Boundary critique of the Climate health Inquiry as a complex wicked problem.

Submission to the Climate Health Inquiry by ▮▮▮▮▮▮

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Contents

Background

This inquiry can be informed by two key concepts. Firstly, "boundary critique" which Midgely describes as a multi stakeholder process of defining and adjusting boundaries around domains of interest (https://www.jstor.org/stable/3009885?seq=1#page_scan_tab_contents) and secondly "knowledge brokering" where different types of knowledge is shared on platforms/ social arenas across "boundaries" that traditionally have been 'siloed' and not understanding each other (https://www.sciencedirect.com/science/article/pii/S1470160X15003945).

The challenge for this inquiry is two fold:

1) How to draw a manageable boundary around what Department of Health has control over (either directly through their enabling legislation or as an active advocate in this space).
2) How to develop platforms for sharing and translating knowledge and learning across different domains

Option A: Narrow boundary – mitigation through waste

Imagine Actor A who draws a narrow focus on waste produced by hospitals. The Department of health could look at purchasing and disposal policies in the health sector and influence leverage points in the diagram below by S. Frysinger.

https://www.researchgate.net/figure/Causal-loop-diagram-CLD-for-scenario-2-GHG-greenhouse-gas-MBT-mechanical-biological_fig1_233769513
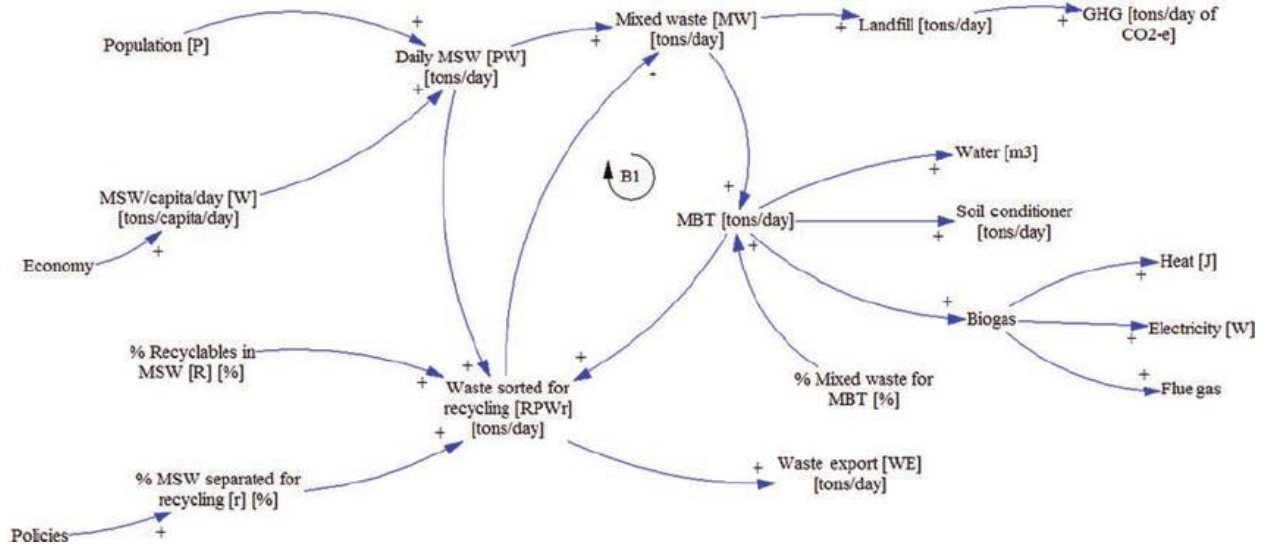
Diagram 1 Causal loop diagram for green-house gas emissions and waste management

For example starting on the bottom left of the diagram you can see how health *policies* around procurement and disposal of wastes in the hospital will have a positive feedback on *Waste sorted for recycling*, a positive impact on *waste export* for recycling and a negative impact (ie a reduction in volume) on the *mixed waste* going to *landfill* and hence reduce *GHG emissions* from landfill. Note that words in italics are all nodes on diagram 1.

Through this narrow focus, Department of Health will influence two areas of GHG emissions – the GHG produced in landfill by the anaerobic decomposition of organic wastes (BUT theatre waste is mostly plastic so it will be left to catering to do the heavy lifting!) and the embodied energy and amount of petroleum products used in the production of plastic/ other medical equipment.

Option B: Broader boundary - adaptation through health environments

However the Department of Health is also responsible for preventative, public and environmental health and not just the delivery of health services once Perth's citizens are already sick. Imagine Actor B has a broader more complex understanding as illustrated in the figure by Petticrew, et. al. (2019) https://www.researchgate.net/figure/Causal-loop-diagram-of-human-health-and-climate-change-Proust-et-al-44-GHG_fig1_330644318
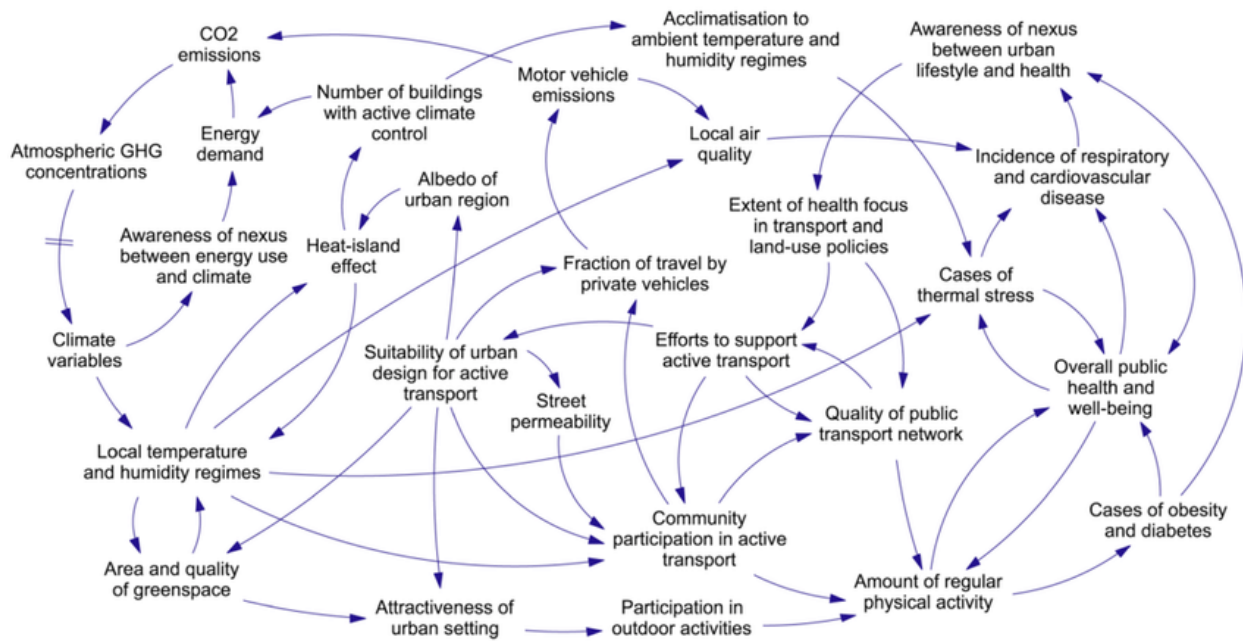
Diagram 2 Causal loop diagram of human health and climate change

As soon as you consider this broader boundary, issues such as municipal and industrial waste, transport, energy, housing, food and health all become permanently intertwined with health and GHG. For example starting in the bottom left of the diagram, the *area and quality of greenspace* will positively influence the *attractiveness of urban setting* hence *participation in outdoor activities* and the *amount of regular physical activity* and *overall public health and wellbeing*. At the same time it will reduce *local temperature and humidity regimes* reduce *cases of thermal stress* and improve *overall public health and wellbeing*. Diagram 2 is already complex but it is still incomplete. For example, not illustrated on the diagram is the direct impact of *area and quality of greenspace* on *overall public health and wellbeing* because being able to look at quality greenspace has been demonstrated in the book "Wildness and Wellbeing: Nature, Neuroscience and urban design" to improve mental health (Myers, 2020). Note that words in italics are all nodes of the diagram.

However this framing by Actor B is still not sufficient as other key gaps remain including:

1) waste – CO2 nexus (ie from diagram 1),
2) the food – water – energy nexus

Examples of conflict created by a too narrow framing are provided by the example of urban infill which has resulted in polarizing the community. The question of the value of infill is currently framed by the local newspapers around: Do we want to protect our neighbourhoods or a concrete jungle?" Opponents to infill often don't consider the impact on climate change of clearing the bush through urban sprawl. However increased density through poorly designed Infill development that might albeit reduce transport demand, but *also* puts pressure on the clearing of urban canopy and a loss of amenity from inner city backyards. Urban sprawl both reduces the ability of vegetation to sequester carbon and increases transportation distances. Meanwhile Poor infill has the potential to create concrete jungles

that increases urban heat, discourage people from walking in their suburbs and increases air-conditioning costs. The answer to these problems is of course "good infill" via water sensitive approaches that retains green and liveable neighbourhoods although the reality is somewhat more nuanced[1].

Which boundary is best?

Remember our two actors – narrow and broad. Actor A is interested in the primary boundary of hospital waste and Actor B is interested in the secondary boundary of wellbeing for Perth's citizens. Diagram 3 illustrates conflict between these two different critiques of the boundary. Collaborative stakeholder engagement process (such as the Climate Health Forums in regional and metro areas) that are well attended and able to engage broadly need to be used to define this boundary. However a broader framing will also make it more complicated in the short term to gain traction although will ensure a better framing in the long term.
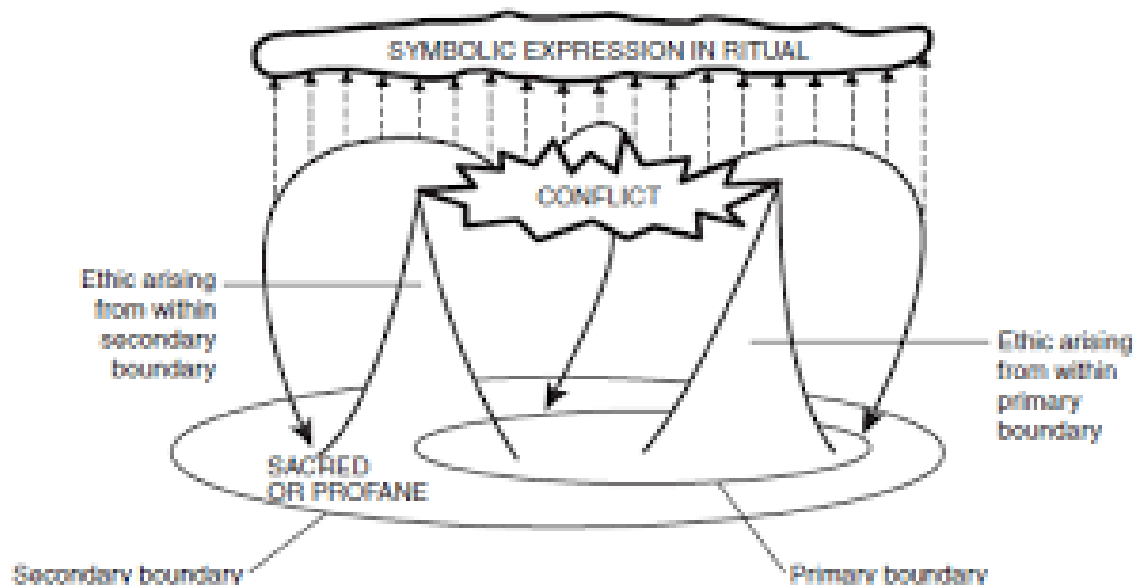

Diagram 3 Conflict from boundary critique (source Midgely)

Mega trends

The other complicating factor is that on top of climate as a mega trend, we are experiencing other megatrends:

- technological breakthroughs,

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[1] In theory there is an optimal level of infill that is more than what we have now but constrained by optimal density levels, time and cost of obtaining planning approvals and perceived risks such as long term maintenance. However the optimal level is hard to define.

- mass urban intensification and
- community collaboration and participation

These three mega trends can both help and hinder achievement of overall public health and wellbeing.

In particular, the trend of community collaboration and participation is essential. Climate change resilience will depend on collaborative learning (social learning) between individuals, community groups, and authorities etc. The process of engagement is key. For example it is not the *report as an output* of a local emergency response plan that will solve the problem but rather the *process of its production*. Instead of a top down report delivered by consultants plans need to truly engage the community through co-design, social learning that also builds social capital in the communities, and hence increase the resilience and ability of the community to adapt.

Knowledge Brokering and Boundary-work

Once the primary boundary has been decided, there will be divisions within this boundary as well as outside the primary boundary. There needs to be platforms established that enable the sharing (and translation) of knowledge across these boundaries. Platforms might include a new policy working group, a report, a workshop/ meeting, a conference or seminar, a committee etc. Some examples of where platforms provide brokering of knowledge across boundaries include:

- *science - policy boundary.* For example a Climate Health inquiry that helps use science to translate a problem into a solution which is translated into the right language for decision makers to develop a policy solution around,
- *waste – health services boundary*. For example the WA Climate health inquiry where the intersection of impacts of health service waste and Greenhouse gas emissions are discussed.
- *climate change – health*. For example the 2008 health impact assessment that translated climate change into the health impacts across multiple sectors and organsiations
- *state* – local government. For example state policies implemented at LGA level (eg LGA health assessments) or networks (Water Sensitive Transition Network) that straddle both layers of government.

To communicate across these boundaries information usually needs to be translated by people who speak both languages and understand the framing and needs of multiple audiences.

In the Climate change space there is no obvious state government lead which is probably why there isn't much progress. However the Department of Health is actually better placed than any of the other state agencies to play this role because they are driven by the needs of people (and not the environment) and have authority as a leading voice. Regional councils also sit in the right areas of influence but only cover some LGA areas, tend to prioritise waste management over anything else, and lack the funding to undertake statewide planning.

Key elements of the path forward

There needs to be a systems approach to climate change but this will be time consuming, challenging for people to get their heads around, "messy" and whilst necessary, isn't sufficient to achieve successful adaptation. Any approach will also need collaborative learning across boundaries, adaptive

management, generation of new knowledge, networks for connecting champions, projects, and tools and instruments to deliver solutions.

The strength of a systems approach is as an analytical tool, it could starting by developing causal loop diagrams (diagrams 1 and 2 above but specific to WA) or alternatively rich pictures of what the problem is. This would then somehow lead into a shared vision across multiple stakeholders.

Throughout the entire process there needs to be the sharing and translation of knowledge across multiple boundaries including between science-policy as well as between the government-community. This will be supported by individual champions as well as networks for connecting champions. For example sector based activities would have to be "translated" into policy language that organizations can implement – eg LGA Public Health assessments or Local Emergency Management Plan. Meanwhile the impacts needs to be "translated" using a community friendly language to build the mandate for change. This is story based, personal and relatable to the general public, around how climate change will impact on individuals (eg how granny was impacted or how a disabled person with spinal injuries was not able to go back home). It needs to consider the role of social capital and the new "emerging vulnerable" whom we currently don't know.

There also need to be generation of new knowledge around what the actual impacts and solutions are, projects demonstrating these solutions, and tools and instruments used to plan and help deliver solutions. The related process of learning from success/failure and adaptive management is ongoing but essential as the impacts of climate change on health will never be fully known, and optimal solutions can't be accurately predicted. Instead we are left to trial small scale approaches that are "safe to fail" and can be evaluated and scaled up to other areas.

Contacts

If you are interested in a systems approach you could speak to ███████████████████████████ who has developed a systems decision making process called "Ariadne", ████████████████████████████ ████████████████████████████████████ who uses this approach in the water sector and ██████████████████████████████ has developed causal loop diagrams for the agriculture sector in WA and there are a number of people who think systemically – ████████████████████ ██ ██████████████████, and ██ ████████████████████████████████. Some of the CRCWSC researchers such as ████████████ also embeds some aspects of this approach in Perth's Transition to a Water Sensitive City.

Bibliography/ Reference can be made available upon request