MAKING DATA COUNT

INSIGHTS ON VISUALISATION AND ENGAGEMENT APPROACHES FROM THE KENYA AGROFORESTRY STRATEGY DEVELOPMENT PROCESS

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CIFOR World Agroforestry SHARED The Decision Hub Busara

01 Background

While research evidence is continually being generated, it is often not used adequately to guide policy decisions.

The development of the Agroforestry Strategy for Kenya provided an opportunity for researchers to support policy development and at the same time gain a deeper understanding of how the research-policy gap can be bridged. A briefing note was developed outlining the study approach as well as preliminary findings of this process.[1] In this briefing, we consider the implications of the final results and highlight issues for further research.

Policymaking is a complex process based on many factors, including values, experience, and resources, but evidence can play an important role.[2] Researchers and other stakeholders seeking to support evidence-based policy making can enhance the likelihood that evidence will be used effectively in decision-making by generating information that is salient (relevant and timely), credible (trusted and believable), and legitimate (fair and unbiased) from both the researchers' and decision makers' perspectives.[3]

Ensuring that decision makers have access to relevant and timely research is an important step in supporting evidence-based policy making, but accessibility alone is not always sufficient for better decision-making where presented information cannot be understood and incorporated.[4] Presentation matters, as does process.

Effective visualisation of data can improve decision-making quality and speed, while participatory processes for collective decision-making can improve the quality and legitimacy of decisions, building the capacity of participants for future decision-making.[5]

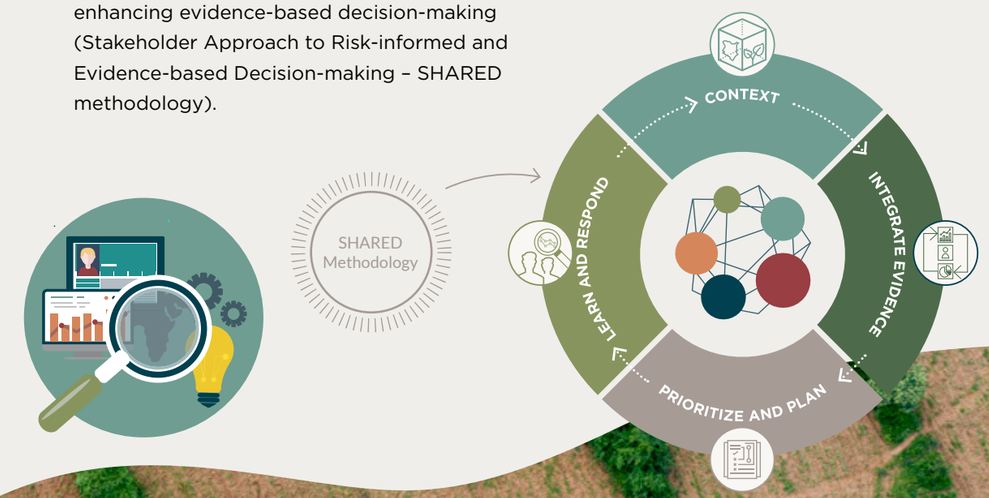
> "The development of the Agroforestry Strategy for Kenya provided an opportunity to gain a deeper understanding of how the research-policy gap can be bridged."

02 The Decision-Making Context

Decision makers from multiple government sectors and NGOs at national and subnational levels are working together in Kenya to develop a national agroforestry strategy.

This work is being conducted in a typical group decision-making context that has been widely studied in the organizational behaviour literature.[6] The Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF) has been supporting the development of the Strategy, building on its inclusive approach to enhancing evidence-based decision-making (Stakeholder Approach to Risk-informed and Evidence-based Decision-making – SHARED methodology).

Concurrent with the strategy development process, SHARED Decision Hub engagement specialists, CIFOR-ICRAF scientists and Busara behavioural scientists implemented a novel behavioural study to inform understanding and address key bottlenecks in applying evidence to policy decisions.



03 Research Questions

Using a quasi-experimental behavioural science approach, the research focused on two core questions.

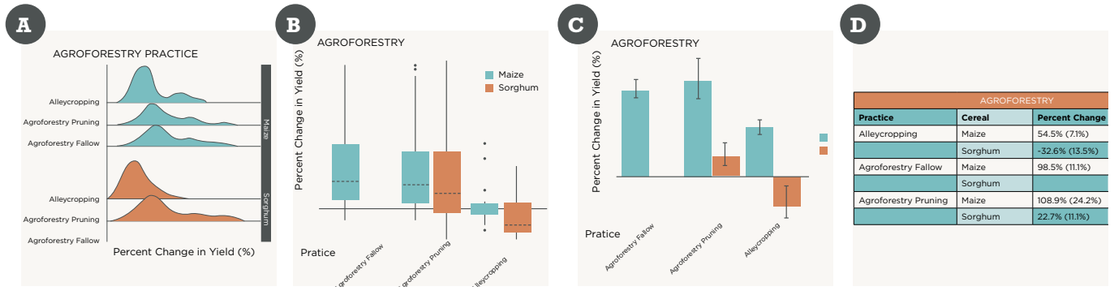
Research Question Nº1

Understanding data visualisation preferences

During June 2020, an online survey was disseminated to key Strategy stakeholders to determine their data visualisation preferences, using pairwise comparison of the same data presented as a bar chart, boxplot, table or ridgeplot.

An Analytic Hierarchy Process analysis was conducted on the survey responses to determine the data visualisation preferences. Then it was rolled out for the strategy consultation and as part of Research Question 2.

Visualisation options compared through the Pairwise comparison approach: (A) Ridgeplot; (B) Boxplot; (C) Bar chart with error bars; (D) Table



AGROFORESTRY		
Practice	Cereal	Percent Change
Alleycropping	Maize	54.5% (7.1%)
	Sorghum	-32.6% (13.5%)
Agroforestry Fallow	Maize	98.5% (11.1%)
	Sorghum	
Agroforestry Pruning	Maize	108.9% (24.2%)
	Sorghum	22.7% (11.1%)

Research Question Nº 2

Understanding the impact and influence of facilitation and peer learning

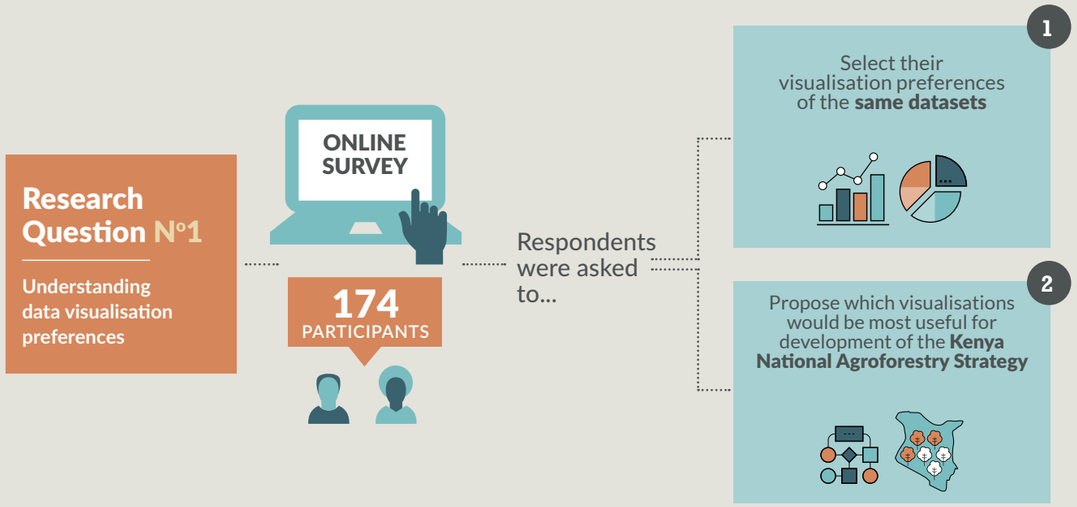
In order to understand how the process of facilitation can impact policy and strategy development, a workshop process was designed directly aimed at key technical officers within the Strategy development process.

Two workshops were held, the first of which was 'peer-led'. In this workshop, participants could review and follow provided instructions, manage the workshop flow without external facilitation of any workshop sessions, and look at evidence in a document form. The second workshop was facilitated using the SHARED Decision Hub methods and approaches, with facilitators guiding participants through a detailed interaction with evidence on a virtual 'evidence wall' which was explained by thematic experts. This allowed for active engagement by individual participants and permitted facilitators to clarify questions and guide participants towards Strategy development objectives.

A week prior to the virtual workshops, participants were provided foundational information, including an evidence pack.

The evidence packs, which focused on the topic of unsustainable woodfuel production and use (related to Pillar 3 of the Strategy), allowed the participants in both workshops to interact with critical evidence related to the focus issue of unsustainable woodfuel production and how best the Strategy could address this.

The two three-hour virtual (due to Covid-19 restrictions) workshops were held in December 2020. In order for the behavioural research to be embedded within an active policy process, the design of the workshops selected one of the focal areas for the Strategy development, so that the workshops formed an active learning process within the Agroforestry Strategy consultation and development process, and not a standalone research-orientated activity.

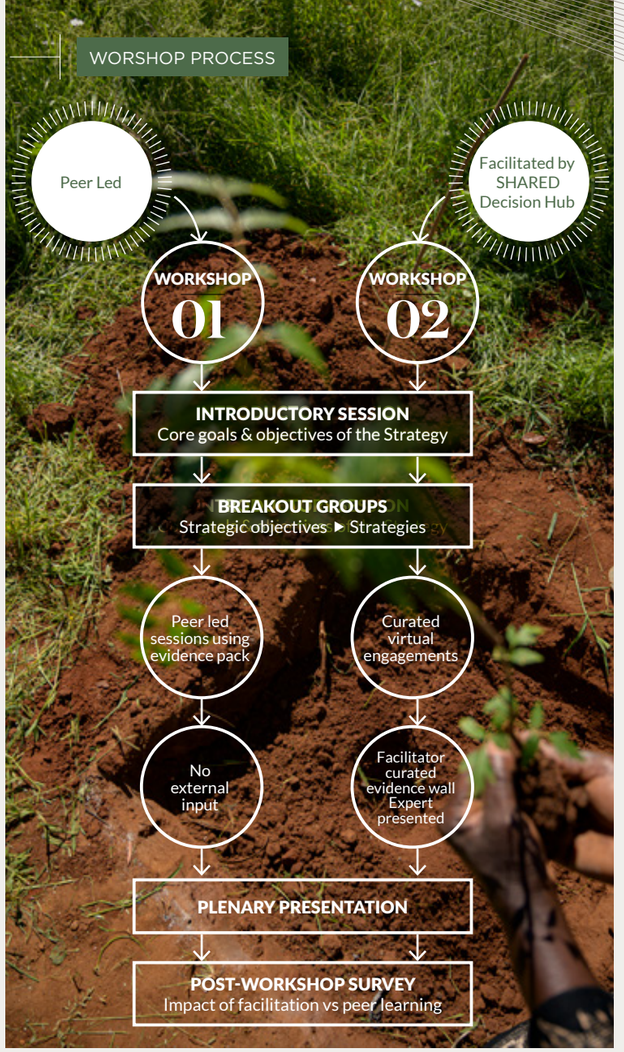


Both virtual workshops started with an introduction to the Strategy, explaining the core goals and objectives of the Strategy. Following the introduction, break out working groups outlined strategic objectives, and developed strategies to meet those objectives, related to sustainable woodfuel system development within the overall Strategy.

> **"The key difference between the two workshops was the role of facilitating the working groups."**

In the first peer-led workshop, working groups allocated a facilitator amongst the participant technical officers, who had an instruction pack for the working sessions. The groups worked through exercises with no external input beyond clarifying instructions. In the second facilitated workshop, SHARED Decision Hub specialists led the introduction to each of the sessions, and curated virtual engagement of evidence provided in the evidence pack in a virtual 'evidence wall'.

This methodology, presented by experts, was developed by the SHARED Decision Hub to allow interrogation of different data sources (such as practitioner experience and scientific figures and maps) in tandem to unpacking deeper linkages and connections. In addition, participants in the second facilitated workshop were taken through a detailed example of a root cause analysis by SHARED Decision Hub engagement specialists. In contrast, in the first peer-led workshop two groups received instructions to run through the exercise alone. Both workshops ended with the participants being asked to complete a post-workshop survey, which sought to reveal the impact and influence of facilitation versus peer learning and the impact this had on interaction with evidence and data – another key aspect we tried to understand.



ANALYSING IMPACT OF FACILITATION VS PEER LEARNING

In order to analyse the differences between the two workshop formats, recordings of the workshops were first **transcribed verbatim** and spliced into **individual topical statements** that were usually one or two sentences long.

In the first wave of categorization, analysts attempted to identify **major topical themes** as well as transition statements.

In the second wave, the topics were refined further into **more precise categories.**

The final step was to **plot conversations vertically** to map the various conversational threads, including the statements that led to topic changes, referencing data or actual decisions.

04 What did we learn?

The research findings have important implications for stakeholders wishing to address the research-policy gap.

The results of the visualisation preference component of the study show that most of the survey respondents preferred a table, followed by a bar chart. These preferences were reflected in their data visualisation recommendations for the Strategy, with the majority of the respondents (53%) recommending the use of tables to present data in the Strategy, followed by bar chart. Study participants felt that these formats were easier to read and understand, more visually appealing, and simpler. Not surprisingly, the results showed that participants preferred visualisation formats that they were familiar with. The study included comprehension questions, which confirmed that respondents mostly understood the information being communicated through their preferred visualisation option.

Though there was a strong preference for tables and bar charts, weighting of preferences through pairwise comparison showed high variation, which indicates that respondents do not have a consistent preference. When asked which additional formats would help to represent the data so that it is most useful, participants suggested a diverse range of options, including adding narration and text to figures and tables, understanding the target audience (as what was useful to one profession might not be useful to another), and having a mix of both figures and tables, including simple methods of data presentation and colour coding the data. Suggested additional visualisation options included pie charts, maps, histograms, line charts and the use of mobile apps.

These results align with past research that highlights the need to present the same data in various ways and to tailor them to the target audience.[7] It has been argued that understanding for whom a visualisation option worked was more important than making one option work for everyone.[8]

Of course, not all information can be readily presented in a table or bar chart. The results of the study indicate that more complex information, mainly linked to variation (typically illustrated in boxplots and ridgeplots), may be missed by technical officers involved in policy-making processes. This highlights the need for capacity support to develop enhanced graphic interpretation skills so that technical officers can interpret more complex details in visualisations.

KEY MESSAGES

1. Technical officers in Kenya prefer, and are better able to understand, **simple and familiar** visualisation options such as tables and bar charts.
2. Preferences do differ, so it is best to **present the same data in various ways** and to tailor them to the target audience.
3. Some data is best presented in formats that technical officers are less familiar with and have more trouble interpreting, so **capacity building for enhanced data interpretation skills** is important.

Regarding the second question, which explored the impact and influence of facilitation and peer learning, results show that facilitated working groups tended to be perceived as more inclusive, with stronger data integration and a better understanding of underlying causes by workshop participants compared to peer-led working groups.

While members of the peer-led working groups did feel that they were included, the facilitated groups showed a slightly greater level of inclusion. Group decision-making outcomes achieved through participatory processes consider the differences in knowledge, perspectives, opinions, values, uncertainties from all stakeholders.[9] In cases where groups are not well facilitated and are not inclusive, individual contributions may not be captured. An inexperienced facilitator that the group has nominated will have less experience ensuring inclusion.

The peer-led groups covered more topics in their deliberations, often mentioning a given topic only once or twice, suggesting that the conversation and decision-making process was more fragmented than in the facilitated groups.

Evidence in the facilitated workshop was shown by experts through a virtual evidence wall. Together with the role of the SHARED facilitator in prompting reflection on the evidence, this likely enhanced the integration of evidence in the objectives and strategies that were developed by the facilitated groups. While the peer-led groups did discuss the data, it seemed to not have been internalised or to have informed the outcomes of the group work to the same degree as in the facilitated groups.

The root cause analysis process was used within the workshops to elicit different underlying causal relations within the wider systems and sustainable development dimensions such that identified strategies would address causes rather than missing symptoms. The facilitated groups tended to demonstrate a more complex analysis of the problem identified and reflected a greater number of dimensions of causes (e.g., economic, social, cultural, environmental, institutions and policy). The facilitated groups tended to have a greater number of strategies identified with substantive touch points that emerged from the causal analyses. The causal analysis in peer-led groups were limited in scope and more simplistic.

KEY MESSAGES

Compared to peer-led workshops, the facilitated workshops resulted in:

1. A stronger sense of inclusion by participants
2. Stronger data integration in strategies
3. A better understanding of underlying causes by workshop participants
4. A greater number of strategies with substantive touch points emerging from the causal analysis

05 Some caveats and areas for further research

The study was conducted with small sample of stakeholders working in Kenya in support of agroforestry scaling and adoption.

Research Question Nº 1: Understanding data visualisation preferences

Regarding data visualisation, the preference for tables and bar charts should not be taken as a recommendation to present data only in these formats.[10] If anything, the high variation in the preferences suggest that **data should be presented in multiple formats.**

The context and end purpose of the process must be considered in the selection of visualisation options, with **end users brought in early to co-design presentation formats.**

Another recommendation is that **technical officers' capacity to interpret more complex graphics should be enhanced** so that they can understand important variability information, which is often presented in these formats.

Next steps to enhance this area of knowledge should include use of **dynamic apps to enhance interaction with data** and **improve understanding of how this can influence both preference and comprehension** over time.

Research Question Nº 2: Understanding the impact and influence of facilitation and peer learning

Interaction with data through facilitated groups appeared to enhance inclusion, understanding and integration of evidence and consideration of a wider system in this study. The study has several limitations as it was undertaken with a small sample, in a virtual setting and captured several interconnected factors (inclusion, evidence and root causes) at once.

Another potential factor influencing the improved performance of the facilitated workshop groups was that they were all facilitated by women and had a greater percentage of women members overall. Women have been found to positively influence a group's collective intelligence as they tend to share input openly and are less autocratic.[11]

POTENTIAL LIMITATIONS

- Small sample
- Virtual setting
- Captured several complex interconnected factors
- Majority of facilitators and participants were women

While the study was designed to replicate a real-life workshop situation, the small sample size and complexity make the different components challenging to separate. The study does however give important initial insights into how facilitation can enhance inclusive evidence-based decision-making. Opportunities exist to continue this work and scale to larger numbers and contexts, including comparison across face-to-face and virtual workshops, with groups of different types of stakeholders, in other countries in Africa and in other geographic regions.

FUTURE WORK COULD INCLUDE:

For the facilitated groups

- The provision of a brief training on group facilitation
- An assessment of facilitator skill level

For the peer led groups

- Clear role definition and guidelines for the facilitators of peer-led groups

It would be valuable to conduct a further study that included a greater number of peer-led groups carrying out causal analyses with varying levels of instruction to better understand their scope.

06 Bringing it all together

A key challenge for research is the integration of relevant results into decision-making processes. There is a need to identify approaches that can enhance accessibility and understanding of data and integration for greater uptake and use.

Efforts that intentionally bring data in preferred formats to decision-making processes and connect science, practice and policy through effective facilitated exercises, dialogue and negotiation, can lead to more inclusive, evidence-based and robust strategies.

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For further information on this research or the SHARED Decision Hub, please contact Mieke Bourne (**m.bourne@cgiar.org**).

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