REGIONAL FOOD LOSS & WASTE WORKSHOP

SESSION 2. STRATEGIES FOR FIGHTING FOOD WASTE IN BUSINESS SECTOR
Challenges for FLW infrastructure and logistics in GCC countries

Mr. Najeeb Alhumaid
Farrelly & Mitchell Business Consultants Ltd
Challenges for FLW infrastructure & logistics in GCC Countries

Oct 15th  Regional food loss & waste workshop
Vulnerable Supply Chains
Too Many Eggs In One Basket? Dangers Of Consolidation

Local environmental conditions mean that KSA and the wider GCC region is one of the most water scarce and food trade dependent regions in the world.

Food & Beverage Market Growth Drivers

- Favourable Demographic: Young & growing population
- Strong Disposable Income: High spending native population
- Changing Dietary Preferences: Western & ethnic influences
- Distribution Channel Modernisation: supermarket & convenience, restaurants etc.
- Modernization & internationalization of retail and HORECA:
- Social & Cultural Changes: Convenience food increasingly popular
- Growing Tourism: Business and leisure tourism
- Net Food Trade as Percentage of Consumption

Source: FAO
FLW in KSA & GCC in the context of Regional Agri-Food Policy
Regional food security agenda – Sustainable high-tech agriculture; legislation to reduce FLW

FOOD SECURITY IN THE REGION

Food security an on-going issue of debate in KSA & GCC.

Major challenges & risks to stability of food supply in the region.

GCC Region’s food security agenda:

- Reduce FLW across the food value chain
- Ensure access to balanced food and promote healthy consumption
- Enhance national capabilities for emergency and crisis response
- Develop high value systems for sustainable local production
- Diversity and stability of external food sources
FLW in KSA & GCC in the context of Regional Agri-Food Policy

Regional food security agenda – Sustainable high-tech agriculture; legislation to reduce FLW

**BALANCING FOOD DEMAND, SUPPLY, AND WATER CONSERVATION**

GCC Governments are a vital link to production capacity with various support schemes, while conserving underground water resources.

However, for food produced in GCC region, water / capita / year wasted due to FLW is estimated at 790 m$^3$ in UAE and 500 m$^3$ in KSA.
FLW in KSA & GCC1 in the context of Regional Agri-Food Policy

Regional food security agenda – Sustainable high-tech agriculture; legislation to reduce FLW

ESTIMATED UAE / KSA FLW IN 2019

1.6/6.1 million MT tonnes of FLW

AED13 billion/SAR 40.5 billion Estimated value of consumer food waste

33% - 35% Of locally available supply in both countries
FLW in KSA and GCC1 in the context of Regional Agri-Food Policy
Regional food security agenda – Sustainable high-tech agriculture; legislation to reduce FLW

FLW ALONG THE FOOD VALUE CHAIN

KSA
- 21.5% at primary production
- 4.5% at post harvest stage
- 57% at consumption
- 16% at distribution (retail, wholesale etc.)

UAE
- 5% at primary production
- <1% at post harvest stage
- 90% at consumption
- 4% at distribution (retail, wholesale etc.)
Food Loss & Waste in GCC – Key Drivers
There is a general lack of awareness across stakeholders. Governance and legislation are primary drivers of FLW.

<table>
<thead>
<tr>
<th>Governance &amp; Legislation</th>
<th>Consumer/Source</th>
<th>Collection &amp; Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of sustainable waste disposal and recycling policies</td>
<td>Lack of awareness</td>
<td>Absence of waste segregation systems at source and disposal</td>
</tr>
<tr>
<td>Lack of incentives encouraging recycling / reuse</td>
<td>Cultural habits</td>
<td>Fragmented commercial food waste value chain</td>
</tr>
<tr>
<td>Lack of National campaigns</td>
<td>Mis-alignment of food supply &amp; demand, at retailer &amp; at home</td>
<td>Lack of awareness of recycling potential</td>
</tr>
<tr>
<td>Lack of effective penalties for driving reduction on food waste</td>
<td>Affordability</td>
<td>Lack of participation of public and private enterprise</td>
</tr>
<tr>
<td></td>
<td>Extravagance at social gatherings</td>
<td>Food waste often not disclosed by food companies due to embarrassment. Often written off against marketing budgets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Distributors and Retailers not aligned on demand planning</td>
</tr>
</tbody>
</table>

Source: Farrelly & Mitchell Research, MEWA
Corporate Infrastructure & Logistics

Food loss at primary production and post-harvest is managed on-site. Food Waste at processing, distribution, consumption levels is challenging.

**POST-HARVEST FOOD LOSS**

01. Poor planning
   - Production / marketing misalignment

02. Poor farm management
   - Over-mature / damaged crops

03. Poor storage
   - Poor temperature control

04. Physical damage
   - Poor sorting

05. Contamination / decay
   - Lack of hygiene

06. Over-storage / spoilage
   - Poor marketing

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Source: Farrelly & Mitchell Research, MEWA

For Composting on-site

No Logistics issues in managing Food Loss
Corporate Infrastructure & Logistics

Food loss at primary production and post-harvest is managed on-site. Food Waste at processing, distribution, consumption levels is challenging.

<table>
<thead>
<tr>
<th>Food Material Barriers</th>
<th>Process Barriers</th>
<th>Logistics Barriers</th>
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<tbody>
<tr>
<td>Identification of suitability of FW</td>
<td>Food Factory design</td>
<td>Identifying potential customers for products made from FW</td>
</tr>
<tr>
<td>Shelf life of FW</td>
<td>Segregation of FW</td>
<td>Distance/transport cost of FW collection**</td>
</tr>
<tr>
<td>Removal of harmful substances</td>
<td>Contamination risk in FW</td>
<td>Competing disposal routes for FW**</td>
</tr>
<tr>
<td>Need for de-packaging</td>
<td></td>
<td>Turnaround time for processing FW to animal feed.**</td>
</tr>
<tr>
<td>Volume &amp; consistency of FW</td>
<td></td>
<td>Unusable FW from Landfills</td>
</tr>
</tbody>
</table>
Government Infrastructure & Logistics

Excellent roads and marine networks across the GCC region support private sector investment.

Construction of additional infrastructure & Logistics

KSA Logistics Market

Cargo handled by KSA seaports in 2017

Cargo handled by KSA airports in 2015

Other GCC Government Initiatives

International partnerships with private sector for linking infrastructure and Logistics systems internally and across borders.

Integration with systems for driving higher performance:

- More rigorous governance
- Leaner processes
- More efficient customs system
Waste Regulation is rapidly evolving in GCC

Whilst existing waste laws are elementary, new waste management laws for KSA are imminent - expected to include mandatory fees and waste separation.

### Existing Regulation

- **Existing regulations lack integrated waste management.**
- **Food waste disposed with other solid waste in landfills.**
- **Lack of landfill tipping fees is a disincentive to improving the standard of waste disposal.**

### New Draft Regulation

- **Most landfills neglected; environmental issues (groundwater contamination).**
- **Limited recycling.. Lack of source segregation.**
- **Not a pressing issue until recent years. Now seen as a high priority to address.**

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**New draft waste management law proposed by MEWA in Jan 2020**

New law comes into force 180 days after publication.

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**National Waste Management Centre (NWMC)**

Governing body for waste management in the country including developing operation and commercial regulations.
Waste Regulation is rapidly evolving in GCC
Whilst existing waste laws are elementary, new waste management laws for KSA are imminent - expected to include mandatory fees and waste separation

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<th>SERVICE PROVIDERS</th>
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<tbody>
<tr>
<td>KPIS IN WASTE MANAGEMENT</td>
<td>Public tenders to select service providers</td>
</tr>
<tr>
<td>STOP ILLEGAL WASTE DUMPING</td>
<td></td>
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<th>STRATEGIC INITIATIVES</th>
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</tr>
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<tbody>
<tr>
<td>FIVE-YEAR STRATEGIC PLAN.</td>
<td>Exclusive licenses to waste management service providers</td>
</tr>
<tr>
<td>RECORD WASTE PRODUCTION. DEVELOP NECESSARY REGULATIONS</td>
<td>Compliance with controls, conditions and procedures</td>
</tr>
</tbody>
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<table>
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<tr>
<th>WASTE PRODUCERS</th>
<th></th>
</tr>
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<tr>
<td>WASTE SORTING AT SOURCE</td>
<td>Severe penalty in case of breach of terms</td>
</tr>
<tr>
<td>IMPROPER SEGREGATION – WASTE RETURNED TO PRODUCER.</td>
<td>Liability for environmental damage, public health and safety</td>
</tr>
<tr>
<td>RECYCLING FEE TO WASTE PRODUCER</td>
<td></td>
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Waste Infrastructure Opportunities – KSA examples

Further to new regulations, SIRC was established to drive waste infrastructure development & opportunities. Private Sector also more proactive.

**PUBLIC SECTOR**

**MEWA**
- National waste management law draft expected to be ratified in 2020
- National Waste Management Center (NWMC) as governing body
- Comprehensive waste management strategy for Riyadh

**S.I.R.C (SAUDI INVESTMENT RECYCLING COMPANY)**
- Will champion waste management in KSA

**Infrastructure focus**
- Tripartite Initiative (SIRC / Riyadh Municipality / NWMC):
  - Recycling facility
  - Sorting Facility
  - Composting Facility

**Opportunity focus**
- Biowaste Start-Ups:
  - Edama – compost solutions
  - Carbon CPU – fatty acids from biowaste (animal feed ingredient)
Waste Infrastructure Opportunities – KSA examples

Further to new regulations, SIRC was established to drive waste infrastructure development & opportunities. Private Sector also more proactive.

Best practice waste disposal contractors… Increasing demand by large food companies for responsible disposal.

More expensive than municipality contractors

PRIVATE SECTOR

Some food manufacturers have launched FLW awareness programs among households and HORECA

Provide consulting service on proper waste disposal

Increasingly important element in CSR initiatives
Mitigating Supply Chain Challenges in managing FLW in GCC

Our Food Manufacturers should employ best-practice methodology for process mapping in the context of Suppliers, Inputs, Process, Outputs, and Customers (SIPOC) for reducing FLW.

**SUPPLIER**
- Supply Logistics
- Production

**Process**
- Input
  - QA to ensure FLW segregated for processing to feed, ingredients, or compost
- Coordinate Logistics for FLW collection
- Sort, segregate, store FLW for purpose
- Segment FLW suppliers; sign supply agreements
- Collate market insight (from feed mills, livestock farmers)
- Sign offtake agreements
- Synchronize production, storage, and dispatch plans
- Define packaging requirements and liaise with external certifiers for certification
- Coordinate Logistics to dispatch products to customers
- Technical sales follow-up visits to assure customer satisfaction

**Output**
- Packaging & Storage of finished products
- Sales Logistics
- CRM to assure customer confidence in finished products
- Certification to assure customer confidence in finished products
- Update production & storage plans according to FLW stocks
- Collate market insight (from feed mills, livestock farmers)
- Sign offtake agreements
- Synchronize production, storage, and dispatch plans
- Define packaging requirements and liaise with external certifiers for certification
- Coordinate Logistics to dispatch products to customers
- Technical sales follow-up visits to assure customer satisfaction
- Package and store finished products
- Dispatch shipments
- Receive shipment, issue GRN

**CUSTOMER**
- Packaging & Storage of finished products
- Sales Logistics
- CRM to assure customer confidence in finished products
- Certification to assure customer confidence in finished products
- Update production & storage plans according to FLW stocks
- Collate market insight (from feed mills, livestock farmers)
- Sign offtake agreements
- Synchronize production, storage, and dispatch plans
- Define packaging requirements and liaise with external certifiers for certification
- Coordinate Logistics to dispatch products to customers
- Technical sales follow-up visits to assure customer satisfaction
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- Receive shipment, issue GRN

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QA to ensure FLW segregated for processing to feed, ingredients, or compost

Sign agreements with collection agencies

Coordinate Logistics for FLW collection

Sort, segregate, store FLW for purpose

Segment FLW suppliers; sign supply agreements

Collate market insight (from feed mills, livestock farmers)

Sign offtake agreements

Synchronize production, storage, and dispatch plans

Define packaging requirements and liaise with external certifiers for certification

Coordinate Logistics to dispatch products to customers

Technical sales follow-up visits to assure customer satisfaction

Package and store finished products

Dispatch shipments

Receive shipment, issue GRN
Farrelly & Mitchell At a Glance

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16+ YEARS IN BUSINESS

CORPORATE & GOVERNMENT CLIENTS  OPERATIONAL & STRATEGIC STRENGTH

VALUE CHAIN FARM TO FORK  GLOBAL REACH & EXPERIENCE

DUBLIN  DUBAI  RIYADH  ACCRA

GLOBAL REACH & EXPERIENCE

VALUE CHAIN  FARM TO FORK

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Measuring FW at hotels and restaurants and economic benefit from prevention: The Food Waste Opportunity

Mr. Ignacio Ramirez
Winnow Solutions, UAE
Measuring FW at hotels and restaurants and economic benefit from prevention

The Food Waste Opportunity
1/3 of all food is never eaten
$1 trillion opportunity
Data shows that in the hospitality sector food waste is typically between 4% to 12% of food costs.

![Distribution of cost of food waste as % of annual food cost at ~500 kitchens worldwide](image)
The global impact of food waste

11%

Of annual greenhouse gas emissions

3x

Emissions of single use plastics

“Our ambition is to become climate positive by 2030”

Jesper Brodin, CEO IKEA
The biggest savings opportunity lies in overproduction.
Reduce, redistribute
Our data shows that post Covid businesses are becoming less efficient

Data from Winnow locations in China 2019/20
Our approach to deliver improved productivity

Baseline
What gets measured gets managed. Use Winnow to find out exactly what you’re wasting

Learn
Accurate, automated, actionable data. Empower teams to reduce waste.

Change
Cut waste, reduce costs, reduce impact. Aligned organisations drive savings at scale.
Solutions for every kitchen

**Winnow app**
Bring your own Android device. Simple menu captures what food was wasted and why.

**Connected scale**
Automates weight capture saving teams time and improving accuracy.

**Winnow Vision camera**
Automatically captures images of food being wasted.

**AI Powered Waste Identification**
Processes images in real time. Fully automates waste recording process using AI.

-Cafe/Kiosk - Small kitchen - Medium/Large Kitchen - Maximum impact
Automated Action Planning to optimise production

Actionable overproduction suggestion for teams

Data led action planning helps teams cut costs quickly

Receive daily smart reduction tips to focus on big wins
The power of pictures

Poor

Average

Good
Helping the hospitality sector reach maximum productivity

- Prevent Spoilage
- Prep efficiency
- Production optimisation
- Plate waste monitoring
We’d expect to halve hospitality food waste

1. Low hanging fruit & quick wins
2. Identify further efficiency gains
3. Maintaining long-term reductions

Avoided cost of food waste

Average reduction 53%

Typical food cost savings

2% - 8%

Typical year 1 ROI

2x - 10x

Source: Winnow data collected in >1,000 kitchens
Kitchens using Winnow are saving $40m a year in reduced food waste costs

Typical annual savings

- **$10k**
  - Small site
  - $200k Annual spend
- **$20k**
  - Medium site
  - $400k Annual spend
- **$50k**
  - Large site
  - $1m Annual spend
- **$200k+**
  - Cruise & Casino
  - $4m Annual spend

Trusted by chefs in 40+ countries in over 1,300 kitchens
IHG MEA work with Winnow

Working together since 2018, IHG have successfully deployed at 19 properties across the Middle East and Africa.

<table>
<thead>
<tr>
<th>19</th>
<th>68%</th>
<th>&gt;$45k</th>
<th>&gt;500k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotels using Winnow worldwide</td>
<td>Reduction in value of food waste</td>
<td>Estimated annualized gross savings per hotel</td>
<td>Meals saved from the bin by Winnow users</td>
</tr>
</tbody>
</table>

“Our partnership with Winnow will help our hotels be smarter and savvier in their approach to creating compelling menus that result in less waste”

Kenneth Macpherson, Chief Executive Officer, EMEAA, IHG
EMAAR Hospitality Group partnered with Winnow to introduce Winnow into their hotels.

- **February 2018**: Winnow waste monitor was installed.
- **May 2018**: Emaar Hospitality Group pledges to help the UAE save 3 million meals per year by 2020.
- **September 2018**: Emaar Hospitality Group signs up to be the pioneer of Winnow Vision in the region.
- **December 2018**: Winnow Vision prototype rolled out in all Emaar Hospitality Group properties.

Creating The Kitchen of the Future with AI.

- **2018 January**
- **2018 April**

- **70%**: Average food waste reduction.
- **350,000**: Meals saved from the bin.
- **1.8 million AED**: In savings across 12 properties.
- **644 tons of CO2e**: saved.
Almost 900 media placements

High profile global partners
There is a financial and environmental opportunity in reducing FW in the hospitality sector

#ForTheLoveOfFood
Food Bank cooperation as a strategy to fight Food Waste

Mr. Amer AlDakhil
General Secretary, Saudi Specialized Council for Food Preservation
Food Bank Cooperation as a Strategy to Fight Food Waste

Amer AlDakhil,
General Secretary, Saudi Specialized Council for Food Preservation

15 October 2020
Worldwide Food Waste Impact

• Approximately 30% of food produced for human consumption around the world is either lost or wasted each year.

• This is equivalent to 1.3 billion tons of food

Source: FAO, 2014
Content

• Food Waste/Loss in the Food Supply Chain
• Food Banks Current Utilization of Excess Food
• Council Forward Strategies
• Food Banks Future Utilization of Food Waste
Food Waste/Loss in the Food Supply Chain

Food Waste/Loss Percentage Throughout the Food Supply Chain

33.1%

Waste/Loss Allocation

- Farming: 22%
- Harvesting: 6%
- Processing: 16%
- Distribution: 57%
- Consumption:

Source: Saudi Grains Organization, 2019
Food Waste/Loss in the Food Supply Chain

Food Waste/Loss Percentage Throughout the Food Supply Chain

33.1%

Source: Saudi Grains Organization, 2019
Food Banks Current Utilization of Excess Food

• Approximately 40 food banks in the Kingdom (25 are specialized)
• Food banks provide door to door service in collecting excess food to ensure safe handling
Food Banks During Covid-19

6 million meals

- Food banks distributed approximately 4 million meals in support of
  - Needy People
  - Communities
  - Covid-19 shelters
Food Banks Current Utilization of Excess Food

- Approximately 40 food banks in the Kingdom (25 are specialized)
- Food banks provide door to door service in collecting excess food to ensure safe handling
- Growing interest to utilize unfit food for human consumption

![Excess Food Graph]

- Wheat products
- Vegi/Fruits
- Meat
- Rice

2019: 8,000 tons
2020: 6,000 tons
COVID-19 Impact
Food Banks Models in Utilization of Excess Food

- Instant distribution
- Cooling, next-day distribution
- Cooling, next-day heating and distribution
Excess Food Handling Process

1. Receive request
2. Prepare team with necessary tools
3. Drive to location as specified
4. Collect food in designated plates
5. Distribute the food to needy people
6. Next day the food is put in small plates and sealed
7. Drive back and store under cooling temperature
Role of the Specialized Council for Food Preservation

- Represent
- Enable
- Coordinate
Council Forward Strategies

- Unify Effective Awareness Programs
- Develop Sustained Financial Resources
- Development of Human Resources
- Transition to Good Governance
- Build Bridges of Cooperation
- Attain Resource Efficiency
Food Banks Future Utilization of Food Waste

Food Waste/Loss Percentage Throughout the Food Supply Chain

33.1% → 26%

By 2024

Utilized Food Percentage

75%

3 million tons

Wasted Food

Utilized Food
Excess/Wasted Food Utilization Benefits

**Economical**
- Increase employment rate
- Increase GDP

**Social**
- Food preservation

**Environmental**
- Reduce greenhouse gas emission
Strategic Partners

- Ministry of Municipal and Rural Affairs
- Ministry of Environment, Water & Agriculture
- Saudi Grains Organization
- Ministry of Education
- Ministry of Commerce and Investment
- Public Investment Fund
- Recycling Companies
Thank You

Specialized Council for Food Preservation

Amer AlDakhil, 15 October 2020
OPEN DISCUSSION