Waste and Spoilage in the Food Chain Initiative

Solutions Visioning Workshop

17 June 2014 • Cape Town, South Africa

At the 2014 IFAMA CCA Food and Agribusiness World Forum

Organized by:

GLOBAL KNOWLEDGE INITIATIVE

Overview

Introducing the Food Waste and Spoilage initiative

Taking a systems approach

Examining strategic elements

Shaping an innovative strategy

Assessing potential trade-offs

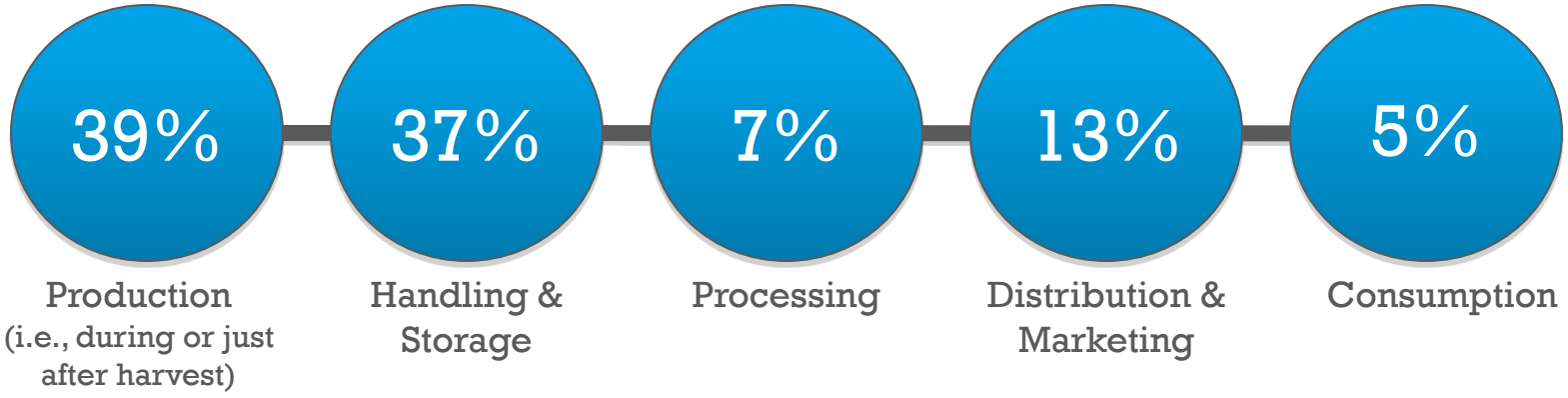
Introducing the food waste and spoilage challenge

Global Food Waste & Spoilage

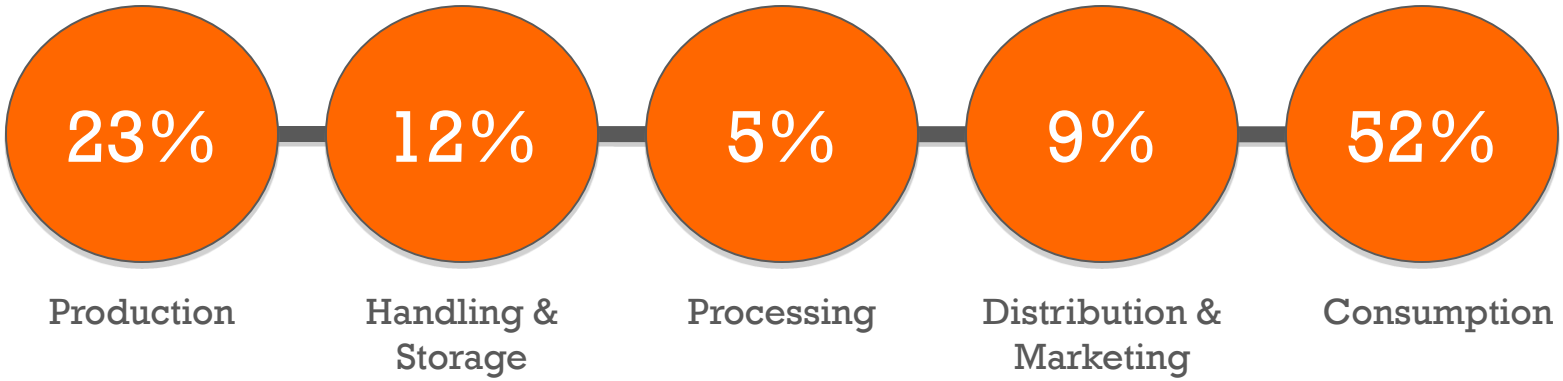
- Approximately one-third of food produced for human consumption worldwide is lost or wasted (FAO 2011)
  - Amounts to approximately 1.3 billion tons of food lost or wasted annually
- Negative outcomes of food wastage include:
  - Reduced farmer incomes
  - Increased consumer costs
  - Unnecessary burden on ecosystems (WRI 2013)

Food loss in Sub-Saharan Africa

Approximations by stage in the value chain

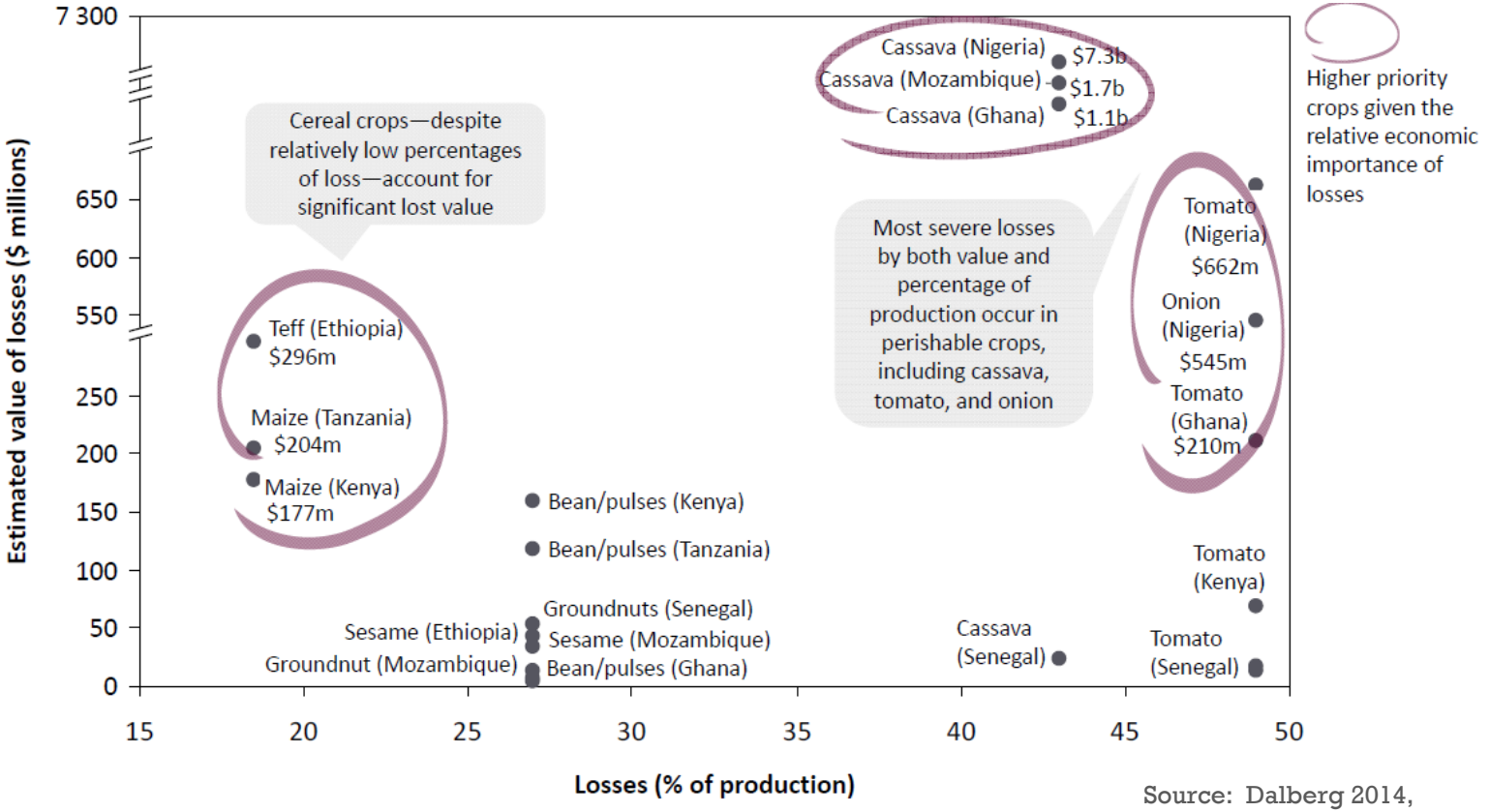


Compared to Europe:



Source: (WRI 2013)

Estimates of loss by crop/country



Source: Dalberg 2014, using FAO data & desk research.

Causes of losses vary by crop/country; massive market opportunity exists to stem these losses in Africa

Burden of food loss high for smallholder farmers

- Lose up to 15% of their income due to food loss
- Many also food insecure, putting further stress on poor families
- Addressing food loss through innovative solutions could prove transformative for millions of poor and vulnerable people

Against this background,
The Rockefeller Foundation launched its
initiative on Food Waste and Spoilage

The Food Waste and Spoilage Initiative

- Seeks to identify innovative solutions to food loss challenges that have potential for impact at scale
- Aims to ensure the affordability, accessibility, adoption, and awareness of high-potential solutions to reduce food loss

Initiative Goal

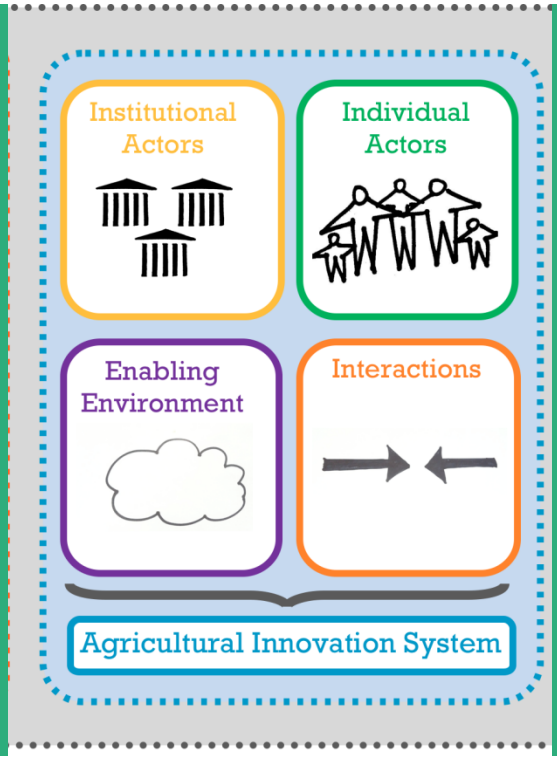
Two million African smallholder farmers have greater income and economic opportunities, improved resilience, and increased food and nutritional security through reduced post harvest loss in the food crop value chain by 2020

Taking a systems approach to reduce food loss

Why a systems approach?

- Causes of food crop loss both complex and interrelated
  - Changes made in one segment of the value chain may put unexpected pressures elsewhere in value chain
  - Incentives that work for one group may run counter to those required by another group
- Important to have holistic understanding for what it takes to create positive, sustainable impact

Goal: integrated solutions to food loss challenge



GKI: Engaging Stakeholders, Sourcing Solutions

GLOBAL KNOWLEDGE INITIATIVE

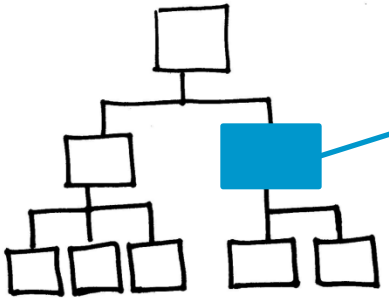
- Global non-profit with operations in Africa, Asia, and the US
- Mission: to enable researchers, innovators and others to solve development-related challenges in science, technology, & innovation

GKI's model for Collaborative Innovation building momentum globally

In Rwanda: addressing taste defect in specialty coffee	In Kenya: developing business models for rainwater harvesting	In Uganda: network formation for sweet potato/ banana tissue culture industry

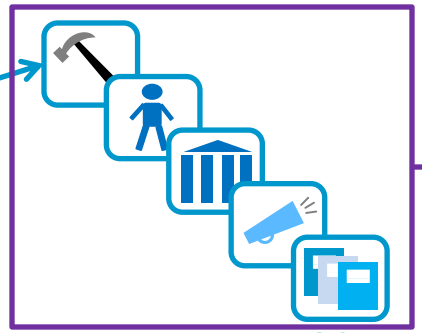
Our approach

Identify key bottlenecks / opportunities



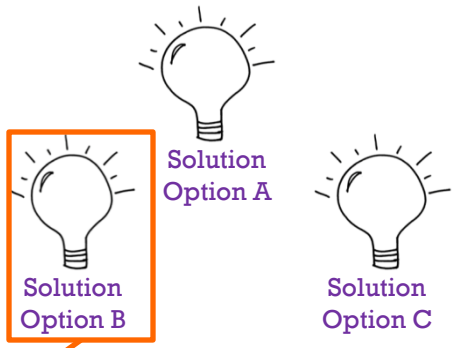
Nov 2013 — Jan 2014

Assess resources available & needed for high priority opportunities



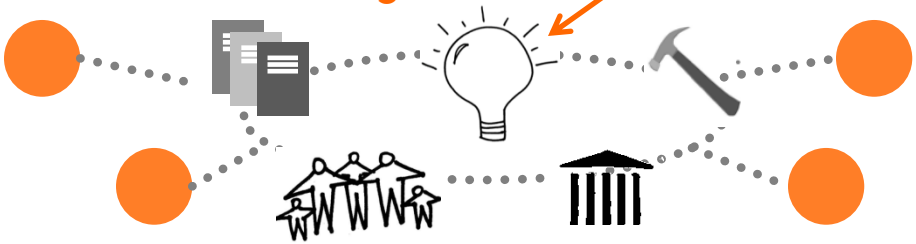
Feb — March 2014

Envision creative solutions using resources available



June 2014

Connect actors and resources poised to bring solutions to life



Fall 2014

Activity #1: Problem Framing

120	expert participants
6	Countries: Ghana, Kenya, Nigeria, Malaysia, Mexico, US
590	opportunities to reduce PHL identified
200	innovations currently in-use to address PHL
47	potential "Big Win" opportunities prioritized
29	additional areas of convergence identified

Potential Big Wins: Kenya

Share success stories
in reducing PHL through improved storage

Get businesses to invest
in farmer training on storage solutions

Facilitate bulking
and group marketing

Access mobile dryers
during rainy seasons

Support policy
on post harvest interventions

Finance
to acquire storage solutions

Build awareness
of promising storage options

Institute standards
for processed goods

Get farmers to understand value
of storage solutions AND primary processing / preservation

Potential Big Wins: Ghana

Access improved PH techs
from university and other researchers

Train on standards
for post harvest handling

Provide a ready market
for farmers through contracts and other means

Effectively disseminate
improved PH technologies

Diversify incomes
of smallholder farmers

Improve record-keeping
of smallholder farmers

Link buyers and producers
through a common platform

Ensure coordination
of agricultural policy / implementation programs

Sustainably intensify
farm output at a decreased price

Resource extensionists
to be effective agents for PHL mitigation

Potential Big Wins: Mexico

Build leadership & vision
for long-term collaboration on PHL

Implement financing
for PHL-related trainings

Transform farmers
into PHL experts

Multiply impact
of existing efforts to reduce PHL

Identify potential
for agricultural output in regions

Improve political attractiveness
of confronting PHL

Extend storage life
of high-value products

Introduce technology
for reducing PHL across the value chain

Boost access to credit
for PH investments among smallholders

What we've learned so far

(1) Case studies of programs addressing aspects of PHL challenge prioritized by experts

How might we scale the use of innovative handling and storage technologies?

- Hermetic storage for grains
- Cool storage for horticulture
- Vegetable preservation

(2) Assessing:

- What resources available to address this issue?
- What resources needed to address at scale?

GKI Activity #2: Resource Assessment

- Result: A comprehensive set of case studies and a visualization of resources available

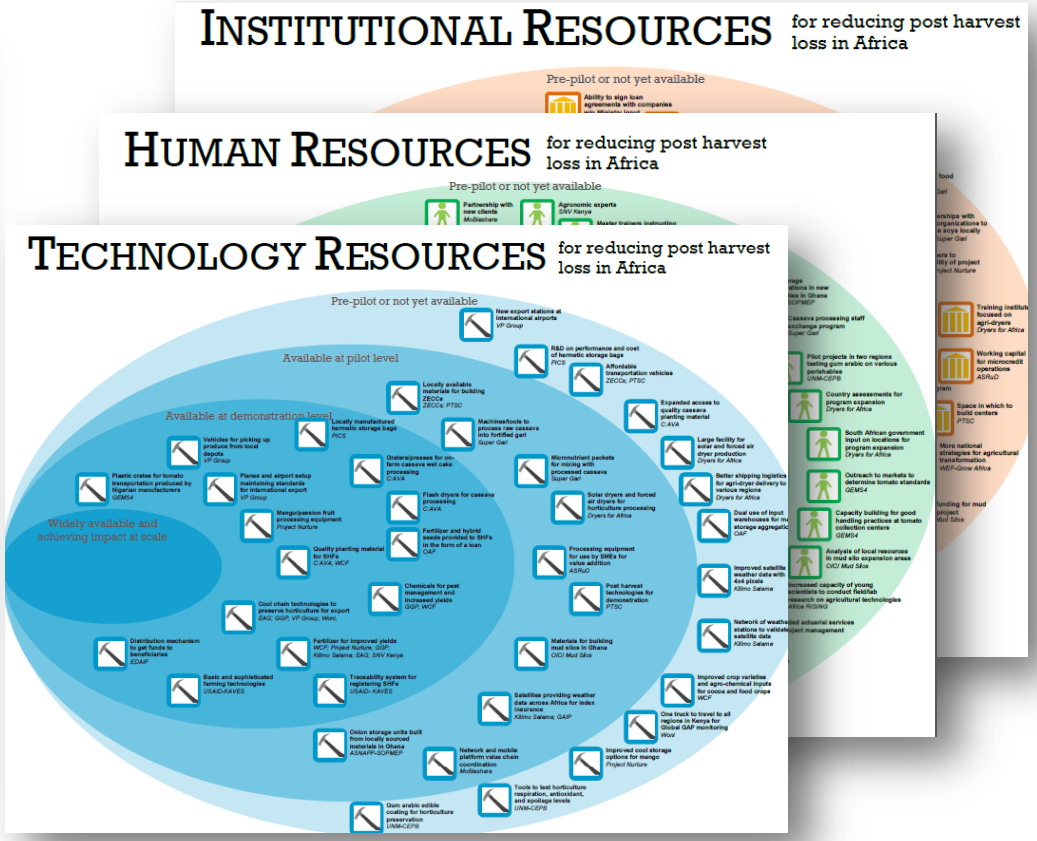
Reducing Global Food Waste and Spoilage

A Rockefeller Foundation Initiative

Assessing resources needed and available to reduce post harvest food loss in Africa

Funded by: THE ROCKEFELLER FOUNDATION

Written by: GLOBAL KNOWLEDGE INITIATIVE



Examining elements of an integrated strategy to reduce food loss

Two emerging strategies to reduce PHL

1

STAPLE CROPS: Spur adoption of post harvest management solutions through optimized financing and distribution models

2

PERISHABLE CROPS: Transform supply chains through processing and value addition

1

Staple Crops: Spur adoption of post harvest management solutions through optimized financing and distribution models

Rationale:

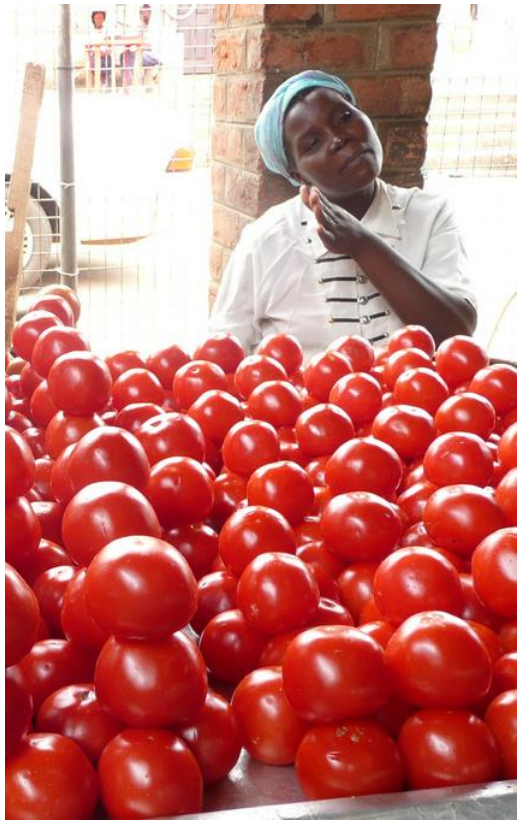
- Many affordable, easy to use solutions for PH management of staple crops exist
- Uptake remains limited due to compounding issues:
  - Limited financing
  - Weak distribution channels
  - Low awareness of utility and market benefit among users
- These available resources go underutilized; PHL persists

2

Perishable Crops: Transform supply chains through processing and value addition

Rationale:

- High rates of loss due to short shelf-life of perishables
- Processing offers way to create shelf-stable products and boost on/near-farm incomes
- Processing underutilized as a strategy for reducing PHL
  - Weak linkages between farms & processors (e.g., transport, communication)
  - Limited awareness of opportunities (e.g., market demand, available outlets)
  - Financing gaps



About the strategies

- At the surface, generally accepted approaches for reducing PHL
- Premium on:
  - Finding new, creative ways to thread needle between existing investments
  - Identifying catalytic investments that can unlock new value and leverage other capital

OUR GOAL FOR TODAY:
Elicit YOUR analysis, experience and creativity to develop and test six elements of a strategy that might be combined into an integrated initiative

Learn your team's innovation challenge!

	Element 1: Distribution Channels	Element 2: Credit facilities suitable for PHL	Element 3: Selling power of FBO's
Staple crops	Charity Mutegi (IITA)*	Bertie Hamman (Standard Bank)	Victor Saavdera (CIMMYT)
	George Marechera (AATF)	Mike Gunderson (Purdue)	Peter Breitenbach (Vodafone)
	Ed Mabaya (Cornell)	Jacques Taylor (John Deere Financial)*	Mpule Kwelgobe (Project Leverage)
	John Vandenheuval (Africa Atlantic Holdings)	Vicki Wilde (BMGF)	John Purchase (Agbiz)*
	Otavio Celedonio (IMEA)	Carlos da Silva (FAO)	Bayella Thiam (Novus International)
	Devika Daga (Google)	Kenneth Simons (Boston Consulting Group)	Diale Mokgojwa (Standard Bank)
Perishable crops	Element 1: Shorten distance between farm and processor	Element 2: Financing mechanisms to lower risk of investing in processing	Element 3: Avail farm-level market information
	Kristian Moeller (Global GAP)	Bian Li (Project Leverage)	Saj Dutta (EAG)
	Mandla Nkomo (TechnoServe)	Frank Obeng (EDAIF)	Thomas Herlehey (Land O'Lakes)
	Angela Hansen (Dalberg)	Victoria Salin (Texas A&M)	Shannon Lucas (Vodafone)
	Bart van Gogh (Wageningen)	Johan van Roogen (Standard Bank)	Jo Cadilhon (ILRI)
	Mohammed Diarra (Nestle)	Emma Green (IGD)	Caryn Formby (ADC delegate)
	Thad Simons (Novus Intl)*	Stephen Hayes (CCA)*	Markus Frank (BASF)
			Jari Tuomala (Bridgespan)

1

Staple Crops: Optimized financing & distribution models for PH management solutions

Element **A**

How might we optimize distribution channels for a proven PH technology?
[Team will select one technology to explore]

Element **B**

How might we establish credit facilities suitable for mitigating post harvest loss in staple crops?

Element **C**

How might we boost the selling power and market access of farmer-based organizations?

2

PERISHABLE CROPS: Transform supply chains through processing and value addition

Element A

How might we shorten the supply chain of perishable crops destined for processing facilities?

Element B

How might we develop new finance mechanisms that lower the risk profile of investing in processing?

Element C

How might we radically improve farm-level access to transparent, timely market information?

Common elements across strategies

- Market-led orientation
  - Understand demand first
  - Private sector engagement
- Aggregation schemes
  - Farmer based organizations
  - Collection centers
  - Community storage options
- Information and communication technologies
  - Market information
  - Financial incentives
  - Training materials

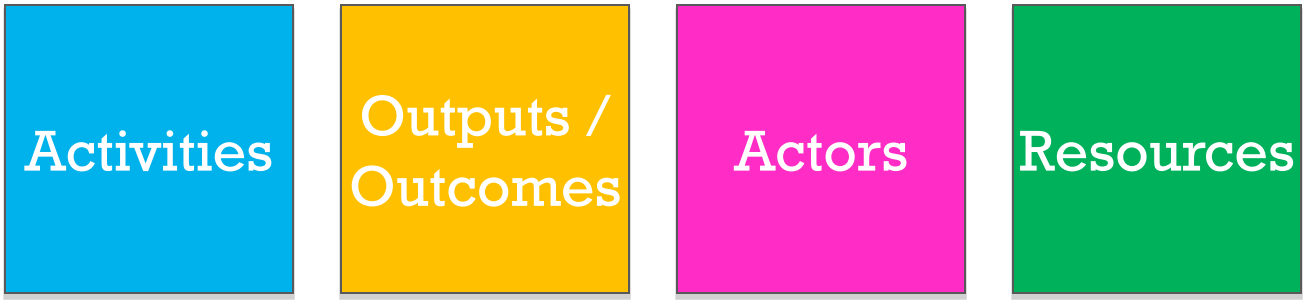
Shaping an innovative strategy

Work of today

1. Design strategies to address six elements of the PHL challenge
   - Build on what is known
   - Experiment with what hasn't been tried before; Be creative
   - Think big about potential for impact
2. Assess triple bottom line trade-offs associated with strategies
   - What dimensions of health, wealth, and environment matter most to PHL?
   - What potential outcomes come out strongest? What are the trade-offs within and across strategies?

How? Strategy Mapping

- Design tool for rapid-prototyping
  - Put groups' ideas into one place, and organize/refine as you go
  - Bring proposed approach into focus by considering what needs to be done and who needs to do it to bring ideas to life



Ask yourselves:

What really needs to change to reduce PHL at scale in Africa? And, what outcomes can be achieved by implementing your ideas?

Example:

How might we scale access to locally available storage solutions, such as mud silos?

Ideas might include…

Activities	Outputs / Outcomes	Actors	Resources
Equip artisans to build businesses around mud silo construction	Near-farm employment opportunities increased	Local carpenters	Viable business model(s) for mud silo construction
Develop village-to-village demonstration programs	On-farm PHL management capacity improved	Community leaders	Transport options
Build user awareness of / demand for mud silos	Awareness of existing PH solutions increased	Extension workers / Technical service providers	Local language radio spots
Identify buyers for staple crops saved using mud silos	On-farm income opportunities increased	Regional grain traders	Platform for value chain coordination

But lists don't help us clarify…

- What sequence of activities maximizes impact?
- What intermediate outputs are inputs into broader change?
- What feedback loops are needed among specific activities, actors, and resources to achieve desired outcomes?

A few ground rules for today

Practice empathy: Listen and learn from others

Defer judgment: Hold off on forming opinions too quickly

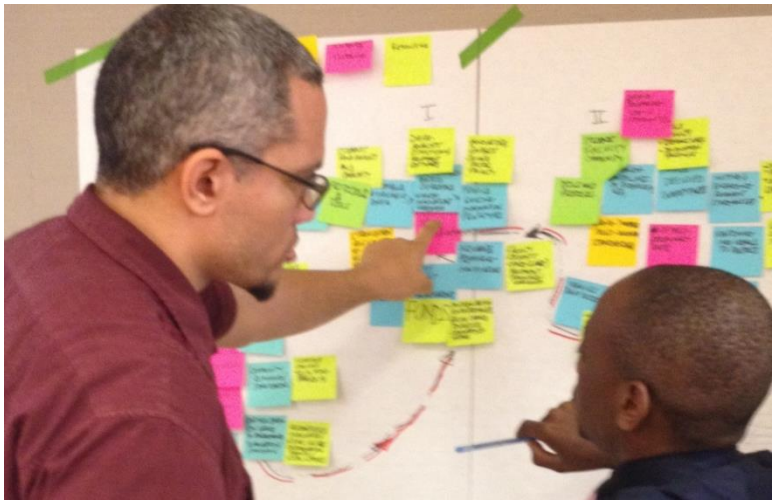
Connect the dots: Look up and out from specific intervention points

Think big: Push the boundaries of what's possible

Be optimistic: Ask yourself "How might we do what hasn't been done before?"

Imagine if…

A little inspiration…



Let's begin!

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Assessing potential trade-offs

The outcomes we seek

Potential impact

By 2023, 2 million SHFs have greater income and economic opportunities, improved resilience, and increased food and nutritional security

Potential high-level outcomes

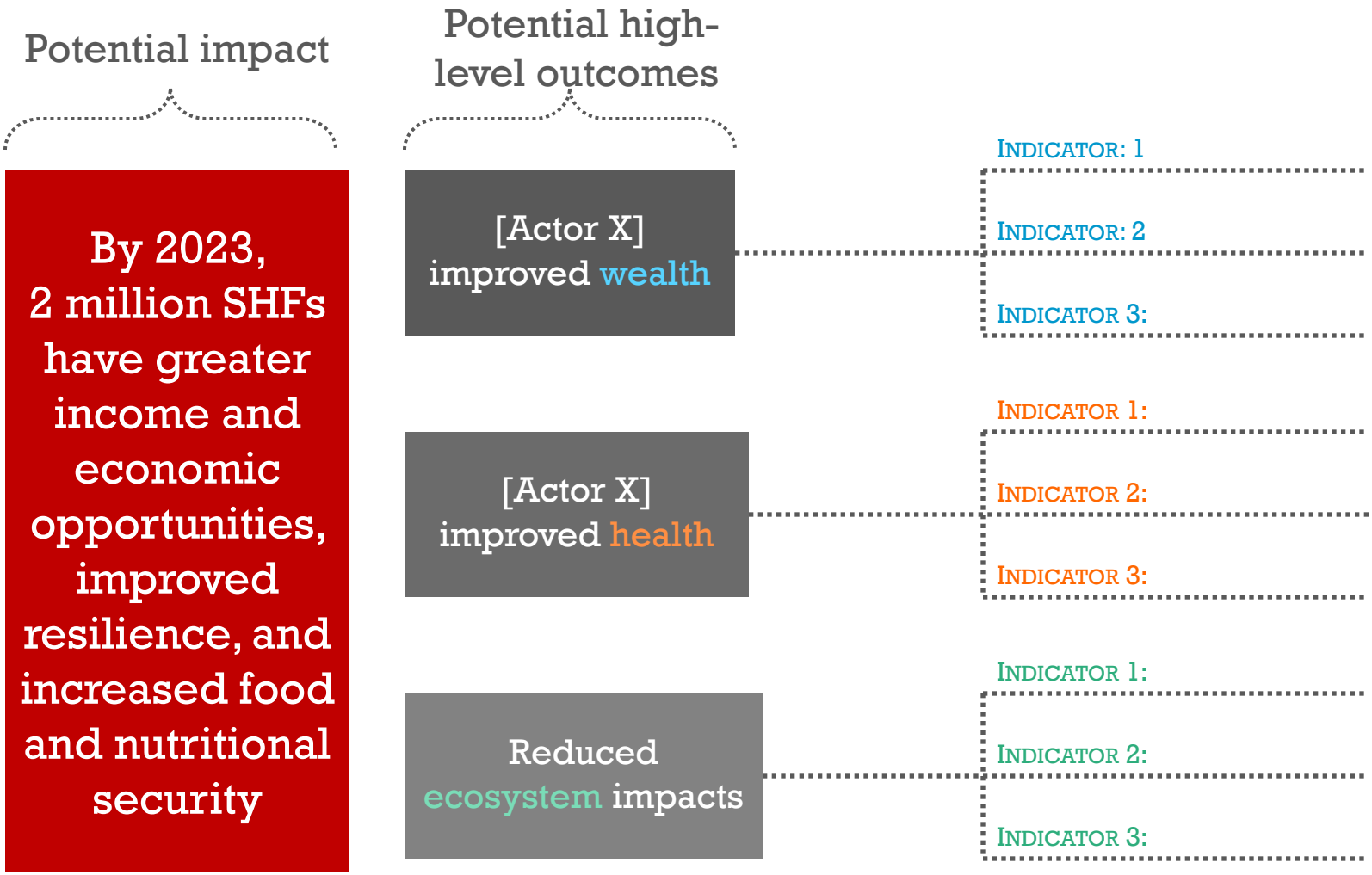
SHFs and value chain actors have improved incomes due to higher volume (and potentially prices)

Producers and consumers have increased availability and affordability of health foods, nutritional quality of crops increased by better handling and storage

Producers supply more people without increasing production reducing ecosystem impact

More gender equitable employment opportunities on and near farm for un- and underemployed women and youth

Setting indicators



Example:

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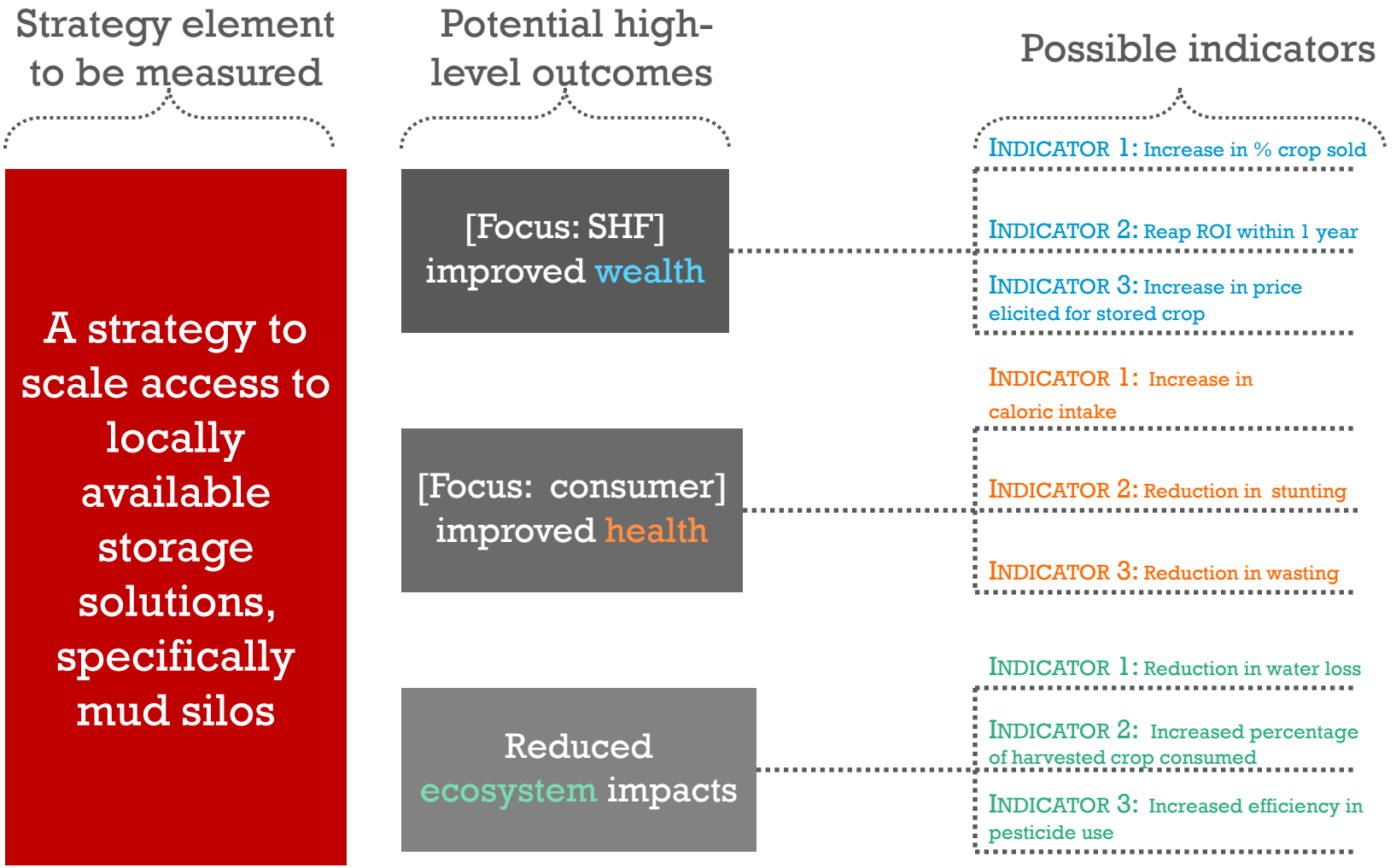
Identify buyers for staple crops saved using mud silos	On-farm income opportunities increased	Regional grain traders	Platform for value chain coordination

Example: Increasing access to mud silos



Using indicators to explore trade-offs

Potential impact

Probability of achieving indicator targets

By 2023, 2 million SHFs have greater income and economic opportunities, improved resilience, and increased food and nutritional security