

FACTORS INFLUENCING PURCHASING PRACTICES IN THE HANDPUMP SUPPLY CHAIN AND THEIR IMPLICATIONS FOR QUALITY

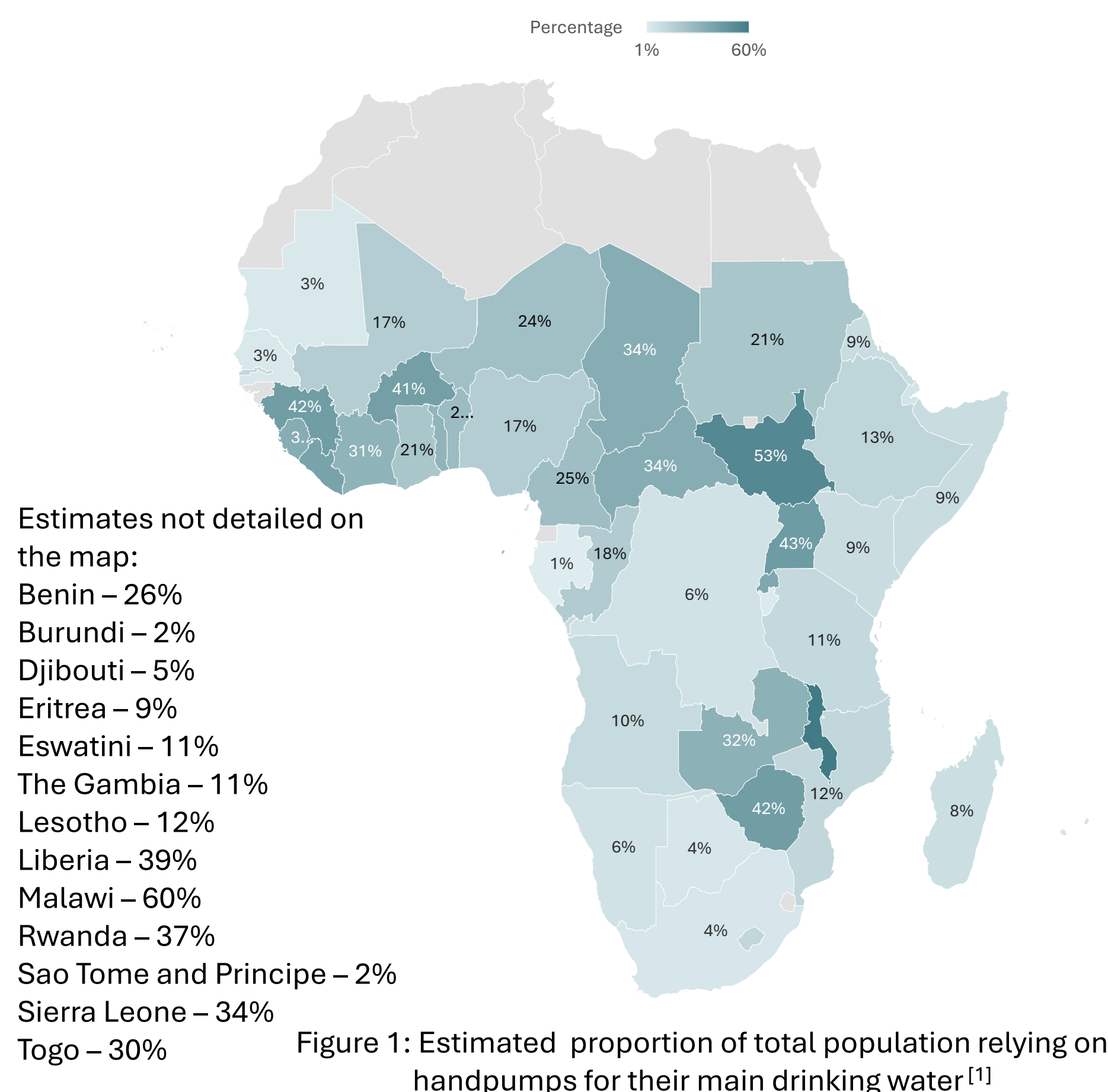


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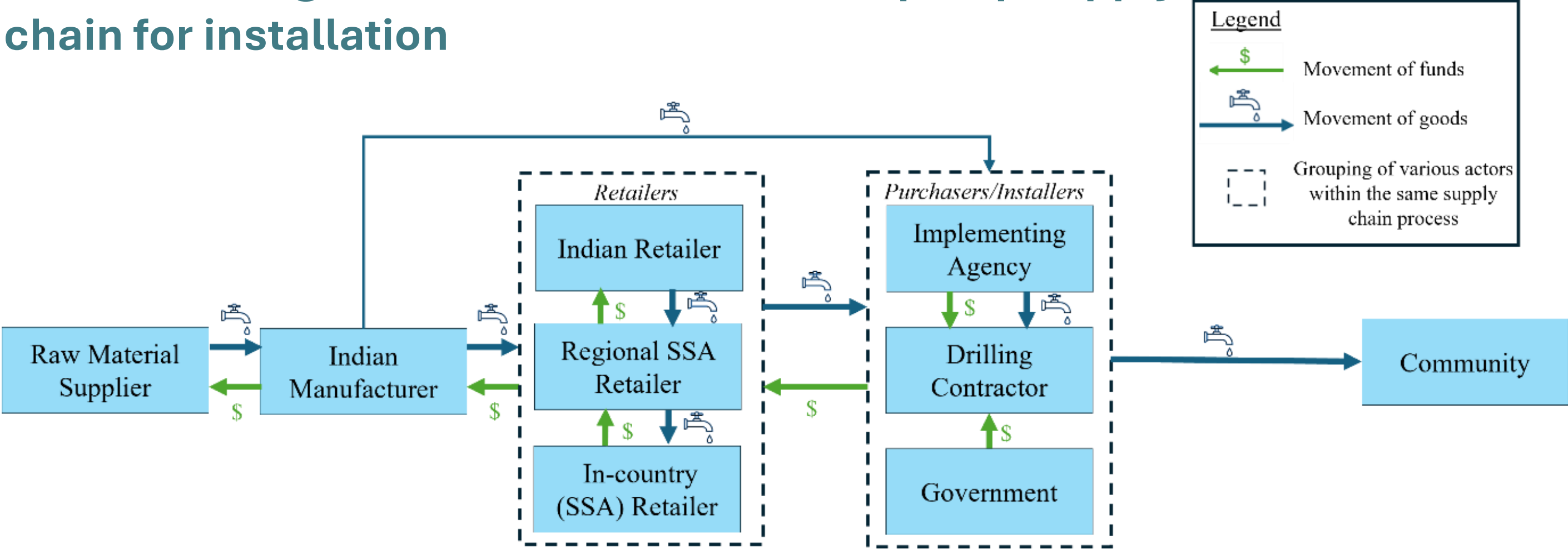
BACKGROUND

200 million people in sub-Saharan Africa (SSA) rely on handpumps as their main drinking water supply^[1]. This makes up **18.5%** of the total population.



The India Mark 2 and the Afridev are the most common public domain designs^[2]. They are mostly manufactured in India and exported to sub-Saharan Africa.

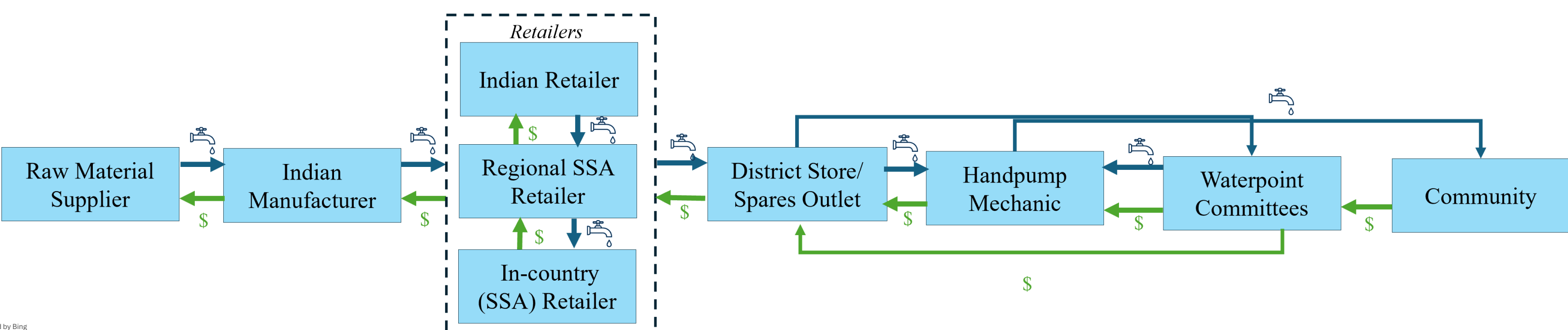
Movement of goods and funds in the handpump supply chain for installation



There are various routes for India-manufactured handpumps to reach SSA countries for installation and maintenance.

Diversity of actors procuring handpumps at each stage creates vastly different working procedures under which approach to quality assurance may vary.

Movement of goods and funds in the handpump supply chain for community-based maintenance



RESEARCH SCOPE AND QUESTIONS

Field investigations into quality of handpump components installed in various rural water supply projects have found dimensional non-conformity^[3], material variations^[4,5] and assembly issues^[6]. To investigate how sub-standard components end up installed, this study asks:

1. What are the factors influencing purchasing practices in the handpump supply chain?
2. How do these factors relate to organisations' approach to quality when purchasing handpumps?

METHODOLOGY AND OVERVIEW OF INTERVIEWS

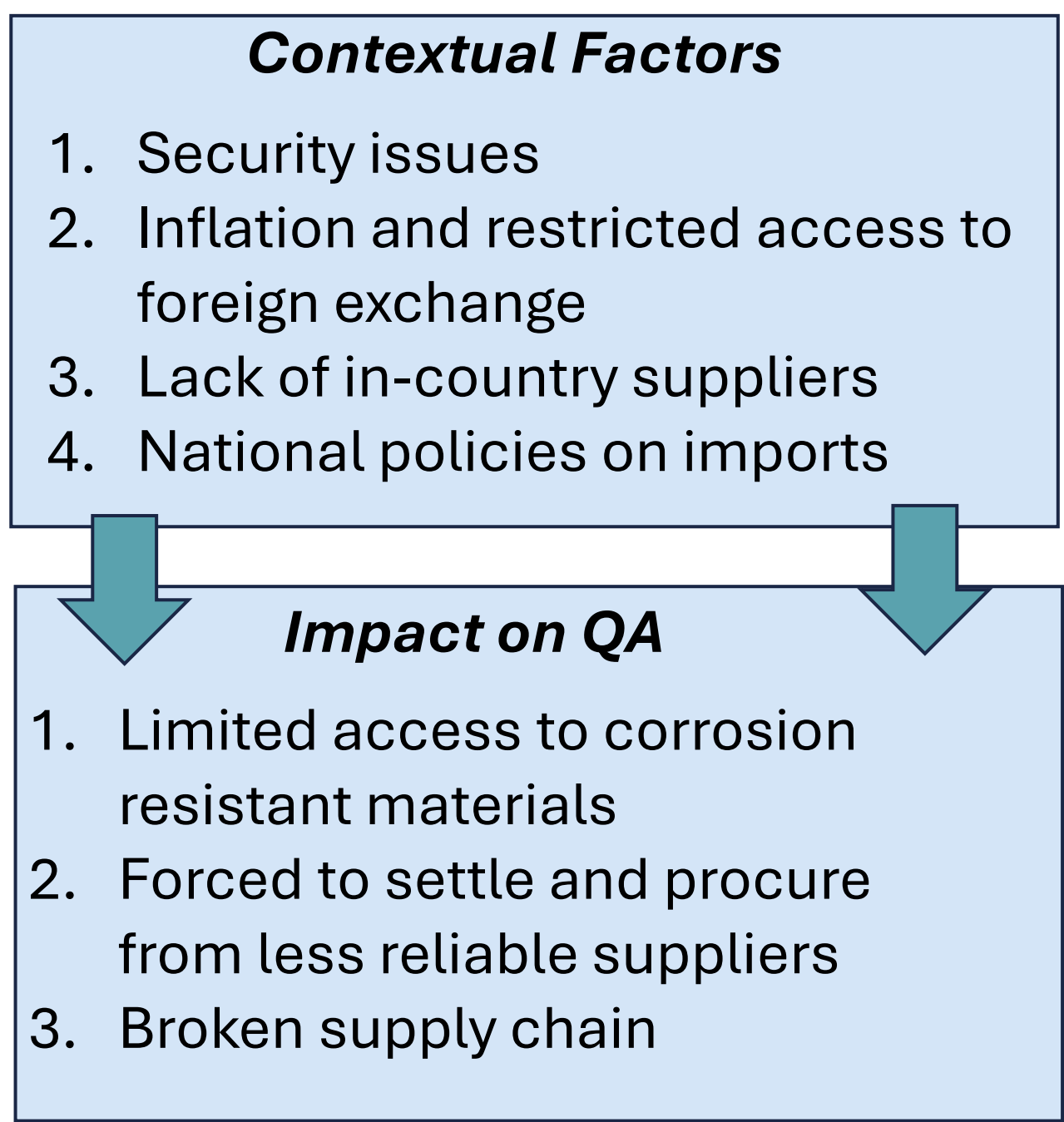
Remote semi-structured interviews with 25 participants across 19 organisations covering 15 countries of implementation

Stakeholders covered: NGOs (new installations), NGOs (maintenance and rehabilitation), drilling contractors and retailers.

Countries covered: Sierra Leone, Benin, Togo, Guinea, Uganda, Malawi, Zambia, Ethiopia, South Sudan, Nigeria, DRC, Madagascar, Mozambique, Tanzania and Kenya.

RESULTS

Theme 1: Contextual factors limit the supplier selection process



"We have a supply chain which is broken because of the ongoing conflict... there's no way we can move spare parts from Uganda into South Sudan or from Kenya into South Sudan." – Participant 19 (NGO)

"So basically, there are two players nationally. Well, apparently there is a third one, but it doesn't have a big number of spares that we found... so we don't have much choice..." – Participant 6 (NGO)

Theme 2: Supplier opportunism thrives under funding constraints

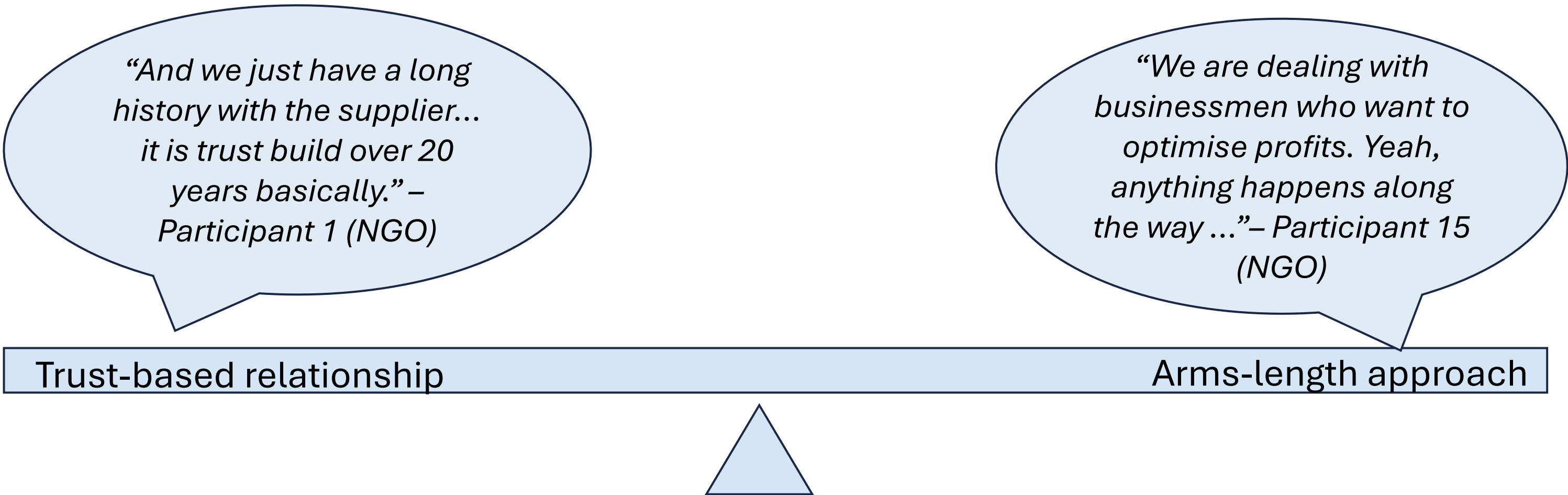
Both NGOs and retailers believe funding restrictions can be exploited by actors selling sub-standard parts through providing low prices which organisations may choose due to budget restrictions and exploiting timeline restrictions by providing sub-standard products immediately to prevent delays.

"But if I am a supplier ... I'll say this is only what is available and especially if I know this NGO has to deliver within these six months because they have money from the donor and getting these products will take them another 12 months. So they say, Oh my brother, this is all, my sister, this is all that I have." – Participant 11 (NGO)

"It is a difference in their pricing. And the, the interruption of the supply also some we know we don't have sometimes in a stock we will tell to take 3-4 months they will tell within a week they can give fabricate they are ready to go." – Participant 17 (Retailer)

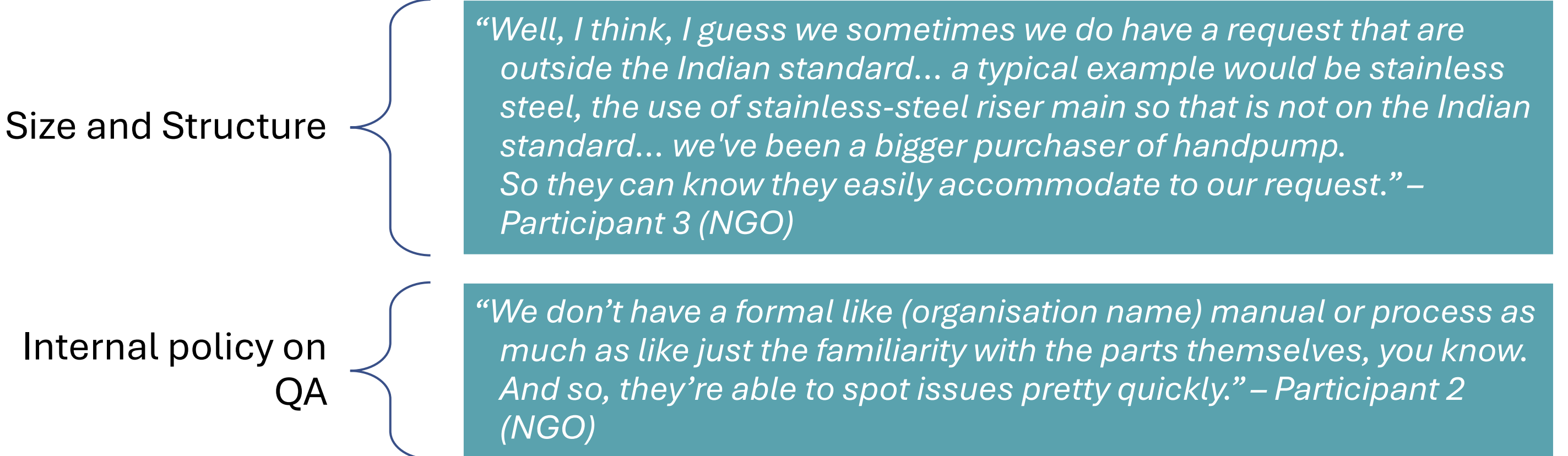
Theme 3: Diverging approaches to relationships

"...when it comes to our company...they just blindly believe that because (company) is a standard product... because they have been using it from globally also. So that's why they don't go into deeper of like checking of the material" – Participant 24 (Retailer)



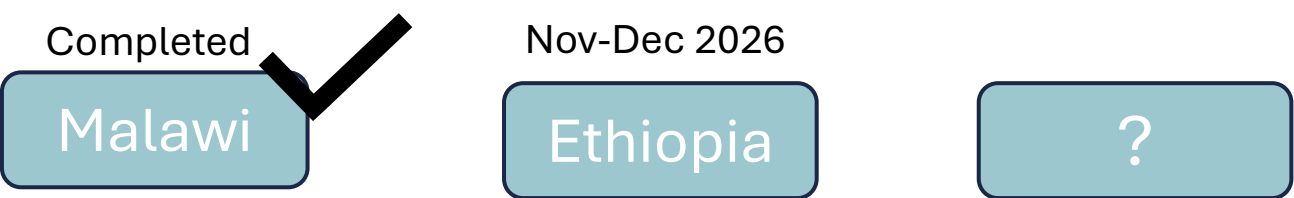
Theme 4: Organisational factors play direct and mediating roles

Organisational factors often acted as mediators which influenced how other barriers influenced the purchasing process. Size of organisations determined how deeply contextual factors are felt. In contrast organisational factors such as internal policy on quality assurance (QA) had direct impacts on scope of inspections.



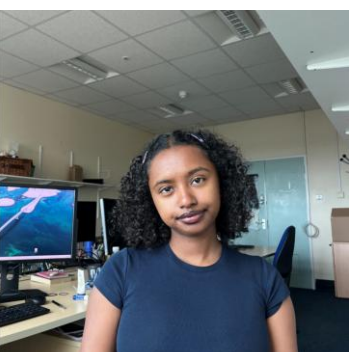
NEXT STEPS

Conducting field work in country for 3 case-study countries to reach stakeholders such as area mechanics, waterpoint committees and institutional stakeholders



ABOUT THE RESEARCHER

Mahilet Berihun is a second-year PhD student at the University of Surrey, UK. Her research focuses on quality assurance practices in the handpump supply chain.



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REFERENCES

- [1] Danert, K. (2022a) 'Stop the Rot Report I : Handpump reliance, functionality and technical failure. Action research on handpump component quality and corrosion in SSA'. AskforWater GmbH, Skat Foundation and RWSN, St Gallen, Switzerland.
- [2] MacArthur, J. (2015). Handpump standardisation in sub-Saharan Africa. *Rural Water Supply Network. Publication*, 1.
- [3] Nampusuor, R., & Mathisen, S. 2000. COWAP Field Paper 27 Report on The Performance of Afridev and Nira Handpumps on the Upper Regions Community Water Project (COWAP).
- [4] Ottosson, Hans J.; Mattson, Christopher A.; Johnson, Oliver K.; Naylor, Thomas A. (2021) : Nitrile cup seal robustness in the India Mark II/III hand pump system, *Development Engineering*, ISSN 2352-7285, Elsevier, Amsterdam, Vol. 6, pp. 1-11, <https://doi.org/10.1016/j.deveng.2021.100060>
- [5] Dang Mvongo, V., Defo, C., & Tchhoffo, M. (2023). Assessing the functionality of water supply handpumps in a Sub-Saharan Africa rural environment: a practical application in eight councils in the Mvila Division, Southern Cameroon. *Journal of water, sanitation and Hygiene for development*, 13(5), 322-332.
- [6] Hankin, P. (2001). The Afridev Handpump-problems and solutions.