Article title: Using System Dynamics to Understand Transnational Corporate Power in Diet-Related Non-communicable Disease Prevention Policy-Making: A Case Study of South Africa
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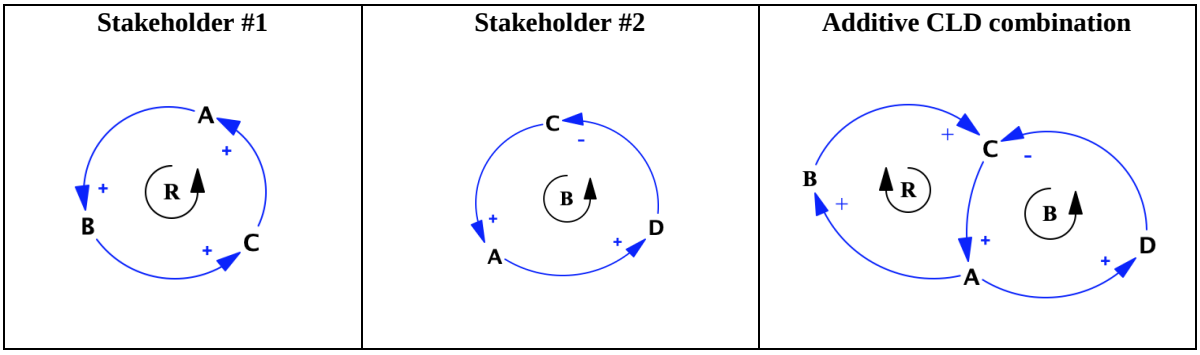
Supplementary file 3. Causal Loop Diagram Combination

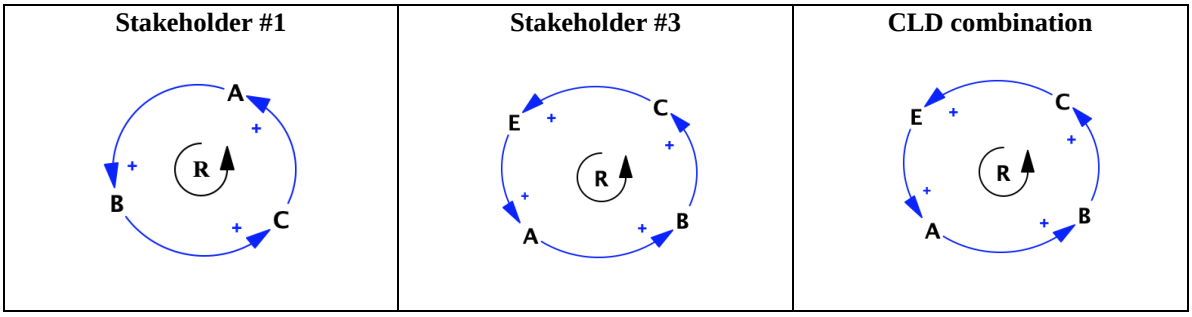
During causal loop diagram (CLD) combination a number of strategies were adopted. When two CLDs undergoing combination are entirely complimentary, a simple additive approach(1) was adopted as illustrated below in Figure 1. For example, if Stakeholder #1 identifies A→B→C→A and Stakeholder #2 identifies A→D→C→A, then the combined CLD would have all identified structures.

Figure 1. Additive CLD combination



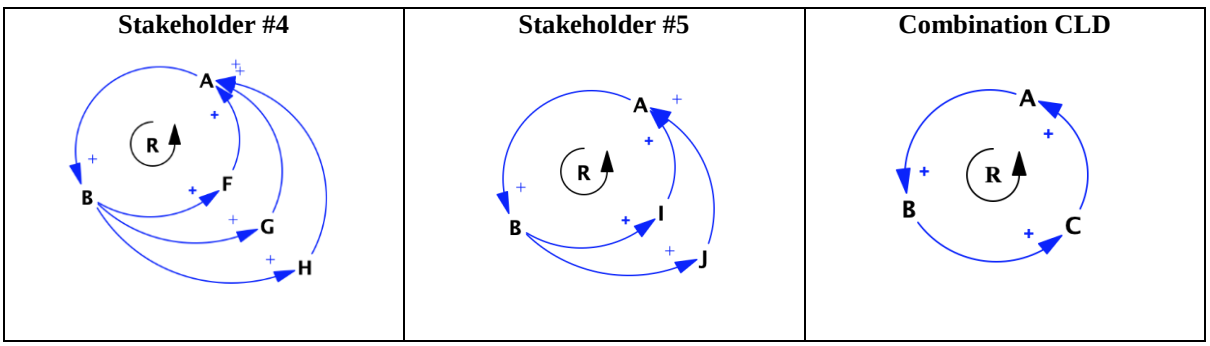
Two main approaches were adopted when CLD structures were not directly compatible and a judgement had to be made about which was the most accurate. The first approach was to select the most detailed description of the system structure(1) as shown in Figure 2. For example, if Stakeholder #3 identified the same causal structure as Stakeholder #1 (A→B→C) but with the inclusion of on addition of variable (E), then the more detailed causal description was included.

Figure 2. Selection of most detailed CLD



In a number of instances stakeholders described the same phenomenon using different language or scenarios which added significant complexity to the CLDs reducing their practical usability while not adding to dynamic complexity (1). In these situations we adopted a second technique whereby variables describing different examples of the same phenomena were combined under one more generalized variable at a higher level of abstraction(1, 2). For example, in Figure 3. Stakeholder #4 describes F, G and H and Stakeholder #5 describes I and J which are all examples of the more general term C so the CLDs are combined and simplified to A→B→C→A.

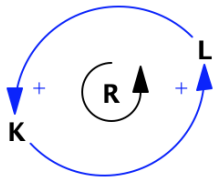
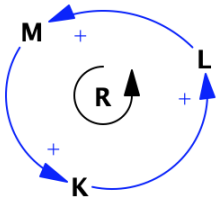
Figure 3. Merging and generalizing variables



Where F, G and H are different scenarios or language describing C	Where I and J are different scenarios or language describing C	Where B is a more general term capturing F, G, H, I and J

At times during initial inidivudal CLD development and again in the final stage of shared CLD development, causal relationships were either so obvious that stakeholders did not mention them or they were somewhat more subtly implied by the context. In these instances the implied causal structure was also included in the CLD. For example if Stakeholder #6 identifies K→L→K but the obvious link to M is not mentioned, the final CLD would be K→L→M→K. Decomposing CLDs was considered acceptable given that the same interviewee (PM) also conducted the purposive text analysis and CLD combination, which facilitated sensitivity to "subtle nuances of, and cues to, meaning in the data" during data analysis(3).

Figure 4. Decomposing CLDs

Stakeholder #6	**Decomposed CLD**
	 Where M is implied by the context of the discussion topic

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