

# Translation of Modeled Evidence for Decision-Making

Research results from Burkina Faso  
Nouna Health Research Center

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CENTRE DE RECHERCHE EN  
SANTE DE NOUNA



RESULTS FOR  
DEVELOPMENT

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# Summary

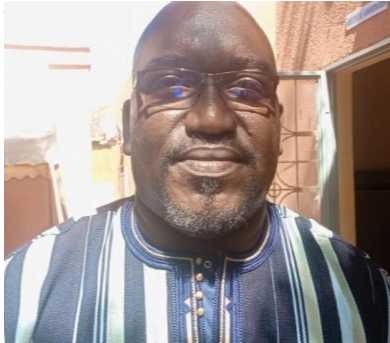


# Research Team

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**Ali Sié**  
Principal Investigator



**Habibou Fofana**  
Co-investigator



**Moubassira Kagoné**  
Co-investigator



**Moussa Ouédraogo**  
Co-investigator



**Idrissa Kouanda**  
Computer Engineer



**Moustapha Lingani**  
Finance Officer



**Nouna Health  
Research Center**

**Research Partner**



**RESULTS FOR  
DEVELOPMENT**

**Coordinator**

**BILL & MELINDA  
GATES foundation**

**Funder\***

*\*The findings and conclusions contained within this report are those of the authors and do not necessarily reflect the positions or policies of the Bill & Melinda Gates Foundation.*

# Objectives

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**Understand how to structure modeling-to-policy and -program efforts to be effective at bridging the gap between modeled evidence and policy/program decision-making by:**

- 1. Identify factors & approaches** that facilitate/inhibit exchange between decision-makers and modelers.
- 2. Evaluate current practices and partnerships** in forums where translation work is already occurring.
- 3. Offer recommendations** to inform changes on funding approaches, organizational structures & country/global policies to enable success.



# Methodology

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## 54 Survey Participants

## 25 Key Informant Interviews

### Participants:

- **Modeling organizations:** in-country organizations/researchers that produce modeled evidence
- **Boundary/brokering organizations:** help to translate evidence, distill findings, foster dialogue, and impact policy or practice
- **Decision-makers:** users/potential users of modeled evidence and those who participate in making decisions for national health policies & practice



# Key Findings: Modeling to Decision-Making Ecosystem in Burkina Faso

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The entire ecosystem of modeling for decision making in Burkina is in a nascent phase, characterized by:

- A lack of funding for the creation of modeled evidence;
- Insufficient capacity of decision-makers to understand and use the models;
- Insufficient capacity of modelers to communicate the findings of the models in a clear and accessible language;
- A lack of a clear strategy for communicating the results of timely research

Nevertheless, there are factors that support the promotion of the use of modeled evidence:

- Recognition of the importance of modeling;
- Readiness of stakeholders to improve the modeling ecosystem



# Key Recommendations

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This research has identified a few courses of action:

- Develop a common understanding of the questions of interest that research should answer;
- Use health system-generated data to create models, not data from other settings; and
- Build capacity among decision makers on understanding and using modeled evidence;
- Build the capacity of researchers to communicate to a non-scientific audience, especially in writing policy briefs





# Background & Context



# Modeled Evidence

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**Modeled evidence**: mathematical models that **simulate different potential health scenarios**, including scenarios around disease transmission, and/or the impact of different policy interventions on health outcomes.

- Modeled evidence can be a **valuable tool** for helping decision-makers choose between **complex trade-offs**.
- The inability to ensure decisions are informed by the best modeling possible results in **losses of efficiency, effectiveness, and impact**.

Relevant literature ([Oliver, et al., 2014](#)) highlights the following as the barriers to evidence use:

- The availability of **timely and relevant research**
- The absence of a **connection between researchers and decision-makers**



# Relevant Literature in Burkina Faso

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Some authors citing the case of Burkina Faso believe that there is still a gap between available scientific knowledge and its use:

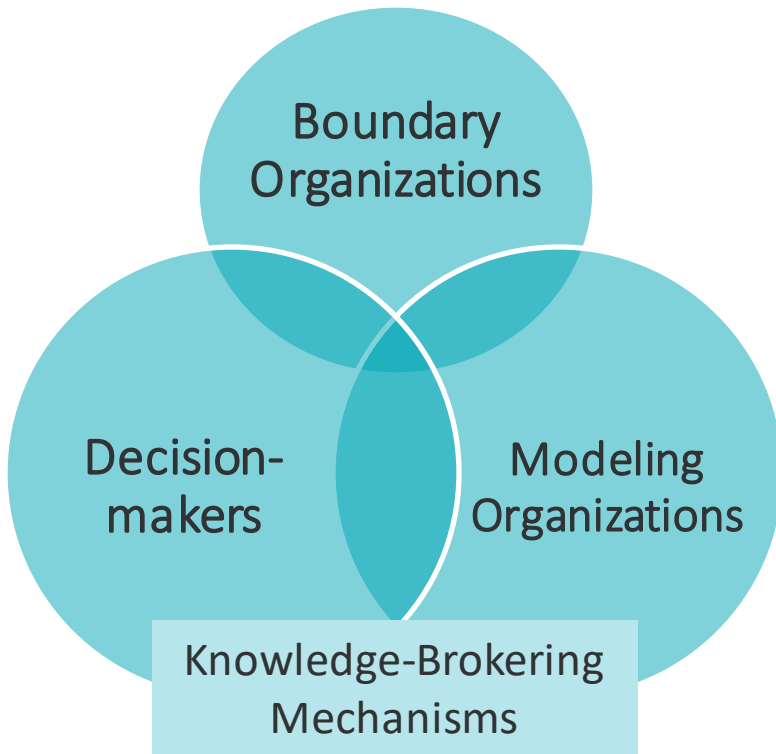
- [Kothari et al., 2014](#);
- [Leijen-Zeelenberg et al., 2014](#);
- [Lysenko et al., 2014](#);
- Nutley, S. M. Activities of the Knowledge Transfer Partnership Research Team, Montreal (2011);
- Dagenais, C., 2021;
- [Dagenais, C., McSween-Cadieux, E., Somé, P.-A. & Ridde, V., 2016](#);
- [Dagenais, C., Queuille, L. & Ridde, V., 2013](#);

For Dagenais et al. this discrepancy is explained by the difficulties in accessing research results and the lack of formulating a course of action to apply the research results.



# Modeling to Decision-Making Ecosystem

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**Modeling organizations:** in-country organizations/researchers that produce modeled evidence

**Boundary organizations:** [stand-alone organizations](#) that help to translate evidence, distill findings, foster dialogue, and impact policy or practice

**Knowledge-brokering mechanisms:** task forces/working groups/other [formal, collaborative mechanisms](#) that may sit within modeling or decision-making organizations or include them in their membership and help to translate evidence, distill findings, foster dialogue, and impact policy or practice

**Decision-makers:** users/potential users of modeled evidence and those who participate in making decisions for national health policies & practice

*\*Organizations may play more than one of these roles*



# Research Questions

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The goal of this study is to develop a shared understanding of what it means to be an effective boundary organization – the **traits and functions that facilitate research-to-policy collaboration and exchange in public health.**

- 1. Understand a range of factors** at various levels (from the individual level to the ecosystem level) that **facilitate or inhibit exchange between decision-makers and modelers.**
- 2. Evaluate partnership structures that support evidence translation** including but not limited to knowledge brokers and boundary organizations in target countries to deeply understand the challenges they face, what they are doing well, how they are learning, and where they need support.
- 3. Offer recommendations to inform changes** to funding approaches, organizational structures, and practices including evaluative thinking and learning, and country or global policies that may better enable decisions to be informed by the best evidence possible.



# Methodology





# Research Process

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Study using a mixed-methods approach

- Phase 1: online survey administered to:
  - Identify key stakeholders in Burkina Faso;
  - Undertake a preliminary assessment of the evidence needed by policymakers;
  - Assess barriers and facilitators to the promotion and use of model-based evidence
- Phase 2: In-depth interviews with key informants to better understand the survey results





# Phase 1: Surveys

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The questionnaire was conducted online from January 8 to February 15, 2022 using the "KoBoCollect" application.

Participant selection process:

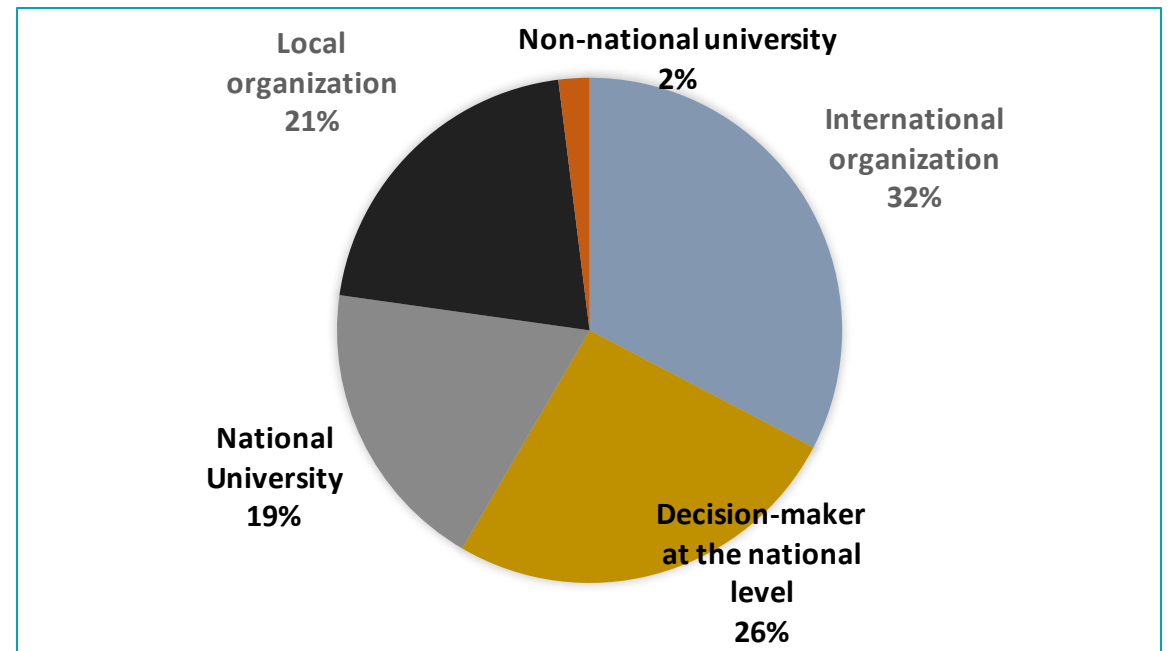
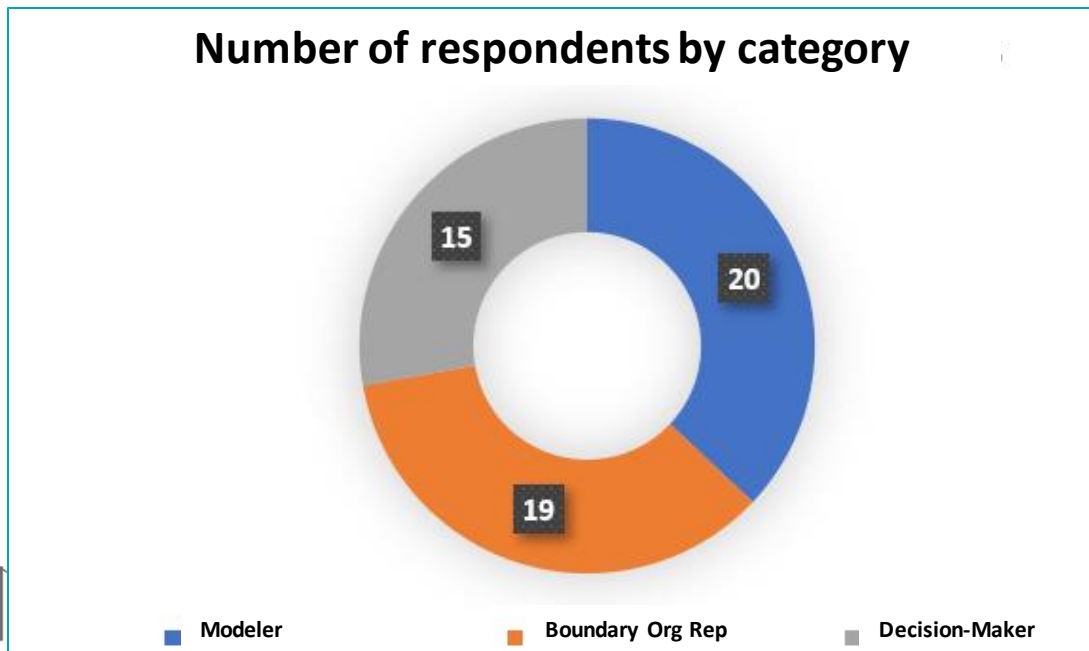
- A mapping of the modeling ecosystem (modeling organizations, boundary organizations, decision makers)
- A reasoned and snowball sampling based on the following criteria:
  - A structure and/or individual working in Burkina Faso;
  - A structure and/or stakeholder whose work is related to public health, diseases (HIV, malaria, COVID-19, tuberculosis, non-communicable diseases, vaccine preventable diseases, sexual and reproductive health);
  - A structure or stakeholder involved in the creation and/or use of statistical, epidemiological and econometric models.



# Survey Responses

- The analysis was done on 54 participants of the 73 expected in the sample
  - 43 men/56 expected and 11 women/17 expected
  - Response rate 54/73 or 74%

The response rates by category are shown below:



# Phase 2: Interviews

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- In-depth interviews with key informants were conducted from March 5 to May 11, 2022
- A subset of the survey participants was sampled in a purposive and snowballing fashion to obtain a diverse sample that took into account the different categories (Modelers, Boundary Organizations Representatives, Decision Makers)
- A semi-structured interview guide was used, addressing the following themes:
  - Ecosystem assessment
  - Facilitators and barriers associated with the use and translation of modeled evidence for decision making
  - Translation mechanisms and strategies for public health decision making in Burkina Faso



## Phase 2: Interviews Continued

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- Before the beginning of each interview, the purpose, objectives of the research, importance, and scope of the study were explained to each participant in order to obtain his or her verbal and written consent to conduct the interview, to record it, and to use the transcribed data and their analysis for scientific purposes.
- Confidentiality and anonymity were assured to each participant, before obtaining his or her signature of acceptance (or fingerprint, if applicable).
- A total of **25** interviews were conducted: 07 Modelers; 11 Boundary Org Reps; 07 Decision-Makers.
- By gender: 19 Men and 6 Women
- 12 face-to-face interviews, 13 telephone interviews; all conducted in French and recorded with a dictaphone.



# Analysis Process

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## **The questionnaire survey**

- The quantitative data from the survey were analyzed using Python
- Additional analyses were done using Excel software

## **Key informant interviews**

- The audio recordings were transcribed into French and coded by the NSRC research team using a codebook developed by the R4D team.
- The transcribed data was analyzed using Nvivo software with a focus on thematic analysis



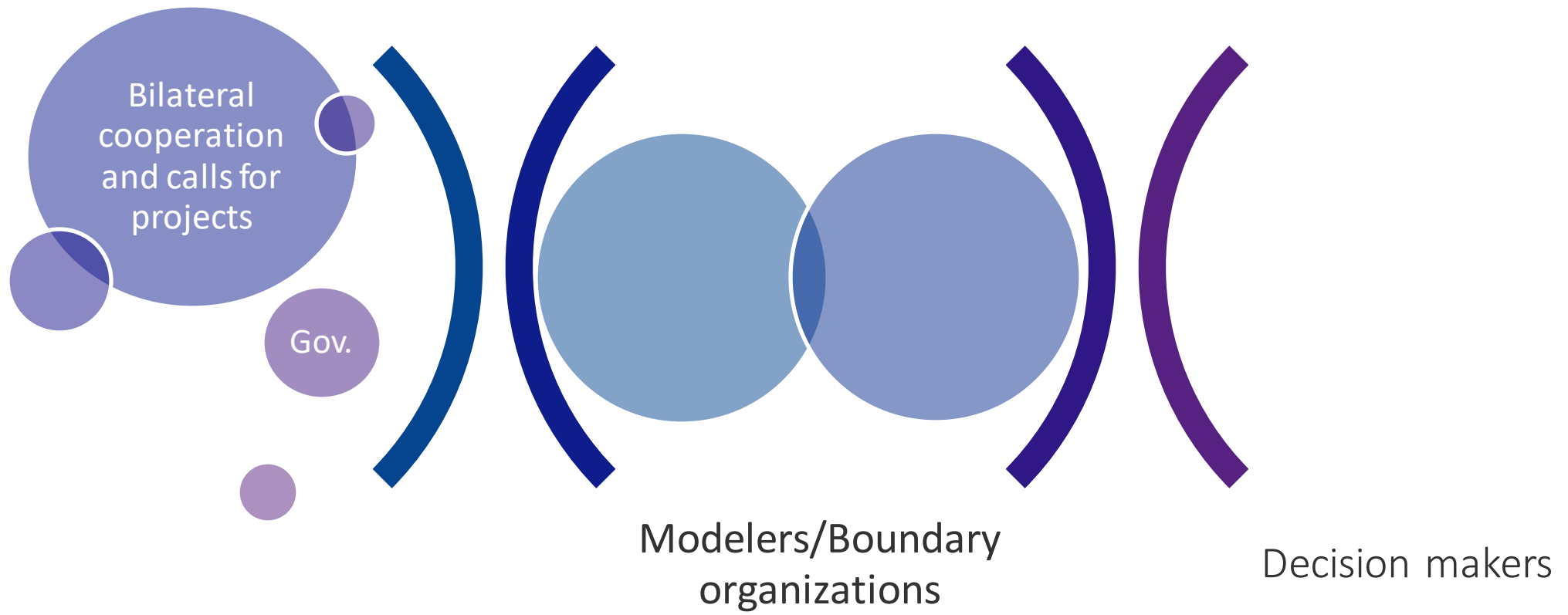
# Results



# Participants

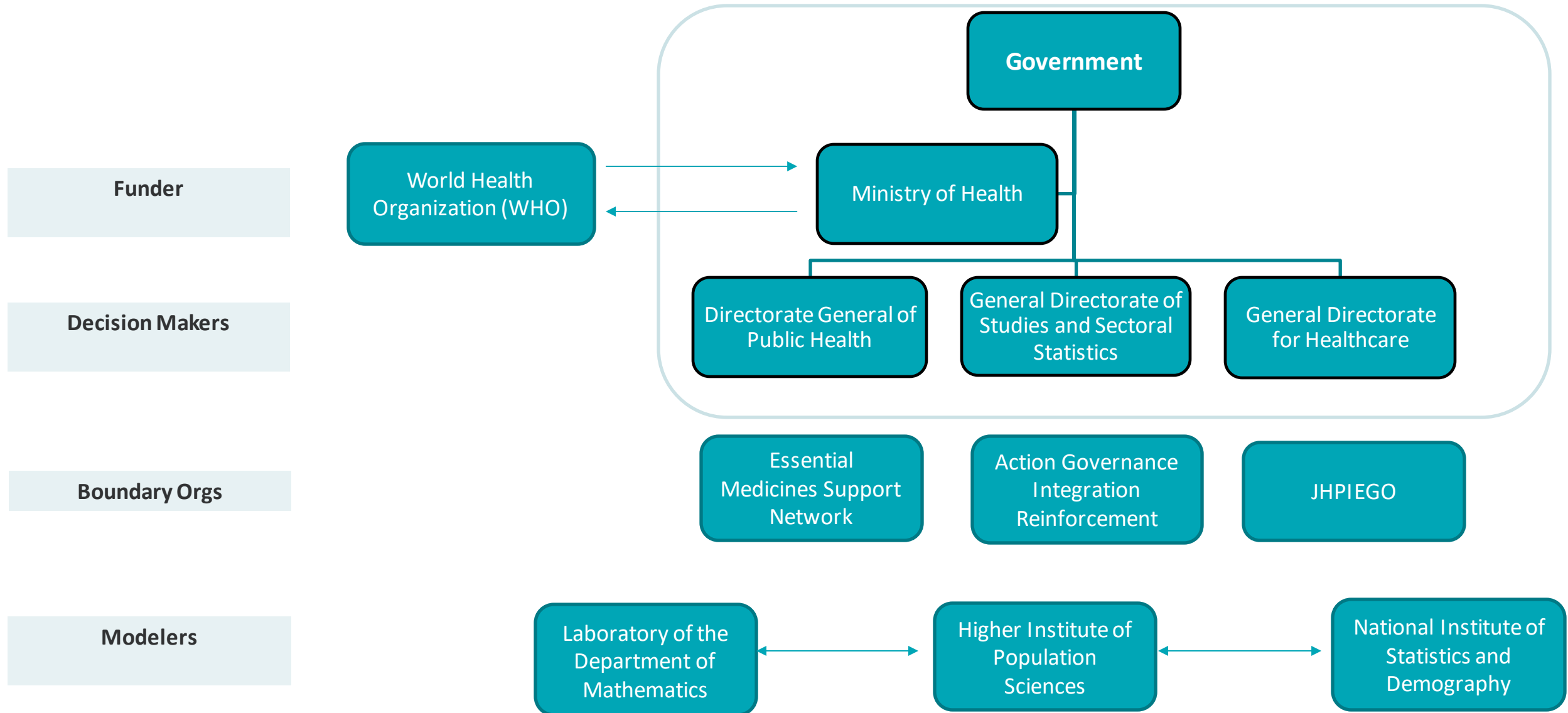
Type of Organization	Decision Maker	Modeler	Boundary Org Rep
Survey Participants	15	20	19
Key Informants	07	07	11
Gender	Female	Male	Other
Survey Participants	11	43	00
Key Informants	06	19	00
Organization Level	Local/Regional	National	International
Survey Participants	04	34	16
Key Informants	04	15	06







# Burkina Faso Modeling to Decision-Making Ecosystem



# Specific Context of Burkina Faso

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- In Burkina Faso, the Knowledge Management and Transfer Unit (UGTC) was established in 2017 by the Ministry of Health following the institutionalization of a pilot rapid response unit, to support the translation of evidence to inform policy and programmatic decision making. The unit produces knowledge that can be used to inform public health policy and decision-making, and disseminates research and evidence to various stakeholders, including policy makers, researchers, health care providers and clinicians.
  - However, its success has been very limited for reasons that include a feeling among decision makers that researchers are in direct competition for power, limited resources such as investment, and a reluctance to support new knowledge translation approaches and meaningfully engage in the research process.
- As a result, other structures such as the Performance Management and Results Unit (UGPR) and the Directorate of Monitoring, Evaluation and Capitalization (DSEC) were put in place to produce data from the national health information system, analyze it and produce regular progress reports to assist in decision making.
  - The UGPR promotes written research knowledge in the form of quantifiable, intelligible, understandable documents for public health action.
  - The DSEC is located within the Direction Générale des Etudes et des Statistiques Sectorielles, which is responsible for coordinating all aspects of health data planning and management and cooperation with technical and financial partners as well as health financing aspects and monitoring of projects and programs.



# Specific Context of Burkina Faso Continued

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- In addition, the Ministry of Health through the National Institute of Public Health (INSP) has its own research centers that make efforts at the national level to find timely evidence-based responses to public health problems.
- Several national research institutes and universities are working to produce scientific evidence in public health.
- However, there is insufficient capacity for experience and expertise in mathematical modeling.
- The West African Health Organization (WAHO) supports capacity development through regional training workshops and webinars to improve pandemic surveillance and management.
- It is noted that the ecosystem from modeling to decision-making is marked by a lack of collaboration between research and the political world.



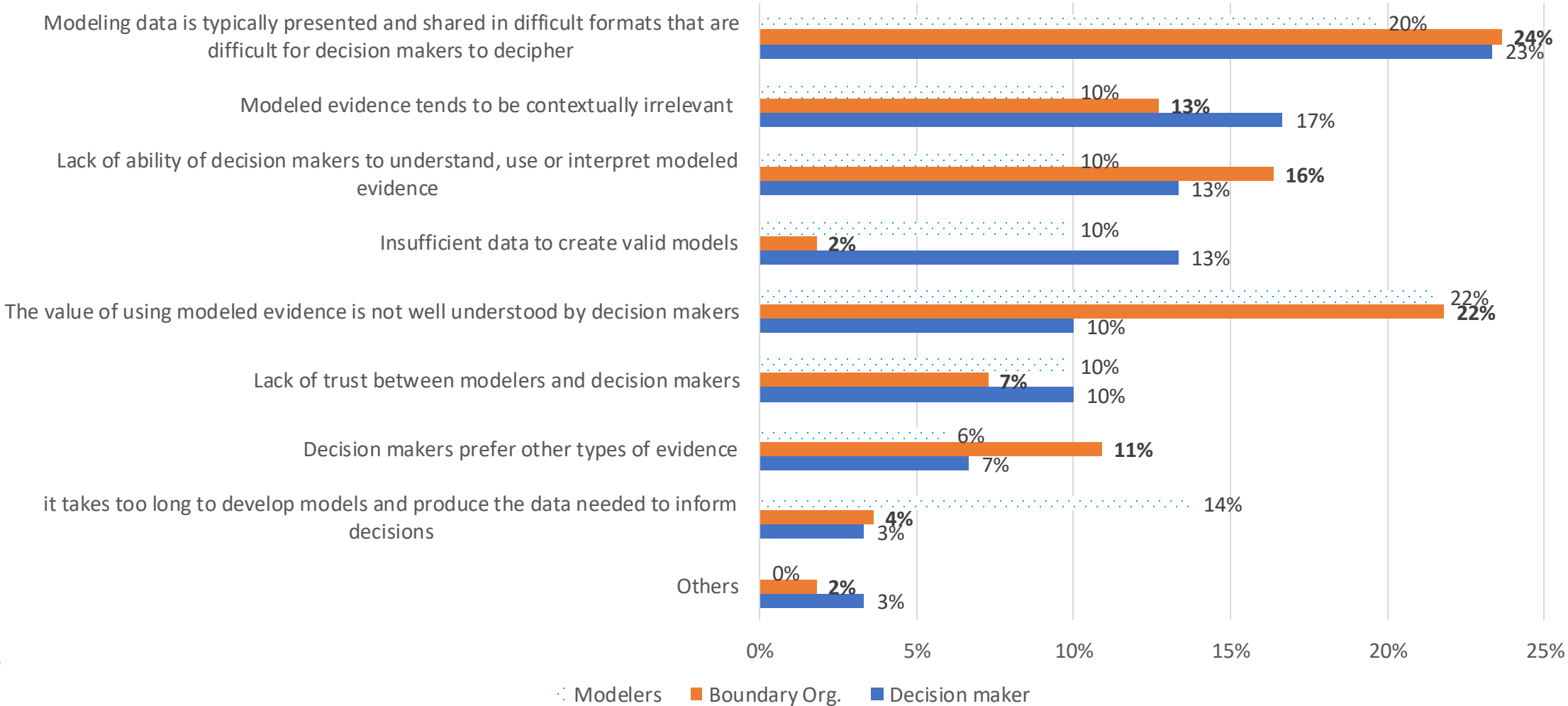
# Research Question 1: Facilitators and inhibitors of exchange



# Survey Results



# Key barriers to promoting the use of model-based evidence



# Summary: Key barriers to promoting the use of modeled evidence

INHIBITORS		
MODELERS	BOUNDARY ORGANIZATION REP	DECISION MAKERS
<p>1st / The value of using modeled evidence is not well understood by decision makers</p> <p>2nd / Modeling data is typically presented and shared in difficult formats that are difficult for decision makers to decipher</p> <p>3rd / It takes a long time to develop models, and produce data needed to inform decisions</p>	<p>1st / Modeling data is typically presented and shared in difficult formats that are difficult for decision makers to decipher</p> <p>2nd / The value of using modeled evidence is not well understood by decision makers</p> <p>3rd / Lack of ability of decision makers to understand and use, utilize or interpret modeled data</p>	<p>1st / Modeling data is typically presented and shared in difficult formats that are difficult for decision makers to decipher</p> <p>2nd / Modeled evidence tends to be contextually irrelevant</p> <p>3rd / There is insufficient data to create valid models</p>



# Synthesis: Key Barriers to Promoting the Use of Model-Based Evidence

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- For the modelers, the first obstacle to promoting modelled evidence is that "***the value of using modelled evidence is not well understood by decision makers***". In fact, they are reflecting the difficult relationship they have with decision makers to promote their research and modeling efforts. They feel, and perhaps this is the case, that decision makers do not perceive their usefulness. The question might be how to improve this image?
- But at the same time, recognizing as a second major obstacle that "***Modeling data is typically presented and shared in difficult formats that decision makers have difficulty deciphering,***" they admit that much of this perception is about the nature of their offering, i.e., the difficulty in understanding their models. And all categories (modelers, boundary org, and decision makers) agree on this as the major inhibitor. The question could be: how to improve the understanding of their models?
- Finally, the third major obstacle is the time required to produce models: "***It takes a lot of time to develop models and produce the data needed to inform decisions***" This factor very often makes modelers "fighters who arrive after the battle". Indeed, it appears difficult for them to respond in a timely manner to requests to inform the policy decision, because the production requires a certain amount of time. The question could be: how to reduce this time?





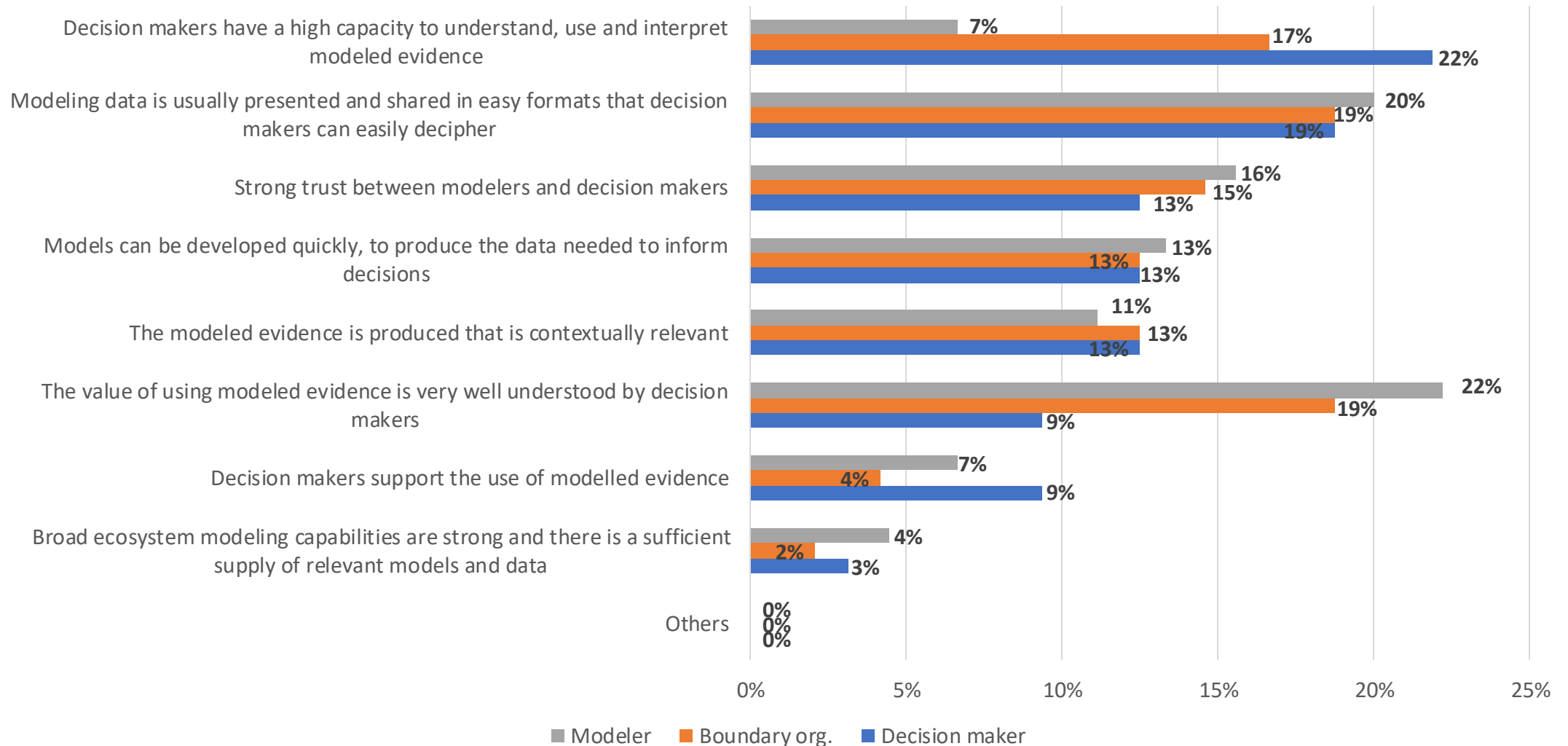
# Summary: Key Barriers to Promoting the Use of Model-Based Evidence

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- The Boundary Orgs. are very close to the opinion of the modelers, precisely on the difficulty of decision-makers to understand the models that are proposed to them for decision making. But here, the main problem is the lack of technical capacity. The decision-makers recognize the difficulty of reading and interpreting the models. But their opinion on the under-use of models is interesting: the proposed models are not always and necessarily relevant, because their validity is not always assured.
- In fact, from the point of view of the decision-makers, what is at stake is not only the question of technicality, i.e. the competence of the decision-maker to understand the model. It is also the actual interest of the proposed models in the context. As decision-makers are bound by convincing and immediate results, they are always skeptical about models that they do not understand well enough and that do not seem reliable in view of the resources mobilized by the modeler.



# Key factors in promoting the use of modeled evidence



# Synthesis: Key Facilitators in Promoting the Use of Model-Based Evidence

FACILITATORS		
MODELERS	BOUNDARY ORG	DECISION MAKER
<p>1st / The value of using modeled evidence is very well understood by decision makers</p> <p>2nd / Modeling data is generally presented and shared in easy formats that decision makers can easily decipher</p> <p>3rd / Strong trust between modelers and decision makers</p>	<p>1st / The value of using modeled evidence is very well understood by decision makers</p> <p>2nd / Modeling data is generally presented and shared in easy formats that decision makers can easily decipher</p> <p>3rd / Decision makers have a high capacity to understand and use, utilize or interpret modeled data</p>	<p>1st / Decision makers have a high capacity to understand and use, utilize, or interpret modeled data</p> <p>2nd / Modeling data is generally presented and shared in easy formats that decision makers can easily decipher</p> <p>3rd /</p> <p>Strong trust between modelers and decision makers</p> <p>The modeled evidence produced is contextually relevant</p> <p>Models can be developed quickly, to produce the data needed to inform decisions</p>



# Synthesis: Key Facilitators for Promoting the Use of Model-Based Evidence

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In each category, the classification of facilitating factors is almost the exact opposite of that of inhibiting factors.

- In the case of modelers, we note that the third factor takes into account the question of the confidence of decision-makers in the models they propose. This means in fact an aspiration, a wish on the part of the modelers who are aware that the promotion of their models depends on the confidence that they will inspire in the decision-makers.
- Among Boundary Orgs, decision-makers occupy a central place and the promotion of models depends on the interest they discover in them
- The classification of facilitation factors by decision-makers shows the importance of the accessibility of models, but above all their capacity to respond to a need, hence the three factors of "trust", "appropriateness to the context" and "speed of development", which come almost equally.



# Interview Results



# Key Individual Facilitators

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Type of organization	As reported by decision makers	As reported by modelers	As reported by boundary org reps
<b>Individual &amp; Interpersonal factors</b>	<ul style="list-style-type: none"><li>• A high individual capacity of the modelers to communicate and explain their models</li></ul>	<ul style="list-style-type: none"><li>• Decision-makers' positive personal attitudes toward the models</li></ul>	<ul style="list-style-type: none"><li>• High trust between modelers and decision makers</li></ul>



# Facilitator: High individual capacity to understand the models

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This refers to the technical skills of the decision-maker. Intermediaries believe that when they are dealing with a decision-maker who is knowledgeable about scientific research, this is a fundamental asset in the exchange. Better still, this quality of the decision-maker promotes acceptance of the model's usefulness.

“There is a growing culture of excellence among most of the decision-makers who are there, and most of them are public health physicians who know and understand the concepts of research, having done public health briefs themselves. So they know that this evidence is important.” (Boundary Org)



# Facilitator: Decision-makers' positive personal attitudes toward the models

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This refers to the decision-maker's "positive bias" toward modeling. If the decision-maker believes that the models developed by scientists can help them achieve their goal, then they are open to discussion and have an interest in the modeling process. However, this is not always the case, because some decision-makers simply do not have de facto confidence in what the models can provide, and are therefore relatively closed from the outset. It is evoked by the intermediaries.

"Increasingly, decision makers in the health sector are becoming more open to the use of data for decision making. In fact, everyone wants to see the effectiveness of their projects and programs. So they're looking at what's worked elsewhere, what hasn't worked well, also what's been found locally at the national level, so now the decision makers are looking at the success factors of their project." (Boundary Org)





# Facilitator: High trust between modelers and decision makers

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This facilitator is mentioned by the decision-makers. This confidence is linked to the skills of the group of experts who developed the model, but also to the relevance of the model.

"The key success factors for COVID were the people who were involved, because they were pretty well confirmed experts nationally, so people had confidence in the model and also because the modeling data was much closer to reality, because there was an initial model, then the model was adjusted, so even in terms of estimation the data was much closer. So, it was really the quality of the model as well that was a factor in the success and also the skills of the expert group." (Decision Maker)

# Key Organizational Facilitators

Type of organization	As reported by decision makers	As reported by modelers	As reported by boundary org reps
<b>Organizational factors &amp; Inter-organizational factors</b>	<ul style="list-style-type: none"><li>• The translation of scientific results into accessible and practical messages</li><li>• The presence of research institutes within the Ministry of Health</li><li>• The presence of intermediary structures within the Ministry of Health</li></ul>	<ul style="list-style-type: none"><li>• Interdisciplinary and regular exchange between specialists from different fields</li></ul>	<ul style="list-style-type: none"><li>• Establishment of permanent frameworks between decision-makers, funders, and modelers</li><li>• Involvement of stakeholders (decision-makers, boundary organizations, funders) in the model development process</li></ul>



# Facilitator: Translating scientific results into accessible and practical messages

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It appears in all categories as a facilitating condition for the use of the modelled evidence. It is defined as the formulation of recommendations for the implementation of the results of the models.

- Present the results in a simple and clear language

"First, it's the simplified language and being clear in the results, presenting the salient results. Research leads to many results, but not all results are important to share, and especially the most important is the recommendations." (Boundary Org)

- Bring the results to the level of the decision maker

"The third thing that can facilitate that is to bring those results to him, because you see, everyone has their area of expertise. When you're a decision maker, unless you're an academic, your reflex is only to go to the libraries and search the bibliography." (Decision Maker)

- Present results in a lightweight format

"For a good understanding, as I was saying, it is necessary first of all to present the results as simply as possible in a fairly accessible language, with a fairly light format. Presenting the results on one page, two pages, can be acceptable, but if it is on a large document, it can still be useful, but not for immediate use..." (Modeler)



# Facilitator: The presence of research institutes within the Ministry of Health

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This facilitator is mentioned by the decision makers. It is defined as the proximity of decision makers to the ministry's research centers such as through the UGTC and INSP. This facilitates not only access to available research results but also consultation with experts for decision making.

"The fact that the department has its own research centers is a contributing factor, and we work with our researchers every day, so we have access to their data that we can use. If we want to ask for expert advice as well, they're not too far away." (Decision Maker)



# Facilitator: Interdisciplinarity and regular exchange between specialists from different fields

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It appears to the modeling actors as a factor that contributes to facilitating access to empirical data available in other fields at the level of research centers.

"There is already openness, a collaboration that is developing between research centers and universities, whether it is the CNRST or other research centers [...] Then, I said that there are restructurings at the level of our laboratories to see how to open up to other fields, so that we can go and see in other fields where we can possibly intervene." (Modeler)

# Facilitator: Establishment of permanent frameworks between decision-makers, funders and modelers

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This facilitator is defined as the need for clear communication strategies around the research, a framework for exchange between decision-makers, modelers and funders in order to reach consensual conclusions.

"There must also be frameworks that facilitate these exchanges. If I take the example of the macroeconomic framework where I intervene most often, there are policy frameworks for that, for example quarterly we meet to look at the indicators, make indicators and others and then produce a note for the attention of certain authorities, so there must be this framework for exchange on the results of the research."  
(Modeler)

## Facilitator: The presence of boundary organizations within the Ministry of Health

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This facilitator can be explained by the fact that the ministry has structures within it with a mission to translate evidence, such as the DSEC and the UGTC, which can contribute to the use of evidence in decision-making.

"The facilitating factors are the potential of the technical group that we already have, which can be a basis for improving the use of these data. There is also the knowledge management and transfer unit, but unfortunately it is not functional. There is the DSEC, the statistics directorate, these are structures that can be factors that can contribute to the use of evidence for decision making." (Decision Maker)

## Facilitator: Involvement of stakeholders (decision maker, boundary organization, funder) in the model development process

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This facilitator is mentioned by boundary organizations as well as decision-makers. It reflects the need, in the process of developing the models, to involve stakeholders, especially decision-makers, to facilitate not only understanding but also use of the recommendations arising from the findings.

"When we start to do the study, the decision-makers at each level of the health system are involved. For example, the chief district physicians, the post nurses, the regional directors, when we take the central level, there are those who do the statistics at the DGESS. So they are already involved in setting up the protocol and even in collecting the data. In the analysis and reporting phase, we still ask them to be there...they are not strangers to what we do. This makes it easier to translate the main results and recommendations for decision making." (Boundary Org)

"(For the case of COVID 19) This is the consultation, the experts have come to say their understanding of the data and based on that what direction we can take. That's what I said, when they're done, they need to tell us how we can use it. There has been stakeholder involvement." (Decision Maker)





# Key Environmental Facilitators

Type of organization	As reported by decision makers	As reported by modelers	As reported by boundary org reps
<b>Environmental Factors</b>	<ul style="list-style-type: none"><li>▪ The occurrence of crises such as COVID 19</li><li>▪ The availability of real data for model creation</li><li>▪ The concordance between the results and the needs of the decision makers</li></ul>	<ul style="list-style-type: none"><li>• The occurrence of crises such as COVID 19</li></ul>	<ul style="list-style-type: none"><li>• The occurrence of crises such as COVID 19</li><li>• Donor practice in encouraging the development and use of models</li></ul>

# Facilitator: The occurrence of crises such as COVID-19

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This facilitator appears in all categories (modeler, boundary org reps and decision makers)

"Yes indeed, COVID has aroused great interest because in the framework of the development of the new PNDES, the institutional mechanism for monitoring has provided for the creation of a group such as COVID, which will provide expertise on the quality and use of data and then propose the results to decision makers at the time of the reviews that are organized." (Decision Maker)

"Absolutely, because it was an opportunity for us to exchange with people who are not mathematicians, we exchanged with doctors, biologists and others, people who wanted to understand what we had done. [...] And the model was used by the ministry and ourselves, which reassured us that what we do has applications, as long as we ourselves go to the decision-makers, we go to the real data. [...] Now with the collaboration that we had to model the Corona virus disease, we have developed others, especially in malaria, we are doing things and also for the dengue too." (Modeler)



# Facilitator: Donor practice in encouraging the development and use of models

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It is reported by boundary organizers and modelers.

"More and more donors are saying that if you propose something to us for funding, what proves that it will work is evidence that supports that (...) funding is made to take into account actions that are evidence-based." (Boundary Representative)

"Our authorities are also required by external actors, often we must not go with empty arms, we must go with data, we must go with evidence, therefore, in this context it promotes the search for evidence by the authorities before going to these frameworks. Beyond that, there are exchanges that the State has with its partners as well, necessarily we have to start with figures, with evidences. [You can't just say it with your mouth, you have to come up with models, scenarios that have already been substantiated, or work." (Modeler)



# Facilitator: Alignment of results with decision makers' needs

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This is a factor mentioned by the majority of decision-makers. It highlights the relevance of available studies that are not always in line with the realities faced by the Ministry of Health.

"It's the fit between our research results and our needs. If you have scientific evidence that doesn't fit our needs, that's fine, but we won't be able to use it" (Decision Maker)

"In order for research results to be used, it must be research that fits within the priorities of the Ministry of Health first" (Boundary Org)



# Key Individual Inhibitors

Type of organization	As reported by decision makers	As reported by modelers	As reported by boundary org reps
<b>Individual and interpersonal factors</b>	<ul style="list-style-type: none"> <li>The communication style of the Modeler and his difficulty to present his model in an accessible way</li> <li>The decision-maker's training in modeling or his ability to read and interpret the models presented to him</li> </ul>	<ul style="list-style-type: none"> <li>The Modeler's ability and communication style to present the model in an accessible manner</li> <li>The decision-maker's training in modeling or his ability to read and interpret the models presented to him</li> </ul>	<ul style="list-style-type: none"> <li>The training of the decision-maker in modeling or his ability to read and interpret the models presented to him</li> </ul>



# Inhibitor: The Modeler's communication style and his difficulty in presenting the model in an accessible way

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This inhibitor is defined by the way in which modelers communicate, often using specialized jargon that is difficult for end users to access. It is mostly mentioned by decision-makers, but also confirmed by both the modelers themselves and the boundary organizations.

"Most research teachers are not trained to be able to translate research results into policy briefs that can be understood by the general public, that's the big difficulty. That's the big difficulty. It's the lack of training, (...) the scientific evidence that we use, the language that we use, we have to adapt it so that it is understandable by the general public and especially by politicians."  
(Modeler)

# Inhibitor: The decision-maker's training in modeling or his ability to read and interpret the models presented to him

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This inhibitor appears in decision-makers and boundary organizations. It denotes the lack of capacity for the decision-maker to understand and translate the results of the models into concrete action. As a result, it is linked to the scientific language used by modelers to communicate about the models.

"But all in all, the results are not always presented in a way that we can read. Information can be read and translated, but often it is not presented in an understandable format. Maybe that's what our researchers are missing. When they finish finding things, you have to tell us what they are used for and what your concrete proposals for use are. [...] Results are not always presented in formats that are understandable to decision makers." (Decision Maker)

"You can't really confirm that they have the capacity to understand, because beyond the capacity to understand, it's how to also operationalize the evidence. Often decision-makers don't have that capacity either" (Boundary Org)



# Key Organizational Inhibitors

Type of organization	As reported by the decision makers	As reported by the modelers	As reported by the boundary org reps
<b>Organizational &amp; inter-organizational factors</b>	<ul style="list-style-type: none"><li>Lack of recommendations or policy briefs for the implementation of evidence findings</li></ul>	<ul style="list-style-type: none"><li>The compartmentalization between research structures and between disciplines (mathematics, biology, medicine, statistics, economics etc.)</li><li>Lack of financial resources for the development of models</li></ul>	<ul style="list-style-type: none"><li>The absence of formal frameworks for exchange and discussion that facilitate communication between modelers and between decision-makers and modelers</li></ul>





# Inhibitor: Lack of financial resources for model development

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This inhibitor is mentioned by the modelers. It is the lack of funding for modeling. This barrier leads modelers to design models that do not reflect reality because they do not have the resources for data collection.

"There are times when we are forced to manufacture data. But if we can get in touch with people who have real data, it will help us. I think this is one of our real problems and it's related to the fact that most of the models we develop are without funding. Because in order to get real data, you have to send people out into the field to make measurements." (Modeler)



## Inhibitor: Lack of recommendation or policy brief for implementation of evidence findings

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This inhibitor is related to scientists and the fact that they often do not make recommendations about the implementation of results, which does not encourage changes based on the studies conducted. This inhibitor appears among decision makers, but it is also accepted by the modelers themselves, for whom modeling is intended for publication of articles as part of their scientific career.

"Maybe it's because it's not translated as well, maybe there should have been a structure that translates the research results into a policy note to facilitate their use. Because at the departmental level, since they are not researchers, even understanding these articles can pose problems. [...] as it is not enough to have the results, but once you have the results, it is how to move from the results, get the studies out and formulate them into policy strategy and action that can be implemented on the ground." (Decision Maker)

"We, we do this first to produce results and to have articles, these are points that scientifically win. The primary objective like that, we don't worry about how it's going to be used afterwards by policy, no." (Modeler)



# Inhibitor: The compartmentalization between research structures and between disciplines

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This inhibitor is more mentioned by modellers. It is defined as the lack of collaboration between research institutions among themselves and between researchers and practitioners in different fields. This does not promote the sharing of experience and data for the creation of models.

"I think it's related to the fact that we organize very few multidisciplinary conferences, each one is concentrated in his field without trying to understand what the other one does, saying to himself, I'm a mathematician, I do my math, the other one is a biologist, he does his biology, whereas there are small things that we can share."  
(Modeler)



Inhibitor: The absence of formal frameworks for exchange and discussion that facilitate communication among modelers and between decision makers and modelers

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This inhibitor usually appears in boundary organizations

"The impression I have is that there is not enough communication between researchers and decision-makers. I think that's why we don't get enough value out of the data that people give us. There is not enough communication" (Boundary Representative)



# Key Environmental Inhibitors

Type of organization	As reported by the decision makers	As reported by the modelers	As reported by the boundary org reps
<b>Environmental factors</b>	<ul style="list-style-type: none"><li>• Lack of training in the use of the models for decision makers</li></ul>	<ul style="list-style-type: none"><li>• Difficulty in accessing data to create models;</li><li>• Decision-making mechanisms</li><li>• Lack of training in the use of models for decision makers</li><li>• Lack of tools to produce models</li><li>• Time spent developing a model</li></ul>	<ul style="list-style-type: none"><li>• Lack of training in the use of the models for decision makers</li></ul>



# Inhibitor: Lack of training on the use of models for decision makers

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This inhibitor is most often cited by decision-makers to signify their inability to use the models. This is due to the fact that there is no training available for them to understand and use the models.

"It is the empowerment of actors, because it is not enough to have the results, but once you have the results, it is how to pass from the results, get out of the studies and formulate them into a political strategy and action that can be implemented on the ground. That's the skill that we generally lack." (Decision Maker)

"First of all, there's training, because as I said, often people are not really equipped to work on the use and analysis of modeled data. Even the modeling, it's really not a lot of people who master that at the health department level." (Decision Maker)



# Inhibitor: Difficulty to access data to create models

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This is an inhibitor that appears in all modelers. To validate the models they create, modelers must resort to empirical data, which unfortunately are not always accessible. Also, the creation of the model requires the mobilization of data over a long period. This is not always accessible to the modelers.

"The biggest difficulty even is often the lack of data, when you want to do modeling, you have to mobilize a lot of data often over a long period of time." (Modeler)

"There are times when we are forced to manufacture data. But if we can get in touch with people who have real data, it will help us. I think this is one of our real problems and it's related to the fact that most of the models we develop are without funding. Because in order to get real data, you have to send people out into the field to make measurements."  
(Modeler)



# Inhibitor: Decision-making mechanisms

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This inhibitor is mentioned by boundary organizations and some modeling actors to signify the complexity of decision-making mechanisms. These mechanisms are based more on urgency, political pressure and the constraint of available resources for policy and program implementation.

"It must be said that this is a culture that is not very well developed in our countries. The impact or the place that should be given to this kind of information in the decision is limited. There are many other contingencies that make the decision much more based on other aspects, urgency, political pressure, resource constraints" (Modeler)





# Inhibitor: Lack of tools to generate models

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This is a factor mentioned by some modeling stakeholders.

It is defined as the lack of tools and resources to produce models quickly enough to be relevant for rapid decision making.

"Yes, there are difficulties, sometimes the data is not of good quality to fit the model we want to develop. The other problem we have is sometimes the lack of software. Often there are models that you want to make, but it requires the use of particular software that you don't have." (Modeler)

"Some models need us to have very large capacity computers, which unfortunately most of our health centers don't have. Even in climatology, we know the different facilities that really have computers that can make pretty accurate measurements." (Modeler)



# Inhibitor: The time spent developing a model

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It usually appears among modelers and boundary organizations. For them, the time spent on modeling is generally long, yet decisions are often made in a context of urgency. This leads decision-makers to make decisions without using models.

"Time is an obstacle because the data that will come out generally is data that needs to make an impact. If we take all our time to make models, it is really to make things that will make a difference and it is not in three years that we will make a difference. That doesn't necessarily interest politicians." (Boundary Org)

"Decision-makers make efforts to look at the data that are out there, but they also have to decide in an environment where sometimes the science is not there when they have to make decisions. This means that these decision-makers are sometimes also obliged to make decisions without scientific advice. So, it may take time to have enough material so that the decision-maker is obliged at some point to look for scientific evidence before making decisions." (Modeler)

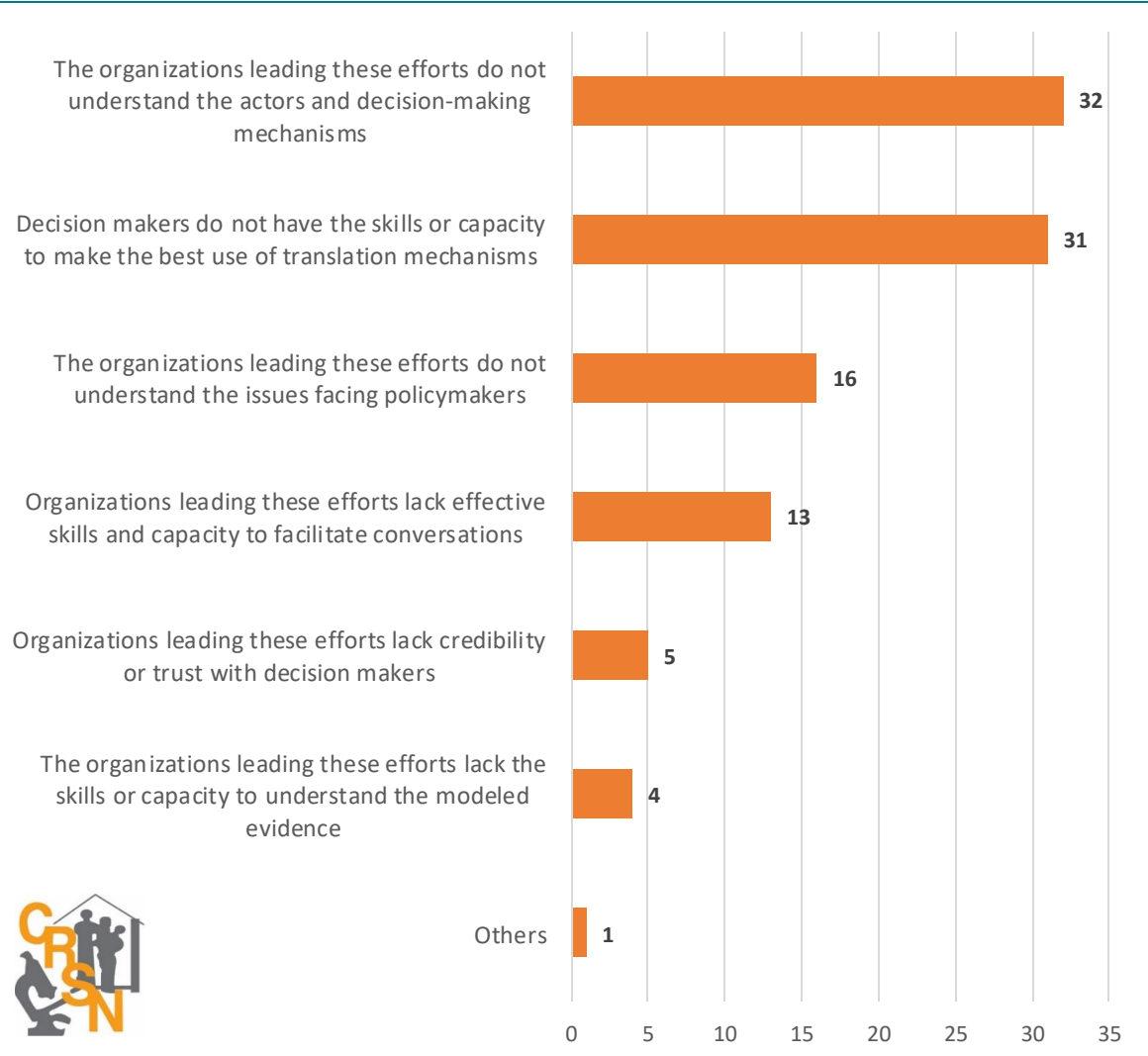


# Research Question 2: Structures to enable exchange between modelers and decision makers

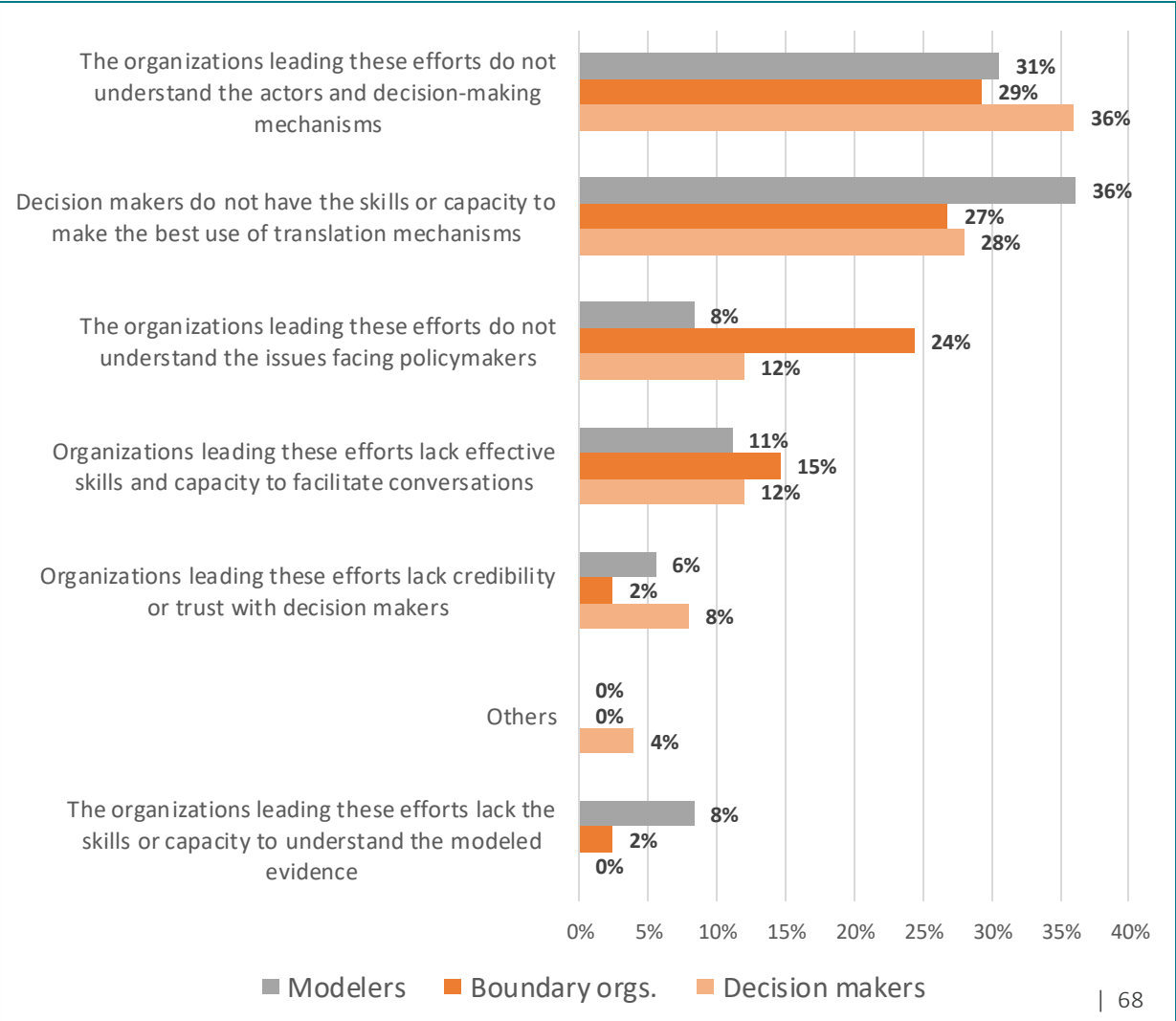


# Key barriers to decision makers understanding and applying knowledge from modeled evidence

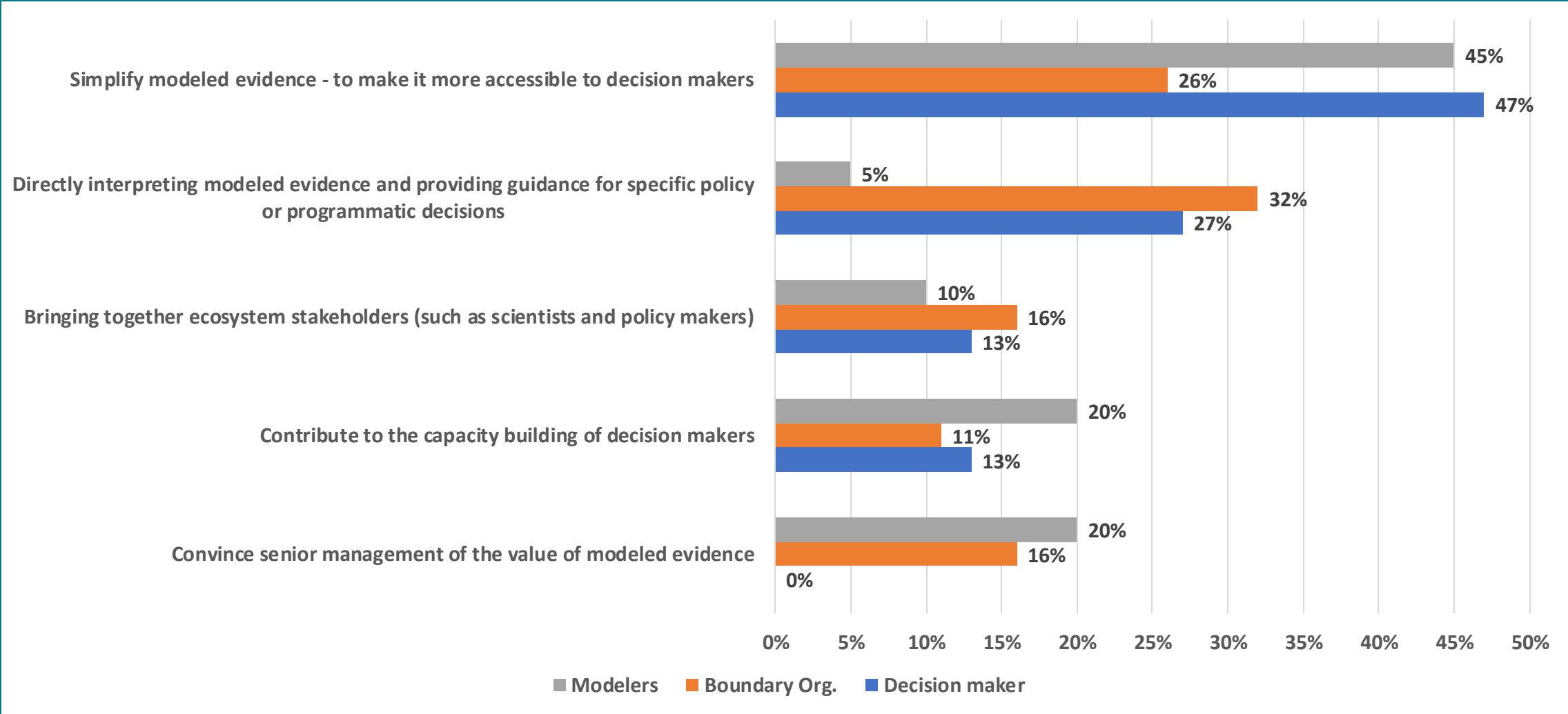
## Overall opinion of participants



## Participants' opinions by category



# Approaches with the greatest impact on promoting the use of modeled evidence for decision making



# Working Groups

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## **Government Advisory Group (Estimate HIV; COVID-19 Thematic Group)**

- These are technical working groups or committees of experts and modelers established by the government to review available data and advise the government (the "Estimate HIV" advisory group; the "COVID-19 Thematic Group").
  - The Estimate HIV advisory group presents results and proposals for taking action, often in the form of reports and scientific publications, to a functional committee in the MoH that includes technical experts and financial partners.
- A small group of modelers and policy and program decision-makers. The COVID-19 theme group is a committee created in the emergency of the COVID-19 response, and is therefore not permanent. In the "Estimate HIV" advisory group, members meet annually. As a member, it brings together all the structures that are involved in HIV care, including the Directorate of Family Health, the sectoral HIV program, the national council for the fight against HIV, which provides the lead, UNAIDS, UNICEF, INSD, ISSP, IRSS.



It regularly engages in the production of projection data to support public health decision makers and also the publication of scientific articles.

# Types of mechanisms: Working Group (Estimate HIV)

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Strengths	Challenges
Brings together several actors (decision makers, academics, technical and financial partners)	Holding regular meetings; only meets annually
The occurrence of crises as COVID-19	The competence of some decision makers in data analysis
Proximity to programmatic and political decision makers	

# Boundary Organizations

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- Autonomous entities that focus on building relationships between modelers and policymakers: RAME (Essential Medicines Access Network/Réseau d'Accès aux Médicaments Essentiels); AGIR (Action Governance Integration and Strengthening/Action Gouvernance Intégration et Renforcement)
  - They call attention to salient policy issues, conduct research and create fora for decision makers to engage with researchers and civil society, although with limited use of modeling and engage decision-makers through deliberative/seminar workshops, feedback workshops, and the simplification of results into policy briefs for decision making.
  - Dependence on external funding.
- Entities within the Ministry of Health such as the UGTC, DSEC
  - Directly attached to the ministry, they regularly provide evidence to the final decision makers for decision making based on the needs of the moment.
  - Works with the state budget.





# Types of mechanisms: Boundary Organization (RAME)

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Strengths	Challenges
Impartiality	Engaging modelers and decision makers to discuss the findings of the modeled evidence
High communication capacity	Monitoring and evaluation
	Not directly involved in decision making

# Strength: Proximity to programmatic and political decision makers

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This strength is based on the fact that the mechanism is directly linked to decision-making bodies. This facilitates the visibility of evidence and its use by policymakers. For example, the HIV Estimate Working Group is linked to the Ministry of Health's Sector Dialogue Framework (SDF).

"The strength is that first of all we made sure that it is backed up by a body of the CSD, the sectoral framework for dialogue, which is a coordination body for all the activities of the Ministry of Health. So this is already a strong point." (Decision Maker)

## Strength: Gathers several actors (decision makers, academics, technical and financial partners)

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This strength is related to the fact that the working group includes several stakeholders including policy makers, academics, technical and financial partners.

"And then, another strength is that the actors are not just the Ministry of Health actors, there are several actors, for example, the academic mode, technical and financial partners." (Decision Maker)

## Strength: the occurrence of crises such as COVID-19

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The COVID-19 pandemic, due to its lack of awareness, has generated interest in participating in this working group, particularly the COVID-19 Thematic Group.

"Since it was a new disease, everyone was interested. So it was really a strength for this group. The whole mode was interested in working and producing something even on a scientific level." (Decision Maker)



# Challenge: holding regular meetings

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This challenge concerns the regular holding of group meetings. Meetings are held irregularly due to stakeholder constraints.

"It is a challenge and not a weakness, it is the regularity of the meetings. It's irregular that we meet. If we had been able to have regular meetings, it would have been more efficient. It's due to the members' constraint and also the motivation" (Decision Maker)

# Learning and M&E

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- Because the modeling ecosystem in Burkina Faso is in a nascent phase, learning and monitoring and evaluation initiatives are non-existent
- However, there is training to build capacity in model creation and communication of model results



# Research Question 3: Participants' Recommendations



# Model development

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- Involve decision makers in the model development process.
- Use data generated by the health system to create models; this will help improve the quality, transparency and confidence of decision makers in the model.
- Create conditions for emulation and collaboration between researchers from different disciplines through the study and consultation departments of the universities.





# Communicating models

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- Strengthen the capacity of researchers to write policy briefs.
- Establish a framework for interaction between the three entities: civil society, policy makers and researchers.
- Use structures such as the Council of Administration of the Ministerial Sector (CASEM) of the Ministry of Health as a space for interaction between modelers and decision-makers.
  - This structure has the advantage of being chaired by the Minister of Health himself in the presence of all central directors, regional directors, hospital general managers as well as all project and program managers and all technical and financial partners of the Ministry of Health.
- Translation of the models into languages accessible to decision-makers.



# Use of models

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- Develop policy briefs in plain language.
- Build the capacity of decision-makers to understand and use the modeled data.
- Engage decision makers in the model development process.



# Discussion and recommendations



# Key Topics

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- The results reveal a lack of expertise in the modeling ecosystem in Burkina Faso. Thus, translation strategies that would have more impact would be to simplify the modeled evidence to make it more accessible to decision makers
- Key barriers to promoting the use of modeling evidence: Modeling data are generally presented and shared in difficult formats that are difficult for decision makers to decipher
- Key barriers to decision makers understanding and applying knowledge from modeled evidence: organizations leading these efforts do not understand the actors and mechanisms of decision making



# Key Topics Continued

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- The results of our research corroborate the observation made by the RENARD research team and the “Institut de recherche pour le développement (IRD)” that the process leading to the use of knowledge is so complex that science and research are still insufficiently considered in practice and decision-making environments. There is a consensus in the scientific literature that efforts to make scientific knowledge available are a necessary, but not sufficient, condition for its effective use in practice.
- The “Fondation Québécoise de Recherche en Sciences Sociales” FQRSC, 2011, p. 9, advocates for the knowledge transfer process to improve the use of research results for decision-making for this to happen there should be a ***“set of efforts made to help make research activities and results known and recognized [...] for use by practice settings, decision makers, and the general public, whether the process is interactive or not.”***
- Some authors citing the case of Burkina believe that there is still a gap between available scientific knowledge and its use (Kothari et al., 2014; Leijen-Zeelenberget al., 2014; Lysenko et al., 2014; Nutley, 2011).



# Summary of Mechanisms

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## Boundary Organizations

# Summary of Mechanisms Continued

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- The survey results showed that the types of approaches commonly used to help decision makers understand and apply the findings from the modeled evidence are: Convening decision makers with other stakeholders (e.g., seminars) (52%); Reports/guidance notes from the modelers/organizations that produced the modeled evidence themselves (50%); Data visuals and dashboards (48%).
- The approaches that would have the most impact on promoting the use of modeled evidence would be to:
  - Simplify modeled evidence to make it more accessible to decision makers (39%);
  - Directly interpret modeled evidence and provide guidance for specific policy or programmatic decisions (20%);
  - Contribute to capacity building of decision makers (15%).



# Recommendations to improve modeling to decision making in Burkina Faso





# Recommendations for donors and global policymakers

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1. Build the capacity of policy makers to understand and use the modeled data;
2. Strengthen the capacity of researchers to write policy briefs;
3. Funding dedicated to knowledge transfer.



# Recommendations for decision and policy makers in Burkina Faso

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1. Develop a common understanding of the questions of interest that research should answer;
2. Establish a framework for interaction between the three entities: civil society, policy makers and researchers;
3. Use structures such as CASEM as a space for interaction between researchers and decision makers;
4. Invite decision-makers to learn about knowledge transfer and to collaborate with researchers for better decision making; develop a communication strategy with researchers;
5. Create conditions for emulation and collaboration between researchers from different disciplines through the directorates of studies and consultation of the universities;
6. Improve access to data generated by the health system for modelers.



# Recommendations for modeling organizations in Burkina Faso

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1. Involve decision makers in the model development process as much as possible;
2. Use health system-generated data to create models; this will help improve the quality, transparency, and confidence of decision makers in the model;
3. Develop a clear communication strategy around research findings;
4. Publish research results in journals that are accessible to end users;
5. Translate research results and provide operational recommendations to decision makers for decision making;
6. Develop models based on the context and needs of the Ministry of Health.



# Recommendations for boundary organizations and knowledge brokering mechanisms in Burkina Faso

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1. Develop policy briefs in plain language;
2. Improving access to and communication of research results;
3. Promote knowledge brokering through training on knowledge transfer;
4. Facilitate meetings, contacts and collaboration between modelers and decision-makers;
5. Create spaces for exchange between modelers and decision makers.



# Limitations

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1. Lack of documentation on modeling in Burkina



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# Thank you

Corresponding author :

Dr. Ali Sié, Principal Investigator, [sieali@yahoo.fr](mailto:sieali@yahoo.fr)

