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Pathways to collaborative performance: examining the different combinations of conditions under which collaborations are successful

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ABSTRACT

The literature on collaborative governance has generated several comprehensive models detailing the conditions which collaborations must meet to achieve collaborative performance. The importance of each separate condition – such as the presence of incentives to participate, appropriate institutional designs, or facilitative leadership – has been validated in various studies. How all of these conditions interact with each other, and whether all of the conditions need to be present to achieve performance, is less well understood. Leveraging the rich resource of the newly created Collaborative Governance Case Database, this article explores the different pathways to performance used by 26 local collaborations. The analysis shows that the presence of strong incentives for partners to collaborate is a crucial condition for success; almost all performing cases shared this starting point. Performance was then achieved by combining strong incentives with either clear institutional design (e.g. explicit rules, transparent decision-making) or with intensive collaborative processes (e.g. face-to-face dialogue, knowledge sharing). This analysis shows that the current models for collaborative governance can serve as roadmaps, laying out all of the different conditions that may be important, but that collaborations can follow different routes to reach their objectives.

KEYWORDS

Collaborative governance; performance; Collaborative Governance Case Database; Qualitative Case Analysis (QCA)

One best way or different roads to Rome?

Collaborative governance, and related forms of interorganizational collaboration, have enjoyed an enthusiastic uptake among practitioners and researchers. A multiplicity of theoretical models has been generated that explain how collaborative governance can be made to work, with prominent contributions from the likes of Bryson, Crosby and Middleton Stone (2006), Ansell and Gash (2008), Provan and Kenis (2008), and Emerson and Nabatchi (2015).

Each model offers a different perspective on collaboration, but all seek to map what conditions are relevant to achieving collaborative performance, such as the presence of

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benign starting conditions, institutional context, governance regime, leadership styles, or accountability structure. In the words of Emerson, Nabatchi, & Balogh, 2012, p. 2), these models offer a “framework enabling further analysis of the internal dynamics and causal pathways of collaborative governance and its performance.”

Subsequent research has indeed leveraged these models to examine the relationship between specific conditions. For example, Turrini, Cristofoli, Frosini, and Nasi (2010) inspect the relationship between network leadership and effectiveness, while Cristofoli and Markovic (2016) explore the link between resources, institutional design, leadership, and network effectiveness. Such research has clarified the relationship between specific elements of collaboration, but falls short of an integrated understanding of the interactions and causal interdependencies between all of the conditions.

Specifically, it is unclear whether the simultaneous presence of *all* conditions considered conducive to collaboration is necessary for realizing collaborative performance or whether a *select* combination of specific conditions may suffice. We therefore ask the following research question: *What conditions of collaborative governance are necessary, and what combinations of conditions are sufficient, for achieving collaborative performance?*

Answering this question presents significant methodological challenges. Analyzing different configurations of conditions and their results would require a relatively large set of cases, necessitating at least a medium-N approach. However, each case must contain detailed information about all of the conditions, including data about the performance of collaborations, which can often only be found in small-N qualitative case studies.

The launch of the Collaborative Governance Case Database (Douglas et al., 2020) provides an unprecedented opportunity to overcome these methodological barriers and address our research question. The Collaborative Governance Case Database brings together highly detailed case studies from experienced collaborative governance researchers from across the world. These case studies contain both qualitative descriptions and quantitative scores of the key conditions of the collaboration. This database offers the opportunity for a medium-N analysis of the interdependencies between all different conditions.

The analysis here starts with a brief review of some of the influential models describing collaborative governance, ultimately drawing particularly on the work of Ansell and Gash (2008) to outline the conditions for collaborative governance and Emerson and Nabatchi (2015) to define collaborative performance. We then conduct a fuzzy set Qualitative Case Analysis (QCA) of the conditions in this model, using 26 case studies to explore the different pathways through which these collaborations do or do not achieve performance.

The results offer three contributions to the literature. First, the analysis shows that strong incentives for partners to collaborate are a crucial condition for success; almost all performing cases shared this starting point.

Second, the analysis shows that collaborations then reach performance through combining strong incentives with either clear institutional design or with intensive collaborative processes and leadership. This finding suggests that the comprehensive models such as the one tested here provide useful roadmaps of the different conditions important to collaborative performance, but that collaborations can use different routes to reach their goals.

Third, in a methodological contribution, this study shows how the new resource of the Collaborative Governance Case Database can be used to test comprehensive models and fundamental assumptions about collaborative governance. This opens up the

opportunity for further tests, e.g. examining the other comprehensive models current in the study of collaborative governance, and more detailed studies of the circumstances under which different routes to collaborative performance occur and succeed.

Explaining collaborative performance

Collaboration may refer to a wide spectrum of phenomena, such as multi-sectoral partnerships (e.g., Herranz, 2008), policy networks (e.g., Klijn, 1996), inclusive management practices (e.g., Quick & Feldman, 2014), or purpose-oriented networks (e.g., Nowell & Kenis, 2019; Provan, Fish, & Sydow, 2007). Beyond their important differences, these phenomena and their related streams of literature are concerned with collaborative, cross-sector, formally designed, consensus-oriented endeavors, producing collective outputs.

Research into collaborative governance has created a large set of propositions about the various key conditions that enable collaborations to achieve performance. To provide a necessary theoretical and methodological focus, we here restrict our explorations to models about collaborative governance specifically, where ‘one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets’ (Ansell & Gash, 2008, p. 544).

The models by Bryson et al. (2006), Ansell and Gash (2008), Provan and Kenis (2008), and Emerson and Nabatchi (2015) seek to explain what makes this collaborative governance work. For example, Ansell and Gash (2008) propose that the realization of collaborative outcomes requires the interaction between four building blocks: The starting conditions (e.g. asymmetry, sense of interdependence between actors), the institutional design (e.g. explicit rules, transparency of decision-making), facilitative leadership (e.g. ability to convene actors or mediate in conflicts), and the collaborative process itself (maintaining a virtuous cycle of face-to-face contact, commitment to process, shared understanding, and achieving intermediate results).

Starting from a different definition of collaborative governance, Emerson et al. (2015) present a somewhat different perspective on the conditions for collaborative performance. They argue that collaborative outcomes are produced by the interaction between principled engagement (e.g. the shared deliberations and discovery between the actors), shared motivations (e.g. trust and mutual understanding), and capacity for joint action (e.g. institutional arrangements, leadership, resources), which takes place in the wider context of the collaborative governance regime.

What these two models, and most other models for collaboration governance, share beyond their differences is the assumption that various key conditions of collaboration must be aligned to achieve collaborative performance. This is best represented by the collaborative governance model of Emerson and Nabatchi (2015), where principled engagement, shared motivations, and capacity for joint action are visualized as three interlocking gears, jointly generating collaborative actions and impact. If one of these key conditions were to malfunction, the whole machinery of collaboration would come to a grinding halt.

An alternative perspective would be that not all conditions need to be present to achieve performance, as forwarded in structurationist discussions about network formation and development (Berthod & Segato, 2019; Sydow & Windeler, 1998). For example,

Raab, Mannak, and Cambré. (2015) showed how low resources in a collaboration can be compensated with high administrative capacity. Cristofoli and Marckowiz (2016) found in a study of health-care networks that different combination of resources and leadership styles could still lead to the same good results (i.e. equifinality).

From these two rival perspectives on the interaction and causal interdependence between the various conditions for collaborative performance, we distil two rival propositions:

- (A) *All conditions of collaboration are necessary for achieving collaborative performance.*
- (B) *Different configurations of collaborative conditions can be sufficient for achieving collaborative performance.*

Importantly, collaborative performance is here not understood as merely ‘hitting the targets’. A collaboration could be said to be ‘performing’ if it is achieving its goals (Ansell & Gash, 2008), but could also be said to be successful if it maintains the support among key stakeholders to survive, and needs to build resilience to sustain its activities in the face of future challenges (e.g., Moynihan, 2009).

Emerson and Nabatchi (2015) summarize that collaborative performance is about achieving effectiveness by achieving goals, maintaining legitimacy by retaining the support of among stakeholders, and building adaptivity by fostering resilience for future challenges. We will build on this tripartite definition of performance when examining our rival propositions.

Research design

Fuzzy set QCA and theoretical model

We test, in a preliminary fashion, our two rival propositions through a fuzzy set Qualitative Case Analysis. QCA is specifically designed for exploring the interaction and interdependence between different conditions (Rihoux & Ragin, 2008; Schneider & Wagemann, 2010). QCA has the ability to identify multiple routes to the same outcome, if they are indeed present in the case set. Using fuzzy set QCA as opposed to crisp set QCA will also allow us to be more nuanced in weighing conditions such as leadership or process, where ‘presence’ or ‘absence’ is not necessarily clear-cut.

QCA does require a clear set of theoretical propositions and set calibration guidelines to code the cases. As discussed above, we build chiefly on the models of Ansell and Gash (2008) and Emerson and Nabatchi (2015) to define the conditions to collaborative performance and for defining collaborative performance. Both perspectives have gained a lot of traction in the literature and – as will be discussed in detail below – align with the data collected in the database. Future studies may use the database to test the mechanisms of the other influential models about collaborative governance.

Ansell and Gash (2008) argue that collaborative governance is shaped by the interaction between benign starting conditions (trust between the actors, little resource asymmetry, clear incentives, awareness of interdependence), appropriate institutional design (explicit rules, respected rules, transparent decision-making), facilitative leadership

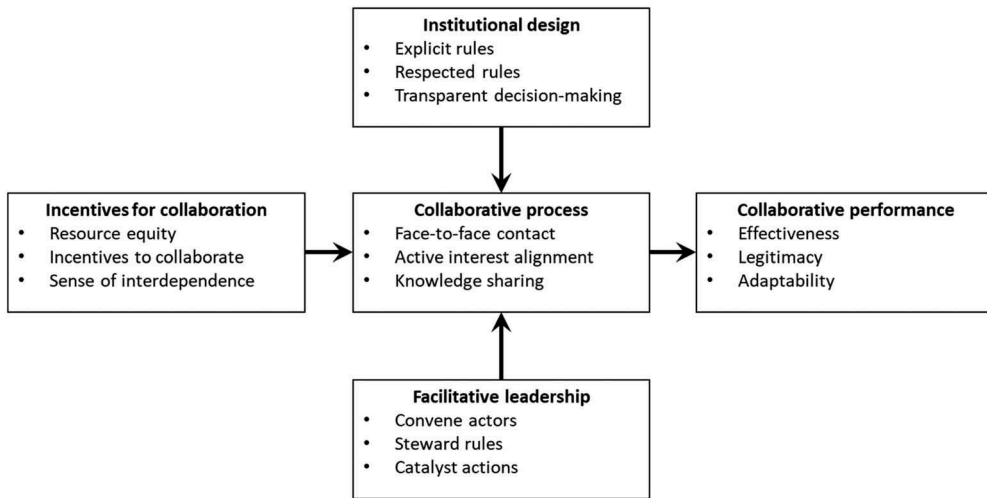


Figure 1. Roadmap for achieving collaborative performance (based on Ansell & Gash, 2008; Emerson & Nabatchi, 2015).

(ability to convene actors, steward the rules, mediate conflicts, and inspire action), and intensive collaborative processes (face-to-face dialogue, shared fact-finding, problem-solving, and marking intermediate outcomes). Ansell and Gash, however, are less specific about what collaborative performance is. Emerson and Nabatchi (2015) are particularly helpful in explaining how performance is a combination of effectiveness, legitimacy, and adaptability.

Combining these theoretical building blocks, we built a roadmap to collaborative performance describing the assumed interaction between Incentives of Collaboration, Institutional Design, Leadership, Collaborative Process, and Collaborative Performance (Figure 1). Our analysis will test whether the recurrence of Performance always requires the presence of the other four conditions. However, this model is still a simplification of all the elements described by Ansell and Gash (2008) as not even the Collaborative Governance Case Database could provide all of the data.

The opportunities and limitations of the Collaborative Governance Case Database

Describing the state of each of these five conditions and their respective sub-conditions requires a detailed knowledge of every single case. Exploring the outcomes of different configurations of conditions requires a multitude of cases to compare and contrast. Previously, such work was hampered by the unavailability of datasets containing both the required depth and mass of case studies (Douglas et al., 2020). Collecting all of this information for a large number of cases would then be an immense and costly research effort.

The recently launched Collaborative Governance Case Database offers an opportunity to leverage the combined case work of a multitude collaborative governance researchers (Douglas et al., 2020). The case database is a common pool resource for collaborative governance researchers to share high quality, previously published case studies. The

database contains individual case reports submitted by the original researcher, which have been reviewed by an editorial board of collaborative governance experts.

The data in the case reports range from descriptions of the starting conditions of the collaboration to assessments of the performance. The data is captured both through quantitative scores on Likert Scales (e.g. “To what extent did the participants have more or less equal levels of resources to bring to the collaborative process?” (1 = Highly unequal, 5 = Highly equal)) and through open long-form questions e.g. ‘Describe the sense of interdependence between the actors.’). Each case report is then 17 pages long.

To ensure reliable and valid case reports, contributors also have the option to leave a question empty if they do not have sufficient information. So while the case questions in the database cover all of the conditions described in our theoretical model, not all reports contained scores on all of the conditions we are interested in. For example, a large share of case reports provided no information on the level of trust between the actors before the collaboration started. Data related to conflict and collaborative performance were also frequently absent.

The final roadmap as presented in [Figure 1](#) is therefore both the product of the available theory and the available data. The models of Ansell and Gash (2008) and Emerson and Nabatchi (2015) provided the long list of conditions and sub-conditions. We cross-checked these with the data available to make sure we would have sufficient cases to test the model, ending up with three sub-conditions for each of the five building blocks of the model. While specific sub-conditions are missing from this analysis, we can still provide a richer analysis on a larger set of cases than previous studies.

Calibration and case selection

Calibrating the set memberships

The calibration of the set membership was informed by our theoretical model (explaining what sub-conditions inform the presence or absence of a condition), the guidelines for QCA calibration (e.g. Rihoux and Ragin, 2008), and the type of information gathered in the database format.

For example, to score the strength of the Incentives condition, we looked at the scores awarded on by the case author for the presence of resource equity (question 17 in the database), incentives to collaborate (question 18), and sense of interdependence (question 19). For each of these questions, the original case contributor scored the case on a 5-point Likert scale, ranging from 1 (e.g. ‘Very little incentives’) to 5 (e.g. ‘Very strong incentives’).

We considered a score of 3 as the condition being neither present nor absent and a score higher than 3 as the sub-condition being present (Rihoux & Ragin, 2008). We also applied alternative thresholds to check the sensitivity of our calibration and its impact on the findings (see Further Analyses and Checks).

If all three sub-conditions were present, the case would be awarded a full 1.00 membership of the Incentives condition. If the case contributor scored only two out of the three sub-conditions as present, the case would only be a partial 0.67 member of the Incentives set. If the case only had one sub-condition present, it would get a 0.33 membership. The

membership would be 0.00 if the case had none of the sub-conditions present. We applied the same approach to Institutional Design, Leadership and Process (see Table 1).

The performance dimension was coded using a similar approach, here drawing on the scores for effectiveness, legitimacy, and adaptability awarded in Question 55, 58, and 59 of the case report (see Table 2). We considered the sub-condition Effectiveness present if a case achieved more than 3 on goal fulfillment. If the case author marked 'Increase efficiency' as a goal in question 10, we checked whether the collaboration scored more than 3 on 'Increase efficiency' on question 55 about the performance of the collaboration. As collaborations can have multiple goals, we considered Effectiveness present when the collaboration achieved more than half of the goals deemed important for that collaboration by the case contributor.

The membership score for Legitimacy was based on a similar principle. We considered this sub-condition present if the collaboration achieved a score higher than 3 from more than 50% of its stakeholders on question 55 about stakeholder support. The sub-condition Adaptability was informed by a two-part question (question 58.1 the stakeholder support for future endeavors of the collaboration and question 58.2 rating the operational capacity for future endeavors). If the case scored more than 3 on the average of these two questions, the sub-condition Adaptability was considered present.

Table 1. Calibrating the collaborative conditions and their sub-conditions.

Set membership rules	Calibration from case format
Incentives	
<ul style="list-style-type: none"> ● 0 sub-conditions present = 0.00 ● 1 sub-condition present = 0.33 ● 2 sub-conditions present = 0.66 ● 3 sub-conditions present = 1.00 	Sub-condition is scored present if the score >3 on: <ul style="list-style-type: none"> ● Resource equity between actors (Q17) ● Incentives for collaboration (Q18) ● Interdependence between actors (Q19)
Institutional Design	
<ul style="list-style-type: none"> ● 0 sub-conditions present = 0.00 ● 1 sub-condition present = 0.33 ● 2 sub-conditions present = 0.66 ● 3 sub-conditions present = 1.00 	Sub-condition is scored present if the score >3 on: <ul style="list-style-type: none"> ● Rules are explicit (Q24) ● Rules are applied (Q25) ● Transparency of decision-making (Q27)
Leadership	
<ul style="list-style-type: none"> ● 0 sub-conditions present = 0.00 ● 1 sub-condition present = 0.33 ● 2 sub-conditions present = 0.66 ● 3 sub-conditions present = 1.00 	Sub-condition is scored present if the score >3 on: <ul style="list-style-type: none"> ● Ability to be convener of actors (Q32) ● Ability to be steward of rules (Q33) ● Ability to be catalyst of actions (Q34)
Process	
<ul style="list-style-type: none"> ● 0 sub-conditions present = 0.00 ● 1 sub-condition present = 0.33 ● 2 sub-conditions present = 0.66 ● 3 sub-conditions present = 1.00 	Sub-condition is scored present if the score >3 on: <ul style="list-style-type: none"> ● Degree of face-to-face contact (Q38) ● Degree of active interests alignment (Q42) ● Degree of knowledge sharing (Q41)

Table 2. Calibrating collaborative performance.

Membership rules	Calibration from case format
Performance	
<ul style="list-style-type: none"> ● 0 sub-conditions present = 0.00 ● 1 sub-condition present = 0.33 ● 2 sub-conditions present = 0.66 ● 3 sub-conditions present = 1.00 	Sub-conditions are marked as present if <ul style="list-style-type: none"> ● Effectiveness: When more than 50% of the goals marked as important for the collaboration (Q10) score >3 on goal fulfillment (Q55). This excludes the legitimacy goals which are addressed under sub-condition Legitimacy ● Legitimacy: When more than 50% of the actors marked as important for the collaboration score >3 on support (Q59) ● Adaptability: When future support and capacity are rated >3 (average of scores for Q58.1 and Q58.2)

Table 3. Overview of the selected cases.

Governance regime	Policy domains ^a	Countries
Externally directed (14)	Agriculture (3)	Australia (1)
Self-initiated (11)	Culture (4)	Canada (2)
Independently convened (1)	Economy Trade (3)	Denmark (1)
	Education (5)	Germany (1)
	Environment (13)	Italy (1)
	Infrastructure (7)	Netherlands (7)
	Health (5)	Norway (1)
	Security (3)	Sweden (1)
	Social Employment (7)	Switzerland (1)
	Technology/Transport (1)	USA (9)
		Vietnam (1)

Number of cases in parenthesis.

^aMore than one policy domains is possible for each case.

Selecting and excluding cases

The database contained 44 cases at the time of writing (September 2019), all offering information on various parts of our theoretical roadmap. However, we did want to pay attention to the importance of context, particularly the level of collaboration. To make the case set comparable, we selected only those collaborations which took place primarily at the local level, although they could have had regional or national components. We did allow for a variation in the exact governance regime, policy domain, and country of origin, although all but one were set in OECD countries (see Table 3).

This left us with a first selection of 30 from the available 44 cases. Four cases had more than one data point missing and were excluded, bringing the final total to 26 cases. Six cases missed just 1 of the 15 required data points. Based on reading the qualitative descriptions we were able to code these sub-conditions by drawing a score from the text.

Table 4 presents the final list of 26 cases and their respective scores. Appendix A provides a table with all the raw data, marking the instances where we inserted data ourselves. Moreover, all 26 cases used can be freely consulted online at the website of the Collaborative Governance Case Database (*link to be inserted on publication*).

Analyzing the different pathways

Analysis of necessity: crucial role for incentives to collaborate?

We first assessed the necessity of each separate condition for the occurrence of Performance (see Table 5). The commonly accepted consistency threshold here is 0.9 (Schneider et al. 2010): if a condition has a consistency score above this threshold it can be deemed necessary for the outcome to occur. None of the conditions met this threshold, although Incentives to Collaborative and Leadership scored relatively high (0,799 and 0,798, respectively).

Further analysis sheds an insight into this number. Not a single case which wholly lacked the Incentives to Collaborate (scoring 0,00 on Incentives) managed to realize collaborative outcomes (none scoring more than 0,33 on Performance). However, there were three cases with limited Incentives (0,33) which achieve partial Performance (0,67) and two cases with limited Incentives which achieved full Performance (1,00). The Incentives condition seems to be important, but is not always necessary for achieving Performance.

Table 4. Overview of cases.

Name in database	Incentives	Design	Leadership	Process	Performance
Area C – Milan	0,33	0,33	1	0,33	1
Baker River Hydroelectric Project	0,33	1	1	1	0
Blackfoot Challenge (Montana, USA)	1	1	1	0,67	1
Canadian wildfire responder network	1	1	0,67	1	0,67
Collaborative flooding governance in Vietnam	0,67	0,33	0,33	0	0,67
Collaborative policy committees Gentofte	1	0,67	1	0,67	0,67
Collaborative policy committees Svelvik	0,67	1	0	1	0
Community Enterprise De Meevaart	0,33	0	1	1	1
Community Enterprise Het Klokhuis	0,67	0,33	1	0,67	1
Delaware Inland Bays	0	0,33	0,33	0,33	0
Desert Tortoise Habitat Conservation Planning	1	0,33	0,67	1	1
Foodborne disease outbreak in Germany	1	1	1	0,33	1
Friends of Redington Pass	0	0,67	1	1	0
Grow houses in the neighborhood	0,33	0,33	0,67	1	0,33
Homelessness policy Vancouver	0,33	1	0	0,33	0,33
Lake Tahoe	0,67	0,67	0,33	0,67	0,67
Local Network for Combating Illiteracy C	0,33	0	0,33	0	0
Local Network for Combating Illiteracy A	0,33	0	0	0	0,67
Local Network for Combating Illiteracy B	0,33	0,33	0,67	0,33	0,67
Peri-urban area development NL	0	0,33	1	1	0,33
Revitalisation of Central Dandenong	0,67	0	0,67	1	0,33
Rhode Island's Salt Ponds	1	1	0,33	0,33	0,67
Spitex	0,33	1	1	1	0,33
Swedish wildfire responder network	1	0	0,33	0	0,33
Tampa Bay	0,67	0,67	0,33	0,33	0,67
Tillamook Bay, Oregon	0	0	0	0	0

Table 5. Analysis of necessary conditions for occurrence Performance.

Conditions	Consistency	Coverage
Incentives	0,799	0,762
~Incentives	0,470	0,424
Institutional Design	0,624	0,625
~Institutional Design	0,578	0,549
Leadership	0,798	0,680
~Leadership	0,547	0,424
Process	0,648	0,577
~Process	0,606	0,500

Analysis of sufficiency: different configurations associated with performance

Turning to the analysis of the different pathways that lead to collaborative outcomes, we first reviewed the truth table of Performance to survey what different configurations occurred (see Table 6).

For example, the first line shows that there are two cases which have strong Incentives and sound Institutional Design in combination with the occurrence of high Performance (i.e. full membership of the Performance set). The eleventh row shows there are four cases where all conditions for collaboration are absent and the association with Performance is very weak (only 0,460 consistency with the Performance set).

As our model contains four causal conditions, which could be either present or absent, there are 16 different configurations possible in theory. In this sample of 26 cases, eleven configurations show up in practice. For example, a configuration that is theoretically

Table 6. Truth table for the occurrence of performance.

Incentives	Institut. Design	Leadership	Process	Number of cases	Raw consist.	PRI consist.
1	1	0	0	2	1,000	1,000
1	1	1	0	1	1,000	1,000
1	1	1	1	3	0,941	0,890
1	0	1	1	3	0,921	0,855
1	1	0	1	2	0,816	0,500
0	0	1	0	2	0,801	0,670
1	0	0	0	2	0,776	0,337
0	0	1	1	3	0,712	0,498
0	1	0	0	1	0,711	0,000
0	1	1	1	3	0,568	0,247
0	0	0	0	4	0,460	0,127
0	0	0	1	0	-	-
0	1	0	1	0	-	-
0	1	1	0	0	-	-
1	0	0	1	0	-	-
1	0	1	0	0	-	-

possible but missing in practice is a case with no conducive Incentives, Institutional Design or Leadership, but still with an intensive Process.

This could be interpreted as evidence that this configuration cannot occur in practice (e.g. you cannot have a good Process without the other conditions), although this collection of cases is arguably too small to support such a grand conclusion. For now, the presence of eleven different configurations in our case collection allows us to analyze what different pathways do or do not lead to Performance.

For the sufficiency analysis examining what (combination of) conditions need to present in order to reach Performance, the minimally recommended consistency level is 0.8 (Rihoux and Ragin, 2008), but a higher threshold can also be selected with an eye on an observable drop in the consistency scores in the data (Vis, 2012). We therefore place the cut-off point for the analysis of sufficiency at 0.921, including nine cases.

As we explore in more detail in the robustness checks at the end of this analysis, we could have also gone for 0.801, including four extra cases. However, that threshold would lead to a significant drop in the reliability of the analysis, as reflected by a drop in the Proportional Reduction in Inconsistency (PRI) score from 0.855 to 0,670.

Different pathways to performance?

Proposition A held that *all* conditions of collaboration are necessary for achieving collaborative outcomes, while proposition B held that *different* combinations of collaborative conditions can be sufficient for achieving collaborative outcomes. The results of the QCA (Table 6) suggest a finding somewhere in between these two extremes. There are two main pathways to performance, but they share a common starting point.

The first route combines conducive Incentives with strong Institutional Design and no Process. The second route also starts with conducive Incentives, but combines this with strong Leadership and intensive Process. Both pathways meet the thresholds for consistency (>0,750) and coverage (>0,250) as formulated by Uruena and Hidalgo (2016), meaning that these routes are both reliable predictors for the occurrence of Performance and significant explanations for a large share of the Performance achieved (see table 6).

Table 6. Two pathways to performance.

Solutions for Performance	Raw coverage	Unique coverage	Consistency
Incentives AND Institutional Design AND No Process	0,349	0,126	1,000
Incentives AND Leadership AND Process	0,499	0,276	0,908
Frequency cut-off: 1			
Solution coverage: 0.624			
Solution consistency: 0.926			

Table 7. Three pathways to the absence of performance.

Solutions for absence of performance	Raw coverage	Unique coverage	Consistency
No Institutional Design AND No Leadership AND No Process	0,368	0,053	0,822
No Incentives AND No Leadership AND No Process	0,368	0,053	0,932
No Incentives AND Institutional Design AND Leadership AND Process	0,315	0,211	0,858
Frequency cut-off: 1			
Solution coverage: 0.632			
Solution consistency: 0.827			

Each route was taken by a variety of cases. The three cases achieving performance through the combination of Incentives and Institutional Design were situated in Germany, Rhode Island USA, and Florida USA. These cases covered economic, environmental, and public health policy domains. While two of these cases were self-initiated, the third case was mandated.

The six cases combining Incentives with Leadership and Process to achieve Performance came from Australia, Canada, Denmark, the Netherlands, and USA, covering different policy domains, from culture and education to the environment and infrastructure. Half of the cases were self-initiated collaborations, while the other half were mandated.

This diversity of cases within both routes might suggest that there is no direct link between context factors such a country setting or policy domain and the path to performance followed, although there may be more nuanced factors at work which cannot be observed with the present selection of data from the case bank.

We conducted several further analyses to explore the robustness of our findings. An analysis of the configurations which were associated with an absence of Performance reinforced the important role of Incentives, but also underlined that it takes more than the presence of Incentives to avoid failure (see [Table 7](#), with further [Table B1](#) in [Appendix B](#)).

Configurations which had Institutional Design, Leadership and Process present were still associated with Performance failure if there were no Incentives present (0,858 consistency). Configurations where there were neither Incentives, Leadership, nor Process conditions were strongly associated with failure (0,932 consistency), but the same was true for configurations lacking Institutional Design, Leadership, and Process (0,822 consistency). Again, Incentives prove to be important ingredient for collaborative performance, but do not suffice by themselves.

Further analyses and checks

We conducted three further sensitivity analyses to examine the reliability of our findings. First, we lowered the consistency threshold for the sufficiency analysis to the lowest

acceptable threshold of 0,8 (Rihoux and Ragin, 2008). This generated a solution with a slightly higher coverage (0,750) as four extra cases were deemed part of the Performance outcome, but also a lower consistency score (0,790) as the set became more diluted (see [Appendix B](#) for the relevant tables).

This analysis with a lower consistency threshold returned a solution which again identified the two pathways to performance already discussed: One pathway combined Incentives with Leadership, while the other pathway combined Incentives with Institutional Design to achieve Performance. Interestingly, the solution contained a third pathway: In one case, only Leadership was present while Incentives, Institutional Design, and Process were absent, yet Performance was still achieved. This case, the regeneration of Area C in Milan, suggests that in the absence of beneficial Incentives, strong Leadership may sometimes suffice to reach Performance.

We also conducted two sensitivity analyses of our calibration. For the first check, we increased the threshold for membership, now only considering a sub-condition present if they were awarded at least a 5 out of 5 by the case contributor instead of the 4 out of 5 in our original calibration. For the second check, we lowered the threshold for membership, counting all sub-conditions present if they scored just a 3 out of 5 (see [appendix B](#) for the relevant tables and data).

The solutions generated by these alternative analyses reinforced our findings; most pathways relied on the presence of Incentives in combination with other conditions, while in a small share of cases strong Leadership could suffice to achieve Performance as well. These alternative analyses did emphasize that beyond the opportunity of reaching Performance through picking and choosing conditions, those cases that met all conditions scored the highest possible consistency score of 1,00. In other words, securing *all* conditions for Performance may not be the easiest pathway, but could be the surest way to success.

Discussion and conclusion

Crucial starting point, different pathways

This analysis has sought to understand what conditions are necessary, and what combinations of conditions are sufficient, for collaborations to achieve performance. The first finding is that strong Incentives to Collaborate constitute a crucial starting point for reaching collaborative outcomes. Almost all the routes identified to Performance commenced with Incentives. Even if all other conditions are present, the absence of Incentives is strongly associated with Performance failure.

However, strong Incentives are not a fully necessary condition as some rare cases achieve Performance by substituting strong Incentives with strong Leadership. The Incentives to Collaborate could arguably be understood as a so-called INUS condition; an insufficient but necessary part of a combination of causal factor, where this combination is unnecessary but sufficient configuration for reaching the outcome.

The second finding is that beyond the shared starting pointing of Incentives, there are multiple combinations of conditions that lead to Performance. The two pathways most consistently identified by our analysis combine Incentives with either strong Institutional

Design or with strong Leadership and Process, although there cases which combine all conditions to achieve Performance.

These findings shed a new light on the interdependence between the various conditions deemed important for successful collaboration by our current theoretical models (in this study chiefly represented by Ansell & Gash, 2008). Our findings suggest that the various components in these models do not have to be considered as the one best way for the achieving collaborative performance, but as roadmaps providing an overview of the different possible pathways that could lead to performance.

Present limitations and future questions

These findings must be considered in light of the limitations of our research design. Firstly, although the Collaborative Governance Case Database offers unparalleled access to a large number of cases, we still run into the problem of missing data. The large comprehensive model examined in this piece relies on a large set of lower level indicators and sub-conditions. The database case format contains questions pertaining to all of the sub-conditions, but in practice, case authors still miss data to provide answers to all of these questions. This forced us to test only a subset of the sub-conditions we were interested in.

Secondly, the present analysis is centered mainly on the Ansell and Gash (2008) model, with some insights from the Emerson and Nabatchi (2015) model. An obvious next step would be to conduct similar analyses to test the models of other researchers. These models examine different conditions for performance and may also suppose different types of interdependence between the various conditions. For example, where Ansell and Gash see incentives, leadership and institutional design as inputs for process, Bryson et al. (2006) emphasize the interaction between collaborative process and structure.

Thirdly, this analysis used a comprehensive definition of performance, including effectiveness, legitimacy, and adaptability. It may be interesting to see whether the different pathways favor one of these sub-dimensions of performance. Do collaborations with strong Institutional Design score better on Legitimacy? And do collaborations with strong Process score better on Adaptability? And are the sub-dimensions of Performance competing with each other (Hood, 1991; Talbot, 2008), or can successful collaborations achieve all of them at once?

Finally, our present analysis provides no insights yet in *why* these collaborations pursued different routes. Collaborations do not exist a vacuum, their choices are shaped by a context of a 'myriad political, legal, socioeconomic, environmental, and other influences [...] that generate the energy and impetus to begin collaboration and set the early direction' (Emerson & Nabatchi, 2015, p. 721). The different context or terrains may make choosing a particular route not a choice but a necessity.

On the whole, researchers can take from the present research that our current comprehensive models provide a good overview and starting point for our analysis, but we need to advance our understanding of the different pathways collaborations can follow through all the conditions. Practitioners can here take comfort in the idea these models need not be used as an unattainable picture of a perfect collaboration, but provide a useful overview of the different routes they can try to reach collaborative performance.

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References

- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571.
- Ansell, C., & Gash, A. (2012). Stewards, mediators, and catalysts: Toward a model of collaborative leadership1. *The Innovation Journal*, 17(1), 2.
- Berthod, O., & Segato, F. (2019). Developing purpose-oriented networks: A process view. *Perspectives in Public Management and Governance*, 2(3), 203–212.
- Bryson, J. M., Crosby, B. C., & Stone, M. M. (2006). The design and implementation of cross-sector collaborations: Propositions from the literature. *Public Administration Review*, 66(s1), 44–55.
- Cristofoli, D., & Markovic, J. (2016). How to make public networks really work: A qualitative comparative analysis. *Public Administration*, 94(1), 89–110.
- Douglas, S., Ansell, C., & Parker, C. Sorensen, E., 't Hart, P., Torfing, J. (2020). Understanding Collaboration: Introducing the Collaborative Governance Case Databank. Policy and Society.
- Emerson, K., & Nabatchi, T. (2015). *Collaborative governance regimes*. Washington: Georgetown University Press.
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal Of Public Administration Research And Theory*, 22(1), 1–29.
- Herranz, J., Jr. (2008). The multisectoral trilemma of network management. *Journal of Public Administration and Theory*, 18(1), 1–31.
- Hood, C. (1991). A public management for all seasons? *Public Administration*, 69(1), 3–19.

- Klijn, E. H. (1996). Analyzing and managing policy processes in complex networks: A theoretical examination of the concept of policy network and its problems. *Administration & Society*, 28(1), 90–119.
- Moynihan, D. P. (2009). The network governance of crisis response: Case studies of incident command systems. *Journal of Public Administration Research and Theory*, 19(4), 895–915.
- Nowell, B. L., & Kenis, P. (2019). Purpose-oriented networks: The architecture of complexity. *Perspectives on Public Management and Governance*, 2(3), 191–195.
- Provan, K. G., Fish, A., & Sydow, J. (2007). Interorganizational networks at the network level: A review of the empirical literature on whole networks. *Journal of Management*, 33(3), 479–516.
- Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal Of Public Administration Research And Theory*, 18(2), 229–252.
- Quick, K. S., & Feldman, M. S. (2014). Boundaries as junctures: Collaborative boundary work for building efficient resilience. *Journal of Public Administration Research and Theory*, 24(3), 673–695.
- Raab, J., Mannak, R. S., & Cambré, B. (2015). Combining structure, governance, and context: A configurational approach to network effectiveness. *Journal of Public Administration Research and Theory*, 25(2), 479–511.
- Rihoux, B., & Ragin, C. C. (2008). *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques* (Vol. 51). Sage Publications.
- Schneider, C. Q., & Wagemann, C. (2010). Standards of good practice in qualitative comparative analysis (QCA) and fuzzy-sets. *Comparative Sociology*, 9(3), 397–418.
- Sydow, J., & Windeler, A. (1998). Organizing and evaluating interfirm networks: A structurationist perspective on network processes and effectiveness. *Organization Science*, 9(3), 265–284.
- Talbot, C. (2008). *Measuring public value*. London: The Work Foundation.
- Turrini, A., Cristofoli, D., Frosini, F., & Nasi, G. (2010). Networking literature about determinants of network effectiveness. *Public Administration*, 88(2), 528–550.
- Urueña, A., & Hidalgo, A. (2016). Successful loyalty in e-complaints: FsQCA and structural equation modelling analyses. *Journal of Business Research*, 69(4), 1384–1389.
- Vis, B. (2012). The comparative advantages of fsqca and regression analysis for moderately large-n analyses. *Sociological Methods & Research*, 41(1), 168–198.



Appendix A.

Case Name	Incentives				Institutional design							Leadership				Process	
	Resources	Incentives	Dependent	Explicit	Applied	Transparent	Convenor	Steward	Catalyst	Process	Face-to-face	Align interest	Q38	Q42			
	Q17	Q18	Q19	SET	Q24	Q25	Q27	SET	Q32	Q33	Q35	SET					
Area C - Milan	0.33	2	5	1	0.33	3	5	3	1.00	5	4	4	0.33	3	3		
Baker River Hydroelectric Project	0.33	4	1	2	1.00	5	5	5	1.00	4	5	5	1.00	5	4		
Blackfoot Challenge (Montana, USA)	1.00	5	5	5	1.00	5	5	5	1.00	5	5	5	0.67	5	3		
Canadian wildfire responder network	1.00	5	5	5	1.00	5	4	5	0.67	4	4	3	1.00	5	5		
Collaborative governance in Vietnam flooding collaborative policy making committees in Gentofte; Denmark	0.67	1	4	5	0.33	3	4	2	0.33	5	2	1	0.00	2	1		
Collaborative policy making committees in Svelvik Municipality, Norway	1.00	4	4	5	0.67	4	3	5	1.00	4	5	4	0.67	4	2		
Community Enterprise De meevaart	0.67	4	3	4	1.00	4	4	4	0.00	3	3	3	1.00	5	4		
Community Enterprise Het Klokhuis	0.67	2	4	4	0.00	2	2	2	1.00	5	5	5	1.00	5	4		
Delaware Inland Bays	0.00	2	2	3	0.33	3	4	3	0.33	2	4	2	0.33	2	3		
Desert Tortoise Habitat Conservation Planning	1.00	4	4	5	0.33	3	3	5	0.67	5	5	3	1.00	4	5		
Foodborne disease outbreak in Germany	1.00	4	4	5	1.00	4	5	4	1.00	5	5	4	0.33	1	1		
Friends of Redington Pass	0.00	3	2	3	0.67	5	4	3	1.00	4	4	4	1.00	5	5		
Grow houses in the neighborhood (Fight Against Organized Crime, Drugs)	0.33	3	3	4	0.33	3	4	3	0.67	4	4	4	1.00	5	4		
Homelessness policy development and program funding in Vancouver, Canada	0.33	3	3	4	1.00	5	4	4	0.00	3	3	2	0.33	3	2		
Lake Tahoe	0.67	3	5	5	0.67	4	4	3	0.33	3	3	5	0.67	3	4		
Local Network for Combating Illiteracy (City C, The Netherlands)	0.33	2	4	3	0.00	3	2	2	0.33	4	3	3	0.00	3	3		
Local Network for Combating Illiteracy (City A, The Netherlands)	0.33	2	3	4	0.00	2	2	2	0.00	3	3	2	0.00	2	1		
Local Network for Combating Illiteracy (City B, The Netherlands)	0.33	2	3	4	0.33	2	2	4	0.67	4	3	4	0.33	4	2		
public-private-people collaboration in peri-urban area development; Netherlands	0.00	3	3	3	0.33	4	3	3	1.00	5	4	4	1.00	4	4		
Revitalisation of Central Dandenong, Melbourne	0.67	2	4	4	0.00	2	3	2	0.67	4	5	3	1.00	4	4		
Rhode Island's Salt Ponds	1.00	4	5	5	1.00	5	5	5	0.33	3	4	3	0.33	1	5		
Spitex	0.33	3	3	4	1.00	5	4	4	1.00	5	5	5	1.00	4	5		
Swedish wildfire responder network	1.00	4	5	4	0.00	2	2	1	0.33	2	2	4	0.00	2	2		
Tampa Bay	0.67	4	3	5	0.67	5	5	3	0.33	3	3	4	0.33	3	4		
Tillamook Bay, Oregon	0.00	2	3	2	0.00	2	2	2	0.00	2	2	3	0.00	3	2		

Case Name	Performance											
	Knowledge			Legitimacy				Adaptability				
	Q41	SET	Present	Share	Supported	Actors	Present	Average	Support	Present	Average	Support
Area C - Milan	5	1.00	1.00	100%	3	3	1.00	3.50	4	1.00	3.50	4
Baker River Hydroelectric Project	5	0.00	0.00	33%	1	3	0.00	1.50	0	0.00	1.50	0
Blackfoot Challenge (Montana, USA)	5	1.00	1.00	100%	5	5	1.00	5.00	5	1.00	5.00	5
Canadian wildfire responder network	5	0.67	1.00	80%	4	5	0.00	3.00	3	0.00	3.00	3
Collaborative governance in Vietnam flooding	2	0.67	1.00	60%	3	5	0.00	2.50	2	0.00	2.50	2
collaborative policy making committees in Gentofte; Denmark	5	0.67	1.00	80%	4	5	1.00	5.00	5	1.00	5.00	5
Collaborative policy making committees in Svelvik Municipality, Norway	4	0.00	0.00	20%	1	5	0.00	3.00	3	0.00	3.00	3
Community Enterprise De meevaart	5	1.00	1.00	100%	4	4	1.00	4.00	4	1.00	4.00	4
Community Enterprise Het Klokhuis	3	1.00	1.00	100%	4	4	1.00	4.00	4	1.00	4.00	4
Delaware Inland Bays	4	0.00	0.00	0%	0	5	0.00	2.00	2	0.00	2.00	2
Desert Tortoise Habitat Conservation Planning	5	1.00	1.00	100%	4	4	1.00	5.00	5	1.00	5.00	5
Foodborne disease outbreak in Germany	4	1.00	1.00	75%	3	4	1.00	5.00	5	1.00	5.00	5
Friends of Redington Pass	4	0.00	0.00	0%	0	5	0.00	3.00	3	0.00	3.00	3
Grow houses in the neighborhood (Fight Against Organized Crime, Drugs)	4	0.33	0.00	25%	1	4	1.00	3.50	4	1.00	3.50	4
Homelessness policy development and program funding in Vancouver, Canada	4	0.33	0.00	25%	1	4	1.00	3.50	3	1.00	3.50	3
Lake Tahoe	4	0.67	0.00	40%	2	5	1.00	4.50	4	1.00	4.50	4
Local Network for Combating Illiteracy (City C, The Netherlands)	3	0.00	0.00	50%	2	4	0.00	3.00	3	0.00	3.00	3
Local Network for Combating Illiteracy (City A, The Netherlands)	1	0.67	1.00	67%	2	3	1.00	3.50	4	1.00	3.50	4
Local Network for Combating Illiteracy (City B, The Netherlands)	2	0.67	0.00	50%	2	4	1.00	4.00	4	1.00	4.00	4
public-private-people collaboration in peri-urban area development; Netherlands	4	0.33	1.00	75%	3	4	0.00	3.00	3	0.00	3.00	3
Revitalisation of Central Dandenong, Melbourne	4	0.33	0.00	25%	1	4	1.00	3.50	3	1.00	3.50	3
Rhode Island's Salt Ponds	3	0.67	1.00	100%	5	5	1.00	5.00	5	1.00	5.00	5
Spitex	4	0.33	1.00	60%	3	5	0.00	3.00	3	0.00	3.00	3
Swedish wildfire responder network	Off	0.33	0.00	40%	2	5	0.00	3.00	3	0.00	3.00	3
Tampa Bay	3	0.67	1.00	60%	3	5	1.00	5.00	5	1.00	5.00	5
Tillamook Bay, Oregon	3	0.00	0.00	20%	1	5	0.00	2.00	2	0.00	2.00	2



Case Name	Capacity	Effective			Goals
		Present	Share	Achieved	
Area C - Milan	3	1.00	67%	2	3
Baker River Hydroelectric Project	3	0.00	0%	0	2
Blackfoot Challenge (Montana, USA)	5	1.00	67%	2	3
Canadian wildfire responder network	3	1.00	100%	2	2
Collaborative governance in Vietnam flooding	3	1.00	100%	2	2
collaborative policy making committees in Gentofte; Denmark	5	0.00	33%	1	3
Collaborative policy making committees in Svelvik Municipality, Norway	3	0.00	50%	1	2
Community Enterprise De meevaart	4	1.00	67%	2	3
Community Enterprise Het Klokhuis	4	1.00	100%	3	3
Delaware Inland Bays	2	0.00	0%	0	1
Desert Tortoise Habitat Conservation Planning	5	1.00	100%	3	3
Foodborne disease outbreak in Germany	5	1.00	100%	2	2
Friends of Redington Pass	3	0.00	0%	0	3
Grow houses in the neighborhood (Fight Against Organized Crime, Drugs)	3	0.00	50%	1	2
Homelessness policy development and program funding in Vancouver, Canada	4	0.00	50%	1	2
Lake Tahoe	5	1.00	60%	3	5
Local Network for Combating Illiteracy (City C, The Netherlands)	3	0.00	0%	0	2
Local Network for Combating Illiteracy (City A, The Netherlands)	3	0.00	0%	0	2
Local Network for Combating Illiteracy (City B, The Netherlands)	4	1.00	100%	1	1
public-private-people collaboration in peri-urban area development; Netherlands	3	0.00	50%	1	2
Revitalisation of Central Dandenong, Melbourne	4	0.00	0%	0	1
Rhode Island's Salt Ponds	5	0.00	50%	2	4
Spitex	3	0.00	50%	1	2
Swedish wildfire responder network	3	1.00	67%	2	3
Tampa Bay	5	0.00	50%	1	2
Tillamook Bay, Oregon	2	0.00	0%	0	2

Appendix B.

Table B1. Analysis of necessary conditions for the absence of Performance.

Conditions	Consistency	Coverage
Incentives	0.497	0.450
~Incentives	0.736	0.776
Institutional Design	0.577	0.548
~Institutional Design	0.605	0.604
Leadership	0.630	0.509
~Leadership	0.604	0.739
Process	0.657	0.555
~Process	0.499	0.574

Table B2. Truth table for the absence of Performance.

Incentives	Institut. Design	Leadership	Process	Number of cases	Raw consist.	PRI consist.
0	0	0	0	4	0.921	0.873
0	1	1	1	3	0.858	0.752
0	0	1	1	3	0.713	0.501
1	0	1	1	3	0.537	0.145
1	1	1	1	3	0.526	0.110
1	0	0	0	2	0.886	0.663
1	1	0	1	2	0.816	0.500
0	0	1	0	2	0.596	0.330
1	1	0	0	2	0.744	0.000
0	1	0	0	1	1.000	1.000
1	1	1	0	1	0.543	0.000

Table B3. Solution with lower consistency threshold.

Solutions for Performance	Raw coverage	Unique coverage	Consistency
Incentives AND Institutional Design	0,599	0,176	0,828
Incentives AND Leadership AND Process	0,499	0,100	0,908
No Incentives AND No Institutional Design AND Leadership AND No Process	0,199	0,051	0,801
Frequency cut-off: 1			
Solution coverage: 0.750			
Solution consistency: 0.790			

Table B4. Overview of cases at stricter calibration.

Case #	Incentives	Design	Leadership	Process	Performance
Area C – Milan	0,33	0,33	0,33	0,33	0,33
Baker River Hydroelectric Project	0,00	1,00	0,67	0,67	0,00
Blackfoot Challenge (Montana, USA)	1,00	1,00	1,00	0,67	0,67
Canadian wildfire responder network	1,00	0,67	0,00	1,00	0,33
Collaborative flooding governance in Vietnam	0,33	0,00	0,33	0,00	0,00
Collaborative policy committees Gentoft	0,33	0,33	0,33	0,33	0,33
Collaborative policy committees Svelvik	0,00	0,00	0,00	0,33	0,00
Community Enterprise De Meevaart	0,00	0,00	1,00	0,67	0,67
Community Enterprise Het Klokhuis	0,00	0,00	0,67	0,33	0,67
Delaware Inland Bays	0,00	0,00	0,00	0,00	0,00
Desert Tortoise Habitat Conservation Planning	0,33	0,33	0,67	0,67	1,00
Foodborne disease outbreak in Germany	0,33	0,33	0,67	0,00	0,67
Friends of Redington Pass	0,00	0,33	0,00	0,67	0,00
Grow houses in the neighborhood	0,00	0,00	0,00	0,33	0,00
Homelessness policy Vancouver	0,00	0,33	0,00	0,00	0,00
Lake Tahoe	0,67	0,00	0,33	0,00	0,67
Local Network for Combating Illiteracy C	0,00	0,00	0,00	0,00	0,00
Local Network for Combating Illiteracy A	0,00	0,00	0,00	0,00	0,00
Local Network for Combating Illiteracy B	0,00	0,00	0,00	0,00	0,00
Peri-urban area development NL	0,00	0,00	0,33	0,00	0,00
Revitalisation of Central Dandenong	0,00	0,00	0,33	0,00	0,00
Rhode Island's Salt Ponds	0,67	1,00	0,00	0,33	1,00
Spitex	0,00	0,33	1,00	0,33	0,00
Swedish wildfire responder network	0,33	0,00	0,00	0,00	0,00
Tampa Bay	0,33	0,67	0,00	0,00	0,33
Tillamook Bay, Oregon	0,00	0,00	0,00	0,00	0,00

Table B5. Truth table with stricter calibration.

Incentives	Institut. Design	Leadership	Process	Number of cases	Raw consist.	PRI consist.
0	0	0	0	14	0.177556	0.0299184
0	1	1	1	1	0.497487	0.24812
0	0	0	1	1	0.498113	0.198795
0	1	0	0	1	0.598187	0.331658
0	0	1	0	3	0.643011	0.378277
1	0	0	0	1	0.778524	0.50376
1	1	0	1	1	0.829146	0.66
0	0	1	1	2	0.87594	0.753731
1	1	0	0	1	1	1
1	1	1	1	1	1	1
1	0	1	0	0		
0	1	1	0	0		
1	1	1	0	0		
1	0	0	1	0		
0	1	0	1	0		
1	0	1	1	0		

Table B6. Solution with stricter calibration.

Solutions for Performance	Raw coverage	Unique coverage	Consistency
Incentives AND Institutional Design AND No Leadership AND No Process	0,348	0,199	1,000
No Incentives AND No Institutional Design AND Leadership AND Process	0,349	0,200	0,876
Incentives AND Institutional Design AND Leadership AND No Process	0,249	0,100	1,000
Frequency cut-off: 1			
Solution coverage: 0.649			
Solution consistency: 0.929			

Table B7. Overview with looser calibration.

Case #	Incentives	Design	Leadership	Process	Performance
Area C – Milan	0,33	1,00	1,00	1,00	0,67
Baker River Hydroelectric Project	0,33	1,00	1,00	1,00	0,33
Blackfoot Challenge (Montana, USA)	1,00	1,00	1,00	1,00	1,00
Canadian wildfire responder network	1,00	1,00	1,00	1,00	1,00
Collaborative flooding governance in Vietnam	0,67	0,67	0,33	0,00	1,00
Collaborative policy committees Gentoft	1,00	1,00	1,00	0,67	1,00
Collaborative policy committees Svelvik	1,00	1,00	1,00	1,00	0,67
Community Enterprise De Meevaart	0,67	0,00	1,00	1,00	1,00
Community Enterprise Het Klokhuis	0,67	0,67	1,00	1,00	1,00
Delaware Inland Bays	0,33	1,00	0,33	0,67	0,33
Desert Tortoise Habitat Conservation Planning	1,00	1,00	1,00	1,00	1,00
Foodborne disease outbreak in Germany	1,00	1,00	1,00	0,33	1,00
Friends of Redington Pass	0,67	1,00	1,00	1,00	1,00
Grow houses in the neighborhood	1,00	1,00	0,67	1,00	0,67
Homelessness policy Vancouver	1,00	1,00	0,67	0,67	1,00
Lake Tahoe	1,00	1,00	1,00	1,00	1,00
Local Network for Combating Illiteracy C	0,67	0,33	1,00	1,00	0,67
Local Network for Combating Illiteracy A	0,67	0,00	0,67	0,00	0,67
Local Network for Combating Illiteracy B	0,67	0,33	1,00	0,33	1,00
Peri-urban area development NL	1,00	1,00	1,00	1,00	1,00
Revitalisation of Central Dandenong	0,67	0,33	1,00	1,00	1,00
Rhode Island's Salt Ponds	1,00	1,00	1,00	0,67	0,67
Spitex	1,00	1,00	1,00	1,00	0,67
Swedish wildfire responder network	1,00	0,00	0,33	0,00	1,00
Tampa Bay	1,00	1,00	1,00	1,00	1,00
Tillamook Bay, Oregon	0,33	0,00	0,33	0,67	0,00

Table B8. Truth table with looser calibration.

Incentives	Institut. Design	Leadership	Process	Number of cases	Raw consist.	PRI consist.
1	1	1	1	14	0.953943	0.943541
1	0	1	1	3	0.89	0.876405
1	0	1	0	2	0.858369	0.835
0	1	1	1	2	0.89759	0.83
1	1	0	0	1	1	1
1	1	1	0	1	1	1
1	0	0	0	1	0.801205	0.75188
0	0	0	1	1	0	0
0	1	0	1	1	0.492537	0
0	0	0	0	0		
0	1	0	0	0		
0	0	1	0	0		
0	1	1	0	0		
1	0	0	1	0		
1	1	0	1	0		
0	0	1	1	0		

Table B9. Solution with looser calibration.

Solutions for Performance	Raw coverage	Unique coverage	Consistency
Incentives AND Institutional Design AND No Process	0,140	0,016	1,000
Incentives AND Institutional Design AND Leadership	0,703	0,578	0,938
Frequency cut-off: 1			
Solution coverage: 0.719			
Solution consistency: 0.939			