



REGIONAL FOOD LOSS & WASTE WORKSHOP

OCTOBER 15, 2020

► **Riyadh-Saudi Arabia**



REGIONAL FOOD LOSS & WASTE WORKSHOP

SESSION 1. FOOD LOSSES & WASTE STRATEGY TO ENHANCE FOOD SECURITY



SESSION 1

Food Waste and Loss: an Integral part of achieving sustainable Food Security

Mr. Essa AbdulRahman AlHashemi,
Head of Food and Water Security, UAE

FOOD LOSS & WASTE :

An integral part of sustainable
Food Security



UAE Food Waste landscape Analysis



Annual Food waste is estimated at **197 kg** per person

25% of the food demand is being wasted

Economic Impact

The UAE's average food waste is **20%** higher than the average in developed countries

~**5 Bn USD** reduction in Financial losses due to reductions in food loss and waste between in 2021

Perishable food items accounts for **68%** of the average **per capita food consumption** in the UAE

Fisheries
4%



Livestock Products
29%



Fruits
21%



Vegetables
14%



The UAE National Food Security Strategy



- 1  Facilitate global agri-business trade and diversify international food sources
- 2  Enhance sustainable technology-enabled domestic food supply across the value chain
- 3  **Reduce food loss and waste**
By 15% in 2021
- 4  Sustain food safety and improve nutritional intake
- 5  Enhance capacity to respond to food security risks and crises

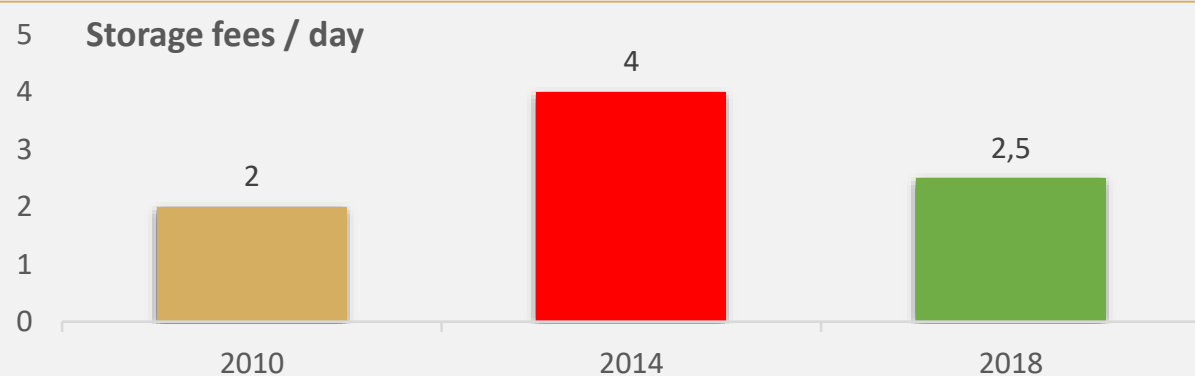
National Food Security Strategy – Reducing food loss and waste Programs

Strategic Direction	Strategic KPIs	Initiatives, 2021
<div>III</div> <p>Reduce food loss and waste</p>	<div>III.1</div> <p>% reduction in food loss and waste</p>	<div>III.1.1</div> <p>Introduce food loss-and waste- related regulation, including waste generation, segregation and Infrastructure</p>
		<div>III.1.2</div> <p>Set up food loss and waste recycling and processing hubs for food and agribusinesses</p>
		<div>III.1.3</div> <p>Establish food banks to cover all emirates</p>

The Cold Chain Storage Facilities

In 2014, a shortage of available cold storage facilities occurred due to (4) market failure factors:

- 1- over regulation in term of ownership and investment
- 2- lack of dedicated specialized economic zone
- 3- fierce competition and concentration of few dominating market players
- 4- limited quality of cold supply chain storage services



As a result Multiple regulatory changes have been introduced to enhance the UAE cold chain logistics ecosystem in the following areas

Ownership

Allowed 100% on shore foreign ownership to distribute goods in the UAE which will allow Multi National Companies to buy out the distribution network or start joint ventures with their local distributors in order to improve the efficiency

Total area / capacity
~120,000+ pallets
~80% for frozen and the rest for chilled

Warehouse quality control

- Introduced regulations for 24/7 monitoring of cold store warehouses through CCTVs
- This enhances quality of cold chain storage allowing more fresh goods to be imported

Reducing dominance
25% of the market share is state owned and/or food retailers

Transportation by authorized drivers

Cold store trucks could only be driven registered / approved drivers which enhances quality of cold chain storage allowing more fresh goods to be transported within the Emirates

Number of players
~ 25

Future Plan, Align the expansion of cold supply chain storage facilities to cater of the Agricultural /modern farming zones

The FoodTech Challenge

What is The FoodTech Challenge?

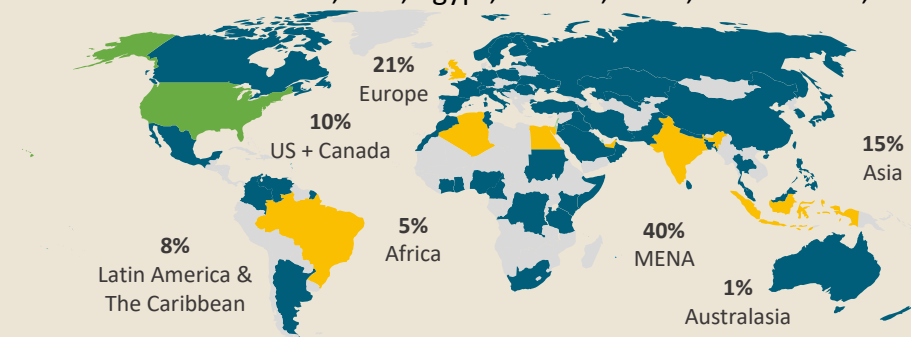
The food security competition is a global competition that aims to identify and implement sustainable (Water-Energy-Food nexus friendly) and technology-driven solutions across the food value chain that enhance the UAE's food security and self-sufficiency at the national, community, and household levels

What type of solutions could the participants submit?

Solutions could address any part of the food value chain: from production, to distribution, to loss & waste management

Submissions could be entered under two categories: household or community

- 437 submission with 68 countries represented
- Representation from all leading Agtech markets
- Top feeder countries are UAE, USA, Egypt, Canada, Brazil, Netherlands, and Germany



Enabling the community to reduce food waste using new technologies in preserving food



One of the top 12 finalists proposed a method to produce a nature-based and edible food coating to extend food shelf life



Recycling Food waste and Loss

Insect Protein



Embarking on a feasibility study to produce insect protein as fish and animal feed

Animal Feed



State of the art research lab to produce animal by mixing algae, food waste and forest waste

The UAE Food Bank

The UAE Food Bank is a non-profit charitable organization, launched January 4th 2017 under the umbrella of the Mohammed bin Rashid Al Maktoum Global Initiatives (MBRGI). It is committed to distributing food to those in need while eliminating food waste by collaborating with local authorities as well as local and international charities to create a comprehensive ecosystem to efficiently store, package and distribute excess fresh food from hotels, restaurants and supermarkets. It is the first Food Bank in the United Arab Emirates.



13,488
tones
Amount of food
received
amounted to UAE
Food Bank

**Number of
UAE Food
Bank
refrigerators**

80 x Dubai

10 x Ajman

10 x RAK



#StoptheWaste Campaign

The Food & Water Security Office supports and participates in #StoptheWaste Campaign organized annually by the WFP. In 2019, an activation event was held to spotlight the global issue of food waste and highlight simple solutions we can all take to prevent it. The event took place at Jumeirah Beach Hotel Conference Center in Dubai and involved celebrity chefs from the hotel, food bloggers, social media influencers and media personalities who have joined the movement and announced their own pledge to #StopTheWaste



FOODWATCH The Foodwatch Platform

The Foodwatch platform by Dubai Municipality was created to facilitate data exchange between authorities, food businesses, service providers and consumers. By utilizing digital monitoring techniques, data analytics and customized applications, the platform offers full traceability of foods with validated ingredient and nutritional information. Smart contracts, services and customized applications will deliver every user a unique experience based on their requirements. Digitalized exchange of data enables delivery of real-time assurance based on predictive insight, from what went wrong to what is likely to go wrong. All food establishments and related service providers must be registered on the Foodwatch platform as per the mandate of Dubai Municipality.

SESSION 1

Food loss and waste in the wheat value chains of Egypt, Jordan and Morocco

Dr. Yigezu Atnafe Yigezu (ICARDA, Jordan)



FOOD LOSS AND WASTE IN THE WHEAT VALUE CHAINS OF EGYPT, JORDAN AND MOROCCO

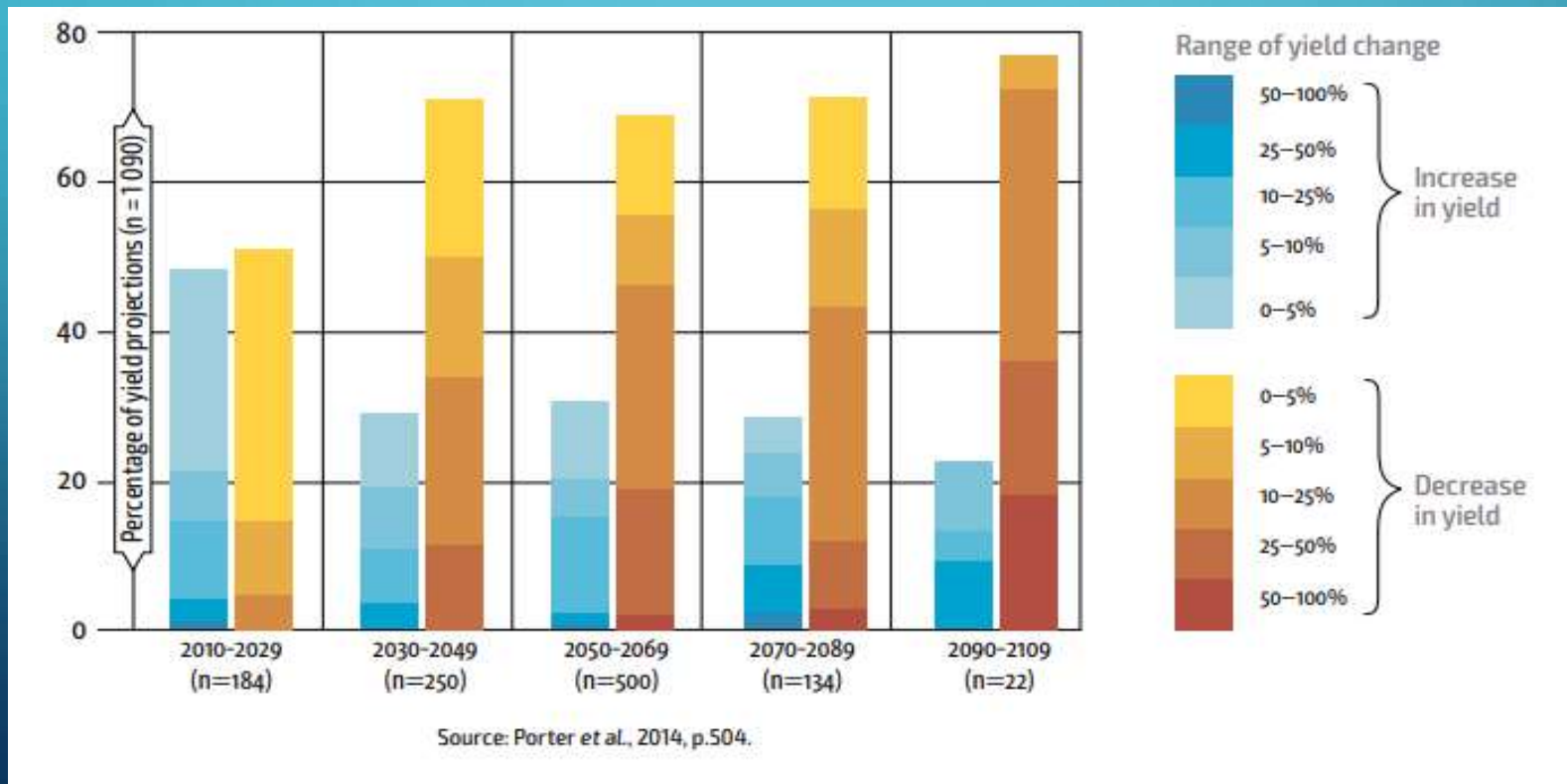
YIGEZU A. YIGEZU

NINTH MACS- G20 REGIONAL FOOD LOSS & WASTE WORKSHOP


RIYADH, KINGDOM OF SAUDI ARABIA – VIA WEBEX, OCTOBER 15, 2020

I MOTIVATION

- Annual food demand will grow on average by 1.1%/year up to 2050;
 - Up to 2050, world population to grow by 0.86%/year & income 1.8-fold;
- Global warming expected to decrease productivity substantially



... MOTIVATION CONT'D

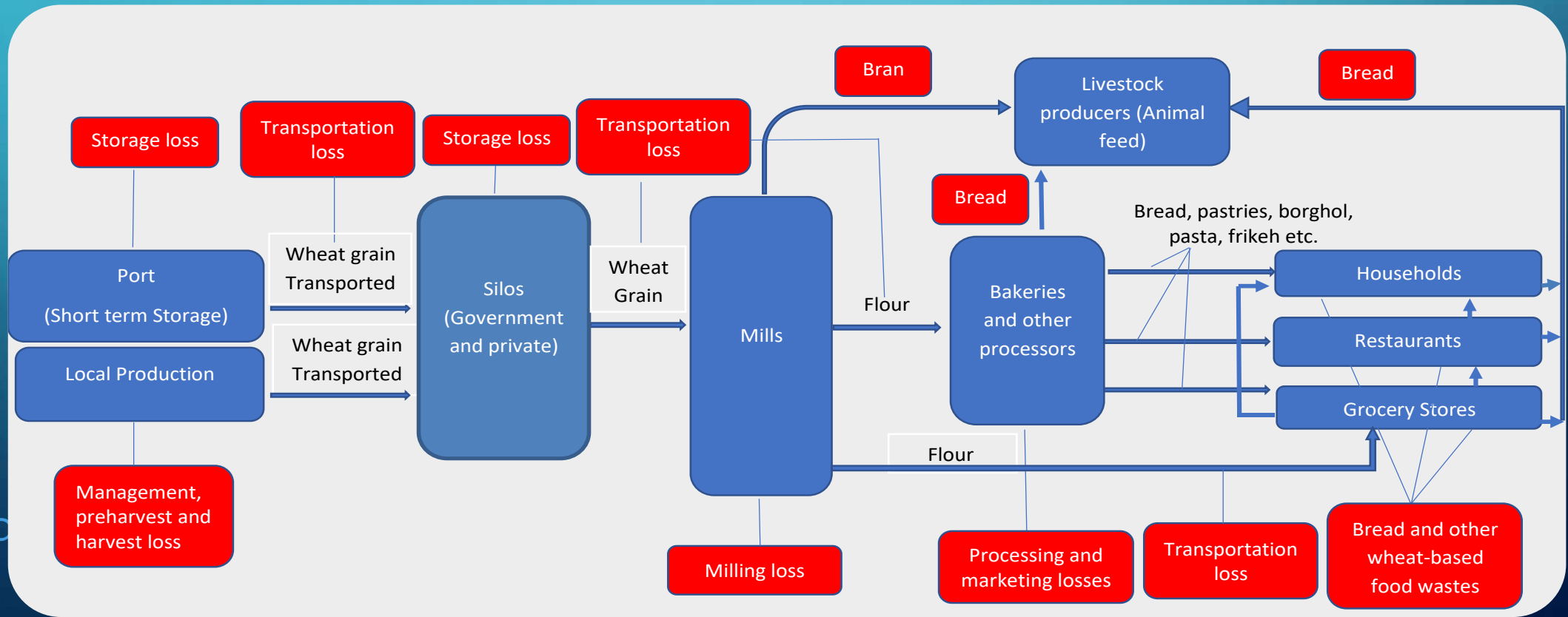
- Ways to enhance food & nutrition security:
 - 1) Increase productivity via intensification;
 - 2) ~~Increase crop area;~~
 - 3) Biofortification;
 - 4) Increase consumption efficiency;
 - 5) Increase dietary diversity;
 - 6) Reduce food loss and waste.
- Items 1– 5 are important, but not sufficient; some infeasible(?);
 It is imperative to reduce food loss and wastage.
- High potential; important ethical, resource & CC implications

II. OBJECTIVE OF THE STUDY

- To provide credible and statistically defensible estimates of losses and wastage at each node of the wheat value chain - from farm to fork.
- **Rationale:** Identifying the nodes where major loss occurs & quantifying the magnitude of loss/waste:
 - For advocacy and policy making;
 - For setting priorities of interventions

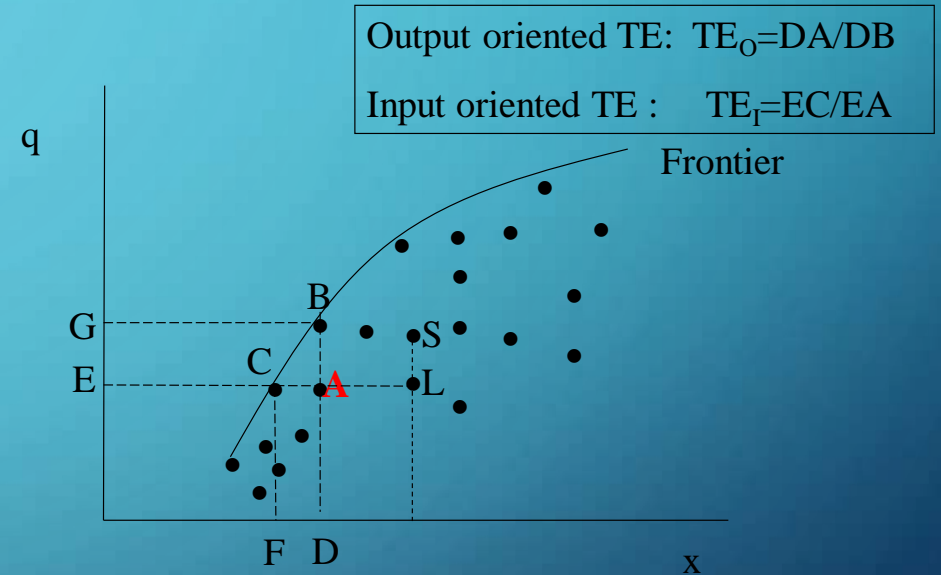
III. MATERIALS AND METHODS

- Protocol developed for the measurement of losses at each node of the value chain (Khader et al., 2019)



...MATERIALS AND METHODS CONT'D

- Physical measurements;
- Interviews;
- Descriptive statistics;
- Stochastic frontier production function.



The background is a blue gradient. In the corners, there are decorative white line art elements resembling circuit boards or neural network connections, with small circles at the end of the lines.

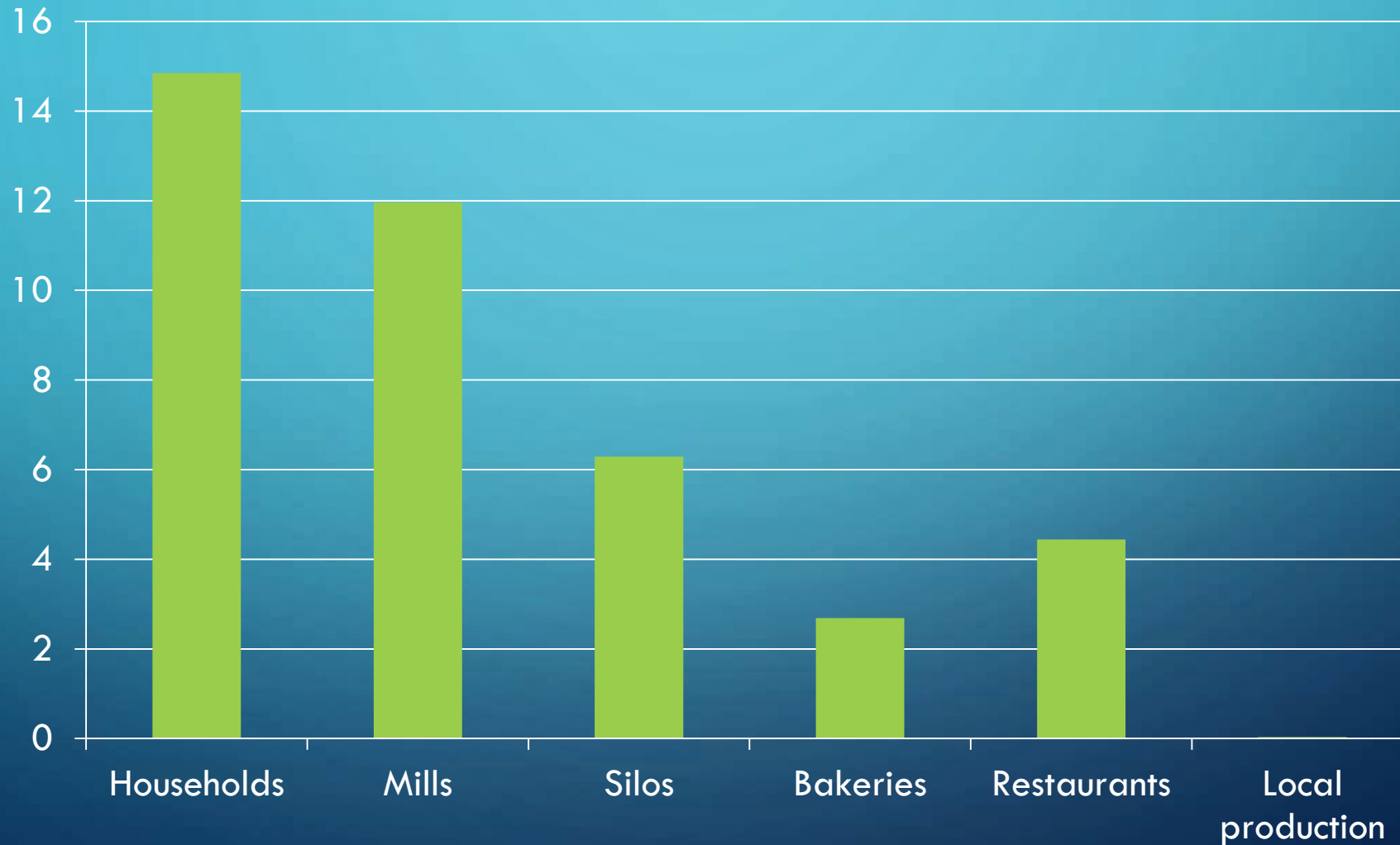
III. Results (summary)

JORDAN

Perecentage Loss at Each Node	% of total grain entering the node (2016)	% of total wheat available in the country (2016)	Rank
Pre-harvest loss (%)=PrHLR	0.42%	0.03%	8
Harvest loss (%)=HLR	9.10%	0.59%	6
Transportation loss (%)=TLR	0.58%	0.58%	7
Storage loss (%)=SLR (?)	6.37%	6.29%	3
Processing loss (%)=PLR	12.92%	11.96%	2
Marketing loss(%)=MLR	3.34%	2.69%	5
Total consumption loss (%)=TCLR	24.73%	19.29%	
Loss during consumption at restaurants (%)=RCLR	3.02%	4.44%	4
Loss during consumption at households (%)=HCLR	31.22%	14.85%	1
Total loss out of the total wheat that would have become potentially available in the absence of loss (%)		41.43%	
Total amount of wheat that has been lost (tones)		377,314	\$113,194,200
Loss excluding storage loss (%)		35.14%	

... JORDAN CONT'D

Loss at each value chain (as % of total local production and imports)



MOROCCO									
Percentage Loss at Each Node	% of total grain entering the node			% of total wheat availalble in the country			Rank		
	2017	2018	Average	2017	2018	Average	2017	2018	Average
Pre-harvest loss (%)=PrHLR		0.09%	0.09%	0.00%	0.05%	0.05%	8	8	8
Harvest loss (%)=HLR	2.66%	5.45%	4.06%	1.45%	3.02%	2.23%	4	3	3
Transportation loss (%)=TLR	0.20%	0.18%	0.19%	0.20%	0.17%	0.19%	7	7	7
Storage loss (%)=SLR	6.60%	6.40%	6.50%	6.49%	6.19%	6.34%	2	2	2
Processing loss (%)=PLR	1.00%	1.20%	1.10%	0.92%	1.09%	1.00%	6	6	6
Marketing loss(%)=MLR	1.50%	2.00%	1.75%	1.37%	1.79%	1.58%	5	5	5
Total consumption loss (%)=TCLR	11.67%	11.12%	11.37%	10.47%	9.78%	10.10%			
Loss during consumption at restaurants (%)=RCLR	6.00%	8.00%	7.00%	1.99%	2.15%	2.07%	3	4	4
Loss during consumption at households (%)=HCLR	13.00%	12.00%	12.50%	8.48%	7.63%	8.03%	1	1	1
Total loss out of potentially available (%)				20.89%	22.10%	21.49%			
Total amount of wheat that has been lost (tones)				1,925,379	2,070,640	1,997,109	\$ 599,132,700		

EGYPT							
Perecentage Loss at Each Node	% of total grain entering the node			% of total wheat avaiialble in the country			
	2017	2018	Average	2017	2018	Average	Rank
Pre-harvest loss (%)=PrHLR	0.00%	0.00%		0.00%	0.00%	0.00%	7
Harvest loss (%)=HLR	7.80%	7.62%	7.71%	3.45%	3.27%	3.36%	3
Transportation loss (%)=TLR	0.27%	0.25%	0.26%	0.26%	0.24%	0.25%	6
Storage loss (%)=SLR	4.80%	3.60%	4.20%	4.62%	3.47%	4.05%	2
Processing loss (%)=PLR	1.90%	1.76%	1.83%	1.74%	1.64%	1.69%	5
Marketing loss(%)=MLR	5.00%	5.00%	5.00%	4.51%	4.58%	4.54%	1
Total consumption loss (%)=TCLR	2.24%	1.84%	2.05%	1.92%	1.60%	1.77%	4
<ul style="list-style-type: none"> Loss during consumption at restaurants (%)=RCLR (Based on estimates from the 2007 study) 	1.60%	1.50%	1.55%	0.38%	0.24%	0.31%	\$999,187,500
<ul style="list-style-type: none"> Loss during consumption at households (%)=HCLR (Based on estimates from a 2007 study) 	2.40%	1.90%	2.15%	1.54%	1.36%	1.46%	
Total loss out of the total potentially available wheat in the absence of loss (%)				16.50%	14.81%	15.66%	
Total amount of wheat that has been lost (tones)				3,547,108	3,115,308	3,330,625	

IV. DISCUSSION

- Food loss has also social, natural resource and environmental implications.
- In Egypt and Morocco, lost food could have respectively:
 - Fed 16 and 9.7 million people
 - Saved 4.5 and 2.7 billion m³ of water;
 - 1.5 and 0.9 million ha of land,
 - 41.6 and 23.8 million GJ of energy.
- Egypt: bold measure to overhaul & reorient the subsidy system;
 - Effective in reducing food waste;
 - Improved food and nutrition security;
 - Saved foreign currency from reduced imports.
- Food loss and waste also affect global warming.

V. RECOMMENDATIONS

- Creating awareness among the society:
 - Magnitude of loss; moral and resource use implications;
- Providing options for smaller package sizes (bundle) of bread;
- Replacing flour subsidies with bread subsidies
- Vouchers to the needy and selling bread at cost (example from Egypt)
- Priority setting for research investment;
 - Loss reduction at each value chain – deserves high priority;
- Functional instruments in silos to monitor temperature and humidity.

The image features a blue gradient background with white circuit-like lines in the corners. These lines consist of small circles connected by straight lines, resembling a stylized electronic circuit or data network. The lines are positioned in the top-left, top-right, bottom-left, and bottom-right corners, framing the central text.

THANK YOU





SESSION 1

Food Security Strategy of the Kingdom of Saudi Arabia

Eng. Abdullah AlRabiah
Saudi Grains Organization (SAGO), KSA



المؤسسة العامة للحبوب
Saudi Grains Organization (SAGO)
المملكة العربية السعودية



وزارة البيئة والمياه والزراعة
Ministry of Environment, Water & Agriculture
المملكة العربية السعودية



Food Security Strategy of The Kingdom of Saudi Arabia

Oct 15th, 2020

The KSA Food Security Strategy is comprised of five main strategic objectives...

Strategic objectives





... with 11 programs identified and assigned to different owners across KSA

Strategy programs

Strategic objective

1	Achieve a sustainable domestic food production system
2	Diversify and stabilize external food supply sources
3	Ensure access to safe and nutritious food and promote healthy and balanced eating habits
4	Build food security resilience capabilities
5	Institutionalize food security at the national level and ensure clear and accountable governance

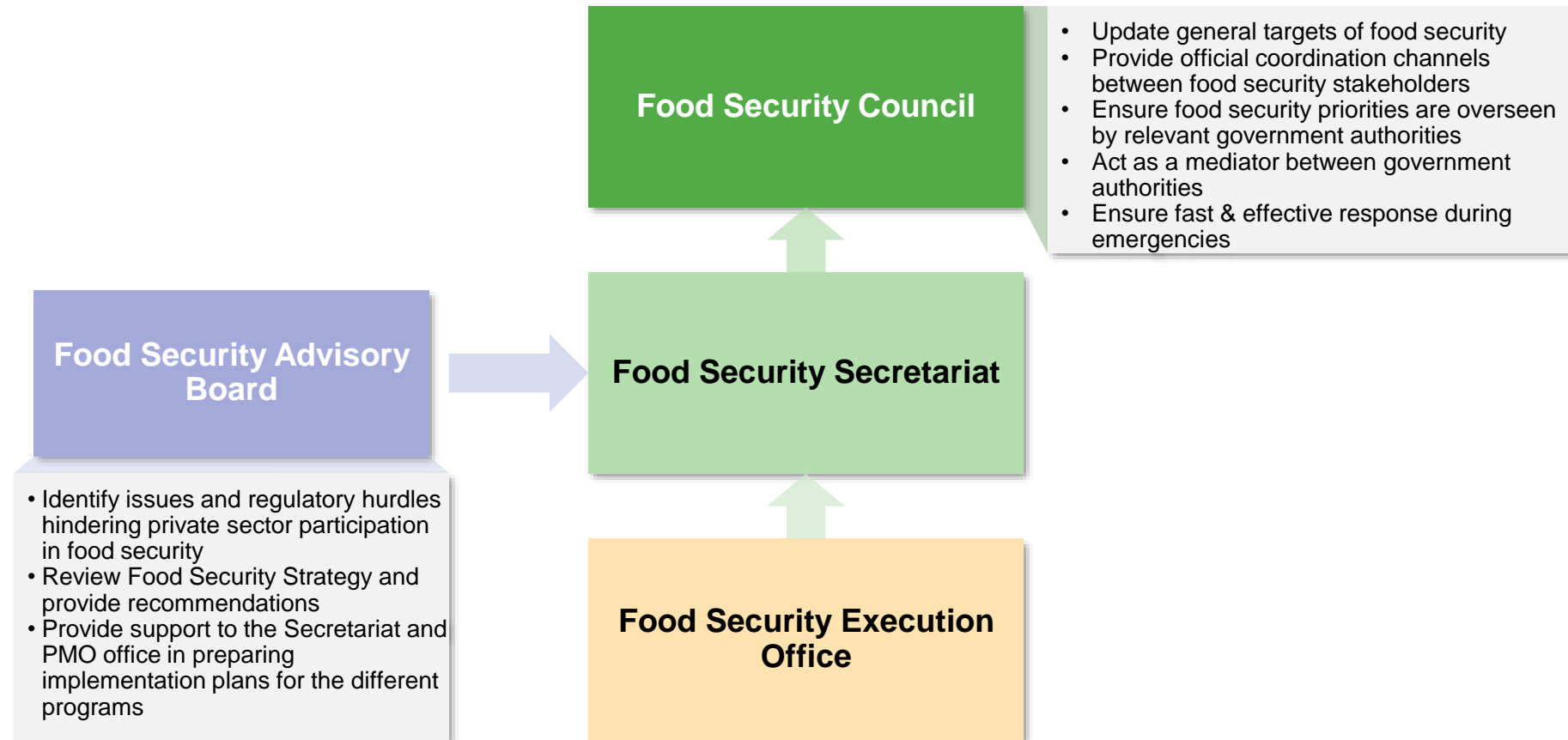
Strategic program

1.1	<i>Sustainable Agriculture and Agro-Food Production</i>
1.2	<i>Food Loss and Waste</i>
2.1	<i>Food Trade Model and Cooperation Platforms</i>
2.2	<i>Agriculture Investments Abroad</i>
3.1	<i>Nutrition</i>
3.2	<i>Social Safety Nets</i>
3.3	<i>Food Safety</i>
4.1	<i>EWS & Emergency Management</i>
4.2	<i>Strategic Reserves</i>
5.1	<i>Governance Model</i>
5.2	<i>Infrastructure and Capability Building</i>

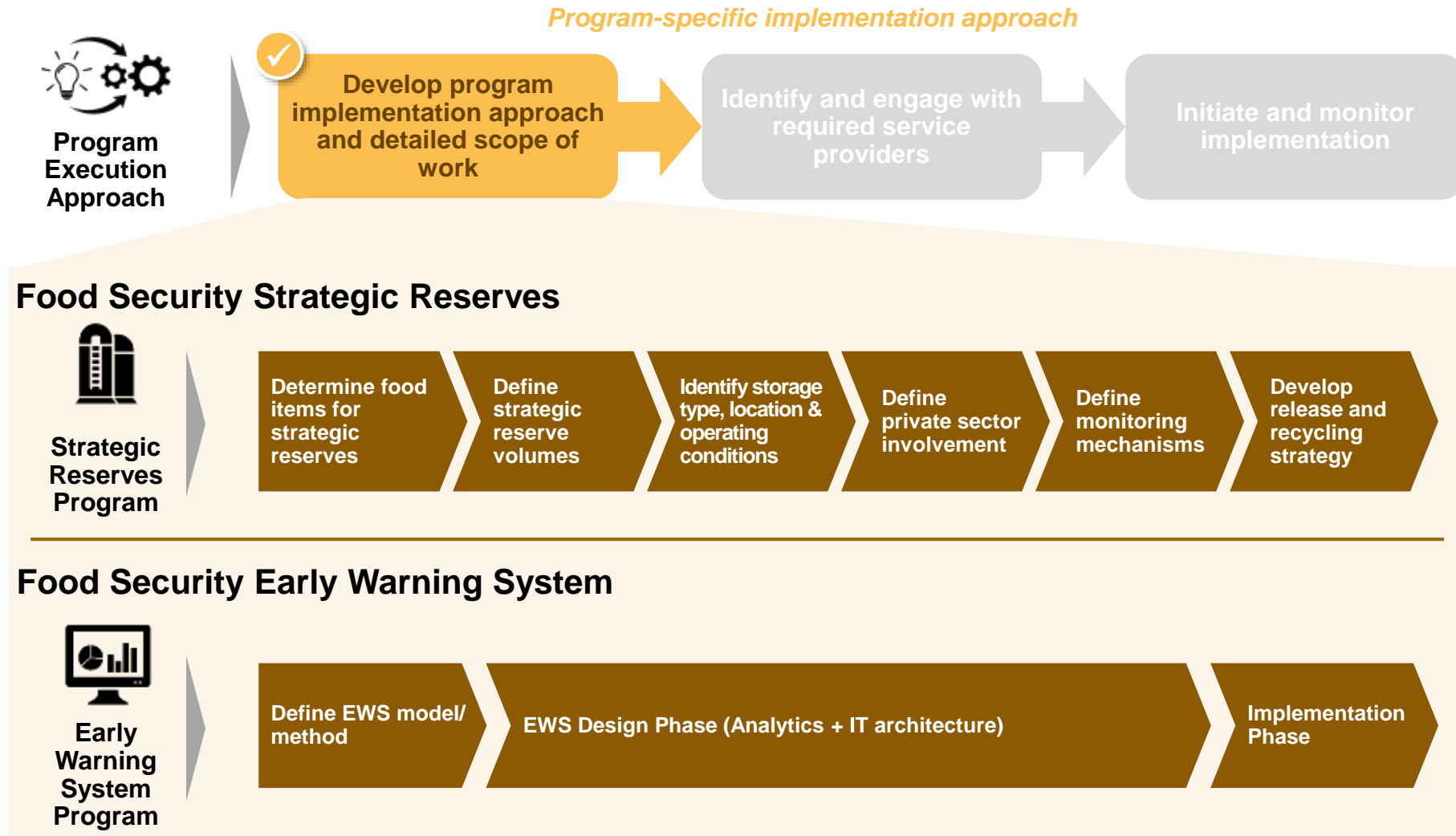


The strategy also establishes four entities for the development and implementation of the strategic programs...

Proposed governance and implementation division

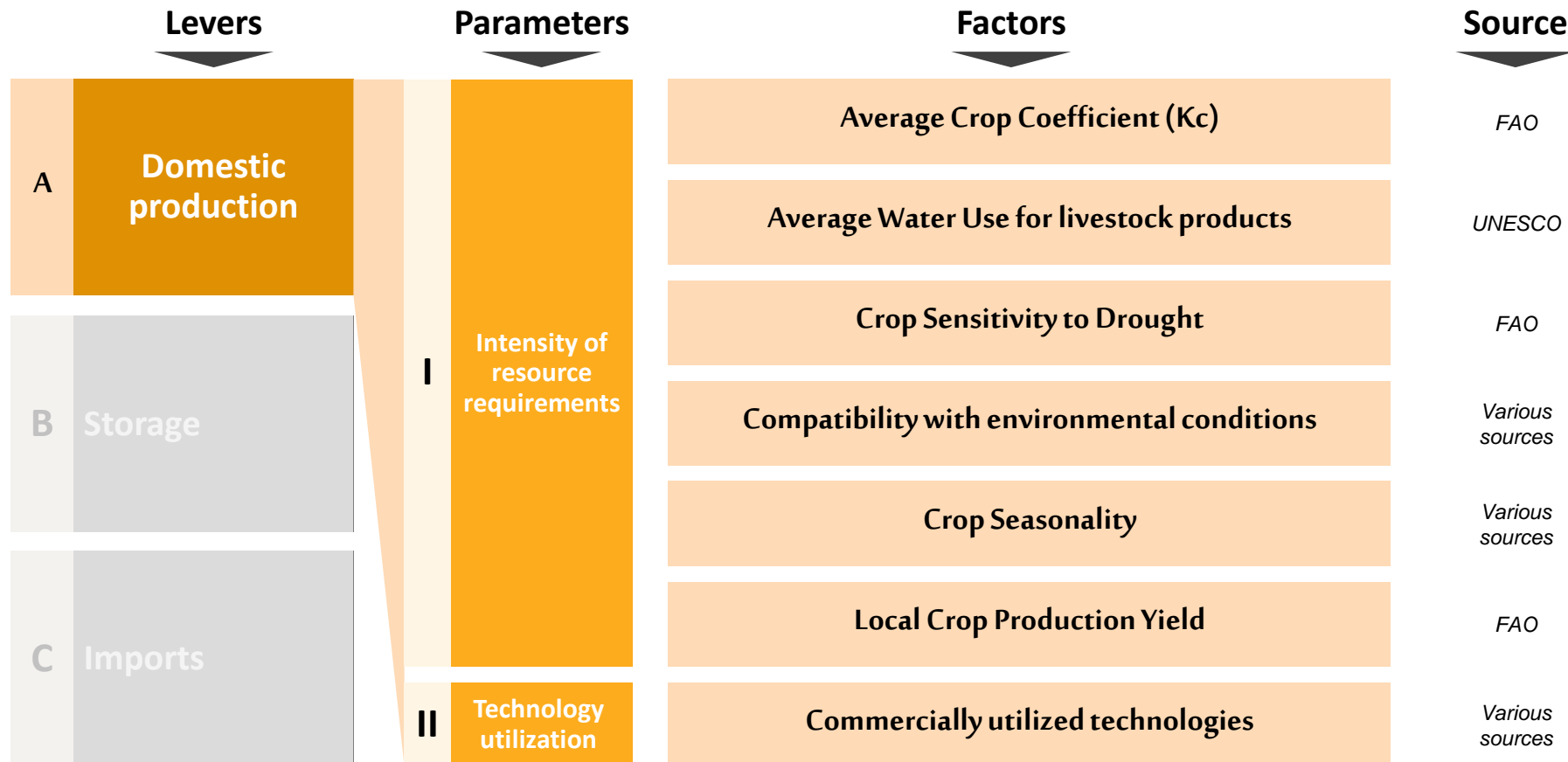


The Food Security Execution Office at SAGO in order to enhance KSA Food Security Resilience had developed the following core implantation programs



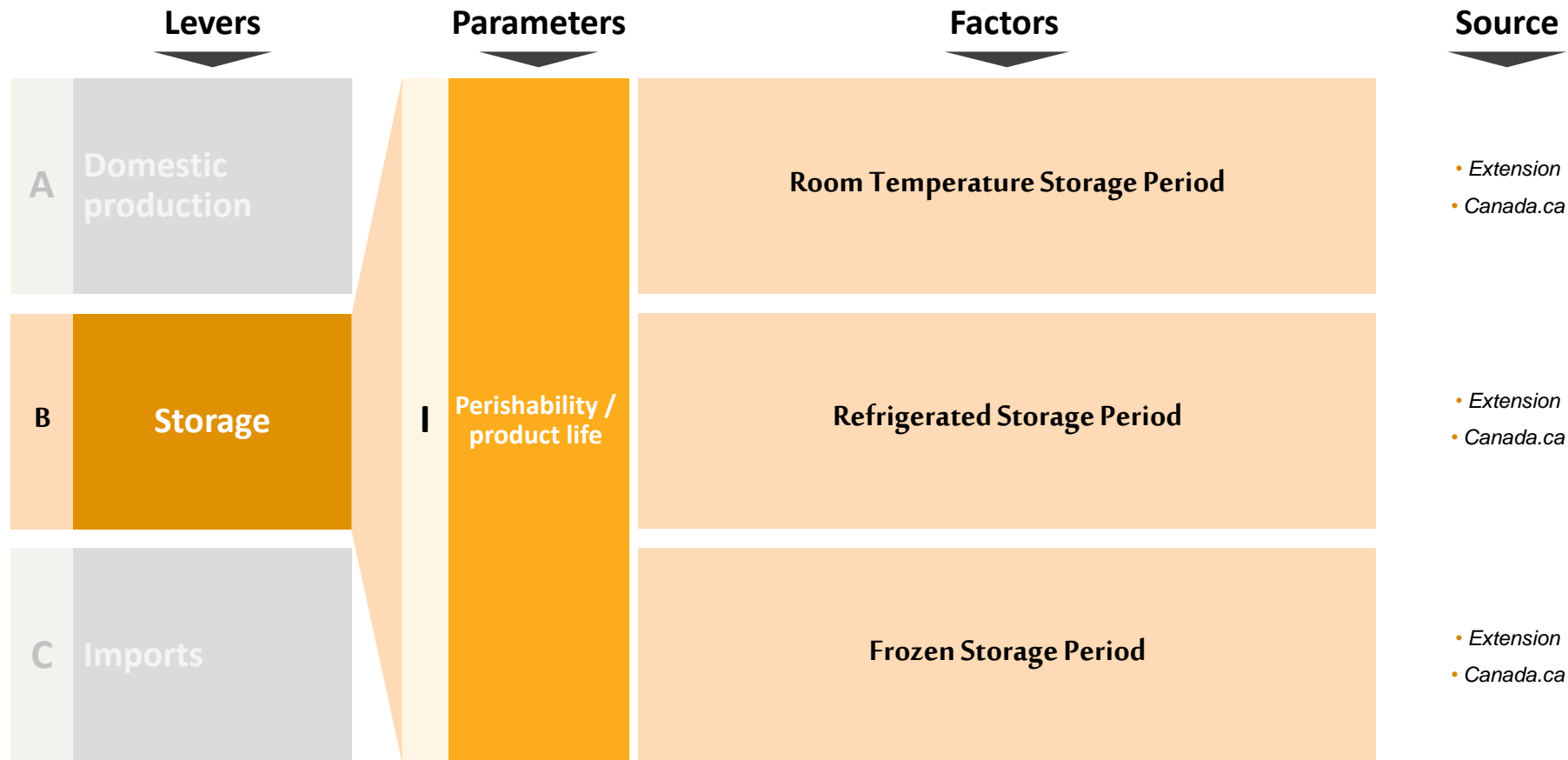


In order to identify targeted food commodities for strategic reserve, we had followed three dimension approach had been followed; A) Domestic Production, B) Storage Requirements, C) Import Evaluations





For storage, we gathered data on three factors related to storage time period and conditions for each strategic food item



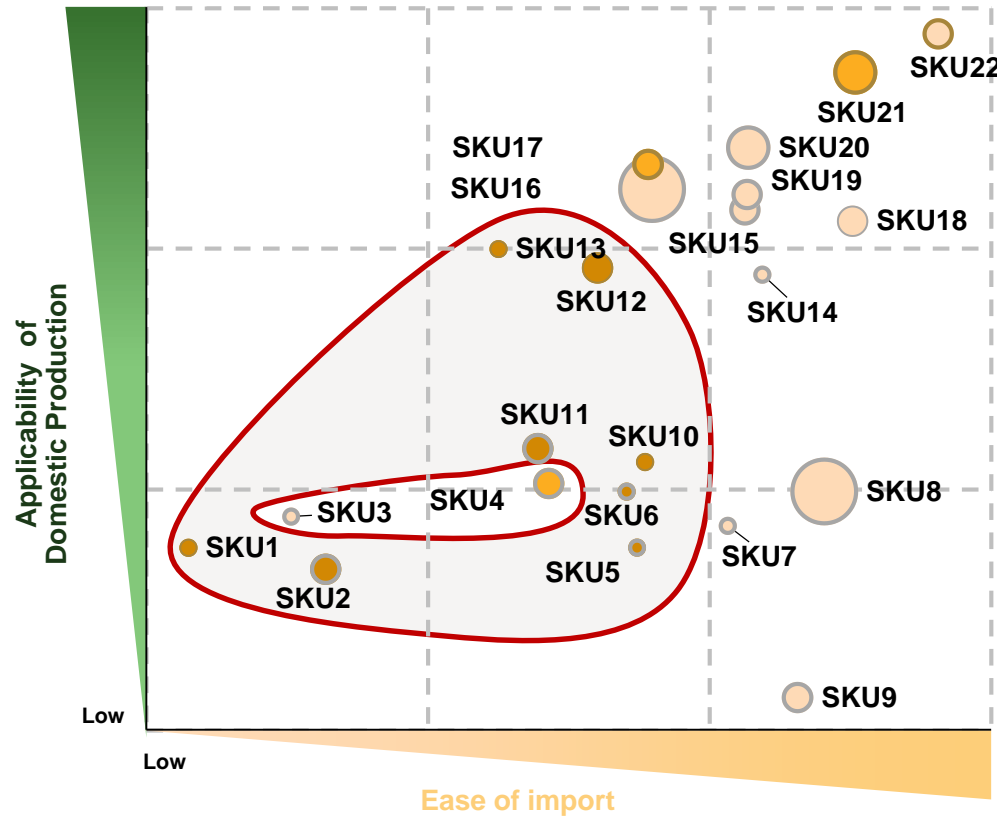


On imports, we defined five factors that would enable a feasibility assessment of sourcing food items from abroad

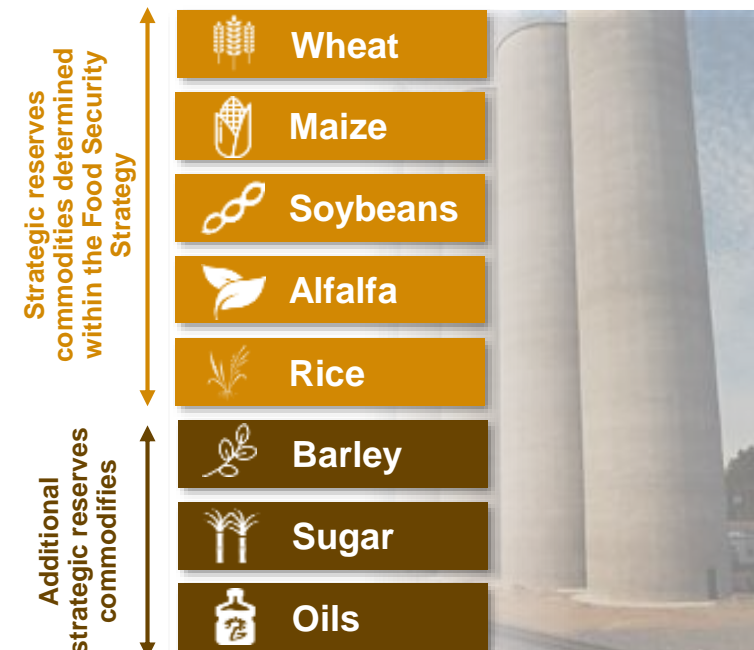
Levers		Parameters		Factors	Source
A	Domestic production	I	Stability of supply	Global Average Price Variance	FAO
				Global Production Variance	FAO
B	Storage	II	Proximity	Distance to Largest Exporters	FAO
C	Imports	III	Vulnerability to geopolitical risks	Political Stability and Absence of Violence index	World Bank
		IV	Vulnerability to climate change	Global Climate Risk Index	Germanwatch

Finally, we determined the optimal strategic food items for strategic reserves based on four dimensions;

1) Applicability to Domestic Production, 2) Ease of Import, 3) Self-Sufficiency, and 4) Ease of Store



Examples of Targeted Bulk Storage Items, Same Approach Had been Applied on Perishable Food Items





For more info,

Please visit **KSA Food Security** at: www.sago.gov.sa or, contact us at:
fs@sago.gov.sa

Thank You

OPEN DISCUSSION

