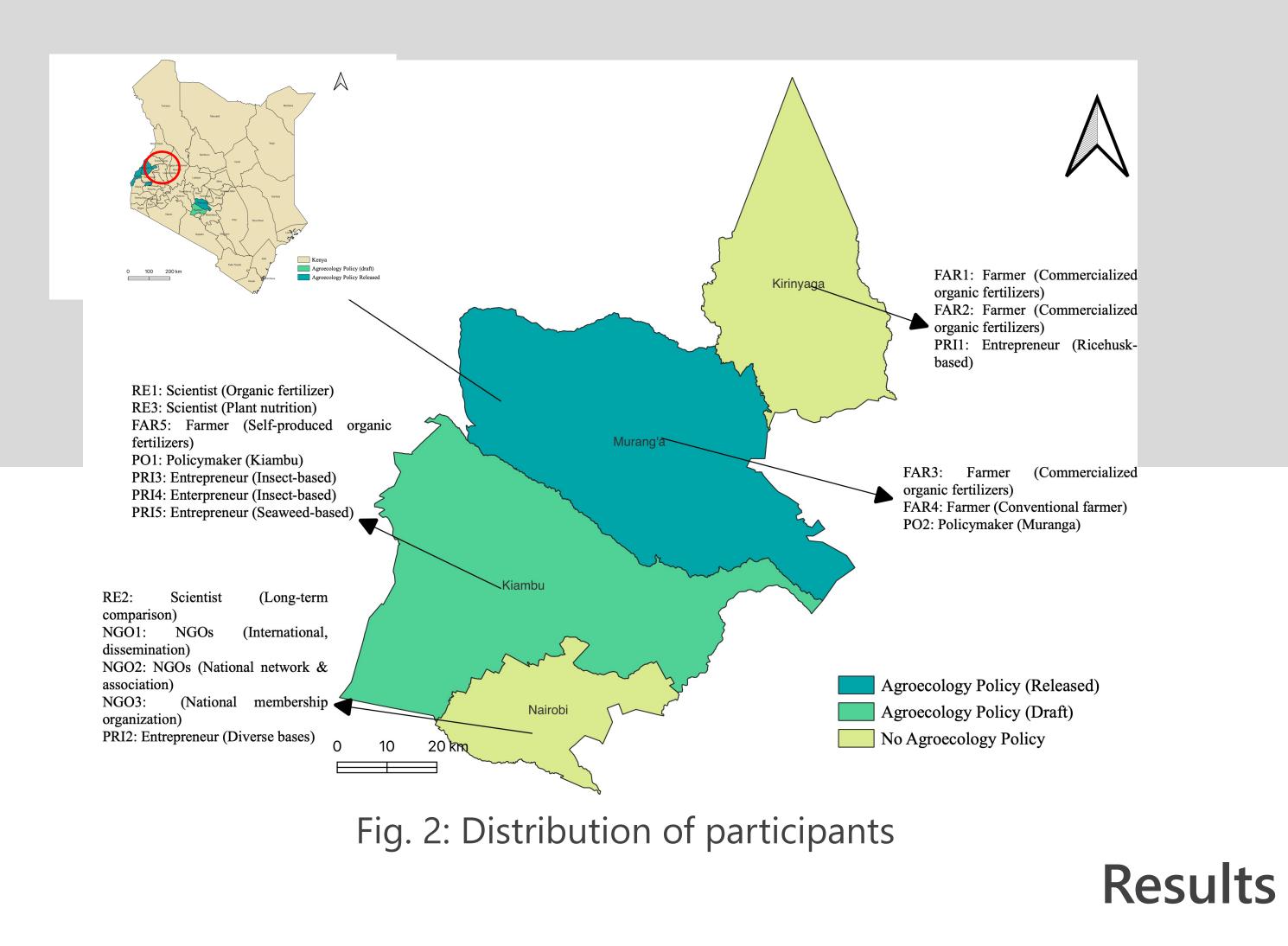


An analysis of challenges and opportunities for upscaling the organic fertiliser industry in Kenya

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Challenge

- Organic fertilizers are considered a feasible solution to restore low quality soil, reduce risk to food security and smallholder livelihood and improve climate and agricultural resilience.
- Nevertheless, their development in Kenya is confronted by numerous challenges and corresponding strategies are calling from the multilevel governments.
- Understanding diverse perspectives within the organic fertilizer sector regarding awareness, priorities, and attitudes toward possible improvement, probably will increase mutual communication and consensus among different groups and sectors

Objective

To investigate

 the various perspectives held by relevant stakeholders regarding the key development barriers and proposed measurements for improvement that stakeholders deem essential for organic fertilizer development in Kenya Three factors were extracted from the research and the results were shown in Tab. 1 and these strategies below were recognized by engaged stakeholders as with high potential to promote the development of the organic fertilizer industry in Kenya

Perception 1: Farmer association Profit-objective: "We need supports"	Perception 2: Enterpreneurs, NGO & Research "It is difficult to convince farmers"	Perception 3: Most diverse "Scientific data will convince them"
OF is better than chemicals for both price advantage and ecological influence	OF is better than chemicals for both price advantage and ecological influence	Obstacles > benefits of using OF: "Quick desire"
Dissemination regarding the benefits of organic fertilizers by TV and radio	Dissemination regarding the benefits of organic fertilizers by TV and radio	Dissemination: current training should be upgraded
Business dynamic: specific sales markets and marketing strategies	On-farm demonstration & conveniently located access	On-farm demonstration & conveniently located access

 the main areas of agreement and disagreement between perspectives

Materials and method

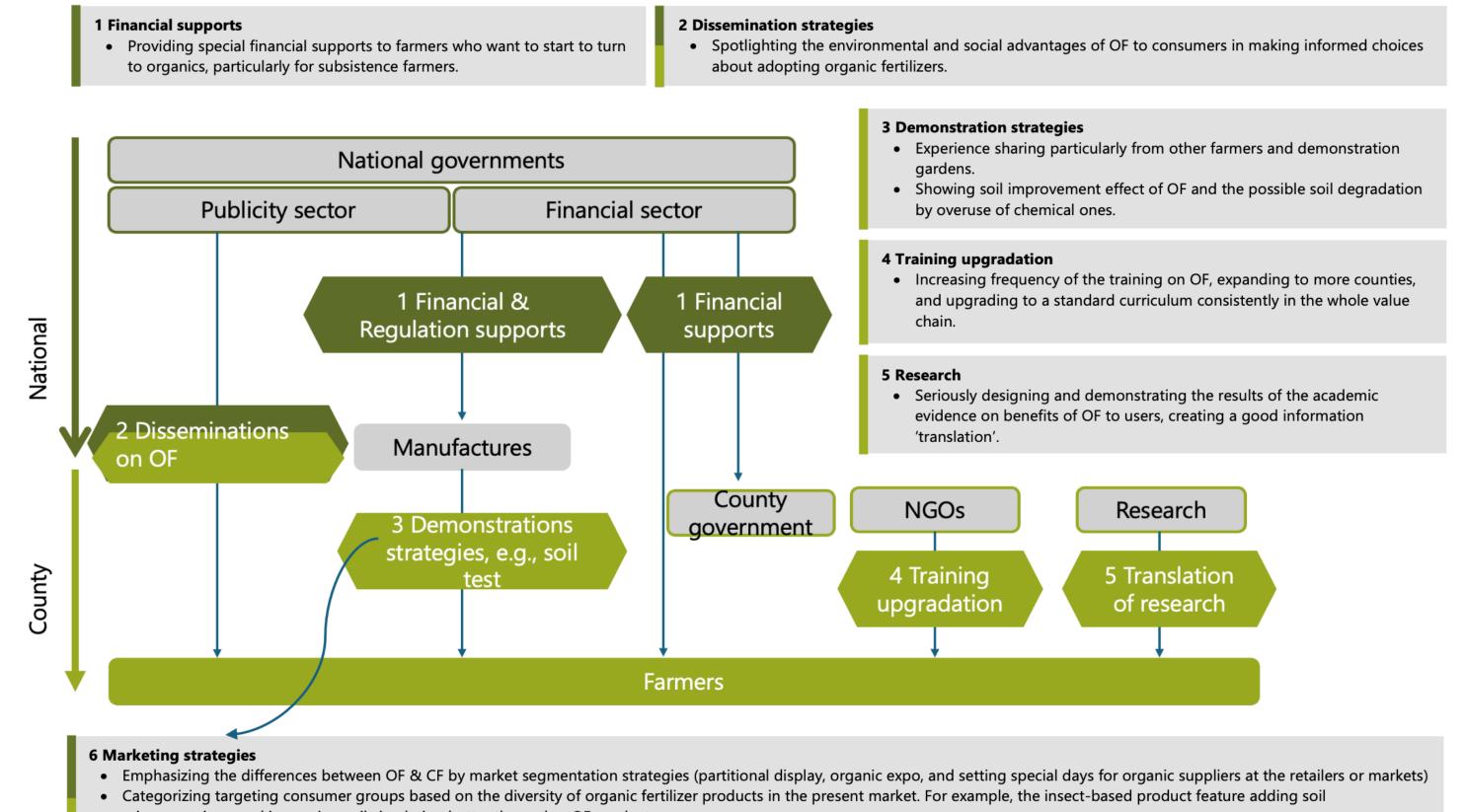
Q-methodology

- Combining quantitative & qualitative to identify participants' subjectivity
- By ranking the provided statements, answer "From your perspective, what is the biggest barrier to the development of organic fertilizer in Kenya?" An example ranking results in Fig. 2.
- 9-point grid ---- "Most like I think", "Neutral", "Least like I think"
- The results were factor analysed using R.

-4	-3	-2	-1	0	1	2	3	4
 8. The key of Kenya's agriculture is to produce as much as food and using chemical fertilizer can produce more food. 	 9. Farmers with land ownership are more concerned about long- term benefits on their land. 	10. Organic fertilizer is not a completely alternative to mineral fertilizers.	-1 23. A harmonized role is needed in the organic fertilizer supply chain.	5. The prices of chemical fertilizer are cheaper than organic fertilizers.	12. The financial supports for organic fertilizer (loans, subsidy) are not enough	3. Long-term scenario assessments of organic fertilizers are lacking.	2. There is a lack of scientific data and figures to evaluate the economic efficiency of organic fertilizers.	 There is a lack of scientific data and figures to evaluate the environmental efficiency of organic fertilizers.
37. It is difficult for famers to master the techniques of organic fertilizers production.	21. The competitions and conflicts between organic fertilizer producers hamper the development of organic fertilizer.	18. The consumers that are able to afford organic products are few.	25. The expansion of organic fertilizer business is challengeable because of a lack of financial support.	7. Money plays a key role when farmers make fertilizer-related decision, so they tend to buy cheaper products.	14. The financial sector is not exactly involved in the organic fertilizer business (e.g., banking systems and loan processes).	6. Farmers don't realize the price advantage of unit of organic fertilizer compared to chemical fertilizers.	4. Farmers are skeptical on the efficiency of organic fertilizer, so on- farm demonstrations would be persuasive.	27. Current training of organic fertilizers still needs to upgrade and include more contents.
	36. The initial investment of organic fertilizer is too much for some smallholder farmers.	22. The networking and interaction among actors of organic fertilizer supply chain should be improved.	26. Media outreach and dissemination should be stressed regarding the benefits from organic fertilizers.	 The county level should allocate more budgets on the promotion of organic fertilizers. 	24. The linkage between organic fertilizers producers and their consumers should be improved, especially for the individual producers.	11. People are not aware of the long-term benefits of organic fertilizers.	38. It takes time for farmers to see the environmental influence of organic fertilizer on crops and to completely convert to organic fertilizers, and someone might give up in the middle.	
		32. Farmers are not willing to be charged for organic certified.	33. The public awareness regarding the detrimental effects of chemicals or pesticides, such as toxic effect on the surroundings is lacking.	15. The cost of organic fertilizer production (transportation costs, raw material) has been increasing.	29. Standards and criteria of organic fertilizers only for Kenya should be formulated and implemented.	17. The market of organic fertilizers will increase if access to the products is improved and conveniently located.		
			34. The public thinks there is no difference in quality (nutrient component, effect on health) of products producing by organic fertilizers and chemical fertilizer.	16. Specific sales markets for organic products would enhance the scaling of organic fertilizers.	30. The government should take actions to increase the awareness of organic fertilizer.			
			35. The access to resource of raw material of organic fertilizers is a challenge for some farmers.	19. Marketing strategies for organic fertilizer products should be improved, such as market segmentation.	31. The standardization of organic fertilizers should be improved, such as nutrient components demonstration and application guidance.			
				 20. The market of organic fertilizers should be created by educating farmers about the knowledge of organic fertilizers, because it is new to farmers. 28. National policy of the statement of t				
				organic fertilizer needs to be formulated and implemented.				

Financial support	Political & legal support	Lack of scientific data & figure	
Grey means No challenge means over	means different measures by each perceptio	n.	

Tab. 1: The overview of three perceptions extracted from Q-method



microorganisms and improving soil circulation better than other OF products.

• Customizing OF products according to local situation (what kinds of nutrient leakage? what crops growing? what kinds of biomass resource available?)

Fig. 3: Proposed measure of improvements regarded by stakeholders for the development of the organic fertilizer industry in Kenya

Fig. 1: An example array of statements of one factor

Site and participation

 18 participants from 5 stakeholder groups [Research (RE), Farmers (FAR), Policymaker (PO), Entrepreneur (PRI) and NGOs] in Nairobi, Kiambu & Murang'a, Kirinyaga counties (Fig. 2).

Conclusion

- The main barrier hampering the development of the organic fertilizer is diverse among perception groups while the proposed measures for improvement are knowledge dissemination.
- It is highly recommended that multilevel government's administrative priorities should take actions to blend chemical and organic products through means including financial supports, disseminations and outreaches, demonstrates, training upgradation, research and marketing strategies.

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