

Addition file 5. Illustration of framework matrix cell, column, and row summaries

		Color key: Dusty blue: Links to framework	Red: Quotes				
		What are the Facilitators	What are the Barriers	How to enhance communication engagement.	Benefits of knowledge exchange and co-creation of knowledge	Analysis relections	Summary
1	Key Informant Interview with KI1 Age = Unassigned Gender = Female Interview Group = Research Team Occupation = Researcher/academic	Who is delivering: The local researchers are better placed mostly because of language advantage to lead communication with the community. However, for all, it must be guided by good communication, sensitivity, and understanding of the community and cultural context To whom: The message needs to reach everyone, regardless of who receives the intervention. Everyone needs to understand the message to engage and share knowledge Recognising the value: Understanding the community's deeper knowledge of the issue	The outside researchers have a limited understanding of the local language to identify the local needs and must rely on local researchers/ members to guide the conversation. " By definition, have they have a better understanding, particularly through language... So I think we need to be guided by them" Photovoice: Researchers' power or assumed superiority of knowledge exhibited in 'the telling to' could also affect the outcome report of the project.	It cannot be limited to the project benefit. It should involve indirect benefits to the community, including how they are an active part of creating knowledge and a better understanding of the issue. Motivation could also include health benefits to the children. However, this might be useful for women. -Use of appropriate tools such as photovoice. It allows "quality of data that you don't get from straightforward interviews... and feeds into creation of knowledge... giving participants more power and control over what's going on"	Project/Researcher: A deeper understanding of the issues and associated reasons. Informs development of feasible interventions " As I began to do some discussions with the women, I began to realise what rich Information...that could be informing the development of improved cookstoves and the kind of projects we want to be developing with these communities" Community: When appropriate tools such as photovoice are used, there is the empowerment element where participants have the freedom to express their views in an open way- "giving the participants more power and control over what is going on"- a solution to the researcher superiority. Enhance sense of efficacy, "that the come together to achieve it as a community, albeit not necesirillaty a, better neeighbour	While this is postivie , identifying if this is direct influence on the sense of communitiy was highlighted as not possibe by the participant	Effective communication is essential to knowledge exchange and identifying the community's needs. Although not always feasible in most research conducted in SSA by global north researchers, language barriers can be reduced by having researchers fluent in the local language to lead communication with the community. However, irrespective of who is leading the communication, all forms of communication must be guided by sensitivity and understanding of the community in its cultural context. In addition, information should be made in simple, understandable ways to all the members of the community irrespective of the proposed intervention target groups. Finally, to enhance communication and engagement, information on indirect benefits to the community must be included in addition to the direct benefit from the project intervention. For example, highlight the sense of efficacy from creating knowledge and active participation in addition to the health benefits of reduced exposure to smoke.
2	Key Informant Interview with KI2 Age = Unassigned Gender = Female Interview Group = Research Team Occupation = Researcher/academic	Facilitating discussions at the group level instead of traditional individual levels gives a better sense of group dynamics and perception of what is feasible in the community and gives a holistic perspective. "...it just gives a lot broader perspectives. It allows deeper knowledge to be gained of what the issues are"	Having mismatched (gender or different economic status) of people in a group discussion could result in intimidation to engage. Not being able to ascertain the value of the information received, especially with contradiction. "You go away, and still I really never got to the bottom of it. Is more of a frustration... it is significant, and it stays with me"	Giving the people something to work on together as a group a specific task. The disagreement of views and discussion during active involvement facilitate deeper discussion because they see it as their own to achieve	Project/Researcher: Termed as data "rewarding" from triangulation of different sources of information. Community: The opportunity to engage in KE exposes the community to increase their collaboration network outside the community and current project. This is important in their ability to negotiate future interventions.	Letting go of task to the community results in engaged conversation, facilitate efficacy and ownership.	Group-level discussion allows interactions that could foster a better understanding of group dynamics in the community and highlights feasible interventions by providing a holistic perspective of what is feasible in the community. Caution is, however, needed when creating groups as existing power, gender, and economic status differences in groups could hinder free information sharing (Ref), hindering full participation. Even if group members are similar, the difference of opinions could result in the inability to ascertain the value of the information. (quote). This disagreement in active conversations could facilitate deeper discussion, especially when the researcher relinquishes the power of a specific task to the community.

