Short guide: How to talk about air quality and environmental health

With clean air in our homes, in our schools, in our workplaces, on our streets we all breathe easier. Clean air makes our communities pleasant to live in and move through for all of us. Yet across places in New Zealand, within the same city even, our air is not the same, some people breathe clean air while others do not. The effect of unclean and polluted air on people's health and wellbeing is significant, leading to asthma and lung diseases, sometimes many years down the track. How we build our cities, the way an industry is run, the way we travel, all affect what is in our air and whether it is good to breathe. Making sure it stays easy to breathe for people across all communities is an important work for all our wellbeing. The people who do this work need the public to see them and understand the benefits of their work, to understand what clean air is, support efforts to improve air quality and hold people and industries accountable for the air we all breathe. How we talk about air quality matters.

About this guide

This guide is for experts, communicators and advocates in the environmental health field with a focus on air quality.

Its purpose is to provide effective communication strategies to:
→ help people designing policies and practices that improve air quality to have better conversations with the public
→ improve people's understanding of the effects of air pollution on our health and wellbeing
→ motivate people to act in support of policies and practices that build healthy environments.

It was developed from a literature review[1] and The Workshop's unique evidence-based framework for narratives for change for the Health and Air Pollution Study (HAPINZ 3.0) funded by the Ministry for the Environment, Waka Kotahi NZ Transport Agency, and the Ministry of Transport.

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[1] Bell, S. & Berentson-Shaw, J. (2020). *Literature review: Framing air quality and environmental health.* The Workshop.

Why we need a guide on how to talk about air quality and environmental health

As with many complex and technical issues, environmental health and air pollution is not well understood by the general public. Why?

- All of us use mental shortcuts (or cognitive biases) that help protect what we already know and believe. For example, confirmation bias means we look for information to support what we already know so we don't have to relearn everything.
- These mental short cuts interact with dominant public narratives (stories and explanations about issues that are dominant in media, politics, communities, and everyday conversations).
- Often the dominant public narratives, especially about complex issues, are too shallow or even false where powerful interests want to keep the status quo.
- Together, mental shortcuts and shallow but repetitive public narratives mean people have mental models (an unconscious internal story or explanation) that are unhelpful to understanding environmental health or air pollution issues as experts understand them.
- All this can make it hard to communicate complex issues and undermine support for evidence-based policies and action.

As experts and advocates for the issue, we often communicate in default ways. We:

- use facts
- correct incorrect beliefs and stories (bust myths)
- lead with problems – costs to society or risks to people
- use technical language
- rely on individual emotive stories.

These default ways of communicating can:
- backfire as people work harder to protect their shallow beliefs
- inadvertently draw upon and reinforce some of the shallow public narratives instead of building new public narratives
- undermine our work to deepen thinking
- fail to create a landscape with better stories and explanations that help people develop new deeper mental models.

To find out more about mental models and public narratives see Appendix 2.

Effective communication strategies to deepen thinking require us to:

1. Understand the landscape of narratives and thinking we are talking into (to avoid the reinforcing unhelpful ones).
2. Create and repeat new effective communication strategies to foster new ways of talking and thinking about your issue.
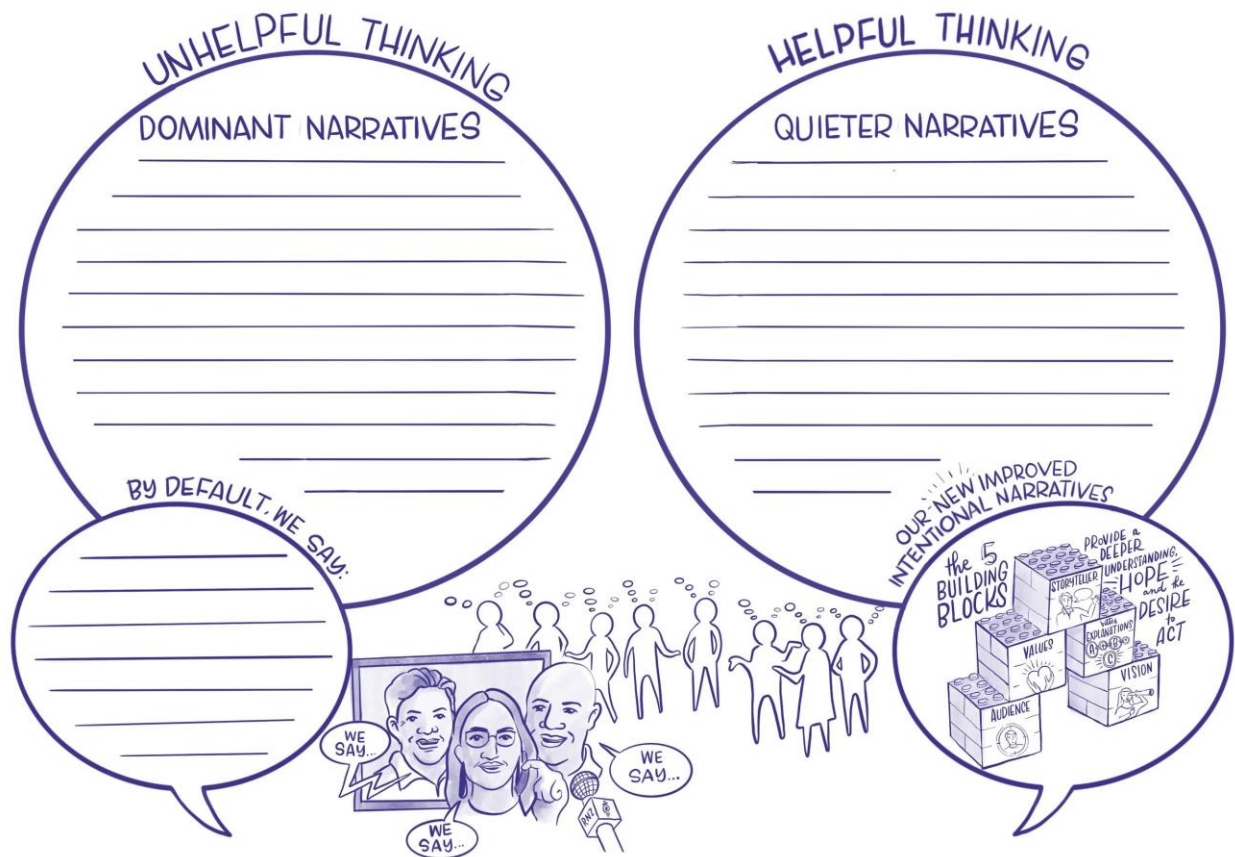
Figure 1. Effective communication to deepen thinking means avoiding narratives that surface unhelpful thinking and instead focusing on narratives that surface more helpful thinking. We can do this using Five Building Blocks of Narratives for Change. What are the dominant narratives that surface unhelpful thinking in environmental health and air quality?

Part 1. The landscape of thinking and narratives on environmental health and air quality

- These are some of the unhelpful ways the public thinks about environmental health and air quality.
- These ways of thinking are brought to the surface (*surfaced)* by how environmental health and air quality is talked about in public (public *narratives*).[2]
- As communicators you want to **avoid surfacing this thinking, and therefore avoid drawing on such narratives.**
- Think of them as traps to navigate around.

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[2] See Glossary for definitions of italicised terms.

Unhelpful thinking about environmental health and air quality	Examples of public narratives that surface this unhelpful thinking	Why is this way of talking unhelpful?
Health individualism – our health is determined by individual behaviour/choices.	"It's important people choose to stop using wood burners to improve the quality of air in Christchurch and people's health".	This references individual choice and behaviour, which can trigger health individualism thinking.
Air pollution is invisible, not harmful to most, and unnecessary to address.	"Air pollution, invisible to most of us, is deadly to some".	This references the invisible nature of air pollution while emphasising it is something that affects others.
Health is created in hospitals and doctors' offices (not by environmental health workers).	"Each year, more and more money is being spent by District Health Boards treating lung and other diseases related to air pollution".	This emphasises thinking that health is something that happens in hospitals, and not something that can be built before people become ill.
Environmental health is all about dealing with contaminants (as opposed to creating good health through structures and systems).	"Air quality expert Sarah Hoffman said that scientists like herself were aghast at the level of contaminants found in the air near schools".	This focuses attention on contaminants, not on the work to prevent them being released.
Air pollution or other environmental health impacts are an inevitable part of progress.	"With economic growth comes environmental impacts like air pollution, we need to balance these things better".	Emphasises and reinforces the unhelpful thinking about air pollution being inevitable.

Now you know what thinking and narratives you want to avoid, and the thinking you want to surface. How do you do that? How do you redirect people's thinking? This is what the five building blocks are for.

Part 2. The five building blocks of narratives for change

At The Workshop, we have developed a framework from research across disciplines to redirect your communications to more helpful thinking. This framework will:

1. Help you build new narratives (or surface more recessive ones)

2. Help you communicate your evidence – whether that be from science, mātauranga Māori or lived experience – and deepen people's thinking.
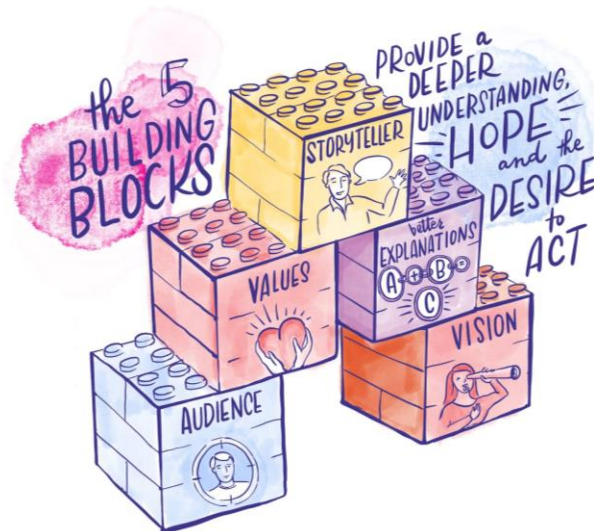
Building block 1. Audience: who you should communicate with

To help build new, more effective narratives, and avoiding defaulting to narratives that surface unhelpful thinking, who you direct your communications to makes a difference.

- If you talk mainly to those who are firmly opposed (often loud and demanding of your attention), you will reinforce dominant narratives and unhelpful thinking.
- It lends itself to **myth busting** and **negating** false arguments. This amplifies the narrative and unhelpful thinking for others and is ineffective.
- Treat this small noisy opposition as an inevitable and fundamental part of shifting thinking and systems.

- If you talk only to those who already understand your issues (your base), you won't develop new communication strategies, new narratives or deeper understandings.
- Instead, look to communicate with people who don't have a fixed view or who have mixed and sometimes competing views on the issue (persuadables or fence-sitters). These tend to be the majority of people.

» Effective strategic communications will activate your base and convince people who are open to persuasion.

Special topic: Listening and building relationships with your audience when communicating about air quality and environmental health

» Find out what matters most to the people affected. Ask communities what they want for air quality and their environmental health then make sure your communications align with their vision for cleaner and safer air quality.

» Use two-way communications developed in collaboration with communities and those with health vulnerabilities that are most affected by air pollution and air quality issues. This means you will include important aspects of local knowledge and behaviours. You will also build support in the community for necessary policy and behaviour changes.

Building block 2. Lead with a concrete vision for a better world

- A vision builds hope – useful when people swim in a sea of problems being communicated to them.
- A vision creates an invitation for people to consider the issue as important to them.
- It opens a side door for your evidence to be listened to.

Key principles of vision-making:
- **Be concrete, believable and specific.**
    - What does that look and feel like for people's day-to-day lives as a result of improved air quality and environmental health.
    - Lead with environmental and people-centred outcomes, not economic outcomes. Describe environments that are calm and pleasant where people can move about freely and be in good health.
    - Envision the entire community. Do not talk about emissions policy in isolation. Include transport, town planning, housing, social spaces, health and other services.

» Seeing and experiencing what the change feels like in small ways can help build understanding and support for longer term changes, and form part of effective vision-making.

» Prototypes and experiments like car-free places and days, lower speed limit zones, that reduce air pollution is one way to do this.

» Temporary reductions in emissions during COVID-19 lockdowns also gave people a glimpse of an alternative future of better air quality.

» The COVID-19 experience of air quality improvements and human and environmental health benefits could also form the basis of a hopeful vision.

» For example, "During the COVID-19 lockdowns, we saw how changes that we made to how we worked and moved about made the air clearer and cleaner. It made our neighbourhoods and cities more pleasant and healthier for our children".

» There is also an aspect of experiential learning where people can be influenced to focus on the long-term future and make more sustainable decisions when they are exposed to more natural and green spaces.

● **Sell the cake, not the ingredients.**
» Don't mistake talking about the changes that are needed, the solutions that will work or the removal of a problem as a vision for people.
» Avoid leading with technological solutions – these become distracting or exclusionary.

● **Ensure your vision is inclusive of all people and their needs.**
» Create inclusive visions in partnership with those most negatively impacted by current environmental conditions. This is likely to improve long-term engagement also.

● **Show credible human-driven pathways to achieving the vision.**
» Name/identify the steps to achieve the vision. These may be smaller local level changes such as reducing traffic flows.

» Put people in the picture.
You can increase people's sense of control and agency if you identify the people in a system who can act to achieve the vision, e.g., people in our local government, the local community, a particular industry.

Without clear *agents*, people default to thinking health is about individual choice or that air pollution is inevitable.

Building block 3. Connecting with what matters to people: values that motivate

Values are what matters most to us in life. They are at the heart of human motivations. Engaging with people's values is shown to help better communicate science.

» Dominant public narratives that tell us money, personal success, our public image is most important, known as *extrinsic and individual values*.

» Many public narratives also surface fears for our own health and safety or that of our loved ones.

» Research shows that what matters most to most people is taking care of each other and the planet, discovery, creativity and reaching our own goals, known as *intrinsic and collective values*.

» These intrinsic values are the ones most likely to engage people in deeper thinking about complex issues and improving systems for collective wellbeing.

» Use intrinsic and collective values to communicate about issues of collective wellbeing.

Values for air quality and environmental health

Talk about fairness between places.

This **equality value** encourages helpful thinking about the collective responsibility and importance of everyone having conditions in place for good health and wellbeing. It helps people understand that working to improve environmental health and air quality solve inequalities between communities. Importantly, it also avoids what is called *zero-sum thinking* so the audience understands that providing resources to address environmental health in one place does not take it away from other places.

What does this sound like?
"No matter where we live, all of us need clean air to breathe and the opportunity to live in healthy neighbourhoods. To make this happen, we need to improve air quality in all communities, especially those where air pollution is high and air quality is bad. This will give everyone the opportunity to breathe clean air and experience good health."

Talk about protection of the environment

Be intentional about framing people as living within an environment that must be taken care of to take care of us, our health and wellbeing.

What does this sound like?
"Living in harmony with the planet and environment is important to ensure our own good health and wellbeing. Working together to reduce air pollution from cars and domestic fires used for winter heating, and improving air quality helps the environment and it helps us."

Talk about responsible management

From research on climate change by the FrameWorks Institute, the idea of the **responsible management value** is to surface thinking around both stewardship or duty to our planet and local environment and doing the thing that works. Often people use cost-effectiveness arguments when they would be better to lead with responsible management and pragmatism which surfaces collective thinking over zero-sum thinking, i.e., more for you means less for me (which discussions of money and allocation of funding tend to do).

What does this sound like?
"It's important we take responsible steps to manage the issues facing our environment, including pollutants in our air and our waterways. We need to think carefully about how to manage these problems and take the best steps to deal with them. Keep the wellbeing and health of children and future generations in mind while we look for those solutions. Responsible management of our air quality means thinking long term and being open minded about solutions. This means that we take practical steps relying on common sense and all the evidence we have to look after our surroundings and our communities."

Avoid	Embrace
» Leading with health values, as it may surface health individualism. Note that talking about health in an explanation is fine, just avoid leading with health values.	» Fairness across places for all people to live in healthy environments and have good health and wellbeing. E.g., "No matter where we live, all of us deserve clean air to breathe and the opportunity to live in healthy neighbourhoods".
» Fear and security values. This is when communicators imply that what	» Care for the environment.

matters most in the context of the issue is keeping safe. For example, don't **lead** your communications with how emissions may impact people's material wellbeing, or damage their health. It is possible to describe health effects in a story that explains how air pollution affects us. Leading with fear increases a desire for simple behavioural solutions to big problems. In complex, systemic problems these solutions don't exist so people disengage from supporting other actions.	E.g., "It's important that governments and businesses act to reduce harmful and greenhouse gas emissions to protect people and places".
» Economic values. Leading with economic values like cost-effectiveness or value to the economy when discussing air quality and pollution should be avoided. This triggers individualistic thinking and action (what's in for me vs. what is in it for us) E.g., "This policy to reduce emissions will save us x amount of money each year".	» Responsible management. More effective than leading with cost-effectiveness or cost is leading with values about responsibility, responsible management, and pragmatism. E.g., "Responsible management of our air quality means thinking long-term for future generations. This means taking practical steps, relying on common sense and all the evidence we have, to look after our surroundings and our communities".

Building block 4. Provide better explanatory pathways

» Explaining how a problem happens, who is responsible, the effects and what to do, is different from just describing a problem.

» To surface better understandings for people about environmental health and air quality, we also need to provide better explanations.

» In strategic communication a good explanation:
1. provides an entire new story about environmental health and air quality and why it matters
2. avoids repackaging unhelpful thinking and narratives
3. includes an intentional and helpful way of framing the issue
4. is solutions driven
5. uses facts as a character in a complete story about causes, effects and solutions.

Frames

» *Frames* are pre-packaged explanations about how the world works.

» Frames surface particular ways of thinking about an issue. For example, health is often 'framed' as an individual responsibility, through the language, metaphors, and images we see.

» Frames are one of many cognitive shortcuts we take to make the mental effort of information processing easier.

» Frames are employed unconsciously and are often shared across a culture.

» We cannot avoid frames or negate or myth bust unhelpful ones, but we can replace them with better ones.

Avoid	Embrace
» Framing air pollution problems and solutions as an issue of individual choice. E.g., "People heating their homes and using their vehicles are the biggest causes of poor air quality in New Zealand". This frames the solution as an individual consumer one not a structural one.	» Framing our collective capability to do something about air pollution. This encourages helpful thinking that we can work together to solve the problem as we have done with other problems before. E.g., "Reducing air pollution and improving the quality of the air we all breathe is something we have all the tools to do. During COVID-19 we saw how, by acting together, we could reduce air pollution in our cities".
» Framing air pollution as a necessary consequence of economic progress that needs addressing. It taps into unhelpful thinking that the problem is too challenging to solve. It also surfaces individualistic thinking (I will lose something). E.g., "Air pollution is one of the consequences of us developing as an economy, now is the time to address it".	» Using health and wellbeing frames, and talking about public health as a common good. E.g., "People in government can ensure that businesses operate in ways that ensure we have clean air to breathe and deliver health and wellbeing for us all".
» Talking about individual responsibility for managing exposure to air pollution. E.g., "Mothers are responsible for making sure their children are not exposed to toxins	» Framing the specific systems and structures that need to be improved.

in the air".	E.g., "People in local government can design cities and ways to travel around them so our children are not breathing in toxic particles from cars and buses".

Metaphors

» *Metaphors* are a simplifying strategy that can help people quickly grasp a better, deeper explanation.
» A metaphor takes something we understand on a practical everyday level and connects it to the abstract or complex to help redirect thinking.
» Avoid untested and unhelpful metaphors where possible or consider what explanations they might surface.
» Images often contain metaphors – test images before use.

Two metaphors have been tested in the research that can help explain both what environmental health work is and why air quality work is important. Both redirect unhelpful thinking.

Environmental health ground crew metaphor

This metaphor fosters helpful thinking about the importance of work done in environmental health, the wide range of skills needed to promote good environmental conditions for our health and wellbeing, and why work on environmental health needs to be a priority.

What does this sound like?
» "The ground crew at an airport makes sure everything goes smoothly and safely on the runway and in the air. There is a highly trained and skilled ground crew for environmental health that helps to ensure that we build and maintain environmental conditions that are healthy for people to live and work in."

Upstream environments, downstream health metaphor

This metaphor works to get people to think more helpfully about the connections between environmental factors and human health and wellbeing and the need for intervention and prevention.

What does this sound like?
» "We all live 'downstream' from environmental factors such as air pollution that negatively affect our health. We need to work together upstream to create positive environmental conditions for human health. This will make sure that what flows downstream builds a healthy and safe environment for all of us."

Avoid	Embrace
» Metaphors that make air quality an individual choice issue. E.g., "Air pollution is in our hands".	» Environmental health ground crew. A metaphor that explains the public services and skilled people who can measure and shape the health of our air.

» Metaphors that make air quality seem out of anyone's control. E.g., "the silent killer".	» Upstream environments/downstream health. A metaphor that directly links human-built systems with air pollution and health.
» Metaphors that evoke war and fighting imagery. E.g., "Join us in the global fight for clean air", "the global struggle for clean air".	» Metaphors that describe the effects of emissions. E.g., "When we burn fossil fuels for energy, the carbon dioxide that is released builds up in our atmosphere and acts like a blanket that traps heat around the world, disrupting our climate".
» Assuming all metaphors will work with all audiences.	» Metaphors that are culturally appropriate to the audience you want to communicate with.

Special topic: Making air pollution visible

The issue of air quality and emissions does, by its nature, mean we are communicating about something that is invisible to most people. The challenge is to make the issue more visible and physical. One way to do this is to describe the physical aspects of air pollution such as its smell, taste, feel and how it can be seen. This can be done by talking about the bad smell and taste of high levels of air pollution, describing the sensation of car emissions being blown into the faces of pedestrians, or the colour and appearance of smog over a city.

It is also useful to be more detailed with the aspect of air pollution you are talking about. Replace:
» 'air quality' **with** 'clean air', 'healthy air' or 'dirty air'
» 'air pollutants' **with** 'harmful particles or gases in the air'
» 'pollutant' **with** the specific issue, e.g., carbon monoxide from car exhausts, coal dust, harmful particles from industrial processes.

Using facts

» Facts are a character in the story you want to tell about what the problem is, who it affects and how, the need to act, who made it happen and who can change it and how.
» Facts are not the entire story. To help talk about facts more effectively use explanatory chains and make sure facts are 'fluent'.

Putting facts into a story: Using explanatory chains

Explanatory chains are a tool to help us explain an issue and solutions using your facts.

People's mental models about issues are constructed in a chain (like a story), so we need to replace that chain of explanation.

Explanatory   chains:

- foreground the issue positively (e.g., a short vision, values or why it matters)
- identify the cause of the problem upfront
- provide general conceptual accounts of the indirect and direct impacts
- end with solutions.

An example explanatory chain for air quality and environmental health	
Foreground the issue	*No matter who we are or where we live, we all need to breathe clean air. But in some places children do not have that.*
Identify the cause of the problem	*Clean air is created upstream from us. For example, the number of cars, trucks and diesel buses driven through a suburb affects how many harmful particles are in the air.*
Accounts of the indirect and direct impacts, provide a few facts	*This has downstream health effects. For example, children who spend more time walking experience more illnesses from breathing in that unhealthy air.*
Solutions	*People in national and local government can build more cycle lanes and walking tracks, increase clean public transport, and reduce the number of cars coming into our cities so all of us will have cleaner air to breathe. Upstream policies work to build our health downstream.*

There is some evidence that exposure to air pollution and poor air quality may contribute to a higher COVID-19 mortality rate. The clear link between COVID-19, air pollution and mortality elevates the urgency for solutions to improve air quality in the mind of the public. It may be useful, therefore, to talk about air quality and health in the context of COVID-19.

For example, "During COVID-19, we have seen that people who breathe polluted air are affected more badly by the virus. Good quality air in cities is a very important part of building people's health, and their ability to overcome any illness".

Make facts fluent

To help tell your story, choose a few limited facts and talk about them in a way that makes them more fluent for people (they can understand and recall them better).
- Use fewer facts.
- Present the facts so people have an everyday context for them, e.g., "This is the same amount of particulate as that released by 200,000 cars coming into the city each day".
- Depict facts visually as a preference, e.g., depict the relative amounts of particulates from different sources in the air, or how high the particulates are above healthy levels, or differences between communities with and without children.
- Use strategies such as guess and reveal. e.g., ask people to make a guess at the fact and then reveal the answer.

Use agentive language

We want people to understand that there are things they can do to change systems to fix issues. Headlines such as "how the lockdown cleared our air" fail to name a person or agent involved in the problem. This makes it hard for people to see who needs to act and what needs to be done. One way to help people lift their gaze and see what needs to happen is to name the specific *agents of change* within the system.

For example, we can talk about members of an 'environmental health ground crew' that includes public health experts, as well as people in government who can make decisions that have a positive effect on systems and structures. It may sound like, ''I can reduce my emissions if people in government make changes to cities". This helps to draw people's focus to aspects of air pollution that people do have control over and gives them a sense of competence.

Avoid	Embrace
» Describing the problem with a lot of facts about air quality and air pollution.	» Explanatory chains that start with cause, lead people through effects and end with solutions.

» Using hard to understand facts in written format.	» Presenting fewer facts, presenting them visually and giving them everyday context.
» Passive sentences without an agent named, e.g., "car emissions are harming people".	» Naming human agents, e.g., "people in local government must work to reduce the number of cars we need in cities".
» Labelling politicians or institutions as corrupt, evil or broken.	» Naming the problematic behaviour and/or naming the new behaviour required.

Building block 5. Storytellers

» We use credibility and trust as one mental shortcut – it's less work to take a trusted person's advice than assess all the information ourselves (credibility mental shortcut).
» We also use mental shortcuts in deciding who to trust or who is credible, i.e., how someone looks, the institutions they come from, past experience with similar people or institutions.
» Expertise is about perception not technical expertise.

Three principles on Storytellers:

1. **Use trusted others to provide positive social proof and improve credibility of a message**
- We move to accept beliefs and positions that we see frequently repeated in order to fit in.
- Repetition from trusted others confers credibility to the information you are trying to get across.
- This cuts both ways – repeating unhelpful information gives it credibility.

2. **Use messengers with shared values**
- It is important to find messengers that people can see represent their values.
- Use surprising messengers – for example, people seen as conservative talking about climate action.

3. **Pair the right messenger with the right message**
- Pair effective narratives with a messenger that is trusted/credible to your audience.
- Choose messengers who will bring with them trust and credibility for your persuadable audience and who are in a position to transition/slide your audience into your helpful message.

What is social proof?
Showing people that others that they consider trustworthy are willing to make or support changes is a more effective strategy to garner support for things like emission reduction plans than presenting people with negative facts about the problem.

Putting it all together – an example message for air quality

Steps 1 & 2: Articulate a positive and inclusive vision and identify helpful intrinsic values: the why

"Across our communities, urban and rural, clean air means we all breathe easier. Whether it be in our homes, schools, at work, on farms, on our streets, clean air is vital to our wellbeing."

Step 3: What is preventing the realisation of this vision?

(Here is the opportunity to provide better explanations about air quality and health effects: the who, the how, the where.)

"Yet across places in New Zealand, within the same city even, some people breathe clean air while others do not. Polluted air is created upstream from us by industry processes and practices, the transport we use, and the fuel we use to heat our homes in winter and it creates downstream health effects. Unclean air makes people more vulnerable to illnesses like COVID-19, and causes asthma and lung diseases. Children who walk to school, and people who work outside, are forced to breathe this unhealthy air more than others."

Step 4. Present solutions

Attribute better outcomes (better air quality and improved health outcomes) based on evidence of the cause.

"People in government and policy makers need to focus on improving upstream environmental factors that contribute to unhealthy air to improve our downstream health outcomes. This means implementing policies that reduce emissions and improve air quality."

Step 5: Present action/resolution (the what now?)

"We have an opportunity to make our communities healthier right now. You can hold people in politics and industries accountable for the air we all breathe."

Glossary

Agents	Our fast thinking system makes it difficult for people to see the actors or human agents who make decisions and affect outcomes in complex systems like the economy or environmental health system. The solution is to show the humans that made this problem and the humans that can fix this problem. This is called naming agents
Extrinsic/individual values	Extrinsic values are when what matters most, or the principles that guide our decisions are centered on external approval or rewards and losses. For example, social power, money, or concern about image.
Frames	Frames are both a) 'prepackaged' mental models that help us to make sense of ideas and b) communication tools that evoke these mental models. Frames act as guides directing people where to look and interpret what they see. Every message or communication is presented through a frame.
Intrinsic/collective values	Intrinsic values are when what matters most, or the principles that guide our decisions, are centered on internal or collective rewards and losses, for example, care for others or connection with nature.
Metaphors	Metaphors are a simplifying explanatory strategy that connects an abstract concept to a concrete or known concept. They help people quickly grasp a better, deeper explanation for complex issues. For example "unlocking poverty".
Narratives	Narratives are stories found across our culture and communications that capture preexisting or shared understandings about the world and influence our thinking. For example Individualism is a narrative that is embedded in many different communications that explains problems as resulting from a lack of individual effort and solutions as about individual effort or choice.
Surfacing	The process by which mental models, helpful/unhelpful thinking, or values are brought to the fore of people's thinking.
Values	Values are what matters most to us in life, guiding principles. They are at the heart of our human motivations. They guide our behaviours, attitudes and how we understand the world.
Zero-sum game	This is a narrative in which people understand, often at a subconscious level, that more for one group means less for me and mine.

Appendix 1: A checklist for your communications about air quality and environmental health

Use this checklist, based on the 'How to talk about air quality and environmental health guide' above, to write and check your communications.

Step 1. Understand how people think about air quality and environmental health

Identify the unhelpful thinking you need to avoid and the helpful thinking you want to surface

- ● Check. p. 6 in the guide for current thinking about air quality and environmental health to avoid and embrace

Step 2. Decide who to talk to and about

Identify your persuadable audience

- ● Check. Don't construct communications for the already convinced or the noisy opposition

Identify your agents. Be clear on who needs to do what

- ● Check. Focus on agents with the most influence. Emphasise collective action, avoid individual behaviour

Step 3. Build the structure of your communications using vision, values, barriers, solutions formula

First>>Articulate the better world we want. Flip the problem to an inclusive vision

- ● Check. Your vision is not the removal of something bad
- ● Check. Your vision uses concrete language and is about people's lives not processes or policies

Then>>Identify the helpful collective values to connect with your audience

- ● Check. pp. 11-12 for helpful values to embrace and unhelpful values to avoid

Then>>Name the barriers and problems that are in the way of the vision and solutions

- ● Check. You have named the agents responsible for removing these barriers

Finally>>Present solutions. Include an action proportionate to the problem

Step 4. Use language that deepens people's understanding

Identify helpful frames to use. See p. 13 for helpful frames

- ● Check. Avoid economic and fear frames

Plan your metaphors

- ● Check. Do not use war or disaster metaphors. Use 'environmental health ground crew' and 'upstream environments, downstream health' metaphors, see pp. 14-15 for more on helpful metaphors to embrace and unhelpful metaphors to avoid

Use clear and concrete language

- ● Check. Can I draw a picture of this? Particles of toxic carbon in our neighbourhood air versus emissions

Use an explanatory chain where you need to explain complex science or cause and effects, see pp. 15-16

Step 5. Check for common errors that surface unhelpful thinking

→ Lead with the cake not ingredients. Do not lead with facts, problems or policy solutions.

→ Tell your story, not theirs. Don't myth bust or negate. Avoid phrases like "you may have heard" or "it is NOT true".

→ People and planet, over money and fear. Don't use money, safety or fear as the 'why'. Avoid phrases like "how can we afford not too", "it will cost more in the long run if we don't".

→ People do things. Turn passive language into agentive language, and check you have the correct agents. Use "people in government set rules that reduced the number of cars in our cities" not "how we cleared our air".

Step 6. Test your communications

Check. Test with your persuadable audience, not the convinced or the opposition

Appendix 2: Cognitive bias, public narratives and mental models. Understanding how and why the public thinks as they do on complex issues

Air quality, environmental health and other social and structural determinants of health are mostly unseen by the general public. They may hold shallow ideas about environmental health and air quality (*mental models*). These mental models can make it very difficult to communicate some of the complexities of air quality issues, and actions that need to be taken to improve it.

We may assume that when we lead with technical details, evidence, or corrections of misunderstandings, people will develop a deeper understanding of the issues (new mental models) and make decisions in the context of this new information. This is the *information deficit model* of information assimilation: people will support a solution when they are filled up with sufficient detail and facts. Unfortunately, this strategy has been shown by scientists to be ineffective for building deeper understandings of complex issues, especially when working with the wider public.

Where do these shallow or incorrect mental models come from and why do they endure?

→ Daniel Kahneman coined the term "thinking fast" to explain the many mental shortcuts we use to reduce the work of assessing the vast amount of information we are exposed to. These mental shortcuts:
> » protect our existing beliefs and knowledge
> » encourage us to grasp the concrete (what we see, touch, smell and hear) and shy away from the abstract (unseen systems and structures, that impact our day-to-day lives).

→ At the same time, there exists in our culture many stories or explanations about the world, and how it works. These can be shallow and dominant. Or more productive and recessive. The digital age has brought new, faster and more targeted ways for us to be exposed to unproductive and shallow explanations.

→ People acquire mental models that both inform the stories we tell and are informed by the dominant stories in our culture. If thinking and stories that are dominant are too shallow, our fast-thinking systems defaults to protect unhelpful thinking. This makes it hard to have productive public conversations about complex issues.

→ As knowledge holders and communicators on air quality and environmental health, we also play our part:
> » We draw on the information deficit model of communication, or we focus on compelling personal stories.
> » In doing so we can inadvertently surface existing unproductive narratives, instead of navigating around them and developing new narratives.

What shall we do?
People process, think, and make meaning from information in narratives and stories. To replace shallow or incorrect thinking about air quality requires not only new facts, but also new stories to help develop

deeper understandings on how our health is built, the role air quality plays in that, what is happening to our air quality, how it is affecting us, and what needs to be done.

We also need to avoid existing problematic or unproductive stories that we are surrounded by in our culture. Stories that come from traditional media, social media, advertising, our friends, families, politicians inform and reinforce unhelpful mental models about air quality and health. So we use tested communication strategies to navigate around the problematic understandings, and tell new more accurate and complex ones that deepen understanding and improve decision making.

What does this mean for building public understanding about the importance of good air quality and its health effects

→ Building understanding and support for complex scientific issues involves dealing with often invisible public narratives and mental models.

→ While dominant narratives in our culture and the mental models they feed into may be unhelpful, other narratives and mental models exist (or can be developed) that can be built upon with well researched strategies.

→ Rebalancing public narratives and the mental models they inform has been proven to deepen people's understandings on complex issues.

→ This change happens over time when strategic communication is used across a field of practice.