

# Can I make this policy work here?

Using evidence for better policy design, prediction and evaluation  
*Illustrated with a sugar-sweetened beverage tax example*

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CHES Working Paper No. 2025-01 Durham University

Original: March 2025

Revised: February 2026



CENTRE FOR HUMANITIES  
**CHES**  
ENGAGING SCIENCE AND SOCIETY

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This booklet is an overview of the method proposed in Cartwright, N., Munro, E. C Pemberton, J. (forthcoming), *Causal Processes and their Warrant: A Practical Guide*. Cambridge: Cambridge University Press. This work was supported by the Arts and Humanities Research Council (Grant Ref: AH/X006727/1). It was also supported by British Academy South Africa grant *Integrating Evidence for Contextualised Public Health Policy: Lessons from South Africa* (Grant Number: EPG\100488). We are grateful for the help of Likhwa Ncube, postdoctoral researcher on the BA grant.

# Quick Start Guide to the Evidence Role Map Framework (ERMF)

Will this policy work here?

## What is ERMF?

While social systems are dauntingly complex to study, this framework offers a pragmatic way to tackle the challenges of deciding whether a policy can help you achieve your goals. It is a structured way to think about how your policy will work or whether it has worked, what evidence is needed and how to organise your evidence. It aims to help you:

- Improve policy design and implementation
- Make more reliable predictions about success in this setting
- Support both post-hoc evaluation and mid-course correction during delivery.

## Who is ERMF for?

Implementation planners, programme teams, monitoring and evaluation staff, technical policy analysts and advisers. (For a more detailed account of the approach, see Cartwright, Munro and Pemberton (2026), *Causal Processes and their Warrant*, Cambridge University Press.)

## Deliverables

Using the ERMF will give you:

1. A **Theory of Change (ToC)** diagramming a rich account of how the policy is expected to achieve its goals and what can help or hinder this in your context
2. A catalogue of **evidence** to estimate whether each step in the ToC can be achieved
3. One or more **evidence-role maps** (short “diagrammed arguments” showing how evidence supports or undermines key claims)
4. Help in identifying **key gaps** in your evidence and in your proposed design fixes
5. A **qualitative confidence** judgement (strong / medium / weak) about how feasible it is to implement the ToC or how well it has been done in your context.

## Seven Key Facts for any ToC step (the checklist)

For a step to work as envisaged, assess whether:

1. *The proposed cause will occur* (at the right time/place/scale).
2. *The proposed effect will occur* (at the right time/place/scale).
3. *No other sufficient cause makes the step redundant* (the effect is not mainly produced anyway).
4. *Required support factors will be in place* (conditions needed for success).
5. *Derailers/detractors are absent or safeguarded against* (or their impact is managed).
6. *The activity* by which the cause is to produce the effect *will carry through* start-to-finish, under workable principles (the mechanism is feasible here).
7. *The underlying system can support the activity/principles* (stable institutional/social/logistical conditions).

## Rules of thumb

- *No evidence is not evidence against.* Mark “unknown” explicitly.
- *Treat the ToC as revisable:* the goal is not to defend it, but to make it more accurate and usable.
- *Prefer explicit reasoning over false precision:* “strong/medium/weak” is often the right level.
- Prioritise evidence collection on the *weakest links* and the most modifiable conditions.
- If right at the start it seems unlikely that you will be able to fix what worries you, *consider adopting a different plan.*

## If briefing senior decision-makers

Use the ToC diagram accompanied by 3 bullets: (i) key risks, (ii) key mitigations, (iii) biggest evidence gaps.

# What we do here

We tackle a well-known pitfall in RCT-based policy evidence: in real life what works in studied populations often fails to work elsewhere. Context makes all the difference. What we offer is a way of studying your context and considering whether it will, or can be modified to, support the policy. Of course, if there have been several studies of the policy in a range of settings, their findings will be helpful, especially if those settings are *similar* to yours in the right ways. But how do you know what makes for ‘the right ways?’ What is a *relevant* similarity? Often, the reason for doing an RCT in the first place is ignorance about the range of factors that can affect whether the policy will produce the targeted outcomes. Also, much of the time, you are using or planning a policy which has not been subjected to an RCT so how can you judge both its feasibility and likely effectiveness in your setting?

We contend that the best starting point is to look to your setting itself to try to understand how the policy would work there. You need to ask: ‘How would the policy lead to the intended outcome here?’ i.e. ‘What is the causal pathway?’ ‘What’s needed for this pathway to operate start-to-finish here in our setting?’ or for post hoc evaluation, ‘How has it operated?’ But what should you focus on? What kinds of facts about the process, setting and the way the policy will be implemented matter for describing causal pathways and establishing whether they will carry through? We offer an account of these facts in Part 1. Part 2 is to help you organise the evidence you collect about these facts in a way that makes clear the role that each piece of evidence plays and where more evidence is needed. Together this rich step-by-step account of what is needed for a policy to work and of the evidence about whether these requirements are met should put you in a stronger position from which to plan, tailor and implement policy.

## **In summary, this is a guide on using evidence for**

- Better policy design and implementation
- More reliable prediction about whether a policy will work in your setting
- More accurate post hoc evaluation of whether a policy has worked there as intended and a deeper understanding of how it has worked.

## **This guide will show you how to**

- Develop an *information-rich theory of change* showing the process by which your policy design is supposed to achieve its targeted outcomes – *how* the proposed interventions are to lead step-by-step to the hoped-for outcomes
- Classify and use *evidence* about whether your policy is likely to work if implemented as planned
- Develop a rough overall assessment of how well justified you are in believing that the process you envisage will go through start to finish
- *Leverage* such assessments to predict how likely you are to be able to implement a policy Successfully
- Assess how well a policy is working to allow you to fix things that are not proceeding properly, or abort the policy before too much is invested if it is failing
- Use such assessments to enhance policy design and implementation.

## **A Running example**

To illustrate the method, we use the example of the introduction of a tax on sugar-sweetened beverages (SSBs) in Barbados in 2015 that was expected to decrease their sales. We illustrate how a rich ToC can be developed and evidenced as part of post hoc studies of whether the steps postulated in the ToC had operated with the intended effect.

## **Our overall purpose**

Many of the considerations we raise will seem obvious, but they become much more useful if you make them explicit and assemble them together in a procedure that makes each one harder to miss. After all, policy failure is common and, after the fact, it is often attributed to things that could have been realised beforehand.

The framework helps you think about and keep track all at once of the large variety of things that might matter to success, including things you might need to change to secure success. In support of this goal, we'll show you how to organise your evidence about these things in a way that helps you see what each piece of evidence is doing to better estimate how your total body of evidence supports – or does not – a prediction of likely policy success.

Part 1 describes how to construct an information-rich theory of change that depicts what is necessary for your policy interventions to lead to your hoped-for outcomes. Part 2 describes how to use your information-rich theory of change to catalogue the evidence you collect and understand what role it plays in supporting – or undermining – a claim of policy success. We conclude in Part 3 with a brief summary.

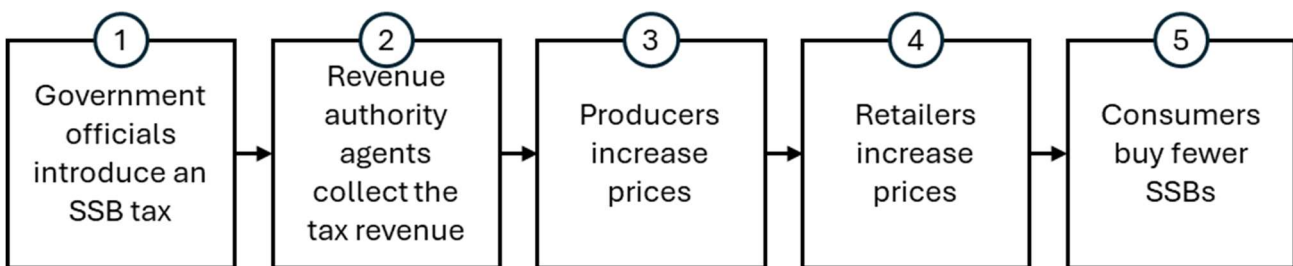
# Part 1: Constructing a rich theory of change

A step-by-step account of how a policy works is called the policy's **theory of change (ToC)**. It details the **successive steps** by which the policy is supposed to lead to the targeted outcomes.

The standard advice is to develop a “**boxes-and-arrows**” **diagram** that shows the main sequence of steps. We start there too but then explain how to enrich this to give more detail of *how you get* from the very first policy interventions to the final targeted outcomes, what helps or hinders each step and how these steps depend on the local context. This enriched ToC will be a practical tool for **design, implementation and evaluation** of the policy.

## *Constructing a basic boxes-and-arrows ToC*

Basic boxes-and-arrows theories of change are very familiar now and are widely recommended. See Figure 1 for an example, depicting a way in which the introduction of a tax on sugar-sweetened beverages (SSBs) is expected to decrease their sales.



*Figure 1: Example of a basic Boxes-and-Arrows Diagram<sup>1</sup>*

This example shows a single direct causal pathway. In reality there may be **multiple pathways** by which the tax reduces consumption, which we shall illustrate later with price and signalling effect pathways for the SSB tax. A complete ToC may need to show branching routes to the outcome, but for simplicity we'll follow this single main pathway.

Figure 1 is an example of a ToC in the usual form with the proposed **policy interventions** at the start, the **desired outcomes** at the end and in between a series of **intermediate cause-effect steps** by which the causes at each stage are expected to eventuate in the outcomes. We will now show how to enhance the boxes-and-arrows ToCs by filling in *what is supposed to happen at each step to ensure that it will lead to the next*. By doing this for each step in the ToC you develop a richer ToC that can be the basis of further exploration. This exploration can help you develop and analyse evidence that is useful for discovering, before implementation, a policy's chances of success and what can be done to maximise them, as well as, after implementation, to what extent the policy achieved its goals.

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<sup>1</sup> Adapted from Cartwright et al (forthcoming). After Alvarado, M., Penney, T. L., Unwin, N., Murphy, M. M., and Adams, J. (2021). 'Evidence of a health risk 'signalling effect' following the introduction of a sugar-sweetened beverage tax'. *Food Policy*, 102(1).

## *Enriching a boxes-and-arrows ToC*

The boxes in a standard boxes-and-arrows ToC generally have short labels, so the first step is describe them more fully – the more you understand about how the features in each box are expected to affect the process, the better you will be able to see if it can work, and how. Include here expected **timings** for a step to lead to the effect, the **magnitudes** of the impact and their **locations** (where, or to what or whom, do you expect the effects and causes to happen). This helps you think through whether what needs to happen at each step matches your best estimate of what is likely to happen there.

Next, consider for each step just **how** that step is supposed to occur. **What must happen** for the cause at that step to produce the effect at the next, and **what might help or hinder this?**

We suggest you think in terms of these categories:

- **Support factors** that are needed if the cause at the step is to produce the effect.
- **Derailers** that *stop* the cause from producing the effect and **detractors** that *hinder* the cause producing the effect, reducing its contribution.
- **Safeguards** that lessen the effects of derailers and detractors.
- The **activities** by which the cause produces its effects.
- The **principles** under which these activities occur in settings like this.
- Characteristics of the social/economic/legal/cultural/geographical/physical/etc. **underlying systems** that allow these principles to obtain and the related activities to happen

### **Support factors**

Causes rarely work alone. For example, in the step from Box 4 (‘retailers increase prices’) to Box 5 (‘consumers buy fewer SSBs’) in Figure 1, price increases will not automatically reduce consumption. Retailers raising prices of SSBs will not by itself cause consumers to buy fewer of them. What more must be in place for that to happen? Suppose that this is to happen by what economists call a **‘price effect’**. Then at least these four further facts must hold:

S4.1. Consumers aim to maximise utility

S4.2. Consumers notice the price rise

S4.3. Consumers take the price rise as a disutility

S4.4. Consumers’ disutility due to price is greater than the utility to them of consuming the SSBs.

If any one of these fails and there is no adequate substitute for it in place, then a rise in prices will not produce less consumption via a price effect.

### **Derailers and detractors**

These are, respectively, conditions that can prevent a cause from bringing about its effect or reduce the contribution it makes. For example in the Barbados study that Figure 1 was based on, the size of the effect in Box 3 (‘producers increase prices’) from the cause in Box 2 (‘revenue

authority agents collect the tax revenue’) was detracted from by producers figuring out how to produce SSBs more cheaply so they did not need to increase prices so much.

## **Safeguards**

Safeguards are conditions which thwart derailleurs and detractors. When you are designing your policy and deciding how to implement it, you should think about possible derailleurs for each step and build in whatever safeguards are practicable. Of course, even when you have envisaged a derailer or detractor, it’s not always easy to guard against it! For instance just what could have been done in advance to stop producers developing cheaper products in the Barbados SSB tax case?

## **Activities**

These are the actions by which causes produce their effects. When a cause produces its effect, it doesn’t just sit there and then a bit later the effect pops into existence. The cause *does something* to produce the effect: it engages in some **activity**. It is important to think through what the activity is supposed to be at each step since this provides clues as to what support factors will be needed and what might derail, detract from or safeguard the process that results in ‘Consumers buy fewer SSBs’ in Figure 1. We suggested that this might take place via a price effect. In this case what the price rise does is *decrease the utility per unit of cost of consuming SSBs*. But Box 4 could produce Box 5 in another way, via a *signalling effect*. The tax was introduced in Barbados accompanied by messaging that it was being introduced as a public health measure, thereby warning the public ‘SSBs are very bad for your health’. In this case, whether or not the price rise appreciably reduces the utility of consuming SSBs, it can also *remind* consumers of these health warnings.

But for this reminder to lead to a reduction in consumption, different support factors need to be in place, like these:

- S’4.1. Consumers care about their health
- S’4.2. Consumers perceive the price rise
- S’4.3. Consumers associate the price rise with the SSB tax
- S’4.4. Consumers recall the health warnings.

So: knowing which activity is intended helps identify the right support factors. One giveaway for recognising activities is that they tend to be named by verbs.

## **Tendency principles**

We assume that it is not arbitrary which activities a cause can initiate and which outcomes can be produced from these – at least it is not arbitrary in cases where you can hope to be able to predict or explain. There is some ‘systematicity’ to it; the activities happen in accord with principles that we can learn and that we can learn how to use. These principles describe the general patterns that the activity exemplifies. Many are familiar everyday principles that we regularly appeal to in explaining and predicting what happens, like ‘People avoid actions they expect to get punished for’, ‘Parents care about the welfare of their children’ and ‘People act to maximise their expected utility’.

These are called ‘tendency’ principles because they do not describe what always follows when the causes acts but rather what the cause ‘tends’ to do. Often what a cause ‘tends’ to do is not

the same as what actually happens because other causes operate as well and what actually happens depends on all of them together.

Even when you know what activity is supposed to occur, knowing the tendency principle under which it occurs can be of further use in identifying support factors and derailers. For instance, consider again the step from Box 4 ('retailers increase prices') to Box 5 ('consumers buy fewer SSBs') in Figure 1 in the case where the activity is taken to be 'reminding consumers of the health warnings'. This activity can reduce consumption in two different ways: under the principle 'People tend to avoid things they think will hurt them' or under the principle 'People tend to pursue things they think will be good for them'. Which of these is to come into play matters for identifying further support factors. If the first is intended, the government health warnings should stress the dire consequences – diabetes, heart trouble, etc – of too much sugar. If the second, the warnings should instead stress the benefits of eating healthily: feeling better, being able to do more, living longer, etc.

Our 'tendency principles' are sometimes called 'mechanisms', especially in realist evaluation.

### **Underlying systems**

'Underlying system' is the label we give to the relatively stable social, economic, legal, cultural, geographical, physical and so on arrangements that obtain in the setting. For example, the settings in which health-orientated taxes are introduced typically provide a legal framework, collection infrastructure, facts of human physiology, resource availability and a particular economic and political backdrop, as well as various cultural and social norms and expectations. It is important to think about these since they set *what the causal possibilities are* in the setting – what tendency principles can obtain there and what it takes for these principles to be brought into play.

For example, consider the step from Box 3 ('producers increase prices') to Box 4 ('retailers increase prices') in Figure 1. Whether this step is causally possible in a setting depends on the underlying conditions of the setting. If, say, retail sales of the product are all in state-run not-for-profit stores, this familiar principle may not operate.

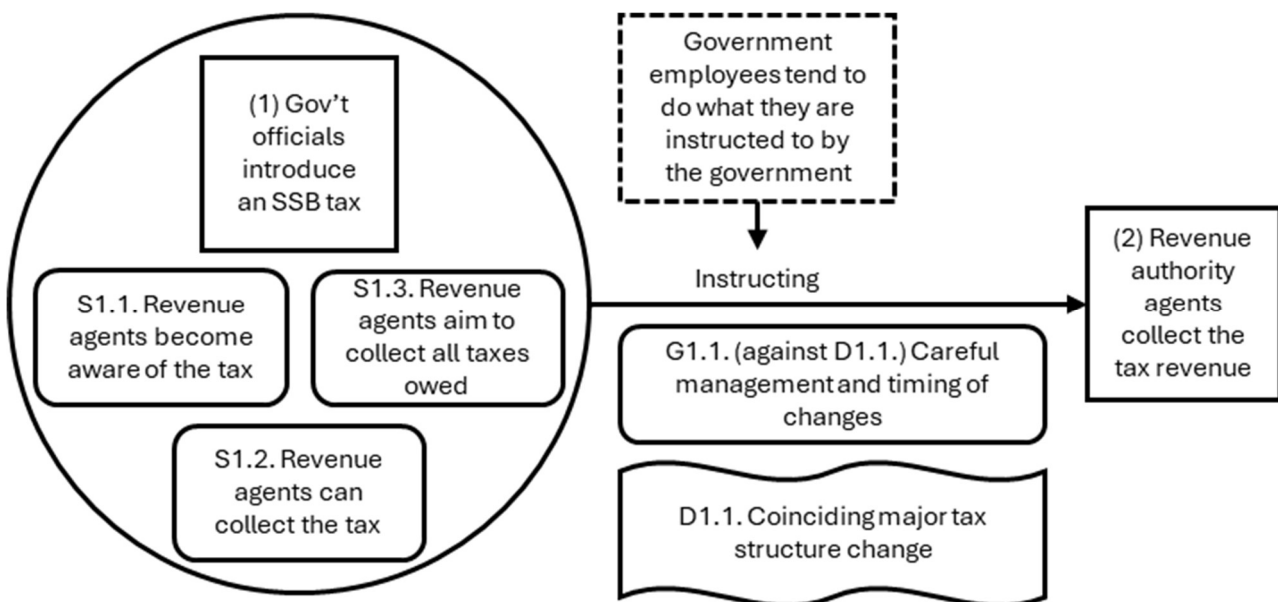
Generally, if the underlying system supports some tendency principle by which a step's cause tends to bring about its effect, then the step can work. If the system doesn't support any such principle the step may fail in that setting under any realistic conditions.

There is no clear-cut line between what is 'underlying' and what is part of the causal process you are focusing on. A useful strategy for deciding whether you should count a factor as part of the underlying system or as part of your intended process is to consider *ease of changeability*. If the current system is currently missing factors necessary for a step to go through, can they reasonably be changed or would that require many factors in the setting all to change together in an integrated way? Since systemic change is so much harder, the sooner you recognise that it might be needed the sooner you can get started on it or decide it is too hard and begin considering alternatives.

## *Diagramming an enriched ToC*

**Now you can draw a far richer, far more informative ToC.** As you reflect, discuss and explore the components of your theory of change – the support factors, derailers/detractors, safeguards, activities and tendency principles – details about them can be added to each step in your ToC diagram to produce an enriched theory of change.

For example, consider Figure 2, which diagrams the step from Box 1 (‘government officials introduce an SSB tax’) to Box 2 (‘revenue authority agents collect the tax revenue’) in Figure 1 discussed above, including illustrative examples of the kinds of extra details we suggest.



*Figure 2: A Causal Step from a Diagram for a Detailed Theory of Change*

In this diagram the cause and effect at the step are numbered (1) and (2) and support factors are numbered S1.1, S1.2 and S1.3. The combination of (1) with all three support factors, represented by the circle enclosing them, acts to produce the step’s effect (2) through the activity ‘instructing’. This activity works in accord with the tendency principle ‘government employees tend to do what they are instructed to by the government’. This step could be derailed or detracted from, say, if the introduction of the sugar tax coincides with the introduction of a major change to the basic tax system so that there is a delay in making the necessary administrative changes. One safeguard against this would be careful management and timing by the government of new tax initiatives and changes to tax structure.

In this illustration we've written our various details into the diagram in an abbreviated way for simplicity. In practice and especially with larger diagrams showing many steps, it's often better to use numeric codes and a key where factors are described in greater detail.

Figure 3 shows an example of such a larger diagram that enriches the causal pathway represented in Figure 1 by including the additional details we recommend. The step represented in Figure 2, notice, appears as only the first step in this larger diagram. Such diagrams and the enriched theories of change they represent can become large and complex. But the extra detail they include tells you a lot about what is needed for the policy to work in your context. You can compare whether the identified support factors, safeguards, tendency principles and underlying system arrangements are in place in your context, while identifying and locating any distinct derailers or detractors and potential safeguards against them, guided by the rich description given to each causal step.

Note that any theory of change developed will generally, at least initially, only be tentative and preliminary, subject to revision in light of the evidence you assemble about the local causal dynamics that determine the effectiveness of the policy in your setting. Given this, the business of preparing a theory of change and testing the theory against your context will generally occur iteratively, the intermediate steps and all that goes with them being reworked in response to evidence about how things work in your context.

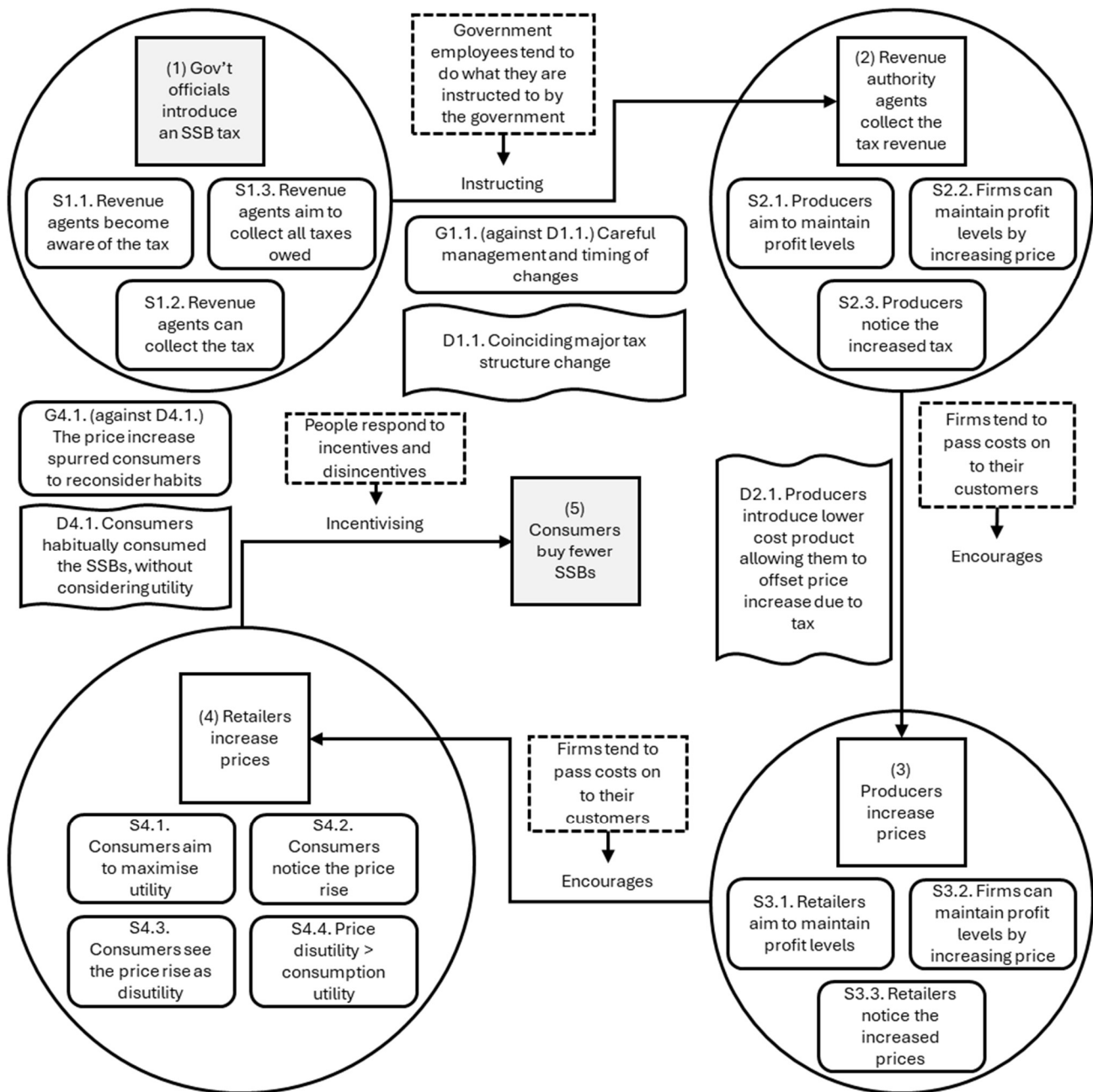


Figure 3: A Detailed Theory of Change showing a price effect pathway by which 'Government officials introduce an SSB tax' (Box 1) may cause 'Consumers buy fewer SSBs' (Box 5)

## Part 2: Understanding the evidence

Your enriched ToC shows how the policy is *supposed* to work, step by step. But will it do so or, post hoc, has it done so? In the following discussion, we use the example of appraising a policy *before* you try it but the advice is readily modified to fit the post hoc appraisal. To make a sound estimate of the policy's chances of success, ideally you should test each step of the ToC using evidence. But when this is not practicable, we advise that you start with the steps that worry you most, since the strength of the whole process depends on the strength of each step. If there is strong evidence that a step will not happen the overall policy is unlikely to succeed, at least by the process envisaged in your ToC. Strong evidence that each step will occur justifies predicting that the policy is likely to succeed.

You will notice that we employ qualitative assessments, talking, say, of 'weak' or 'moderately weak' or 'strong' support. That's because, in a host of practical cases, you will not have the background information necessary to make more precise assessments. Formal methods, like Bayes' formula, can sometimes be used to generate these. But if they are going to yield precise outputs, these methods require that you input precise assessments somewhere about something else, and you will often find that you don't have sufficient knowledge to make credible assessments there either. When you do, that is all to the good. But we do recommend a rule endorsed by Aristotle (in the *Nicomachean Ethics*) and more recently stressed by the philosopher Stuart Hampshire (in many public lectures): do not bring to a subject more precision than it can bear!

We suggest that you catalogue evidence step-by-step. You should consider, for each step, all the things that must happen at appropriate times and places if that step is to be successful and then try to gather evidence about whether they will indeed occur.

### *What facts matter at each step?*

The facts that matter to a step's success follow immediately from the discussion in Part 1. There are seven key facts identified there:

#### **1. The proposed cause at that step occurs.**

If the cause does not occur, the step fails. For example, in the step from Box 4 ('retailers increase prices') to Box 5 ('consumers buy fewer SSBs') in Figure 3, if retailers do not increase SSB prices the step to consumers buying fewer SSBs by the overall 'price effect' pathway depicted in Figure 3 cannot happen. Evidence that the cause at a step occurs provides some support for the success of that step, but on its own, it is weak unless combined with evidence that the effect occurred or, even better, that the expected activity occurred and was completed.

#### **2. The proposed effect at that step occurs.**

If it doesn't, the step fails. For example, at the last step depicted in Figure 3, if consumers did not buy fewer SSBs (the effect in Box 5 doesn't occur) then it follows that the step, and the overall 'price effect' pathway depicted by Figure 3, didn't occur. In practice this may be because the cause wasn't accompanied by some needed support factors, or some unguarded derailer occurred or the underlying system wasn't right. Evidence that the effect occurred provides some support for a step occurring, but stronger support comes when this is combined with evidence that the cause contributed to it. It is also important to secure evidence about the size and timing of the effect. Did the effect have the size expected and did it occur at the time expected if the cause contributed as expected?

### **3. Other causes sufficient to produce an effect of the size that occurred at the time it occurred are absent.**

If other causes are present that are sufficient to produce an effect of the right size that occurs at the right time, the cause at that step may not have contributed. In such circumstances you may even see the final outcome you hoped for but not as a result of your intervention (at least in the way envisaged by your ToC). For example, considering the last step of Figure 3 again, if there was an unrelated public health campaign sufficient to cause a drop in consumer purchase of SSBs of the scale observed (the effect in Box 5), this would count against the proposed cause in Box 4 having contributed its expected bit and overall against the 'price effect' pathway having produced the outcome. If you can rule out all such other causes, your case that your cause worked is stronger. But finding reasonable evidence to decide can be difficult, especially with multiple factors influencing outcomes.

### **4. The support factor that are required will occur.**

Recall, support factors are conditions needed for the step to succeed. For example, in the last step of Figure 3, for the cause in Box 4 ('retailers increase prices') to have contributed to the effect in Box 5 ('consumers buy fewer SSBs') at least all of these needed to be the case:

- S4.1. Consumers aim to maximise utility
- S4.2. Consumers notice the price rise
- S4.3. Consumers see the price rise as disutility
- S4.4. Price disutility is greater than consumption utility.

If any needed support factors were missing then the step would have failed and any decrease in SSB consumption (even one of the expected size) must have been brought about in some different way – or else your hypothesis that that factor was necessary was mistaken.

### **5. Detractors and derailers are absent (or guarded against).**

If derailers or detractors exist without safeguards, the step will fail or not be as big as hoped for (which may matter to whether the next step can succeed). For example, when a SSB tax was introduced in Barbados, its effect on consumption was diminished by what Figure 3 calls detractor D2.1 – 'producers introduce lower-cost product allowing them to offset price increase due to tax' – without any safeguards in place to limit its impact on the causal pathway and

policy outcome.<sup>2</sup> In a case where you are doing an ex ante study, anticipating and checking for such detractors and derailers can help anticipate troubles.

## **6. The activity expected at that step will obtain, start-to-finish, and the related tendency principle operates.**

The cause only works as intended if the requisite activity happens. For example, in Figure 3 where a price effect is expected, the activity in the last step is ‘incentivising’. If this incentivising doesn’t occur – for example, if prices rise but that does not reduce consumers’ utility, maybe because the consumers do not perceive the rise as significant – the step fails.

## **7. The underlying system is right to allow the activities that are to occur at that step to occur, and their associated principles to operate.**

As we explained in Part 1, the underlying system in your setting must allow the tendency principle to operate for a step to occur as envisaged by your ToC. For example, returning to the last step of Figure 3, the tendency principle invoked is ‘people respond to incentives and disincentives’. Plausibly this obtained in the Barbados context that inspired this example, but it needn’t obtain in every context. In a cultural context where people feel duty-bound to act in specific ways even in minor matters regardless of incentives, it needn’t be the case that ‘people respond to incentives and disincentives’ enough for the kind of ‘incentivising’ activity employed by the last step of Figure 3 to deliver an outcome like Box 5 (‘consumers buy fewer SSBs’).

### *Marshalling and evaluating evidence using evidence-role maps*

Each of our seven key facts matter for the success of each step in your ToC, and the success of each step matters for the success of the whole process. Hence, knowing, as best you can, which of these facts will obtain and taking account of the role each plays in the process is all-important for evaluating the support you have for – or against – policy success. That means that you will need to estimate at least roughly how much support you have for each of these facts.

That some facts will obtain can just be taken for granted, given widely acknowledged background knowledge about the setting. Many will need evidence. That’s a lot of evidence to keep track of and understand the significance of. To organise your evidence, we propose that for each step in your ToC, you have a **separate page** where you collect together the evidence you have about that step, dividing it into **seven columns**, each collecting evidence about one of our seven key facts.

To estimate the degree of support a body of evidence provides for one of these facts you will need to take into account that there are two sources of weakness for pieces of evidence: uncertainty about the **facts offered as evidence** and uncertainty about the **relevance of these facts**.

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<sup>2</sup> Taken from Cartwright et al (forthcoming). After Alvarado, M., Penney, T. L., Unwin, N., Murphy, M. M., and Adams, J. (2021). ‘Evidence of a health risk ‘signalling effect’ following the introduction of a sugar-sweetened beverage tax’. *Food Policy*, 102(1).

For instance, look at the cause in Box 4 ('retailers increase prices') for the last step in Figure 3. What evidence could warrant that this occurred? You might, as indeed the post hoc Barbados SSB-tax evaluation did, cite the records of a chain of stores as evidence for it. However, first you might not be altogether certain that the records you have about the chain's prices are accurate. To whatever extent this is likely, this reduces the support for retailers increasing prices supplied by those records. Second you may not be certain that the evidence you cite decisively bears on the claim you suppose it supports. *How much*, say, can the records of a single chain support the claim that in general retailers increased prices? Perhaps *a bit*, but also plausibly not enough to prove it beyond doubt even if the chain's records are beyond doubt.

Given these two different sources of uncertainty about evidence we suggest thinking of evidence claims not as one single claim but as a matched pair of claims: as **factual claims**, often (but not necessarily) expressing pieces of empirical evidence, coupled to **relevance claims** which explain how these factual claims bear on the conclusion to be established. Going even further, this same approach can also be applied to any claims offered as evidence themselves and so on until you have fully articulated the argument for your claim.

This process of evidencing a claim can quickly become long and complex. One way of handling this is to draw up **evidence-role maps** showing how claims offered as evidence for steps in a theory of change relate to the things they are evidencing. These are, in effect, diagrammed arguments for these claims.

Articulating an evidence-role map can be accomplished longhand by assigning codes or names to claims that express their relations to one another, however it can be easier to lay things out in a diagram. For illustration see Figure 4, which expands on the example of retailers increasing prices, adding additional evidence claims.

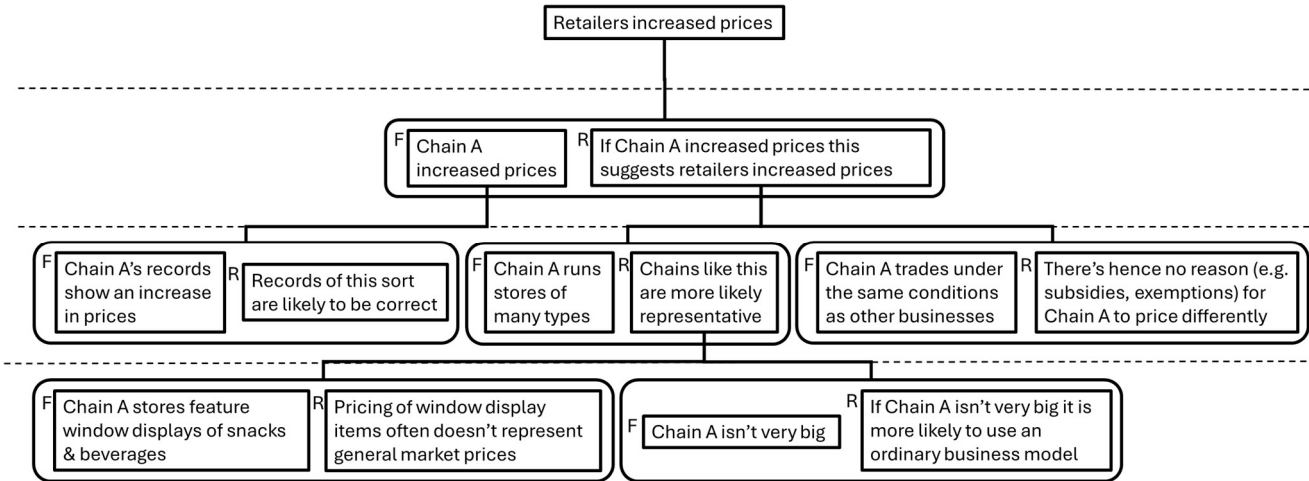


Figure 4: A simple evidence-role map

In Figure 4, factual and relevance claims (annotated *F* and *R* respectively) are organised into groups which together support (or oppose) claims) claims of fact or relevance diagrammed above them, including the 'main claim'. Note that the evidence diagrammed can provide support either for or against the claim it bears on. For example, see the bottom line in Figure 4. If Chain A's stores aim to attract customers by window displays of snacks and beverages, they are less likely to be representative in their pricing of these. It can then be very helpful to devise a

way of marking evidence claims that provide positive support differently from those providing negative support, perhaps with different colours, and also to indicate how strong you estimate that support to be. Note though that we don't expect you will generally be able to do this with any precision.

Organising your evidence in this way allows you to see how a piece of evidence contributes to the overall claim or how weaknesses in a piece of evidence tell against it. You need only track the connections up to see which claims are affected and hence check the impact on the overall support for or against the top claim. This may seem obvious in a simple case like this, but in more complex cases involving more complex bodies of evidence, being clear about just how your evidence bears on your claims can be very helpful.

### *Assessing the chances of success*

Recall that we do not expect that in general you will be able to do this with any quantitative precision. But understanding your evidence and just what it is doing for you should make your qualitative assessments far better grounded and accurate.

We suggest you begin by reviewing the strength of support for each step since this helps you make a sensible judgement about the success of the whole process.

For example, if, for a step, you have strong evidence that the cause occurred and that the tendency principle often operates in your setting, this generally provides what we would label 'medium support' that the step occurred when you have no evidence to the contrary. If at the same time, though, you have good evidence that a needed support factor was missing, this weakens the case substantially, suggesting that things didn't work exactly as you wanted. In this kind of case when you are doing ex ante prediction and aiming to maximise your policy's chances of success, it will be worth some effort to try to get that support factor into place.

If you are doing post hoc evaluation and you have evidence that a necessary support factor was missing but you also have evidence that the effect occurred, this suggests revising your theory of how the effect was achieved. Perhaps that factor wasn't in fact needed, or perhaps the effect was caused by something other than the step's cause. In the latter case this provides good reason to suppose your interventions did not actually contribute even if the expected outcome occurred – unless the process you theorised was not after all the one by which your interventions operated. For a proper evaluation, you need to probe such possibilities and refine your theory of change. By this process a theory of change can be developed that is well-grounded in the available evidence and that can be used to assess whether the policy did what it was supposed to in the way expected.

Evidence-role maps highlight exactly where your evidence is weak. We hope that their usefulness for better understanding what your evidence shows and hence for **better planning, prediction and post hoc evaluation** is clear.

You can use such information to plan **targeted evidence** collection to increase your confidence in each step, instead of gathering data indiscriminately. And you can do that both before and after the fact. For instance, consider how achieving intended results via the pathway shown in Figure 3 relies on retailers increasing prices. Evidencing that this occurred in the way shown in Figure 4 involves evidencing that a sample chain whose prices you reviewed is

representative of the market. If you were to do this without knowing that your sample chain operated many types of stores and you believe this to be relevant, then checking this would be a priority in building your overall case, as shown by the relevant evidence-role map.

A similar strategy helps when doing **pre-implementation planning**. By mapping out your evidence, you can organise an overall case that the steps in your policy ToC will go through as desired, or not. In doing so you can detect places where you do not have enough support to provide sufficient confidence that factors necessary for a step will be present to bet on its success. This alerts you to where you need to make changes in the setting so that there is more possibility of the step occurring and hence of overall policy success.

### *Some helpful rules of thumb*

Below are some simple rules of thumb for assessing what the evidence indicates about how likely a step is to succeed. Note that these judgments are always relative to a given ToC, so you should bear in mind that your ToC itself may be faulty (and be prepared to revise it if you find one that better fits what happens in your setting). In what follows we mean by ‘good’ evidence fact-relevance pairs that supply a strong reason for belief. We assume for these purposes that your ToC describes your context accurately and doesn’t miss anything important.

For any given ToC:

- Good evidence that the cause will occur (fact 1) and that the envisaged activity will occur in accord with appropriate principles (fact 6) together amount to strong evidence that the step will occur.
- Good evidence that the effect will occur (fact 2) and that no other sufficient cause of this effect will occur (fact 3) together amounts to strong evidence that the step is not redundant and so will be able to make a difference.<sup>3</sup>
- Good evidence that the cause will occur (fact 1) and that sufficient support factors will occur (fact 4) together amounts to strong evidence that the step will occur as envisaged, if no detractors strong enough to derail the step are likely.
- If there’s good evidence that no set of factors strong enough to derail the step will occur or that they will be guarded against (fact 5), this together with good evidence that the cause will occur (fact 1) and that sufficient support factors will occur (fact 4) amounts to very strong evidence that the step will occur.
- Good evidence that any one of the seven facts necessary to a step working will not occur is, by itself, strong evidence against the step working.
- Good evidence that a cause will occur (fact 1), or its effect will occur (fact 2), or its support factors will occur without or with safeguarding against derailment (facts 4 and 5) or that its activity will occur (fact 6) amounts to weak evidence that the step will occur.

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<sup>3</sup> This ‘Holmesian inference’ approach is especially useful in post hoc assessment, where evidence about the occurrence of steps’ respective effects is more likely to be available.

## Part 3: Better ToCs, better appraisals

What can you learn from working through the justifications for the causal claims involved in policy in this way?

Most clearly, you can gain insight into, and better express, how well-justified the claims are, given your evidence. A well-constructed ToC, step-by-step validated by well-mapped and high-quality evidence, allows you to assemble strong support for or against a causal claim. Equally, you might discover a lack of such support that might otherwise be missed, which is no less important in working towards well-evidenced and effective policy. Furthermore, you are doing all this by drawing on evidence sensitive to the context in which the policy is implemented, allowing local variations in how things work and what can work to emerge during the step-by-step validation and refinement of your ToC. This gives a basis for interrogating the likely effectiveness of both imported policies and home-grown ones.

A further benefit is that, by organising the evidence for your ToC in the way we suggest, you can gain insight into where gaps in this evidence exist. This will be wherever evidence-role maps show a reliance on claims that seem in need of further justification, or where what appeared to be a sound theory of a causal step turns out to rely on unsafe assumptions about any of our seven key facts pertinent to that step. In such cases, you can return to evidence collection armed with greater clarity on what needs to be checked and thereby more efficiently develop support for or against the policy you are considering implementing.

Of course, evidence about which of the necessary factors are already in place and which are not, and whether your local setting can reasonably easily provide those that are missing, will be invaluable for designing how to implement your policy and for predicting the chances of success. If the underlying system looks unlikely to allow for the causal pathway by which your policy is expected to work, then you must assess the policy as unlikely to work in your setting, at least in the way envisaged, and – as a planner – consider alternate pathways by which to achieve the intended results (or else pursue more systemic change). You can equally consider alternate means of pursuing your intended outcomes if the support factors, safeguards or tendency principles look unlikely to occur as needed by the ToC you envisage, or if you envisage unsafeguarded detractors or derailers. You can also – in planning implementation – take steps to arrange for needed factors to be put into place or problem detractors or derailers to be removed, as practicable. By enriching and interrogating your ToC in the way we suggest, whichever of these approaches you are taking, you should be better equipped to assess and ultimately maximise your chances of success. At least, you should be better equipped to justify your assessments in a clear, orderly and accountable way.

The enriched ToCs and evidence-role maps that we recommend may look daunting. However, such detail is necessary for making informed judgments about what is happening in the social and physical world. Note that reliable quantitative methods for processing evidence are just as onerous when written out in full, and they are onerous for just the same reason. The world is complex, and effective attempts to assess and plan interventions in the world must grapple

with this complexity. The effort put in will, we believe, help you plan wisely when deciding whether an intervention can work in your context and in planning how to implement it more effectively.

## Try it and see:

We suggest if you are considering using this method, that you try it out on one step in the ToC. Perhaps identify one that you think might be the weakest link, the hardest to implement well. This will give you a taster of how useful it can be.

1. **Interrogate that step using the Seven Key Facts checklist** (in the ERMF quick start guide).
2. **Catalogue evidence** for each key fact (even rough local knowledge counts but label it).
3. For each evidence item, write two linked claims:
  - **Factual claim:** what the evidence says about the world here
  - **Relevance claim:** why that fact matters to this step in the ToC.
4. **Judge support** for each key fact (strong/medium/weak), noting:
  - What would most improve confidence
  - What design changes could reduce risk.
5. **Revise the ToC** (and implementation plan) accordingly.