



Busara



POSNER
FOUNDATION
of Pittsburgh

Behavior Change Interventions Toolkit for Reducing Food Waste in Sub-Saharan Africa



Preface

Food waste significantly exacerbates food insecurity, with substantial portions of food discarded globally despite widespread hunger, particularly in the Global South. One-third of all food produced for human consumption is wasted by vendors and consumers worldwide (FAO, 2019; 2023), necessitating a focus on reducing waste at points of sale and production.

What if a few simple changes, like rethinking how we display produce, pricing it creatively, and sparking new conversations at the vendors' stall, could drastically reduce market waste and boost vendor profits? That's exactly what Busara's work in Kenya and Nigeria shows, where "funny-looking produce"¹ was a major contributor to food waste. By introducing simple behavioural solutions, most vendors increased sales and reduced the wastage of funny-looking produce (and thereby food waste), while consumers' willingness to buy funny-looking produce increased by 22% (Saldanha & Aranha, 2022).

Drawing on these real-world examples, this toolkit equips the readers with proven, evidence-backed techniques from markets like yours, to design solutions, improve food waste outcomes, and track impact.

¹ Funny looking produce is food that is less visually appealing. It can be a fruit or vegetable that is safe for consumption but misshapen in some way leaving its visual appearance far from what consumers or vendors would consider normal.

Acknowledgements

Our heartfelt thanks to the Posner Foundation, particularly, Hana Uman and Anne Marie Tockett, for their continued partnership and thoughtful guidance throughout our research on food loss and waste in traditional markets in Kenya and Nigeria, which informed and inspired the development of this toolkit.

We extend our gratitude to the teams at Busara for their dedication and hard work throughout this project, including Wairimu Muthike, Wanjiku Kiarie, and Mugambi Murithi, whose thoughtful contributions across research, design, and project management were instrumental in bringing this work to life. We are also grateful to Sheral Shah, who led the editorial development of this toolkit, and Arizechukwu Okafor and Mellan Lilumbi, who supported the capacity-building workshops with great commitment. Finally, we deeply appreciate the invaluable contributions of the data collection firms, field officers, and respondents who generously shared their time and insights to make this work possible.

Funding

This research, which informed the contents of this report, was funded by the Posner Foundation of Pittsburgh from 2022-2025.

Authors

Fadila Jumare
Laura Schun
Juhi Jain

Supporting Researchers

Edel Koki
Jonathan Karl

Lead Designer

Anthony Mogaka

Field Consultant

Jane Atieno



Image credit: Busara Center

Table of contents

Introduction and Context	6
Introduction: Reducing food waste through applied behaviour science	7
The Toolkit	10
A. Situational analysis	11
B. Design and Test	24
C. Implement	35
D. Evaluate	36
A note on sustaining solutions	36
Summary and Conclusion	38
References	41
Resources	45

Introduction and Context

Introduction: Reducing food waste through applied behaviour science

Why do behaviours matter for food waste?

Global hunger and the economic and social cost of food waste is worth trillions every year (UNEP, 2024). While vast quantities of food go to waste, up to 783 million people worldwide face hunger annually, and 150 million children under five experience stunted growth due to insufficient access to essential nutrients (UNEP, 2024).

In Sub-Saharan Africa, an estimated 40% of food is lost or wasted each year, with substantial wastage occurring in traditional markets, which are central for food access (MARKET.US, 2024). For example, about 66–77% of Kenyan consumers shop from traditional markets (Ivers et al., 2022; RSA, 2015). In traditional markets, multiple actors including suppliers, transporters, vendors, and consumers shape outcomes. **Everyday decisions, from how produce is transported and handled, to how it is displayed and priced, to which items consumers choose to purchase, collectively determine how much food is wasted.** Therefore, understanding everyday decisions and behaviours and intervening appropriately is essential to effectively preventing food waste.

To understand and solution the everyday decisions that drive food waste in Kenya and Nigeria, Busara conducted a multi-year study. The focus was on reducing the wastage of funny-looking produce², a major source of avoidable loss, by vendors and consumers. Using behaviour science tools, Busara designed

and tested practical solutions including changes in the display of produce at the stall, pricing strategies and nudges to encourage the purchases of funny-looking produce. These solutions led to clear results wherein vendors reported higher sales and reduced spoilage, while consumers' willingness to buy funny looking produce rose by 22%³.

How to target behaviours?

Busara's results from the study in Kenya and Nigeria demonstrate how understanding behavior can drive measurable change. But, how does one go about understanding everyday decisions and behaviours objectively and design appropriate solutions? Applied behavioral science and design thinking provide us with tools to understand behaviors, design targeted user-centered solutions and measure impact. One might say that eventually everything targets behavior, but what makes behavioral science and design thinking different? The strength of this approach lies in the 3 C's: Co-creation, Contextual Relevance, and Continuity. Solutions are co-created with and for the community, making them contextually relevant and ensuring their continuity and scalability.

Practically, applied behaviour science may be approached by asking three simple questions presented in Figure 1. The following toolkit takes the reader through the application of the applied behavioural science framework to design solutions that are practical, context-specific, and effective in reducing food waste.

² Funny looking produce is food that is less visually appealing. It can be a fruit or vegetable that is safe for consumption but misshapen in some way leaving its visual appearance far from what consumers or vendors would consider normal.

³ For more information on the study, please refer to the supplementary resources by scanning the QR on page 7 of this guide.



Figure 1: The applied behaviour science framework

What to expect from the toolkit?

By now, it's clear that this toolkit is an **evidence-based guide**⁴ to apply behavioral science for reducing food waste. But what exactly can you expect to gain from it? **Whether you use the toolkit in full or focus on specific sections**, it will equip you with practical tools to apply the behaviour science framework in your context, through the phases outlined in Figure 2 below.

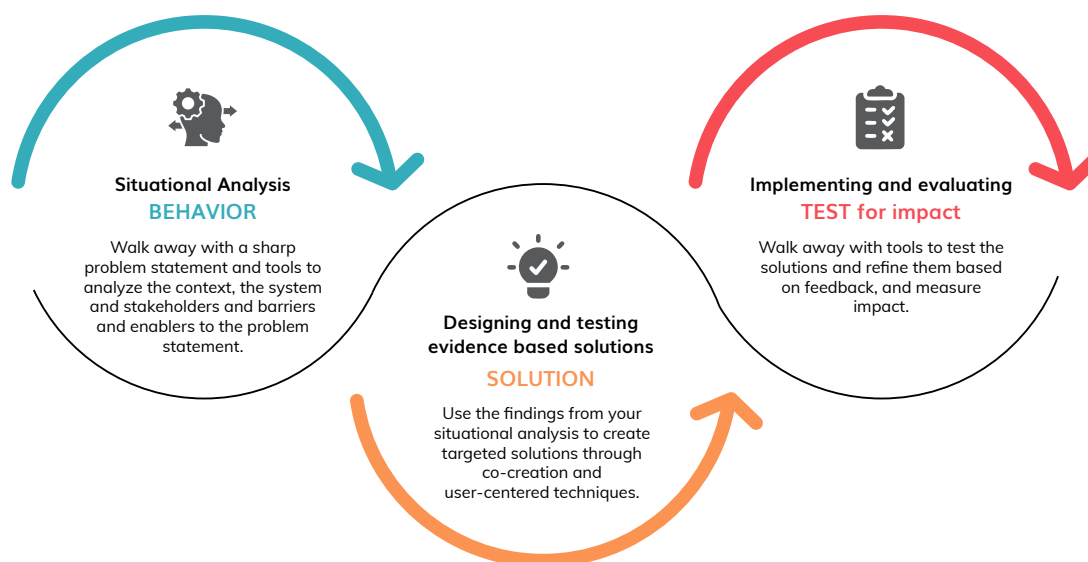


Figure 2: The behaviour change process

⁴ We call this an evidence based guide as it is based on our experience from the study in Kenya and Nigeria.

How can I use this toolkit?

1. Can I start anywhere in the toolkit?

Yes. Use the section most relevant to your current challenge or follow the full workflow for a comprehensive approach.

2. Is this process strictly linear?

No, it is iterative. Findings at one stage often inform changes in another. For example, implementing and evaluating solutions may lead to changes in the solutions created in the design phase.

3. Does this only work in Kenya and Nigeria?

Even though no two contexts or projects will be exactly similar, the broad steps to follow can remain the same. For instance, you will always need to conduct a situational analysis to understand the problem and its drivers.

4. Are there any tips for the readers?

Remember that this toolkit is all about using a user-centred and iterative approach. Collaboration and co-creation with stakeholders, coupled with an open mind, are essential for success.

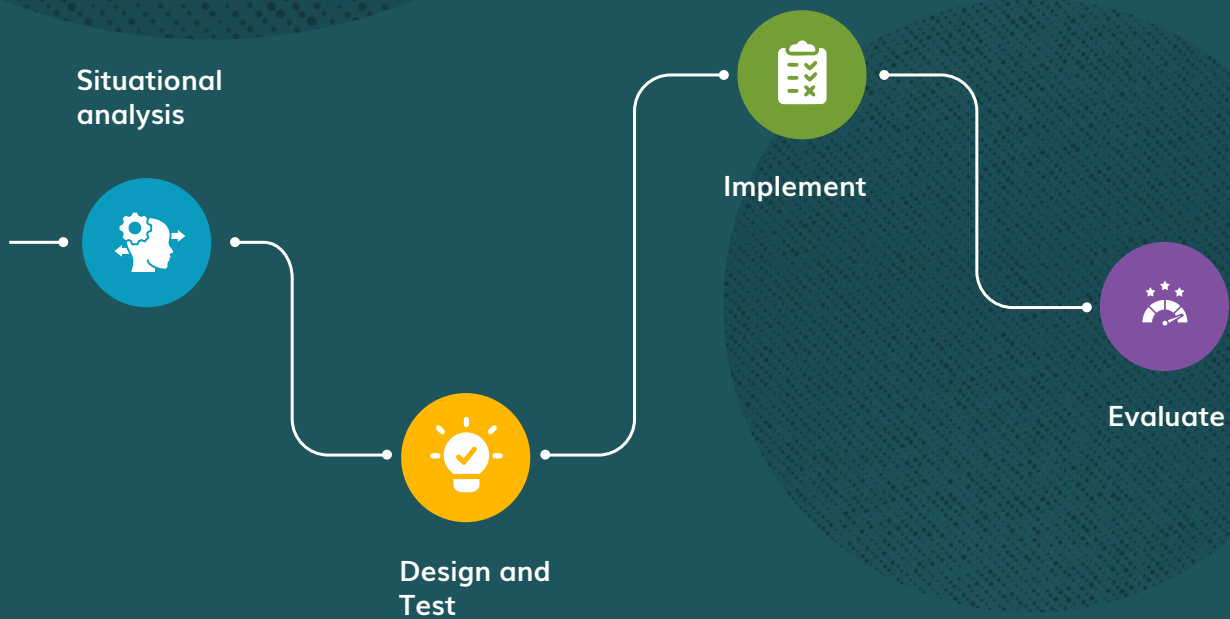
5. I work for a grassroots organisation and am not trained in behavioural science. Can I use the toolkit?

Yes, formal training in behavioural science is not required for the toolkit. The toolkit equips practitioners, policymakers, donors, researchers, and anyone interested in the domain of food waste with easy-to-adopt tools and an alternative lens for tackling food waste.

The next section takes you through the suggested framework and tools. At the end of this document, you will find a compilation of resources to supplement the activities suggested in the toolkit. **You can also find supplementary resources as well as some real life case studies from Busara's research in Kenya and Nigeria by scanning the QR code provided.**



The Toolkit

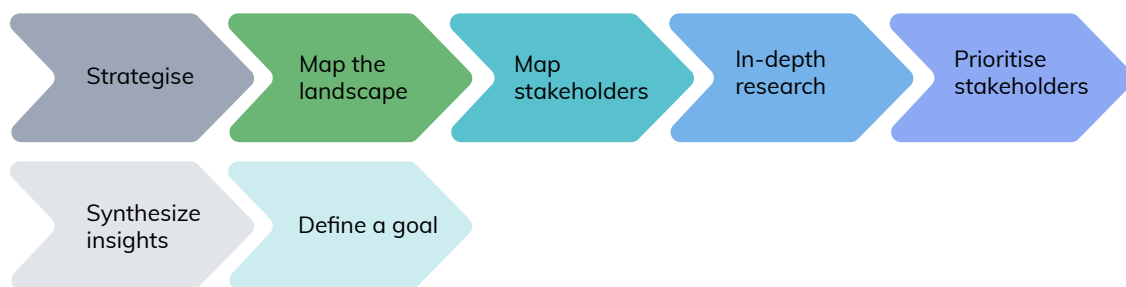


This toolkit takes you through various phases and steps to convert your insights into action for food waste prevention. Beginning with a situational analysis to define your problem statement, identify behavioral drivers and determine target behaviors, it then guides you to design, test, implement and evaluate solutions in a way that is practical, evidence-based, and sustainable. Depending on your challenge or the stage you are at, you can also choose to use each phase independently.

A. Situational analysis



At the end of situational analysis you will have a clear set of goal(s) that will enable you to identify the key barriers and enablers to your problem statement as well as the key stakeholders and their roles. This step serves as the basis of solutioning for your problem statement.



Step A1: Strategise



Objective:

This step is to define a clear and observable, behavior-focused problem statement that captures the behaviour (what), the one who is performing the behaviour (who), the context in which it is being performed (when / where) and the resulting outcome of the behaviour. The problem statement is iterative and may be refined as insights emerge through the research.



Methodology:

- Internal brainstorming sessions with the team.
- Co-creation or brainstorming sessions with stakeholders.
- Reviewing project briefs or requests from clients, if already defined.



Outcome:

A clear, behavior-focused problem statement that can take the form of the suggested structure: "[Actor] [does what behavior] [under what circumstances] [resulting in what undesired outcome]".

(Example problem statement from the research in Kenya and Nigeria: Consumers discard edible produce that does not look perfect in traditional markets of Kenya resulting in food wastage).

Step A2: Map the landscape



Objective:

Once the problem statement is defined, the next step is to build a full-picture understanding of the context in which it exists. This involves exploring the existing landscape of food waste, reviewing evidence or case studies of similar issues and how they have been addressed, and mapping the ecosystem of processes and stakeholders that influence or are influenced by the problem.

Tip!

Remember that this is just an initial landscape analysis to get an idea of the context. It is crucial as you wouldn't want to jump into the project before getting a basic lay of the land. You may also be able to refine the problem statement based on the outcome of landscape mapping.



Methodology:

- Secondary research such as literature reviews.
- Scan your organisation's past work to identify lessons learned or approaches.
- Hold quick workshops or discussions with clients to get a download of what they already know.



Outcome:

You should be able to answer questions such as:

- What is the situation of food waste in similar contexts and what's been done?
- What are some potential drivers or influencers of the behaviour? (These can act as initial assumptions which will get refined later on)
- How is the produce reaching the markets and who are the stakeholders involved?

Step A3: Map stakeholders



Objective:

Step A2 should equip you to map key stakeholders, understand their roles and identify the ones for your in-depth research (Step A4). While deeper insights will emerge from Step A4, having a preliminary understanding of all the stakeholders involved and their roles helps make Step A4 more nuanced. Be open minded and think of as many stakeholders that can be involved in the food supply chain.



Methodology:

- **Identify relevant stakeholders in the food supply chain:** Map the flow of produce from farm to consumer, and list stakeholders across the value chain such as farmers, transporters, vendors, consumers, aggregators, processors, retailers, restaurants, street vendors, waste collectors, and local authorities or NGOs where relevant.
- **Map roles and influence:** For each stakeholder, document their role along the value chain and certain assumptions on how their actions contribute to or can prevent food waste.



Outcome:

A clear map of key stakeholders which could take the form of Table 1.

Stakeholders	Role in supply chain	Assumed influences in food waste
Farmers	Grow and supply fresh produce	Discard off-grade produce at harvest, face rejection
Transporters	Move produce from farms	Contribute to spoilage due to poor handling
Vendors	Sell fresh produce, manage stock	Sort produce by appearance, price down imperfect produce, discard
Consumers	Buy produce, drive demand norms	Reject imperfect produce due to looks or safety concerns
Restaurants/Food Services	Purchase and serve fresh produce	Reject imperfect produce, influence consumer norms
Waste Pickers/Collectors	Handle discarded produce	Collect for resale or composting

Table 1: Stakeholder mapping

Step A4: In-depth research



Objective:

Once a preliminary understanding of the context is established and stakeholders are identified, it is time to dig deeper into the problem statement. This step focuses on identifying the specific behavior to target, the stakeholders relevant to the study, and the drivers (may be both behavioural and systemic) influencing the target behavior. It enables you to refine the problem statement and the stakeholder map, define a clear goal for the study (whose behavior and what behavior to target), and build a solid foundation for designing effective solutions.



Methodology:

There are multiple tools for in-depth research, many of which are presented in Table 2. You must identify the right stakeholders, design an appropriate discussion guide and select an appropriate method.

Research Tool	Examples of how each tool is used
In-Depth Interviews	One on one engagement with stakeholders to explore their perceptions ⁵ , attitudes ⁶ , and motivations ⁷ , while uncovering systemic issues, practical constraints, and broader factors that shape behaviors and practices.
Focus Group Discussions (FGDs)	Engagement with stakeholders in a group setting to identify shared community challenges, perceptions, and opportunities for behavior change, highlighting collective experiences and norms around food waste.
Key Informant Interviews (KIIs)	Assess what has already been implemented in the same or nearby markets. Identify effective and ineffective solutions and understand why to ensure new ones complement, not duplicate, existing ones.
Surveys	Measure the scale of relevant behaviors and practices. Identify patterns, gaps, and areas where targeted solutions may be most effective.
Observations	Observe real-world interactions, behaviors, and practices among stakeholders. Identify practical barriers, decision points, and opportunities to design effective solutions.

Table 2: Suggested research tools



Outcome:

By the end of this step you should be able to:

- Refine the problem statement (if required).
- Update the stakeholder map, adjusting stakeholders, their roles, or assumptions about their influence on food waste.
- Have a good understanding of how the produce flows along with a long list of behavioural as well as systemic drivers and barriers to your problem statement .

⁵ The processes through which individuals interpret and make sense of sensory information and experiences to understand the world around them (Schiffman & Wisenblit, 2019).

⁶ Learned tendencies to evaluate an object, person, or issue in a favorable or unfavorable way, influencing how individuals think, feel, and behave (Ajzen, I. 1991).

⁷ Internal drives or needs that energize, direct, and sustain behavior toward achieving specific goals (Deci & Ryan, 2000).

Tip!

When using research tools like focus groups, surveys or interviews, especially in public or group settings, be aware of social desirability bias. This happens when participants give answers they believe are expected or accepted rather than what they truly think or do. For example, a vendor might say they are open to selling funny-looking produce because they think it's the "right" answer, even if they wouldn't do so in practice.

How to reduce this bias:

- *Conduct interviews or surveys in private, where participants feel safe to share honest opinions.*
- *Assure respondents that their answers are confidential and there are no right or wrong responses.*
- *Use indirect questions (e.g., "What do others in the market think about...?") to reduce pressure.*
- *Include observational research to cross-check what people say with what they do.*

Combining methods and triangulating data helps uncover more accurate and honest insights to design effective solutions.

Case study 1 - Insights from research in Kenya and Nigeria:

To understand and solve the everyday decisions that drive food waste in Kenya and Nigeria, Busara conducted a multi-year study. To conduct in-depth research, we used key informant interviews, observations and in-depth interviews with market authorities, consumers, and vendors. The in-depth research led to an extensive understanding of the flow of produce and potential behavioural and systemic drivers and barriers.

For example, there are numerous points of loss in the journey of produce from farm to consumer (Figure 3). At the farm gate, produce not meeting visual standards is often discarded, while wholesalers and transporters further contribute to wastage through sorting and handling. Vendors at retail level continue the trend, sorting for the best produce and inadvertently damaging it in the process. Even consumers play a role, selecting the highest quality but sometimes damaging the produce unintentionally. After passing through different stages, lower-quality produce may end up being sold for alternative uses or discarded altogether.

Focusing on vendors, as a large quantity of food is wasted at points of sale, we found that they often rely on visual cues (shape, color, firmness) to judge the safety of food produce. They are also driven by risk-aversion⁸ (behavioural driver), due to fear of reputational and financial loss if sold produce is perceived as low-quality.

⁸ Risk aversion is the tendency to favor options with greater certainty, even when they offer lower returns, because they place more value on avoiding losses than on pursuing higher potential gains.

In traditional markets, produce gets lost at every stage



Figure 3: Journey of produce from farm to scale



Image credit: Busara Center

Step A5: Prioritize stakeholders



Objective:

Building on Steps A3 and A4, this step helps you prioritize stakeholders. Not everyone from your stakeholder mapping exercise will hold equal priority because of the different roles they perform. Some will be the direct beneficiaries of your solutions (let's refer to them as key actors), some stakeholders will have direct influence on the behaviors you aim to change and can be engaged in co-creation of solutions, while others may be critical for buy-in, support, or continuity of solutions. By prioritising stakeholders you can make informed decisions about where to focus efforts and how to engage each actor effectively.



Methodology:

To determine the role of stakeholders in your study:

- Revisit Table 1 and the insights collected in Step A4.
- Look at the role played by each stakeholder and the level of influence they have especially on the actor identified in your goal or the one to be directly targeted by your solution. (Example: Taking from the study in Kenya and Nigeria, we identified vendors to have a high influence on shaping the consumers' decisions.)
- Also gauge each stakeholder's interest and openness to understand their willingness to adopt new practices.
- Now use the actor mapping grid in Figure 4. The actor mapping grid helps determine how to engage different stakeholders based on their level of influence and interest, guiding practitioners on where to focus efforts and tailor engagement strategies effectively. Here is an explanation of how to engage actors in each quadrant:
 - **Low Influence, Low Interest:** Monitor them, but limit resource investment unless influence or interest grows.
 - **High Influence, High Interest:** Manage closely, actively involving them in co-design, decision-making, and implementation.
 - **Low Influence, High Interest:** Keep informed with regular updates and participation opportunities to maintain motivation and support.
 - **High Influence, Low Interest:** Keep satisfied with periodic updates and involve strategically to sustain support.

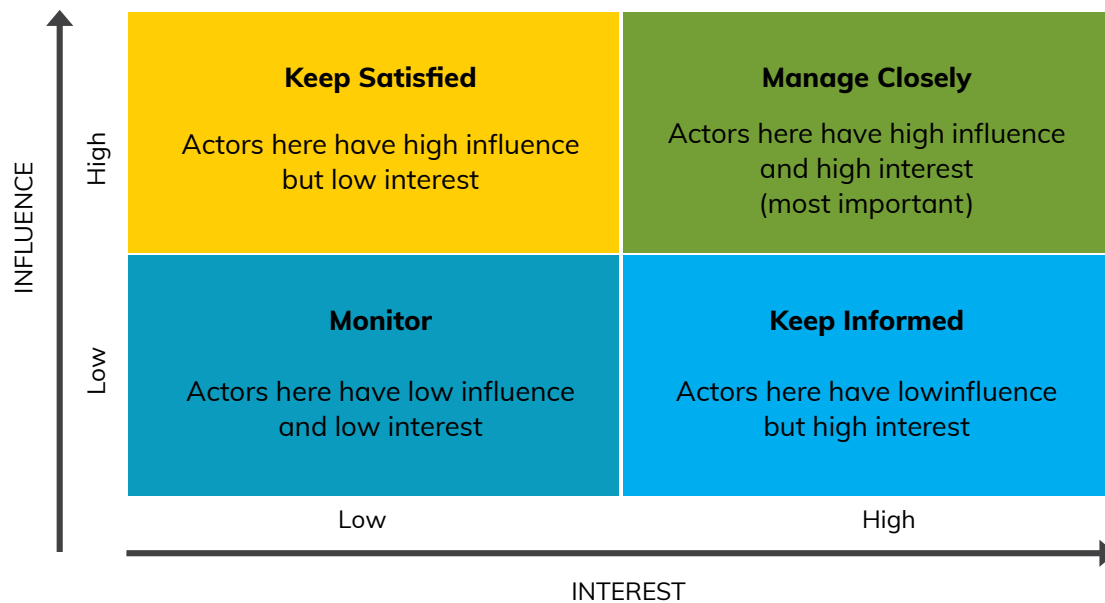


Figure 4: Actor Mapping Grid



Outcome:

By the end of this step, you will have a clear strategy for stakeholder engagement tailored to each stakeholder's level of influence and interest. For example, in the research conducted in Kenya and Nigeria we identified vendors and consumers to be our key actors.



Step A6: Synthesize insights and journey mapping



Objective:

Once the key actor of interest has been identified, behavioral science frameworks can be applied to systematically assess the barriers and enablers that shape their food waste-related decisions (you can club the insights from Steps A2 and A4). This systematic mapping helps us prioritise the key issues to target through our solutions.



Methodology:

You can use the following two step approach to synthesize your insights. However, based on your comfort level, you can also proceed with the two steps simultaneously.

- **Using behaviour science frameworks:** Behavioral science provides frameworks like the Capability, Opportunity and Motivation model (COM-B model) to make sense of the barriers and enablers identified. According to the model, behavior occurs when three core components are present, and change happens when solutions influence one or more of them (refer to Case Study 2 to understand the application).
 - **Capability (can I do the behaviour?),** which refers to an individual's physical (strength, stamina, dexterity) and psychological ability (knowledge, skills) to perform the behavior.
 - **Opportunity (does the environment allow me to do the behaviour?),** which includes all external factors in the social (peer networks, norms) and physical (access to resources) environments that enable or prompt the behavior?
 - **Motivation (do I want to do the behaviour),** which encompasses both reflective processes (e.g., planning, decision-making) and automatic drivers (e.g., emotions, habits)

⁹ Behavioral frameworks are systematic and structured approaches, based on validated research, to analyze, understand and predict human behavior and decision making processes. They offer clear roadmaps to apply behavioral science principles to understanding real-world situations and issues, identify influencing factors and design effective solutions. Other than the COM-B model there are other frameworks such as the Theory of Planned Behavior, Social Norms Theory and Nudge Theory. Please refer to Resource 1 to understand some of these frameworks and their usability. You can choose to apply one or more frameworks at the same time and combine their insights. But if you're new to behavioral science, starting with COM-B is recommended.

Case study 2 - COM-B to synthesize insights of research in Kenya and Nigeria:

To understand and solve the everyday decisions that drive food waste in Kenya and Nigeria, Busara conducted a multi-year study. The landscape analysis and in-depth research revealed unsold funny-looking produce by vendors and consumers to be a major contributor to food waste (refer to Case Study 1). Digging deeper, the COM-B model was used to systematically assess the identified barriers and enablers for vendors (why don't they sell funny looking produce?) and consumers (why don't they buy funny looking produce?).

Capability: We assessed the capability gap (Figure 5) based on if vendors and consumers discard funny looking produce due to lack of information or knowledge.

Vendors	Consumers
Limited knowledge of the difference between funny-looking and spoiled produce. Due to limited knowledge of funny-looking produce, vendors assess the quality of produce based on attributes like absence of dents, bruises, insect pricks, or scratches. Size was another key criterion, influencing price determination. Low awareness of the financial cost of food waste incurred. Vendors were aware of food waste as an issue, but struggled to quantify the extent of financial losses made. Estimations primarily focused on the weight of wasted produce.	Poor knowledge of the difference between funny-looking and spoiled produce. Inability to distinguish between spoiled produce and funny-looking produce, perceiving the latter as a subset of the former. Funny-looking produce was often seen as near-spoiled produce, leading most consumers to avoid purchasing it as discounted. Encountering funny-looking produce discouraged them from revisiting the vendor. Belief that funny-looking produce has less nutritional value for the poor. Consumers would not purchase funny-looking produce, while the other half believed that they contained little to no nutrients. It was often associated with economically disadvantaged individuals and viewed as detracting from the overall marketplace experience. These negative perceptions were largely driven by a lack of awareness about the safety and viability of consuming funny-looking.

Figure 5: Capability

Opportunity: We assessed the opportunity gap (Figure 6) by analyzing the external factors such as market infrastructure and social norms that either facilitate or hinder waste prevention efforts. For example, inadequate storage facilities and cultural preferences for aesthetically perfect produce can contribute to higher waste levels.

Vendors	Consumers
High cost of storage facilities. Lack of access to cold storage due to fees charged serves as a barrier to preserving produce. Inadequate facilities for hygienic produce display. Poor market facilities including unsanitary conditions arising from waste piles and mud lead to faster deterioration of fragile fresh products. Poor produce handling during transportation. Vendors who restock their produce daily to reduce wastage are faced with the challenge of poor handling during transportation and unloading leading to produce damage and reduced produce value. Poor market waste management. Lack of proper waste disposal systems and washing facilities further exacerbates the issue, making it challenging for vendors to maintain hygiene and effectively manage unsold produce. This discourages customer engagement and increases the likelihood of produce waste. Limited access to farmers. Inability to interact directly with farmers means that vendors are unable to select more aesthetically pleasing produce to reduce waste especially as the produce is pre-packaged at sale.	Unsanitary produce handling practices by vendors Concerns about the lack of cleanliness, often associating vendor handling methods with unsanitary practices. Flies and insects swarming around produce and cross-contamination due to vendors handling different products with dirty hands. Poor market waste management. There is a feeling of discomfort when seeing waste piles in the marketplace because these are viewed negatively by consumers and especially unpleasant due to foul odors and the attraction of flies and pests. Lack of proper washing. Poor produce displays by vendors. Discomfort when seeing produce in direct sunlight or on the ground. Price Sensitivity. Price is a factor for produce selection with many consumers willing to pay more for fresh produce. However, prices of old produce are the same as for new produce.

Figure 6: Opportunity

Structural
Behavioral

Motivation: We identified barriers to be motivation related (Figure 7) based on an assessment of people's internal processes that influence decision-making, including beliefs and intentions. Vendors and consumers lack the incentive to adopt waste-reducing practices as they perceive no immediate economic benefit.

Vendors

Bulk purchasing trade-offs and limited control over produce quality. Vendors purchasing in bulk face limitations in selecting produce based on their preferences due to receiving entire shipments at once. In contrast, vendors procuring smaller quantities have the freedom to hand-select their produce.

Dependence on outdated storage practices contributing to spoilage and waste. Access to cold storage was deemed crucial, particularly for watermelon and leafy greens. However, vendors rely on cheaper storage methods which are less effective in preserving produce.

Stigma and market norms discouraging the sale of funny-looking produce. Vendors avoid funny-looking produce due to fears of spoilage and its reduced appeal to customers, which makes them hesitant to buy it.

Consumers

Preference for aesthetically perfect produce over Funny-looking alternatives. Freshness consistently took precedence over price, with many consumers willing to pay more for fresh produce. Visual cues, such as color and the absence of bruises, were also mentioned as factors influencing consumer choices of produce.

Misconceptions about the quality and social stigma associated with funny-looking produce. Consumers often feel uncomfortable when offered funny-looking produce by vendors, leading them to seek alternatives from other vendors.

Figure 7: Motivation

 Structural  Behavioral

→ **Journey Mapping:** After using behaviour science frameworks (or even simultaneously), the next step is to map how these behaviors unfold in real life using a journey map. This is to create a simple picture that shows what people do, feel, and struggle with at each step of buying or selling produce. You can create separate maps for different key actors in your specific setting such as for vendors from buying produce to selling and storing it and for consumers from deciding to shop to choosing what to buy. The process to create a journey map includes (refer to Case Study 3 to see journey mapping in action):

- **Define the journey stages:** Define key stages of a journey. Steps A2 - A4 should equip you to do the same.
- **Map information from using behaviour science frameworks:** Try and place the barriers identified in the previous step (using behaviour science frameworks) on each stage of the journey. This ensures each stage of the journey clearly highlights what drives or hinders behavior, enabling targeted, behaviorally informed solutions.
- **Visualize the Journey:** Use charts, drawings, or icons to illustrate actions and barriers. Add real quotes or insights where possible. A sample journey mapping sheet can be found in Resource 2.

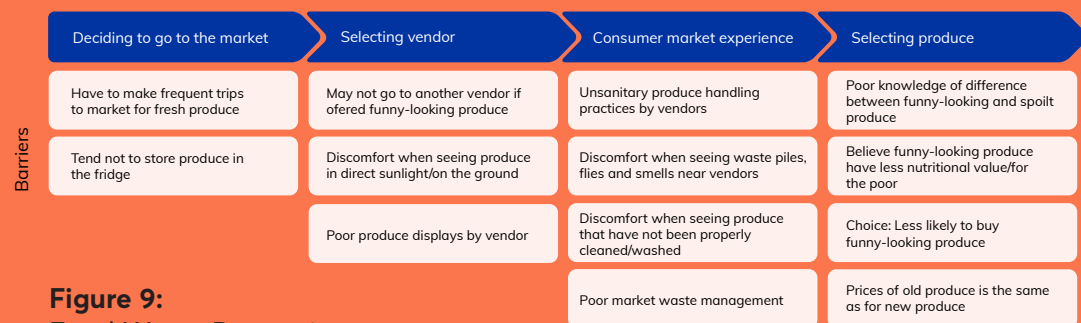
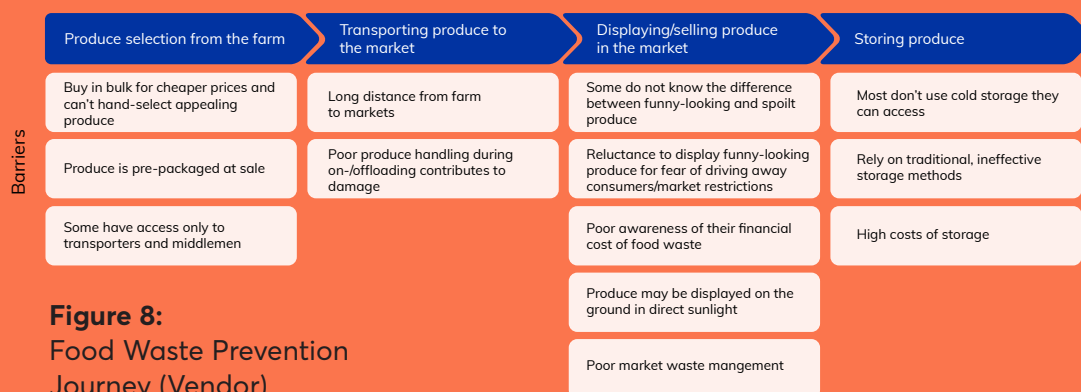
Case study 3 - Journey mapping for the research in Kenya and Nigeria:

To understand and solve the everyday decisions that drive food waste in Kenya and Nigeria, Busara conducted a multi-year study. We used the COM-B model to make sense of the insights collected through in-depth research (and also landscape analysis) for vendors and consumers. Further, to add a layer of nuance, we mapped the journeys of vendors and consumers and aligned the same with insights from the COM-B model (see Case Study 2).

For example:

- Vendors move through stages of selecting, transporting, displaying, selling, and storing produce, where limited storage and transport (opportunity barriers) and perceptions about quality and pricing (motivation barriers) often lead to perfectly edible food being discarded.
- Consumers, from deciding to visit the market to choosing vendors and produce, face structural challenges like poor storage and unsanitary environments (opportunity barriers), negative perceptions about imperfect produce and hygiene concerns (motivation barriers), and limited knowledge to distinguish imperfect from spoiled food (capability barriers).

Understanding these interconnected barriers across both journeys supports the design of solutions that address not only infrastructure constraints but also the beliefs and behaviors driving waste, enabling more effective and sustainable food waste reduction.



- **Prioritizing insights:** You may now prioritise your insights / barriers / enablers based on what is standing out or recurring throughout the journey. Based on the number of barriers you have, you can select the top 3 or top 5.



Outcome:

A clear understanding of behavioral priorities by identifying key barriers and enablers across a journey. It will guide the creation of targeted, behaviorally informed solutions.

Step A7: Define a goal



Objective:

Concluding the situational analysis, you will now be able to create a goal if you wish to proceed with creating solutions to address the problem statement. However, you can also stop at Step A6 alone if that is the scope of your research.

Tip!

You may have multiple goals depending on the barriers and actors identified. Ensure goals are mutually exclusive, specific, actionable, and measurable.



Methodology:

Define study goal(s) that clearly articulates what success looks like. This involves answering:

- **Barriers and enablers:** Priority list of barriers and enablers
- **Key actor to target:** Who should be the focus or direct beneficiary of your solution(s)?
- **Desired outcome:** What behavior change or result do you aim to achieve?



Outcome:

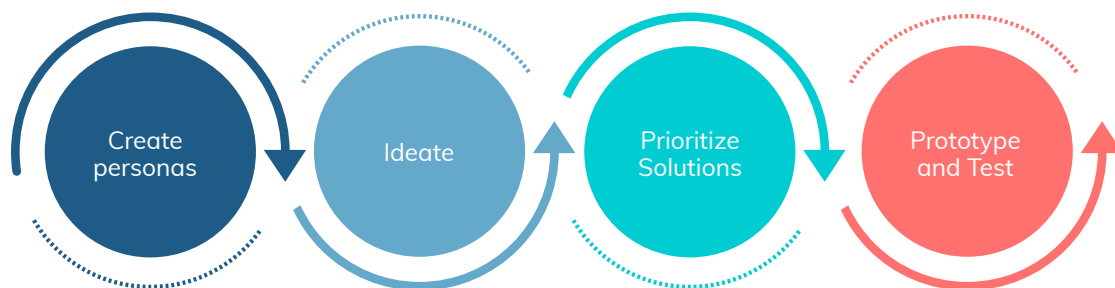
A clear study goal can follow the suggested structure: “[Actor] [performs what behavior - taking directly from the barrier identified] [under what circumstances] [resulting in what desired outcome]”.

(Example goal from the study in Kenya and Nigeria where unsold funny-looking produce was identified to be a recurring barrier: Consumers increase the purchase of funny looking produce in traditional markets of Kenya resulting in a reduction in food wastage).

B. Design and Test



Following in-depth research and the identification of a clear study goal(s) (you may have this already or may have arrived at this using the steps in Section A), the next phase is to create and test solutions. This is an iterative process with co-creation at its core. The design and test phase will leave you with the solutions / ideas you would want to implement.



Step B1: Create personas



Objective:

Persona creation is the first step in solutioning your ideas. It is about humanizing your key actors by translating aggregated insights into relatable profiles that capture motivations, barriers, and decision patterns. This step bridges research and design allowing you to co-design solutions with, not for, the target actors.



Methodology:

Situational analysis has already given us a priority list of barriers and enablers throughout the journey of key actors¹⁰. Building on that, we can create personas.

- **Start from the target behaviour** which is also identified in your goal. Going back to the suggested format of the goal - “[Actor] [performs what behavior - taking directly from the barrier identified] [under what circumstances] [resulting in what desired outcome]”, “performs what behaviour” is the behaviour you are targeting.
- Now, using the information already collected in the situational analysis and synthesised using COM-B and journey mapping, capture details around the target behaviour, as suggested in Table 3.

¹⁰ If you are starting directly from the design phase, refer to Step A6 of the situational analysis for ways to synthesise your pre-existing list of barriers and enablers.

Category	What to Capture	Why it matters
Demographics (only if relevant)	Age, gender, location, socioeconomic status	Provides context but should not be the main focus.
Behavioral Patterns	What behaviors do they exhibit related to the target behavior? (e.g., how they manage finances, how they use health services)	Helps identify pain points and habitual actions.
Motivations & Goals	What drives their decisions? What are they trying to achieve?	Aligns solutions with intrinsic and extrinsic motivators.
Pain Points & Barriers	What prevents them from adopting the desired behavior?	Helps design solutions that address real obstacles.
Decision-Making Process	How do they make choices? Are they rational, emotional, or influenced by social norms?	Informs how to frame messages or solutions.
Psychological & Emotional Factors	What emotions or biases affect their behavior?	Helps tailor solutions using behavioral insights (e.g., loss aversion, trust).
Technology & Accessibility	How do they engage with digital tools or offline services?	Critical for designing inclusive digital solutions.

Table 3: Key Components of a Persona

No single persona can capture the diversity of your audience. A wholesaler in Githurai or Abuja has very different needs and motivations from a middle-income shopper in Nakuru or Lagos. That's why multiple personas are essential to avoid one-size-fits-all solutions, and build empathy for less visible groups. In contexts where norms, incomes, and even weather patterns influence behavior, multiple personas ensure solutions reflect real complexity. A sample worksheet to create personas is available in Resource 3.

Tip!

When we use personas well, they become a tool for empathy and equity, making sure our solutions are not just effective on paper, but relevant, acceptable, and sustainable. Amongst these best practices for developing personas, you might recognise some of the elements we have already mentioned in the past:

1. **Basing them on research evidence, to minimise biases:** Use interviews, surveys, and data, not assumptions.
2. **Keep them focused:** Avoid too many personas; focus on key user types.
3. **Making them relatable:** Include names, photos, goals, and pain points to humanize them.
4. **Use in solution design process:** Refer to the personas, using them actively during ideation, design, testing, and iteration.
5. **Keep them updated:** Keeping the personas updated by revising them as new insights and used data emerge.



Outcome:

This step results in a set of realistic, human-centered personas that bring your target actors to life. These personas make behavioral insights from the situational analysis actionable, helping you to create solutions. For example, following the study in Kenya and Nigeria one of our personas was "the skeptical vendor" who is driven by risk aversion for the fear of losing money if customers don't buy funny looking produce.

Step B2: Ideate



Objective:

After building personas, the next step is to ideate and co-design solutions for specific personas, with key actors as well as any other stakeholders identified to be important (refer to Step A5 of the situational analysis). Co-design ensures ideas are grounded in real experiences, uncovers local insights, and builds ownership while tailoring solutions to diverse contexts.



Methodology:

Follow the suggested steps below to ideate:

- **Summarize insights:** Use insights from the journey map and personas to guide brainstorming, ensuring ideas are grounded in real behaviors and contexts.
- **Develop “How Might We” Questions:** Transform barriers into opportunities using How Might We (HMW) questions. This helps teams reframe challenges into actionable design prompts. The suggested format of these questions is: **“How might we [action] for [user] to achieve [goal]?”**. Taking an example from the study in Kenya and Nigeria to illustrate:
 - **Before (Insight / Barrier):** “Customers avoid purchasing less visually appealing fruits due to the belief that they are of lower quality or spoiled.”
 - **After (HMW):** “How might we shift customer perceptions so that less visually appealing fruits are seen as equally fresh and high-quality?” OR “How might we shift customer perceptions so that less visually appealing fruits are seen as equally fresh and high-quality?”

Tip!

How Might We questions will serve as the basis of co-creation. The questions have to be broad so that multiple solutions can be created but not too broad that you lose direction.

- **Co-design with key actors:** Now, facilitate a collaborative workshop with key actors as well as other important stakeholders (refer to Step A5 of situational analysis) where participants brainstorm solutions that respond to the HMW questions. This can be done through a design workshop where you share journey maps, personas, and summarized barriers to spark idea generation. **A strong idea would be simple, evidence-based, barrier-focused, low-cost, and aligned with how people actually behave, not how we wish they did.** Based on your needs, you can also have more than one workshop.

These activities may also be executed in partnership with stakeholders in the food waste reduction sector selected in the actor mapping grid such as NGOs, market authorities and policy makers.

→ **Shortlist ideas:** Read through all the ideas generated by your key actors and stakeholders and discuss and build on ideas with these groups. If two or more ideas are similar, you can merge them into a single, stronger concept and consider this as a new combined idea. If you have too many ideas, you can choose using a vote. You can vote based on the following questions:

- How excited am I about this idea?
- How likely is it to succeed in our market?
- How practical is it with our current resources?



Outcome:

This step results in a set of user-driven, behaviorally informed solutions that are both creative and feasible. The process strengthens local ownership, integrates on-the-ground realities, and ensures that proposed solutions are culturally sensitive and actionable.

Step B3: Prioritise solutions



Objective:

After creating and shortlisting ideas / solutions, it is now time to prioritize! The goal is to focus on ideas that are both **high impact and feasible**, ensuring resources are directed toward solutions that can realistically address your problem statement or target behaviour.



Methodology:

The suggested technique is creating an **Impact - Feasibility Matrix**. It is a visual tool that helps teams quickly assess which ideas are both practical and likely to make a meaningful difference.

→ **Evaluate impact:** As suggested in the name of the matrix itself, start by evaluating if the solutions / ideas would be high impact or low impact. **High-impact solutions typically reach more people, tackle core barriers, and drive consistent engagement. Low-impact solutions may still be useful but should be secondary or complementary.** You can evaluate the same using a table or an excel sheet (refer to Table 4).

Dimension	High Impact (Y/N)	Low Impact (Y/N)
Reach	If targets a large or influential group	If reaches a small or peripheral group
Behavior Change Potential ¹¹	If strong likelihood of impacting the problem / behaviour	If weak (or uncertain) likelihood of impacting the problem / behaviour
Interaction	If enables frequent engagement with key actors such as on daily or weekly basis	If one-time or minimal engagement with limited reinforcement opportunities
Relevance	If tackles a core barrier identified in research	If addresses a secondary or minor issue

Table 4: Assessing impact of solutions

→ **Evaluate feasibility:** Next, you can evaluate the feasibility or practicality of your solutions. Again, it can be evaluated using a table or an excel sheet (refer to Table 5 below). If an idea meets 4+ of the given dimensions, it's highly feasible, 2–3 means it may need support / resources and fewer than 2 means it's likely impractical or too resource intensive.

Dimension	High Feasibility (Y/N)	Low Feasibility(Y/N)
Resources and Capacity	If affordable, within team capability	If costly or needs unavailable expertise
Scalability	If easy to expand to other contexts . markets without major changes	If highly context specific
Complexity	If can be implemented within given ecosystem	If requires system / policy change
Accessibility	If easy adoption	If had to access or understand
Speed	If easy to develop	If long development time
Adoption Likelihood	If actors would be willing and motivated to adopt	If low interest among actors to adopt

Table 5: Assessing feasibility of solutions

¹¹ It can be based on evidence from past solutions or pilots.

→ **Create matrix:** Now, combine information from both the tables to create the impact - feasibility matrix as shown in Figure 10. The best ideas sit in the top-left corner of the matrix: high impact and high feasibility. Focus first on piloting ideas in the green quadrant as they are high-impact and easy to implement, flag ideas for later testing or redesign in the pink and grey quadrants and discard or rework ideas in the red quadrant.

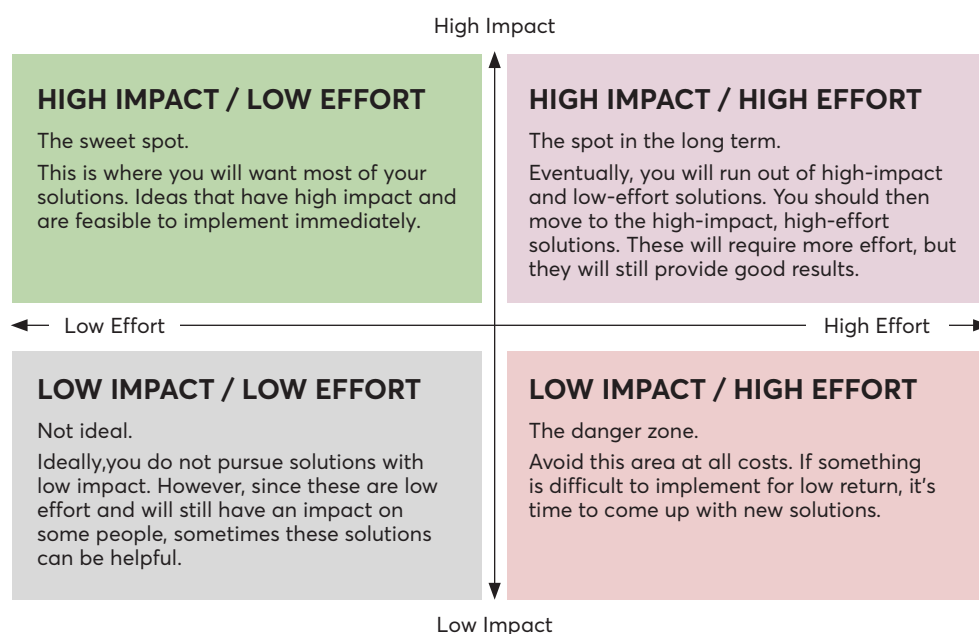


Figure 10: Impact-Feasibility Matrix

→ **Flesh out solutions:** Once the top ideas / solutions are selected define target users, delivery channels, communication / implementation channels, key partners, and core behavioral messages to be conveyed. To help refine even further, use the MoSCoW method to prioritise resources and focus on what will make the biggest difference in testing:

- **Must-haves:** non-negotiable elements for the idea to work.
- **Should-haves:** important but not critical.
- **Could-haves:** nice additions if resources allow.
- **Won't-haves:** things we agree are not necessary for now.

You'll also need to give each idea a name, define its objectives, describe the outputs, and outline the parameters, including what it relies on, how it will be executed and what behavior you want to change.



Outcome:

You will now have a list of high-impact, feasible ideas / solutions ready for prototyping and testing!

Step B4: Prototype and test



Objective:

Now, it is time to bring selected ideas / solutions to life through rapid prototyping which is a quick, low-fidelity way to test and refine solutions. Rooted in co-creation, a prototype is not the final product but a draft version that allows target audiences to interact with the idea, content, or delivery method and provide early feedback.



Methodology:

The process involves clarifying the prototype's purpose, selecting a simple and low-cost format, building a basic draft, testing it with real users to observe behaviors and gather feedback, and iterating based on what's learned. Table 6, suggests a step by step process to prototype and test.

Stage	What to Do	Suggestions
1. Clarify Purpose	Define the specific question your prototype should answer. A clear purpose ensures the test is focused and actionable.	Example from Kenya and Nigeria: Will customers buy funny looking produce if they get more information on its quality and use?
2. Prototype & Build Draft	Choose the simplest, lowest-effort way to bring your idea to life and test key assumptions quickly and affordably. Consider if actors are likely to use it and if it is feasible in the given context. Draft a simple, low-fidelity version of your idea / prototype focusing on core elements while avoiding over-designing	Using basic materials like paper, posters, or role-play tools or whatsapp messaging
3. Test with actors	Test your draft or prototype with real users to understand if your solution changes the targeted behaviour, if there are any barriers and if people respond positively to the solutions. The template in Resource 4 will help you create a testing plan to ensure that your test is clear, measurable, and focused on behavior.	There are multiple non expensive and practical ways to test; refer to Resource 5 for more details
4. Iterate & Refine	Adjust based on findings, test again if needed, and keep improving.	

Table 6: Steps to prototype and test

➤ Tip on testing!

Testing reduces risk, reveals real-world behaviors, and enables rapid learning and improvement, ensuring solutions are effective before scaling. Testing doesn't have to be expensive, complex, or conducted in a lab. Refer to the tools presented in Resource 5 for simple methods that help you see what's working and why in a way that's fast, visible, and grounded in real behavior.

You can also test many different elements without changing the whole solution. Some examples from the research in Kenya and Nigeria include:

- **Message wording:** Try different phrases on your sign. E.g., "Fresh but funny-looking" vs. "Perfectly imperfect & safe to eat"
- **Timing:** Test impact of messaging during morning rush vs. late afternoon, when decision-making and crowding differ.
- **Pricing Format:** Compare unit price vs. bundle price, discounts or credit purchase. E.g., "KES 10 each" vs. "3 for 25"
- **Calls-to-Action (CTA):** Experiment with clear CTAs like: "Try this today & save" or "Ask me why this carrot is a good deal". See which prompts get more engagement.

Testing small elements helps identify what creates attention, interest, or trust without overhauling your entire setup and it's less risky than testing everything at once. However, keep the following in mind while testing:

- Focus on one variable at a time (e.g., only test message, not price + placement)
- Keep your measurement simple and observable
- Don't aim for perfect, even basic comparisons give useful signals
- Test over a few hours or days, depending on context

Image credit: Busara Center



Case study 4 - Example prototype and testing from the research in Kenya and Nigeria:

To understand and solve the everyday decisions that drive food waste in Kenya and Nigeria, Busara conducted a multi-year study. The in-depth research, COM-B analysis and journey mapping revealed the perception of poor quality and hygiene as one of the barriers to the low uptake of funny-looking produce.

To address the same, one of the solutions created and tested was a visual signage to reframe the perception from poor quality and hygiene to fresh, safe and affordable. More information on the solution, testing and results is provided in Figure 11 below.

Background:

Local markets in Kenya and Nigeria showed low interest in funny-looking produce (LVAP) due to perceptions of poor quality and hygiene.

Intervention:

Visual signage prototype was developed to reframe LVAP as safe, fresh, and affordable.

Visual signage Prototype:

Visual Concept Prototype-static posters placed at market stalls.

Testing Method:

A before-and-after field test with A/B testing was conducted in real market settings. Signage was varied to compare which message framing and design elements most effectively influenced customer attitudes and vendor confidence.

Results:

Implementing signage A in real world market settings led to 22% increase in customer willingness to pay for funny-looking produce.

Why this intervention was chosen:

Signage is a low-cost, scaleable, and easy-to-test prototype that directly addresses consumer perceptions at the point of purchase, making it ideal for rapidly shifting norms ground.

A vs. B Signage:



Sign A: Gain Framed Messaging

Messaging: It may look funny or ugly from the outside but if opened up it is exactly the same as normal produce.



Sign B: Standard Messaging

Messaging: Fruits and vegetables can be bought in many different places. They can be bought in supermarkets, traditional markets, shopping centers close to your neighborhood and even online.

Figure 11: Creating and testing solution



Outcome:

Prototyping turns abstract ideas into tangible, testable solutions. It helps teams learn what truly drives behavior change in real-world conditions, reducing risk, improving effectiveness, and ensuring solutions are practical, user-centered, and scalable.

C. Implement



Image credit: Busara Center

This phase focuses on transforming tested ideas / solutions into real-world action. At this stage, refine your solutions (you may already have the solutions or will have created them using the steps above) based on user feedback, create implementation strategies and engage key actors as advocates to ensure ownership and local relevance. Again, at the core of implementation is a flexible iterative process - rolling out, monitoring and adapting solutions based on continuous learning.



Objective:

Once the prototypes have been created and tested, implement and scale the most effective ideas by integrating user feedback, strengthening actor engagement and ensuring practical, context-specific rollout strategies.



Methodology:

Table 7 lays out a roadmap for implementation. Implementation should not be viewed as a rigid, sequential process. Some of these activities can and should happen concurrently or in iterative cycles (refer to Resource 6 for a sample implementation plan).

Step	What to Do	How to do (suggested)
Refine solutions	Use feedback and testing insights to fine-tune solutions, resolving barriers and improving their overall effectiveness. Choose your best ideas. Select the solutions that are effective, affordable, and easy to implement.	Example from Kenya and Nigeria: Will customers buy funny looking produce if they get more information on its quality and use?
Plan for roll out	Revisit stakeholder mapping conducted in situational analysis (refer to Steps A3 - A5) to clarify roles and engagement strategies. Develop guidelines for broader implementation.	Prepare materials, assign roles, and decide where and when to implement. Think about scale: will this be in one market, or several?
Engage key actors	Involve your key actors in shaping and promoting your solutions. This builds ownership, ensures they understand the benefits, and reduces apprehension, making implementation smoother and more effective. Keep engagement simple and focused; avoid overwhelming participants with too much information at once.	Some ways to engage key actors include: • Conduct short orientations or demos. • Provide clear visual cues, reminder materials, and practical guides that link new practices to visible benefits, shared gains, and stronger relationships.
Engage stakeholders	Engaging other stakeholders in the ecosystem as identified in situational analysis (refer to Steps A3 - A5) can significantly boost the impact and sustainability of your solutions. These can act as trusted advocates, supporting key actors in adopting the solutions, responding to concerns and reinforcing key messages. With simple training and ongoing support, they bridge the gap between implementers and actors, ensuring strategies are locally relevant and momentum continues well beyond the initial rollout.	Simple training and ongoing support
Launch and Monitor (Implement)	Roll out the solution, observe and collect quick feedback.	Checklists, interview
Reflect and Adapt	Review what worked and what didn't. Adjust solutions and prepare for scale-up.	• Check-ins or WhatsApp • Assign a local ambassador/ team member to summarize and share insights.

Table 7: Roadmap to implementation



Outcome:

Prototyping turns abstract ideas into tangible, testable solutions. It helps teams learn what truly drives behavior change in real-world conditions, reducing risk, improving effectiveness, and ensuring solutions are practical, user-centered, and scalable.

D. Evaluate



Once the solutions are implemented, progress can be tracked and evaluated regularly by focusing on learning what works and what doesn't. It also builds ownership, as key actors and communities can see the impact of their own efforts.



Objective:

Track and evaluate the impact of solutions in a simple, continuous, and actionable way. Build ownership among key actors and communities, enabling timely learning, adaptation, and celebration of progress.



Methodology:

By following the steps suggested below, you can create a robust system for evaluating the impact of your solutions while fostering a culture of continuous improvement and community celebration.

→ **Develop a Theory of Change:** Design a theory of change to explicitly state the outcomes or goals you want to achieve.¹² Simply put:

- Define a clear goal or outcome you want your solution to achieve¹². You can think back to the goal defined in the beginning of this toolkit at Step A7 of the Situational Analysis.
- Ensure that goals and indicators explicitly connect to the underlying drivers (which are also synthesised in Step A7 of the Situational Analysis). For example, in the research conducted in Kenya and Nigeria, instead of only tracking food waste reduction by consumers, we dug deeper and measured shifts in willingness to act, perceived social approval for the behaviour, ability to perform the behavior, and how easy the behavior becomes in practice.

→ **Monitor the implementation of your solutions:** You don't need expensive tools to track implementation and impact, but consistent observation and documentation. For example tracking simply in a notebook or an excel or through pre and post surveys. Other tools are suggested in Resource 7.

¹² Find a great resource to help you develop and measure your theory of change in IDInsights Impact Measurement Guide. Please find it linked in our Supplementary Resources.

- **Tracking on excel or in a notebook:** Create a basic excel sheet or notebook to record weekly changes such as the number of actors who have adopted the solutions, any feedback or behavioural responses of actors or other stakeholders, etc.
- **Pre and post surveys:** Based on the outcomes of interest you can design surveys, record the outcomes pre and post implementation and measure changes. Surveys can be paper-based or electronic, depending on context. Complement surveys with direct observation, brief interviews, and even informal feedback to track actual behavior, not just perceptions¹³.

Tip!

Use a photo log to capture key moments or outcomes of interest and compare changes over time.

Train a designated team member or local volunteer to consistently update the tracking tools.

→ **Analyze and Iterate:** Learn by analyzing results, reflecting with stakeholders, and adapting strategies based on what works.

- Combine all tracked data (sales figures, survey results, photo logs, and checklists) to analyze trends and patterns. Use simple charts or graphs to visualize progress for stakeholders.
- After analyzing results, share findings with implementers and stakeholders, refine solutions components based on what drives behavior change, and adapt tools or messaging as needed.

Tip!

To ensure effective tracking and learning, implementers should receive basic training in monitoring and evaluation (M&E) techniques. This training should include how to use simplified tools such as observation checklists, weekly vendor logs, and consumer feedback forms (refer to Resource 8 for an easy-to-use M&E worksheet to begin with).

Ensure that women and youth actively participate and benefit by tracking their involvement and adoption of practices, and gather feedback on barriers such as time, resources, or confidence. Apply these insights to tailor support and promote equitable opportunities for underrepresented market actors.

¹³ The survey guide by Priscilla A. Glasow provides practical examples and guidance for adapting the survey to your context. Please find it linked in our Supplementary Resources.

A note on sustaining solutions

Sustaining behavior change solutions requires more than just a strong launch; it relies on building systems, ownership and partnerships that keep momentum alive long after initial implementation. Continuity efforts focus on sharing results, reinforcing collaboration, and embedding solutions into existing community and institutional structures.

A key part of sustaining behaviour change is to share findings with stakeholders. Reporting successes and lessons learned helps replicate and scale successful solutions in other communities. Try and make the success stories tangible and relatable by showcasing real-life personas and how the solutions have impacted the personas. For example:

- "Mary, a vendor, increased her profits by 30% through bundling strategies."
- "John, a consumer, discovered new recipes for funny-looking produce, saving his family money."

Tip!

Gather testimonials, quotes, and photos for storytelling. Present stories through posters, newsletters, or social media campaigns.

Crucial to sustainability is also the development of a sustainability plan with stakeholders from the start. This is to co-create a shared vision for long-term ownership. Stakeholders should help set goals, define roles for ongoing training and monitoring, and identify local resources to sustain activities. Sustainability efforts may include integrating the solutions into existing programs, securing low-cost awareness materials, or designating rotating community champions across the value chain. By embedding these efforts within trusted local structures, solutions are more likely to endure, adapt, and scale over time.

Tip!

To ensure the continuity of solutions:

- **Initiate dialogue early:** Present the solutions and implementation plan to local or municipal officials, showing alignment with broader goals like food security, environmental protection, or sustainable markets.
- **Seek formal endorsement:** Request letters of support, introductions to key market officials, and formal approvals to conduct activities like training or poster installations.
- **Leverage Influence:** Invite local authorities to speak during community events, flag-offs, or awareness campaigns to boost credibility.
- **Hold co-design workshops:** Include officials in co-design workshops to get their insights on regulation, infrastructure and compliance to shape stronger, more realistic solutions.
- **Provide updates and recognition:** Share reports and celebrate milestones with local government to maintain interest and promote continuity.



Image credit: Busara Center

Summary and Conclusion

Food waste is a critical challenge with economic, social and environmental impacts. Addressing it requires more than technical fixes; it calls for understanding the behaviors, motivations and contexts that drive waste across the food system.

This toolkit is a practical, evidence-driven guide designed to help practitioners, policymakers and organizations apply behavioral science to reduce food waste across the value chain. It translates research insights into actionable steps that can be implemented in real-world settings.

The toolkit divides the behavior change process into interconnected steps that can be followed sequentially or accessed individually depending on your stage of research or implementation. Throughout, it emphasizes co-creation, iteration, and evidence, ensuring that solutions are tested, refined, and grounded in real experience.

At its core, the toolkit is a catalyst for action. By engaging stakeholders across the value chain, it fosters collaboration and ensures that solutions are contextually relevant and widely supported. Through continuous learning, measurement, and refinement, the toolkit equips stakeholders to build food systems where resources are valued, benefits are shared and sustainability is embedded for the long term.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)

Berkowitz, A. D. (2004). The social norms approach: Theory, research, and annotated bibliography. <https://www.alanberkowitz.com/articles/social%20norms%20approach-short.pdf>

Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Feedback Global. (2015, July). Food waste in Kenya: Uncovering food waste in the horticultural export supply chain. The Rockefeller Foundation & The Barham Trust. https://feedbackglobal.org/wp-content/uploads/2015/07/Food-Waste-in-Kenya_report-by-Feedback.pdf

Food and Agriculture Organization of the United Nations. (2014). Food loss assessments: Causes and solutions—Case studies in small-scale agriculture and fisheries subsectors: Kenya (Banana, Maize, Milk, Fish). SAVE FOOD. https://www.fao.org/fileadmin/user_upload/save-food/PDF/Kenya_Food_Loss_Studies.pdf

Food and Agriculture Organization of the United Nations. (2019). The state of food and agriculture 2019: Moving forward on food loss and waste reduction. FAO. <https://openknowledge.fao.org/items/ba08937f-4a41-4ff5-a4e7-e495e5f5f599>

Food and Agriculture Organization of the United Nations. (2023). Food loss assessments: Causes and solutions. <https://doi.org/10.4060/ca6030en>

Food and Agriculture Organization of the United Nations. (2019). FLW database. <https://www.fao.org/platform-food-loss-waste/flw-data/en/>

IDinsight. (n.d.). Theory of change. <https://guide.idinsight.org/theory-of-change/>

Investopedia. (n.d.). Risk-averse. Retrieved from <https://www.investopedia.com/terms/r/riskaverse.asp>

Ivers, L., Niavas, S., Mitchell, C., Sqalli, Z., & Frikha, O. (2022). The future of traditional retail in Africa. Boston Consulting Group. <https://www.bcg.com/publications/2022/the-future-of-traditional-retail-in-africa>

Kc, K. B., Haque, I., Legwegoh, A. F., & Fraser, E. D. (2016). Strategies to reduce food loss in the global south. *Sustainability*, 8(7), 595.

Michie, S., van Stralen, M. M., & West, R. (2011). The behavior change wheel: A new method for characterising and designing behavior change interventions. *Implementation Science*, 6(42). <https://doi.org/10.1186/1748-5908-6-42>

Glasow, P. A. (2005). Fundamentals of survey research methodology. https://www.mitre.org/sites/default/files/pdf/05_0638.pdf Retrieved January, 18, 2013.

Mmereki, D., David Jr, V. E., & Wreh Brownell, A. H. (2024). The management and prevention of food losses and waste in low-and middle-income countries: A mini-review in the Africa region. *Waste Management & Research*, 42(4), 287-307. <https://doi.org/10.1177/0734242X231184444>

ReFED. (n.d.). The problem: Where does food waste occur? https://refed.org/food-waste/the-problem/#where_does_food_waste_occur

Research Solutions Africa (RSA) Ltd. (2015). Report of a market study on fresh vegetables market in Kenya consumer survey. pp. 1-31. <https://www.agroberichtenbuitenland.nl/binaries/agroberichtenbuitenland/documenten/rapporten/2015/12/part-1---report-of-a-study-on-fresh-vegetables-market-in-kenya/part-2---reportof-a-study-on-fresh-vegetables-market-in-kenya/Fresh+Vegetables+Market+in+Kenya+-+Part+2+-+Retailers+Survey.pdf> accessed August 26, 2023.

Saldanha, A. T., & Aranha, R. (2022). Influence of consumers' self perception on devaluation of ugly produce—marketing strategies to reduce food waste in the Indian context. *Indian Journal of Marketing*, 52(8), 41-50. <https://doi.org/10.17010/ijom/2022/v52/i8/171223>

Schiffman, L. G., & Wisenblit, J. (2019). *Consumer behavior* (12th ed.). Pearson.

Social Change UK. (2019). COM-B and changing behavior. https://social-change.co.uk/files/02.09.19_COM-B_and_changing_behavior_.pdf

Surucu-Balci, E., & Tuna, O. (2022). The role of collaboration in tackling food loss and waste: Salient stakeholder perspective. *Journal of Cleaner Production*, 367, 133126. <https://doi.org/10.1016/j.jclepro.2022.133126>

United Nations Environment Programme. (2024). Food Waste Index Report 2024: Think Eat Save—Tracking progress to halve global food waste. <https://www.unep.org/resources/publication/food-waste-index-report-2024>

WRAP. (n.d.). Actions on food & drink — Food waste. <https://www.wrap.ngo/taking-action/food-drink/actions/action-on-food-waste>



Image credit: Busara Center

Resources

Resource 1: Behaviour science frameworks

Suggested behaviour science frameworks other than COM-B.

The Theory of Planned Behaviour

The Theory of Planned Behavior (TPB) posits that an individual's intention to perform a behavior is the most immediate predictor of action (Ajzen, 1991). This intention is shaped by three key factors:

- Attitudes toward the behavior (whether the person sees it as positive or negative),
- Subjective norms (perceived social pressure from important others), and
- Perceived behavioral control (the belief in one's ability to carry out the behavior).

TPB suggests that behavior change is possible if someone has a favorable attitude, perceived social support, and feels the behavior is beyond their control. It is commonly used in health and Social and Behavior Change (SBC) solutions to identify leverage points that influence motivation and decision-making.

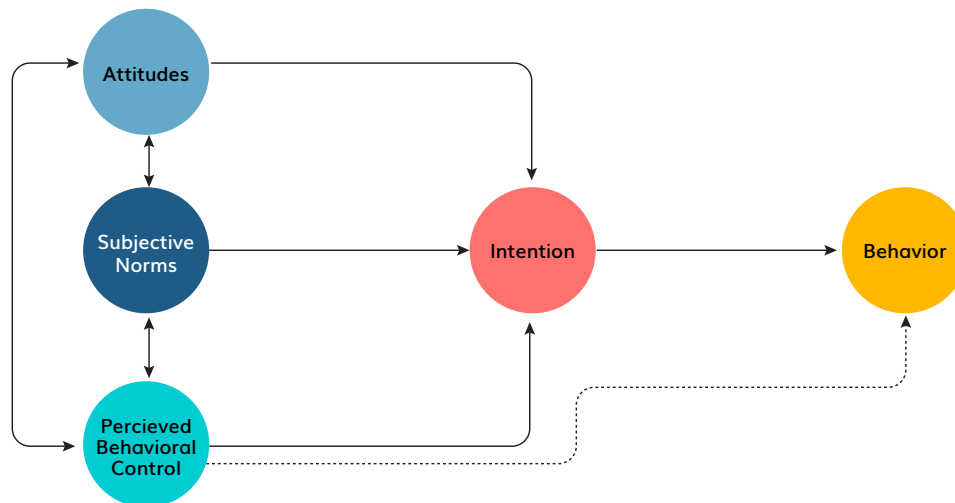


Figure 12: The theory of planned behavior (Source: Azjen, 1991)

The Social Norms Theory

The Social Norms Theory focuses on how people's behaviors are influenced by their perceptions of what is typical and expected within their community or peer group.

It distinguishes between:

- Descriptive norms (what people believe others do) and
- Injunctive norms (what people believe others approve or disapprove of).

Often, individuals conform to perceived norms even when those perceptions are inaccurate. This theory is especially useful in behavior change communication because correcting misperceptions or reinforcing positive norms can shift group behavior. It emphasizes that social influence, not just individual reasoning, plays a major role in shaping behavior.

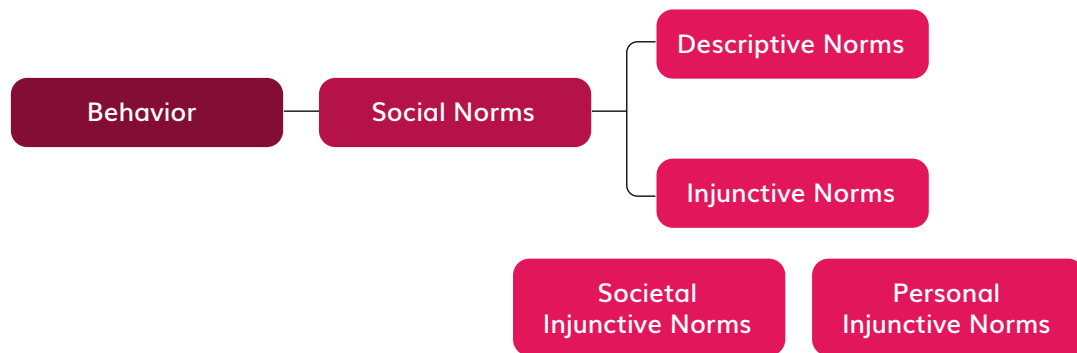


Figure 13: The Social Norms Theory (Source: Busara)

Resource 2: Sample journey mapping sheet

Journey Mapping Worksheet

Barriers					
Enablers					

Figure 14: Journey Mapping Worksheet

Resource 3: Sample persona worksheet

Persona Worksheet

Name and Role - Fictional name, job title, company/sector

Demographics - Age, location, years in role, industry

1.

2.

3.

4.

Persona description - Provide a brief description of your persona. Include family set up, preferences, frequency of market visits etc.

Decision-Making Style - Data driven? Intuitive? Needs external validation?

Goals & Success Metrics - What does success look like for them? What are their key performance indicators?

Pain Points & Challenges - What obstacles do they face? What frustrates them?

Behavioral Patterns - What are their current habits, practices or trends in their behaviors? How often do they do these? What drives them to perform these habits?

Figure 15: Persona Worksheet

Resource 4: Sample testing plan worksheet

Sample testing plan worksheet to help you create a testing plan to ensure that your test is clear, measurable, and focused on behavior.

Target Barrier	Target Key Actor	Solution Idea	Behavior You Want to Change	What You'll Measure	How You'll Measure It	Expected Result
What obstacle does the solution address? (e.g., lack of awareness, negative perceptions, limited access)	Who is the primary actor involved? (e.g., vendors, consumers, transporters, farmers)	What is the idea? E.g., signage, pricing, bundling	What action do you want to increase or reduce? E.g., interest, purchase, interaction	What outcome shows success? E.g., count of customers asking, number of purchases	How will you track it? Observation, tallies, vendor notes	What do you hope to see? E.g., 20% increase in uptake

Table 8: Testing plan worksheet

Resource 5: Testing tools

Suggested techniques to test solutions

Testing Option	Description & How to Conduct the Test
A/B Testing with Different Designs	Present two or more variations of a visual or product design to users and compare their reactions or preferences. This can be done through short surveys, interviews, or quick display tests to see which design communicates the message more effectively or drives the desired response.
Preference Ranking Exercises	Give users multiple design or product options and ask them to rank their preferences from most to least appealing. This helps reveal priorities, likes, and dislikes. Conduct individually or in small groups for richer feedback.
Before and After Testing (Baseline)	Conducted before implementing the prototype or solution, this stage establishes a baseline of user knowledge, attitudes, and behaviors. It helps identify existing perceptions, habits, and potential barriers to change. • Use short surveys, interviews, or quick behavioral observations to document current practices. • Ask questions or observe how people currently interact with the problem (e.g., how they buy, store, or handle produce). • Capture quantitative (e.g., how often) and qualitative (e.g., why) insights.
Before and After Testing (Endline)	Conducted after exposure to the prototype or solution, this stage measures changes in behavior, perceptions, or engagement. It assesses whether the solution achieved its intended effect. • Re-administer the same surveys or observation checklists used during pre-testing to compare results. • Conduct short feedback interviews or focus groups to understand shifts in perception or ease of use. • Track behavioral indicators such as uptake, interest, or understanding.
Comprehension Checks (e.g., "What does this mean to you?")	After showing a design, message, or prototype, ask users to explain what they think it means in their own words. This helps assess message clarity, interpretation, and potential misunderstandings.
Think-Aloud Feedback Sessions	Ask participants to verbalize their thoughts as they interact with a prototype (e.g., reading a poster or using a product). Listen for confusion, emotional reactions, and decision-making cues.
Guided Walkthroughs with Users	Walk users step by step through a prototype, explaining its intended purpose and features, and ask them to share their reactions at each stage. Useful for testing usability and clarity.
Quick "First Impression" Tests	Show the prototype briefly (e.g., 5–10 seconds) and ask for the user's immediate reaction. This helps assess initial appeal, clarity, and emotional impact without overthinking.

Testing Option	Description & How to Conduct the Test
Hands-On Interaction Sessions	Allow users to directly handle and use the prototype in a realistic setting. Observe their natural interaction and ask follow-up questions about ease of use, comfort, and functionality.
Observational Feedback While in Use	Observe participants using the prototype without intervening. Take notes on where they hesitate, struggle, or react positively. Follow up with short debrief interviews to understand why.
Role-Playing with Actual Users	Simulate a real-life service interaction (e.g., vendor-customer exchange). Users act out scenarios while the facilitator observes their behaviors, pain points, and responses.
Mystery Shopper Style Testing	A researcher or trained participant acts as a regular customer to test how the prototype performs in real conditions. This helps capture authentic experiences and identify hidden issues.
Shadowing Pilot Interactions	Observe real users as they experience the solution during a pilot test. Shadow them through the process to identify behavioral patterns, challenges, and opportunities for improvement.

Table 9: Suggested testing tools

Resource 6: Implementation plan

Sample of how you can systematically think about implementing your solution(s).

1. Solution overview

Solution Name/Focus:

Objective (What are you trying to achieve?):

Activities and timeline

Key Activities	Timeline (When?)	Responsible Actors (Who?)

Table 10: Activities and timeline

3. Partnerships needed

Who do you need support from? (e.g., vendor associations, local market authorities, NGOs, community leaders)

How will you engage them?

4. Risks and mitigation

Potential Risk/Barrier	Likelihood (High/Med/Low)	Mitigation Strategy

Table 11: Risks and mitigation

5. Next steps and immediate priorities

1. _____
2. _____
3. _____

Resource 7: Tools to monitor the implementation of solutions

Suggested tools to monitor the implementation of solutions.

Observation checklists

Develop structured checklists to systematically assess practices during implementation. These checklists should be tailored to the specific solution and the goals you aim to achieve, helping track how activities are being applied in real settings. Using examples from Kenya and Nigeria, the checklist areas might include:

→ **Display & Visibility:**

- Are key products or messages prominently placed and easy to see?
- Are they presented in a way that attracts attention?

→ **Bundling Strategies:**

- Are items grouped or bundled in ways that encourage uptake?
- Are different presentation options available to appeal to diverse preferences?

→ **Promotions & Pricing:**

- Are communication materials or signage used effectively?
- Are prices or offers clearly displayed and easy to understand?

→ **Quality & Variety:**

- Is there a good range of options available to customers?
- Is the display area clean, organized, and well maintained?

Willingness-to-Pay experiments

Use surveys or structured exercises to directly assess how people respond to different pricing or value propositions. Willingness-to-pay experiments help estimate how much individuals are willing to spend for a product, service, or benefit by presenting varied options and observing their choices. Using examples from Kenya and Nigeria this may involve the following:

- Introducing controlled variations in pricing or product offerings to understand decision-making behavior.
- Tracking changes in purchase patterns, interest, or engagement to identify what drives uptake.

Resource 8: Monitoring worksheet

1. Outcome

What outcome are you trying to influence? (e.g., % of funny-looking produce sold, reduced vendor spoilage, consumer willingness-to-pay increase)

Outcome Statement: _____

2. Indicators

Indicator	Baseline Value	Target / Endline Value
Example: % of funny-looking produce sold weekly	10%	30%

Table 12: Indicator targeting

3. Baseline and endline plan

Baseline: Who will you survey/observe? How many?

Endline: Who will you survey/observe? How many?

What questions will you ask?

4. Tools for data collection

- ☐ Vendor diaries/logbooks
- ☐ Short surveys
- ☐ Tally sheets
- ☐ Customer short interviews
- ☐ Observation checklists
- ☐ Other: _____

Using the information above, fill out the worksheet below

Outcome	Indicator	Data Source	Collection Tool	Frequency	Responsible Person
Increased sales of funny-looking produce	% of funny-looking produce sold weekly	Vendor records	Tally sheets	Weekly	Vendor association lead
Reduced spoilage	Number of spoiled items at end of day	Stall observation	Observation checklist + photos	Twice weekly	Field officer
Consumer acceptance	% of consumers willing to buy funny-looking produce	Consumer feedback	Short exit survey	Monthly	Market youth volunteers

Table 13: Outcome matrix



Image credit: Busara Center

Cover images credit: Freepik.com