. Allas, 2013)



Challenges associated with modern policy-making

It is widely acknowledged that Governments' and others strategic and operating environments are increasingly complex (Forum for the Future report here). This means in future that they will often have to make big decisions and develop plans and policies under conditions of incomplete information and uncertain outcomes.

- An online version of a 2016 study on '*How to improve strategic decision-making in complex systems*[2] *when only qualitative information is available*' says 'working with qualitative methods allows decision-makers and social actors to be more aware of the directions their decisions could lead … and what the key variables are for the implementation of public policies' to achieve the desired outcome.'
- Geoff Mulgan (2009) in *The Art of Public Strategy* explained that understanding different environments for change was a key to successful public strategy.
- Paul Gibbons (2015) came to a conclusion similar to Mulgan in *The Science of Successful Organisational Change* (**Table 1**). Gibbons argued that certain environments for decision-making are readily amenable to analyse, while others require different bases for decision-making.

[2] (Uncertain world, lack of information, consideration of qualitative and quantitative information, participation of different actors in the decision-making processes, etc.)

- The Victorian Public Service (VPS) in Australia **stipulate** that senior VPS leaders demonstrate a strategic approach by: 'charting a clear organisational direction, positioning their organisation for the future, dealing comfortably with ambiguity, and adjusting strategy to reflect changing dynamics and demands.' Similar statements exist in leadership frameworks for other public services.
- 'Decision making within complex systems asks decision makers to identify existing patterns that are occurring that can be amplified or dampened for an improved outcome (Rockefeller 2014).'

The question of what 'improved' policy or 'better' policy-making entails and on what criteria such improvements might be judged is beyond the scope of this paper.

Being adapted or adaptive?

A second result of operating and deciding in complex environments is that an organisational capacity to understand how change is happening is becoming a 'central determinant of effective intervention design (Rockefeller 2014).' The balance between being future aligning and future influencing is growing in importance.

- You are future- aligning when you are trying to approximate what is coming (to be better aligned with it) to take advantage of opportunities or avoid threats more quickly or elegantly and times when
- You are future influencing – i.e. you are trying to influence the course of events itself, to promote desirable outcomes and head off negative (i.e. belief that trend is not destiny).

Evidence

There has been a broad movement toward 'evidence-based' policy in recent years (Head 2008, Banks 2009). Evidence in public policy-making contains varying levels of uncertainty that must be assessed, communicated, and managed (**Table 2**). The levels of uncertainty should be explicitly identified and communicated directly in plain language to decision makers

- A simpler way of putting this may be: 'We don't know everything, but do we know enough to act?'
- In a **paper** about policy advice Löfgren and Cavagnoli (2015) suggest that policy is in fact not truly evidence-based – echoing earlier critiques (**like this**) about the cultural contradictions of using horizon scanning in an evidence-based policy environment

Unintended Consequences

Policies may have **unintended impacts** (**positive** and negative), don't accomplish their goals, or just get in the way.

- By identifying key factors that affect policy performance and identifying how these factors might evolve in the future, policies can be made robust to a range of

anticipated conditions, and indicators developed to help trigger important policy adjustments when needed.

Table 2: Mulgan (2009) & Gibbons (2015) on relying on different forms of evidence in different environments

Nature of cause of change		System logic	Decision style	Example
Mulgan		**Gibbons**		
Direct causation	Amenable to comprehensive analysis and action	Simple	Categorise	Day-to-day management challenges
Multiple variables	Need for multiple policies, scenarios and modelling	Complicated	Analyse	Traditional strategy, operational analysis
Complexity	More learning by doing, adjusting in response to experience	Complex	Experiment, prototype	Rapidly changing contexts (markets)
Chaos and crisis	Speed of response important	Chaotic	Act quickly, learn	Crises

Comparing foresight methods to policy analysis and choices

In this section of the report we consider the policy relevance of the different foresight approaches proposed in this report (**Table 3, Table 4**). The methods are described in summary (**Table 1**) and in detail from **page 19** onwards.

A key take away is that choice of foresight method matters – too great a focus on user comfort, culture, and expectations may undermine the core purpose of scanning and thus its effectiveness.

Table 3: Comparing the foresight methods to an eight step policy analysis (using E. Bardach)

	Horizon scanning method					
Policy analysis	**PEST Analysis (over time)**	**3 Horizons Thinking**	**Futures Wheel**	**Assumption Testing**	**Backcasting**	**Change Causes & Effects Analysis (new)**
Define the problem (helps with understanding)	√	√		√		√
Assemble *some* **evidence** (including about conditions that give rise to problem)	√	√	√	√	√	√
Construct the alternatives	√	√			√	√
Select the criteria (value judgments)				√		
Project the outcomes	√	√	√		√	√
Confront the trade-offs			√			√
Tell your story						

Table 4: Cascade of strategic policy choices compared to foresight methods proposed (using O'Donovan & Flower 2013)

Policy making choices	PEST Analysis (over time)	3 Horizons Thinking	Futures Wheel	Assumption Testing	Backcasting	Change Causes & Effects Analysis (new)
What is our vision? & How do we understand change?						
What challenge / opportunity are we working to address?	√	√	√			√
How do we believe that we can make a difference?				√	√	√
Where will we play?						
What part of the problem should we work on	√	√	√			√
What role should we play				√		√
Where will we focus our efforts?	√	√			√	√
How will we succeed?						
What actions, adaptations, and economic model are required?	√	√	√			√
How will we measure success?				√		
What capabilities will we need?						
What skills and abilities will we need individually and collectively to create the impact we've set out to create?		√			√	√

Foresight

> 'It *is not possible to prepare exhaustively for every contingency. Instead, a 'search and discover' approach should be adopted. The military calls this approach observe, orientate, decide, act, or OODA, a recurring cycle of decision making that acknowledges and exploits the uncertainty and complexity of the battlefield*' (**Peter Ho** former head Singapore Civil Service)

A good partner of policy

Policy-making requires that decision-makers take a view of the future. Foresight activities are 'future-oriented.' This makes foresight a good partner of policy-making.

What foresight does, with lesser to greater certainty and confidence, is describe conditions of interest to policy makers (or that might come to interest them when they are described), probe into natural, social and other changing conditions that may give rise to the need for policy action, and project what might happen if action is taken (or not taken) to address those conditions.

In foresight it is assumed that the future is not pre-determined, but can evolve in different directions, depending upon the actions of various players and the decisions taken today. In other words, the future can be actively shaped, at least to some extent. (i.e. There is at least some freedom to choose among alternatives and hence to increase the likelihood of arriving at a preferred future.)

- Foresight approaches, methods, and tools are, simply, another guide to understanding problems, the conditions that give rise to those problems, and the outcomes that might occur when policy addresses those problems.

Horizon–scanning (a foresight approach)

> *'It is often the case that we focus our attention on things we know well; the things that we know we know. However, it is the factors that we know little about that take us by surprise, often leading to strategic failure. We are not looking at them because they are not prominent in our organisation and therefore do not become part of the conversations within the organisation.'*[3]

Horizon scanning involves discovering a range of individual observations that collectively indicate patterns of change.

Horizon scanning, a 'search and discover' approach, is effectively an organisation's antenna. Horizon scanning, like other foresight activities, **does not seek to predict events**, but to identify emerging patterns and trends. Horizon scanning has both:

- a forecasting utility – it provides information on potential futures; and
- a disruptive dimension – it calls into question our assumptions about the present, scanning, and properly applied, improves the robustness of policies, adds to the evidence base, and informs decisions about the longer-term.

Most successful horizon scanning involves a core scanning team, knowledgeable about the priorities of the organisation and connected to a broader network. A researcher or a research team begins scanning with pre-set views about the future –about how change is happening. Horizon scanning results in (weak) signals or 'scan hits.' Scan hits differ in three fundamental ways:

- How clear the cause(s) is (**Table 2**)
- How confidently we can project results of the emerging issue or trend change (uncertainty, **Figure 2**)
- The extent to which the observations challenge conventional thinking

These differences make decision-makers more (or less) comfortable with the projections that result from foresight because of their comfort (or not) with uncertainty, ambiguity, and complexity. Also, projections can be less reliable if the environment is particularly volatile.

This foresight method relies on individual and collective capacity to hold conversations about the future, an advantage.

- To get the full benefits of this foresight technique it is important to make sure that people spend more time thinking about / holding conversations to make sense about the future and less time in collecting data.

[3] Van der Heijden, Kees et al (2002), The Sixth Sense: Accelerating Organizational Learning with Scenarios, Chichester, UK, John Wiley & Sons

Drawbacks

A disadvantage of this method is that *people are uncomfortable speculating about the future qualitatively*, when they are used to using more quantitative methods like cost – benefit analysis. (We tend to use economic or quantitative lenses to look at the future). Further:

- Scanning work might not test participant views, especially if they focus only on detecting change within a certain pattern
- Participants (scanners) may fail to recognise outlier events because of their own cognitive biases – they need to design in ways to combat these biases.

Other consistent problems with horizon scanning are:

- Keeping data fresh and therefore relevant
- Too much data – and not enough interpretation of it
- Few incentives to participate (e.g. not held important by senior managers)
- Too broad / vague observations

Outcome (if done well)

The aim is to hold discussions about the future that identify challenges that can form the basis for broad recommendations *which have so far not received sufficient attention in policy and decision processes*.

Shifting the understanding of a problem and its causes has the power to bring together new sets of actors and unleash innovative capacity to think beyond traditional and conventional approaches to achieve transformative change (Rockefeller 2014).

How does this relate to policy making?

In strategy and policy-making traditional approaches have relied on the most likely conception of the future when establishing outcomes (the 'probable' future in **Figure 2**). When the environment in which a public service agency operates is challenging it is increasingly important that decision-makers take into account a range of plausible futures.

Horizon scanning helps broaden, make systematic and explicit the habit and skill of policy analysts who consider how a decision might play out over time. This means horizon scanners are more likely to capture things they 'should have known.'

- Horizon scanning is a structured process of reading 'grey' literature[4] (example **here**) and early research evidence (e.g. WIREs Climate Change **here**) to spot change early. Often 'scan hits' are scattered and / or show little or no historical evidence

Providing early warning of emerging issues, changing trends, challenges, and opportunities allows policy advisors and researchers to get ahead of the *future* (**Dewar et al** at Rand described

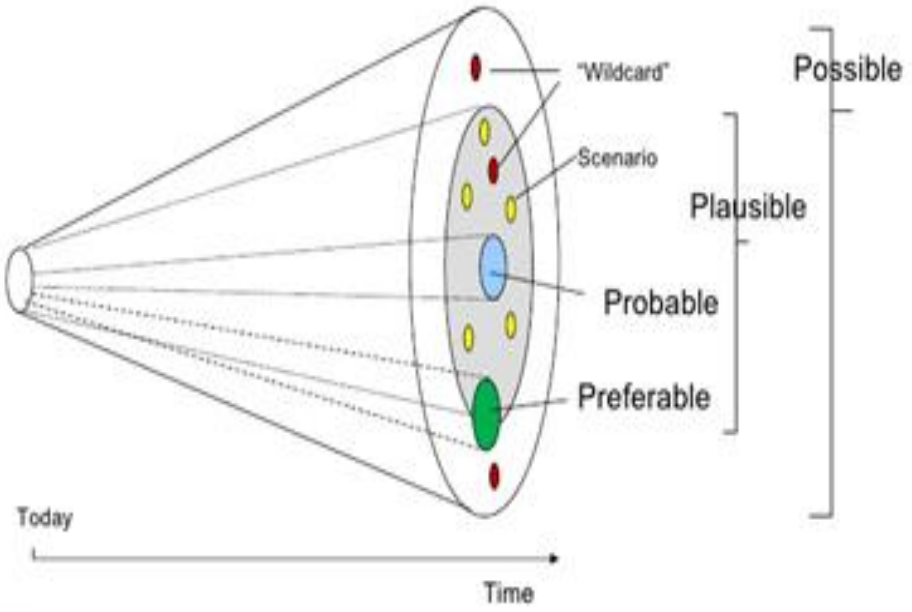
[4] Documents produced on all levels of government, academics, business and industry in print and electronic formats, but which are not controlled by commercial publishers.

this as shaping vs. hedging in 2004). For instance, if we are early enough in detecting a changing pattern, we can potentially intervene to boost positive patterns that, for example, build resiliency, or dampen patterns that undermine resiliency.

- While we cannot predict the future, it is possible to 'scan' for signals of change
- Paying attention to scan signals give clues to how the original drivers-of-change (see Glossary) are starting to play out, allowing for intervention to keep a policy on track
- Detecting change early provides an opportunity to create – more of – the future you want ('desired' in Figure 2)
- Scanning allows us to reappraise our original thinking, enabling us to suggest action to ensure we remain flexible, innovative and headed towards the desired destination

When the question on the table is what are the 'real' conditions or what will 'probably' happen if we implement one policy instead of another, foresight tools and approaches - on balance – produce a more dependable and defensible guide than informed hunches, analogies, or personal experience.

Figure 2: Futures cone (from Hancock & Bezold 1994)



Different decision-makers – when taking collegial decisions – can hold different conceptions of the future. **Figure 2** illustrates different possible views of the future in the form of a 'futures cone (Hancock & Bezold 1994).' Often the different views are implicit (unstated, unconscious).

A simple scanning process

The purpose is to speculate about possible future developments with an eye to finding missed opportunities / drawbacks / unintended consequences of a decision.

- Provide timescales whenever you are talking about future developments. As a general rule, policy-makers and politicians are more interested in something that might happen within the next few years

The scan process illustrated In **Figure 3** is as follows:

1. Collect scan hits across a comprehensive spectrum
2. Synthesise these into meaningful ideas / themes / clusters (that exhibit some logical structure and link to existing decision-making structures)
3. Look at the links between the clusters
4. Assess issues (for example on a seven-point Likert-scale – see **Explanatory Notes**) for:

   Relevance to policy-making / strategy

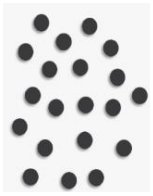
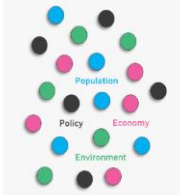
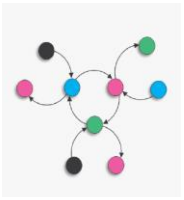
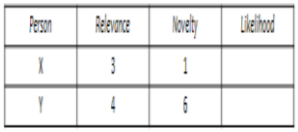
   Novelty in comparison with earlier policy debates / strategy

   Sometimes

   - Likelihood (probability) of occurrence by a specific date

Once these first steps are completed choose a 'method' (described in Part 2, **Figure 3**) to further analyse implications for strategy and policy analysts and decision-makers.

Figure 3: A simple scanning process

Part 1: Identifying scan hits to investigate (includes Steps 1 to 4)			
Step 1	**Step 2**	**Step 3**	**Step 4**
Identify hits	*Cluster them (name)*	*Determine links*[5]	*Choose for further analysis*
			
	The way individual observations are organised /clustered might vary.	There is more than one way to explore the relationship between different clusters / observations	Choose for relevancy (to policy) or for novelty (in policy thinking)

Complete steps 1 through 4 then choose one or more of the foresight methods to analyse the issues

Part 2: Making foresight policy relevant					
PEST Analysis (over time)	**3 Horizons Thinking**	**Futures Wheel**	**Assumption Testing**	**Backcasting**	**Change Causes & Effects Analysis (new)**
Develop 'what if' assertions about the future …	Develop 'what if' assertions about the future …	Start with an event or trend or a decision	Identify differentiating assumptions that you have about prospective change	Describe a desired outcome	Compare PEST factors to point of impact change factors
Think through how the assertion(s) results in changes from different points of origin	Think through your findings in terms of the effects the changes will have on peoples' behaviours	Brainstorm how this might play out over time	Reverse improtant assumptions to test validity / sustainability over time	Work backwrds fromthat outcome to determine feasibility and barriers to implementation	Compare different change factors (origin vs. impact) to gain insight about the nature of changes and the pace of change

[5] Events and trends in various spheres interact with one another in complex and sometimes mystifying ways. We will be surprised time and again because complexity creates interdependencies that are inexplicable, emergent, and difficult to predict.

Comparing five methods of foresight (by steps in the method)

Table 5: Steps in each foresight method

	Method 1	Method 2	Method 3	Method 4	Method 5	Method 6
Name	**PEST Analysis (over time)**	**3 Horizons Thinking**	**Futures Wheel**	**Assumption Testing**	**Backcasting**	**Change Causes & Effects Analysis (new)**
Step 1	Develop a brief ***what if*** statement	Develop a brief ***what if*** statement	Select a ***decision or event*** relevant to the policy domain	List Assumptions	Describe an outcome in detail	Select PEST drivers of change
Step 2	Pretend the ***what if*** has happened Looking at drivers of change (PEST acronym)	Pretend the ***what if*** has happened Consider impacts on people (DRC3 Categories)	Brainstorm possible direct, 1st-order consequences of that change	Reverse each assumption	Ask: What needs to happen to get us to the new scenario?	Select stakeholder group to assess impact on them
Step 3	Consider how this might play out over time	Consider how this might play out over time	Identify indirect, 2nd order consequences - only … then tackle / discuss 3rd order consequences and so on	Generate policy relevant (new) ideas	Identify the priority areas – 'What actions must be taken to enable this to happen in the real world?'	Assess PEST categories against DRC[3] categories for a particular stakeholder group i.e. investigate inter-dependencies.
Step 4			Analyse Implications			
Step 5			Spell out actions			

Making foresight policy relevant: PEST Analysis (over time) (Method 1)

In a nutshell

Use three horizons thinking to project the development of a possible event or potential management decision in concert with the PEST framework. This will allow you to anticipate where policy might need to be nudged back on track over time.

Horizon scanning can be translated into policy relevant findings through 'what if' thinking as illustrated (**Table 6**). 'What if' requires an ability to speculate about 'how this might play out' often over time. The ability to effectively use horizon – scanning in policy and decision-making results involves *making decisions about what signals are worth scanning*. **Figure 3** illustrates a simple scanning process.

How to do this

Having identified scan hits (issues, events and propositions) take the following actions:

First

1. Develop a brief ***what if*** statement – an assertion of what might happen in future by combining different scan 'hits' (i.e. relevant / novel issues / themes / events / propositions identified during the scanning process.)

Second

2. Choose one assertion (***what if*** statement) about the future and pretend that this has happened
    a. Use these criteria – urgency, tractability, impact (to select the assertion)[6]

Third

3. Consider how the assertion might play out over time

An example

A similar approach (here) was used by Nesheim, et al (Editors) 2015 in 'A Framework for Assessing Effects of the Food System' (Institute of Medicine and National Research Council).

[6] There are solution-oriented criteria related that will help you choose an issue to analyse further: **Urgency:** Is the issue likely to cause impacts that require urgent actions? **Tractability:** Can solutions be identified and implemented? Do *we* have the institutional capacity to act on this challenge? **Impact:** Are the actions to be taken by *us* expected to have a major positive impact?

Table 6: Exploring '*what if*' thinking

#1 Place your statement about a future decision or option chosen here. Pretend that this has happened. For example – a fat tax is imposed on Monday morning.	**Horizon 1**	**Horizon 2**	**Horizon 3** *Remember to set the time period you are exploring.*	**Assess**
Political *Remember to explore the relationship between the different layers of change. Think about how they might interact, think about different paces of change*	#2 In this box you describe (narrative) the combination of Horizon 1 and 'political' factors – for instance how a supporter or an opponent might react			#3 Q: What will we do to avoid unwanted developments? When? Q: What will we do to exploit opportunities? When? Q: What should we do more of? Less of? Stop doing? Start doing? When?
Economic	(Think about winners and losers)			
Social				
Technical or technology				

'linear' thinking

Column 1 to 2 to 3

Column 1 to 3 to 2

Be careful not to make your statements too vague in the process of translating information into language that policy-makers will understand.

Making foresight policy relevant: 3 Horizons Thinking (Method 2)

In a nutshell

Use three horizons thinking to project the development of a possible event or potential management decision in concert with a framework ***that focuses on the impact on people*** *(as opposed to focusing on where change starts as in Method 1).*

Many conditions at stake in a policy choice are not social – collapsing bridges, atmospheric pollution, and species loss. Evidence from engineering, chemistry, and ecology describes those conditions and their causes. Yet even when the policy is about physical or biological conditions, the need to consider the human actor is seldom absent when considering policy options.

Ensuring that possible societal and cultural changes are fully considered can be difficult because of the tendency policy analysts and others have to continue along current trajectories / norms. **Table 7** proposes using a different futures framework – *in the vertical axis* – in place of the PEST framework.

This technique for exploring a wide range of social and cultural responses is a people-focused futures framework – using – it as a template for discussion ensures that all aspects of human society are covered. You would do this if you are mostly interested in the impact of a decision on people. A recent paper is **here**.

- This differs from the more common drivers of change approach (which uses the 'point of origin') by focusing on the 'point of impact' i.e. where the effects of changes are felt in the future.

  This shift in focus from 'origin' to 'impact' points helps uncover and broaden the mental model of the scanner.

  Focusing on the impacts on people, especially those whose interests the politicians are likely to be particularly concerned about, might advantage this technique over Method 1.

This framework uses five categories to explore change:

1. Define – how will people define themselves, what concepts, ideas and paradigms will emerge to help them make sense of the world?
2. Relate – how people relate to each other and the world around them
3. Connect – what media and technologies are used to connect people and places?
4. Create – how will people create new goods, services, and knowledge?
5. Consume – how people use and dispose of resources

The categories are also discussed in the Explanatory Notes section of this report.

How to do this

Having identified scan hits (issues, events and propositions) take the following actions:

First

1. Develop a brief ***what if*** statement – an assertion of what might happen in future by combining different scan 'hits' (i.e. relevant / novel issues / themes / events / propositions identified during the scanning process.)

Second

2. Choose one assertion (***what if*** statement) about the future and pretend that this has happened
    a. Use these criteria – urgency, tractability, impact (to select the assertion)[7]

Third

3. Consider how the assertion might play out over time

Table 7: What if thinking using an ethnographic futures framework

Step 1	Horizon 1	Horizon 2	Horizon 3	Assess
Define: the concepts, ideas and paradigms we use to define ourselves and the world around us	Step 2	*'linear' thinking*		Step 3
Relate: the social structures and relationships which define people and organisations				
Connect: the technologies that connect people, places, and things				
Create: the processes and technology through which we produce goods and services				
Consume: the ways in which we acquire and use the goods and services that we create.				
Destroy: the ways in which value is destroyed and the reasons for doing so				

[7] There are solution-oriented criteria related that will help you choose an issue to analyse further: **Urgency:** Is the issue likely to cause impacts that require urgent actions? **Tractability:** Can solutions be identified and implemented? Do *we* have the institutional capacity to act on this challenge? **Impact:** Are the actions to be taken by *us* expected to have a major positive impact?

Making foresight policy relevant: Futures Wheel (Method 3)

In a nutshell

This form of analysis looks at the consequences of an event or a decision made. In essence you are looking for 'knock-on' or downstream effects of the event or decision. The purpose is of the tool is to identify the future implications of a trend, issue, or a futures-related development. If it happens, what does it mean? What are the consequences?

The futures wheel is an alternative foresight tool that is used to investigate / look specifically at outcomes of an action.

- Remember that consequences are not necessarily negative
- And, done well, the futures wheel helps identify unintended consequences

A 2013 set of ads run by Direct TV are not only hilarious (see this **Don't Wake Up in a Roadside Ditch**, for example) — they are excellent examples of the type of thinking encouraged in using the wheels. How one thing leads to another leads to another. Obviously, the goal is humor in the ads. Another video showing use of a futures wheel is shown **here**.

Because the futures wheel is a graphic organiser, it is useful for presenting complex inter-relationships in a highly visual manner. However, unlike mind mapping, the futures wheel completes each ring in concentric circles by first exploring primary impacts, followed by secondary impacts, then tertiary impacts and so on.[8]

How to do this

First

1. Identify and write the decision or event that you need to consider in the centre of a piece of paper, or on a flipchart. This could be an event, trend, problem, or possible solution.

Second

2. Now, brainstorm possible direct, first-order consequences[9] of that change. Write each consequence in a circle, and connect it from the central idea with an arrow. These are 'first-order' consequences.

   The items surrounding a central core are not just concepts of relevance, but result from an initial decision or event.

[8] Mind mapping is useful for exploring linkages, but does not necessarily make distinctions between primary, secondary and tertiary impacts relative to other impacts radiating out in time

[9] In the change management literature first order change (transactional) is sometimes described as surface change. For instance 'first-order' change involves modifications to ways in which work is done, but not how people in the organisation think and interpret information. Second order (transformational) is profound – that is – 'second-order' change involves transforming the mindset, mental models, or interpretative frameworks (schema) used by people in the organisation.

You may find it useful to colour-code each 'level' of the wheel. This makes it easier to prioritise and analyse consequences once you've completed your brainstorming. Remember that consequences are not necessarily negative.

Third

3. Identify indirect, second-order consequences. You now need to brainstorm all the possible 'second-order' consequences of each of the first-order (direct) consequences that you wrote down and add them to your diagram. Then, repeat this by identifying the third-order consequences, fourth-order consequences, and so on.

   One useful outcome is that when you get to third-, fourth-, or fifth-level consequences, you may identify some possibilities that would escape routine analysis.

Fourth

4. Analyse Implications. Once you've completed all of the levels of the Futures Wheel, you'll have a clear picture of the possible direct and indirect consequences resulting from the change. List these.

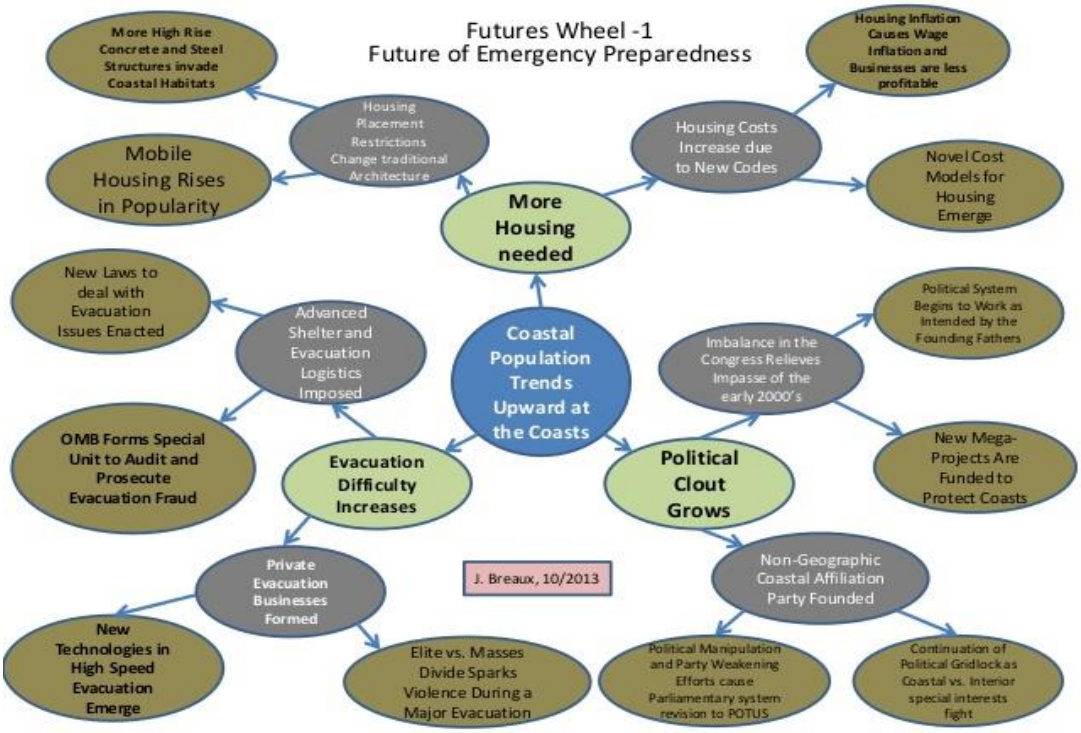
Fifth

5. Identify Actions. Where the possible consequences that you've identified are negative, think about how you'll manage them. Where consequences are positive, think about what you'll do to take full advantage of them.

   Don't paint either a 'doom and gloom' picture or an overly positive picture.

An example

Figure 4: Futures wheel example (here)



Making foresight policy relevant: Assumption Testing (Method 4)

In a nutshell

Spelling out the assumptions you have about 'how things work' or 'how they might work in future' will allow you to guard against believing something is true because one wants it to be true.

Assumption reversal[10] is another approach used to inform policy-making. The purpose of this technique is to deliberately question your underlying assumptions about a problem to help spark new ideas for addressing it. Internalised assumptions are blind spots. Turning your assumptions on their head requires creating a mirror image view to alter an aspect of the problem or your assumptions about it.

The technique is most commonly used for problem solving and decision-making, overcoming obstacles or barriers and dealing with general problems. For example, as many organisations are experiencing at the moment, you may be required to cut budgets at the same time as delivering more programming. The apparent contradiction of delivering more with less may be a significant block to problem solving and decision-making. There is also the possibility that you may be harbouring false assumptions. If so, this technique will also help you to discover that this is the case and avoid the limitations that this can cause.

- For example, a department or agency making a policy decision may prematurely accept as true something that has been presented only as a possibility and then interpret existing data or seek out data confirming what has been decided (mindset or group-think biases).

Your original assumptions are not necessarily wrong but in reversing them you can generate new approaches.

How to do this

First

List assumptions. It may be helpful to think through these questions:

1. What do we take for granted about the current operating environment?
2. What have we ceased to think about, taking it as a given in decision-making?

Second

Reverse each assumption.

[10] Assumption reversal was developed by creativity consultants who wanted to find a way to overcome the paradoxes that are often inherent in many problems.

Third

Generate new ideas.

Doing it in steps is helpful in keeping in check our natural inclination to come up with a solution to the given assumption/problem.

An example (here)

Table 8: Some examples of reversed assumptions

Conventional Wisdom	Reverse Thinking
A group should learn about a topic from the most knowledgeable person.	The person who is most knowledgeable about a topic should learn from the group.
Wikipedia demonstrates why people should trust experts instead of consensus thinking.	Wikipedia demonstrates why people should trust consensus thinking instead of experts.
The world needs more brilliant specialists to further their fields.	The world needs more brilliant generalists to connect multiple fields.
The best scientists think critically.	The best scientists think creatively.

Making foresight policy relevant: Back-casting (Method 5)

In a nutshell

Backward planning or back-casting starts with where you want to get to and then asks what needs to be done to create that environment from where you are now.

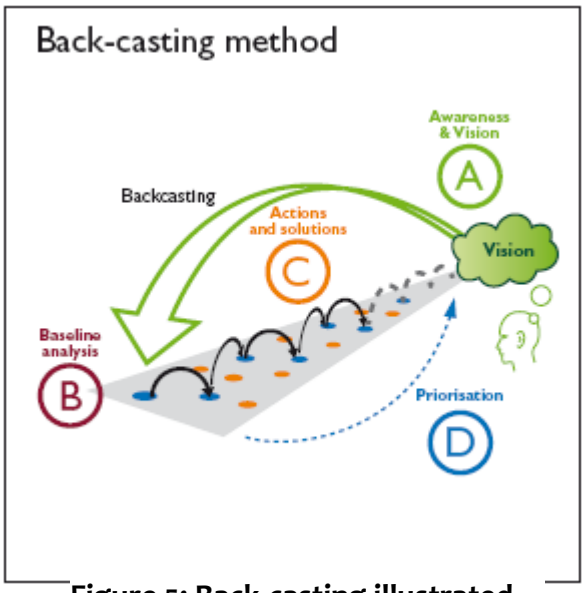


Figure 5: Back-casting illustrated

You imagine being in the future looking back at already having achieved a good outcome. Back-casting (**Figure 5**) can be helpful in a number of ways – in particular:

- it can help identify the key processes, structures or cultures that need to change
- It can help move people out of a mind-set where they are focussed more on what can't be done than what can be done

The idea of *punch through* may be helpful notably when faced with a seemingly overwhelming event or difficult task that is just over the horizon. When faced with a really big future difficulty prepare well and then aim 'past' the future event.

This is best done with a small group of people with an interest in the area under consideration.

How to do this

First

Imagine the area of the institution / department etc. on which you want to focus in five (or more) years. It is working well. Focus on the desired outcome and not the barriers. Then ask the following questions:

- How do we know it's working well?
- What will be its impact on other areas of the institution?
- What will staff say about it?

There are a range of activities which can help this process of 'visioning' the future such as:

- Writing positive headlines or articles on the topic that are appearing in national, local or internal publications
- Using internal performance indicators and saying what they will be in five years

Second

The next stage in the process is to ask:

- What needs to happen to get us to the new scenario?

A brainstorming activity around this or group work can be helpful here with each group presenting its version on the route adopted.

Third

The final stage is

- Agree steps along the way to creating the new vision of the future and possible barriers
- Identify priority areas – which actions *must* be taken to enable this to happen in the real world, which *should* be taken and which might assist
- Identify whose responsibility each priority would be and clarify how the process will be monitored

Making foresight policy relevant: Change Cause & Effect Analysis (Method 6)

In a nutshell

*This method is untried. However it does draw on '**systems thinking**' and '**cross-impact analysis**' methods which help people gain insight about the future by being better attuned to interdependencies between sources of change and the impacts of change.*

- System thinking is a method of critical thinking by which you analyse the relationships between the system's parts in order to understand a situation for better decision-making. In simple terms, you look at a lot of the trees, other plants and animals living around the trees, the weather and how all these parts fit together in order to figure out the forest.
- Cross-impact analysis looks at relationships between events and variables. These relationships are then categorised as positive or negative to each other, and are used to determine which events or scenarios are most probable or likely to occur within a given time frame.

This method will show links between ideas about the future and highlight concerns of stakeholders that matter to policy issues.

How to do this

First

Start with a hypothesis about a significant change – pretend it has occurred

Second

Select a stakeholder group that is relevant to the policy concern / issue being explored

Third

Describe the effect of change origin points on specific stakeholder groups in terms of their interdependencies.

Table 9: Proposed method based on modified cross-impact analysis technique

Identify policy issue/ concern				
Identify specific stakeholder group ↓	**Political change**	**Economy**	**Social**	**Technology / technical**
Define: the concepts, ideas and paradigms we use to define ourselves and the world around us	*Describe how political change affects stakeholders thinking (mental models) I.e. P in PEST vs Define*			
Relate: the social structures and relationships which define people and organisations				
Connect: the technologies that connect people, places, and things				
Create: the processes and technology through which we produce goods and services				
Consume: the ways in which we acquire and use the goods and services that we create.				
Destroy: the ways in which value is destroyed and the reasons for doing so				

Concluding observations

One of the most powerful results of strategic foresight work is that it improves the ability to pose high-quality questions and explore answers to those questions. A high-quality conversation is better than a good question.

Here is an example of a good question: *What is going on here?*

- Asking this question would certainly encourage a person to look a little deeper into the situation.

While good questions are conversation starters, they don't typically encourage answers that are specific to your context and to your ability to secure your fundamental interests.

A high-quality conversation points you towards insights that are specific and meaningful to your organisation - these are better questions raised during high quality conversations, which might be generated by the foresight methods proposed here:

- What is interesting about what is going on here?
- How are power relationships changing?
- What relevant things are being overlooked by most people?
- What are patterns in the evidence and what assumptions being made about those patterns?
- What are the future implications of what we see today?
- What could put you out of business?

Attachment A: Explanatory notes

Choosing issues to investigate

Some agencies can use Likert scores to determine mean and standard deviations that can then be plotted on a scatter diagram (here and here).[11]

Table 10: How to choose an issue (for Step 4 of a simple scanning process)

Person	Relevance	Novelty
Person 1		
Person 2		
Etc.		

Thinking-in-time

Strategy and policy-makers in government are required to 'think-in-time,' and to develop policies, plans, programs and services that are robust or resilient to different operating conditions over time.

Political vs policy (vs foresight) time

There is a difference across political time, policy time, and research time. One should take care not to mistake one for another.

- The pressure for fast, simple, and confident conclusions is generated by the needs of politicians not necessarily the needs of the policy. Political time is defined by election cycles, budget debates, and the need to respond to short-term crises or sudden shifts in public attention
- Public policy history suggests that societal learning about complex problems and large-scale policy responses takes place on a much more gradual curve

Three Horizons

- Thinking in time analysis is often done using a 'three horizons' approach (**Figures 7 & 8**, M. Baghai, 2000, A. Curry, 2008). The assumption is that looking at different operating conditions requires an understanding of the external and internal – *to the agency* – factors that cause change over which the government agency has little or no control (i.e. if you had control you would exercise it).
- Considering cultural and societal change using 'three horizons' analysis (Curry & Hodgson 2008) involves thinking through how different ideas and paradigms become more, or less, dominant in society over time.

[11] The **Likert Scale** is a five (or seven) point **scale** which is used to allow the individual to express how much they agree or disagree with a particular statement.

The current prevailing system is the '1st horizon', which may become a poor 'fit' under changing conditions.

The '3rd horizon' contains system structures, which currently are marginal or unrealistic but may be more appropriate in the future.

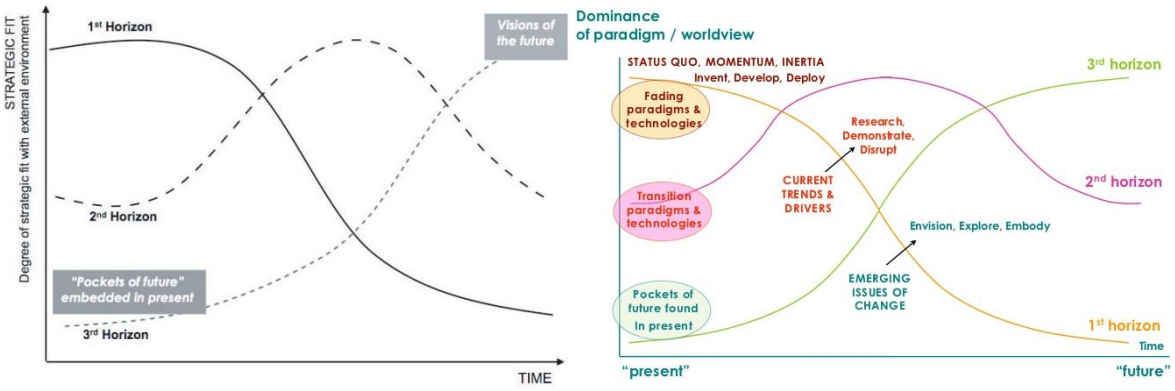
The 2nd horizon is the space where transition between first and third horizons occurs, characterised by instability and clashes of values between actors proposing alternative paths into the future.

Pest analysis

One method that is used in concert with three horizons thinking is to consider change factors – political, economic, social and technical or technological change. This is called PEST analysis (or **variants** of this acronym). PEST analysis (**F. Aguilar**, 1967) reminds analysts to think broadly about different factors affecting the design and delivery of policy (programs, and services). Remember that you can change the acronym to reflect areas in the strategic or operating environment where causes of change arise.

PEST analysis categories – drivers of change – view change through the lens of 'causes' of change and might be very broad (ambiguous).

Figure 6: Simple example of a three horizons plot used in futures analysis



The Six Domains of people-oriented futures analysis

Define: The Define domain speaks to the concepts, ideas, and paradigms we use to define ourselves and the world around us. This includes things like worldview, paradigms, and social values and attitudes.

Relate: Deals with the social structures and relationships that organize people and create organizations. Here we look at things like family structures, business models, and governance structures.

Connect: Encompasses the technologies and practices used to connect people, places, and things. Connect looks for things like information technology, urban design, and language.

Create: Concerned with the technology and processes through which we produce goods and services. This is all about things like manufacturing, efficiency, and rule-making.

Consume: About the ways in which we acquire and use the goods and services we create. This domain is about issues like modes of exchange, consumer preferences, and marketing.

Destroy: About the ways in which we destroy value and the reasons for doing so. Here we are concerned with phenomena like violence and killing, waste, and attempts to undermine rules and norms.

Attachment B: Glossary

Glossary Term	Definition
Foresight	*A collection of forward-thinking methods that are generally applied to improve institutional long-term planning or policy making for potential future situations, hazards, or opportunities. The methods can be used singly or in combination to provide insights about potential futures and trends*
Horizon Scanning (HS)	*A specific foresight method that uses various steps to identify issues at the edge of current thinking that may have significant impact in the medium to long-term future.*
Weak Signal	*These are generally understood as current or past developments with unclear implications to future developments. These may or may not be relevant and are generally difficult to identify. For example, changing public attitudes towards an issue could be considered a weak signal that may change slowly over time. Relevant weak signals are essential to foresight work.*
Scan hit / Indicator	*A scan 'hit' identifies an emerging change that is objectively new even to experts, that confirms or is confirmed by additional scan data, and that has been identified in time for social dialogue, impact assessment, and policy formation. – Scanning should produce results that challenge 'business as usual' assumptions and paradigms; a scan 'hit' will problematize the present.*
Driver	*A driver references the underlying cause of change. These may or may not be obvious.*
Black Swans	*A black swan event is a metaphor that describes an event that comes as a surprise, has a major effect, and is often inappropriately rationalised after the fact with the benefit of hindsight.*
Trend	*A directional assessment of something that is changing or developing over time. Often this is a result of specific drivers. For example, as a result of the driver 'globalization,' there is increasing demand for ethnic or specialty foods across the globe.*
Wild Card	*This can be described as an event that has a very low probability of occurring, but a very high impact. These could include things like natural disasters, world wars, emergence of new deadly viruses etc. While these are low probability, it is important for them to be considered in foresight work as they do have a high impact on future possibilities.*
Wicked problems	*Complexity generates 'wicked problems' i.e. large and intractable challenges with many dimensions and multiple stakeholders that do not necessarily share common goals. The most vexing wicked problems today (such as climate change, energy security, global pandemics, sustainable development, and cyber threats) have causes and influencing factors that are not easily determined ex ante. Wicked problems often co-occur.*

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