

# United Against Food Loss and Waste; How to Accelerate the Global Movement

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Taipei, 14 June 2018



Asia-Pacific  
Economic Cooperation



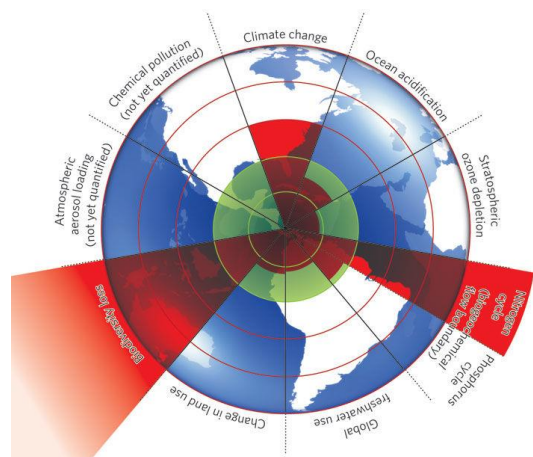
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## Drivers for change



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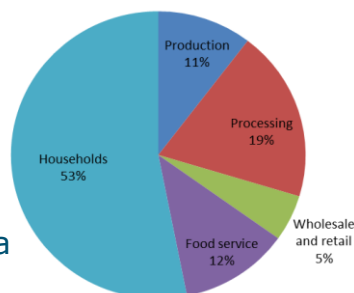
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## Food waste – latest estimate EU-28



173 kg pro-capita  
food waste

- Equivalent of **20%** of all produced food in EU
- **143 billion euros**
- ~ **304 Mt CO2 eq** (6% of total emissions of GHG in EU28%)



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## FLW PROTOCOL

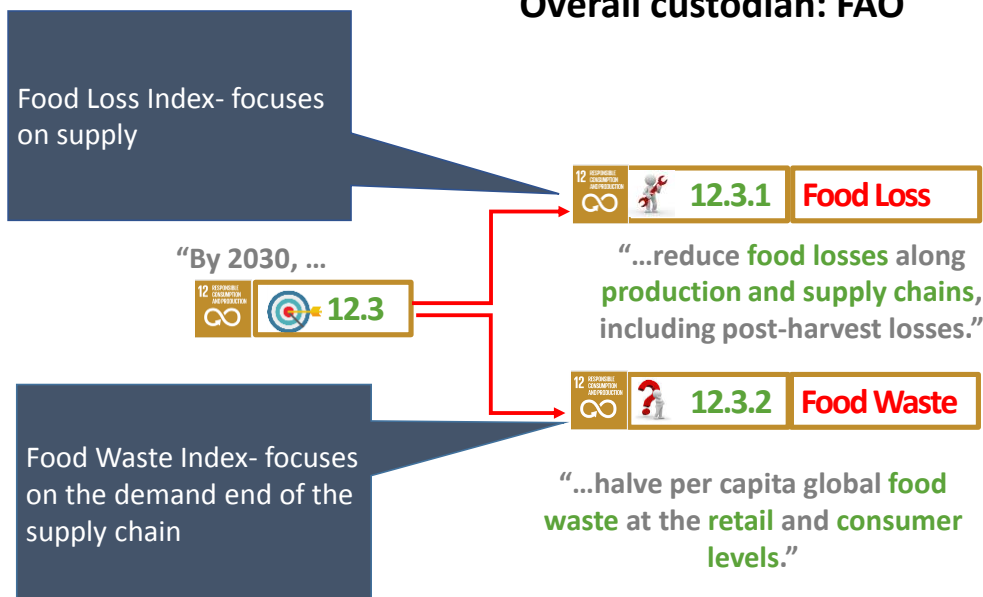


A multi-stakeholder effort to develop a global  
*FLW Accounting and Reporting Standard*



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## Overall custodian: FAO



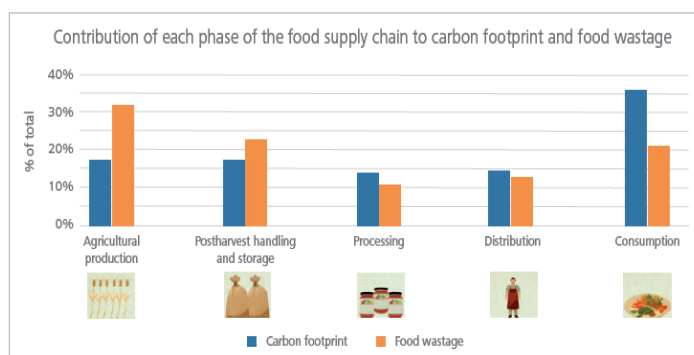
## CGIAR – CCAFS Program Reducing FLW

- Program in the context of Climate Change Agriculture and Food Security (2016 – 2022)
- 2017/2018 new Public-private Partnerships

## Project outcome statement

The project will contribute to understanding the link between FLW reduction and emissions mitigation, drivers for reducing FLW relevant to mitigation and promising interventions and their potential impacts on food, nutrition and emissions. The project will achieve this by setting up initiatives in selected value chains and regions with strong consortia that target the reduction of FLW, including business models and finance, stakeholder incentives, and interventions in the enabling environment.

# Modelling climate impacts of measures for food loss reduction



Comparing carbon impacts:  
increase of food supply  
vs.  
added costs of loss-reducing measures

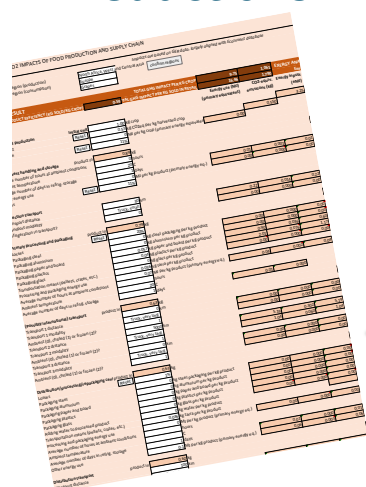
increasing cumulative carbon impact per kg product along the chain related to energy, fuel, packaging, etc.



## Post-harvest measures for post-harvest food loss reductions

### Potential measures

- Redesigning roles and processes in supply chains
- Reduce order lead times
- Create information transparency along supply chains
- Increase fresh product quality management  
handling practices, temperature control, packaging, storage facilities
- Reduce time between harvest and processing  
small-scale (pre)processing near location of production
- Processing of surpluses (shelf-stable products)  
pasteurisation/sterilisation, freezing, drying, fermentation, ...



# Dual approach: estimate effects on food security & climate change impacts

Food security	Climate change impact
Example: shelf life extension  Quantitative effect on food losses can be <ul style="list-style-type: none"><li>• measured (protocol)</li><li>• estimated (model)</li></ul>	Climate change impact of measures: <ul style="list-style-type: none"><li>• energy</li><li>• packaging</li><li>• ...</li></ul> v.s. additional production
Example: processing  Processed surpluses/losses: Fill in non-seasonal availability	Climate change impact of processing v.s. non-seasonal import or intensified (greenhouse) production

Also take into consideration GHG emissions from waste

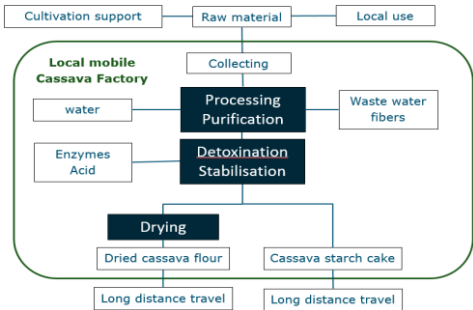


## Case: mobile cassava processing unit

Challenge (Mozambique)

- collection transport > 48hrs
- postharvest physiological deterioration -> unpalatable and unmarketable for food/feed (destined for bioethanol)

Intended situation with intervention:



	Reject raw material	Processing yield	Total yield	Product
Traditional processing	-	77%	77%	gari
Village processing	-	90%	90%	gari
Mobile factory	-	98%	98%	Cassava flour
Central Factory	30% (estimate)	98%	69%	Cassava flour

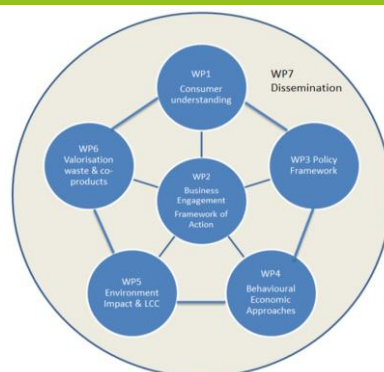




## Resource Efficient Food and dRink for the Entire Supply cHain (2015 – 2019)

**26 partners, 12 countries**

**Multi stakeholder platforms: the Netherlands, Germany, Spain, Hungary, China**



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## The REFRESH Project

A central ambition of the REFRESH project is to develop a 'Framework for Action' model that is based on strategic agreements across all stages of the supply chain (backed by Governments), delivered through collaborative working and supported by evidence-based tools to allow targeted, cost effective interventions.



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# The REFRESH Project consortium

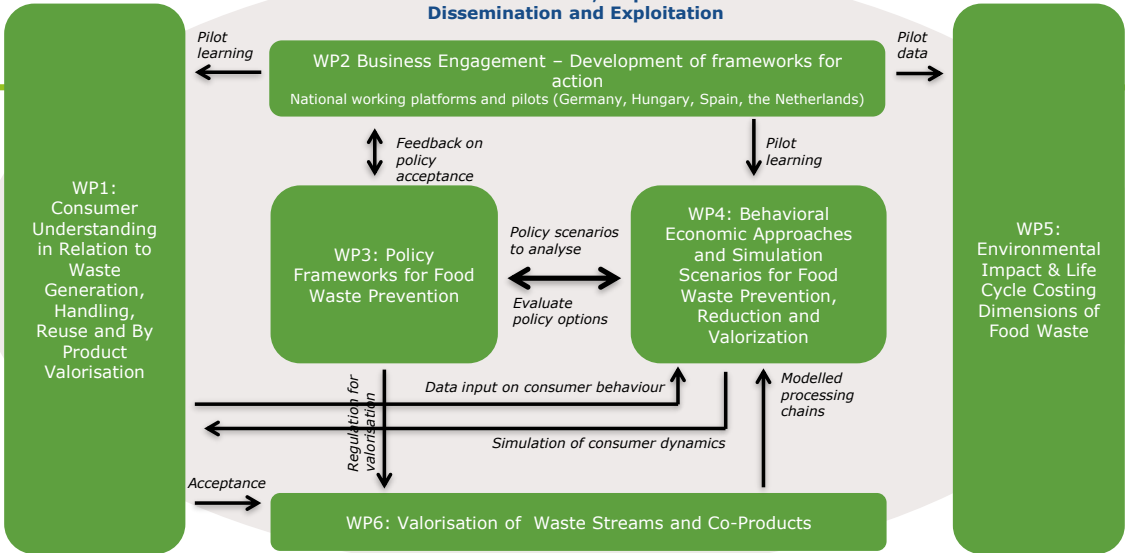


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## WP7: Communication, Impact Oriented Dissemination and Exploitation



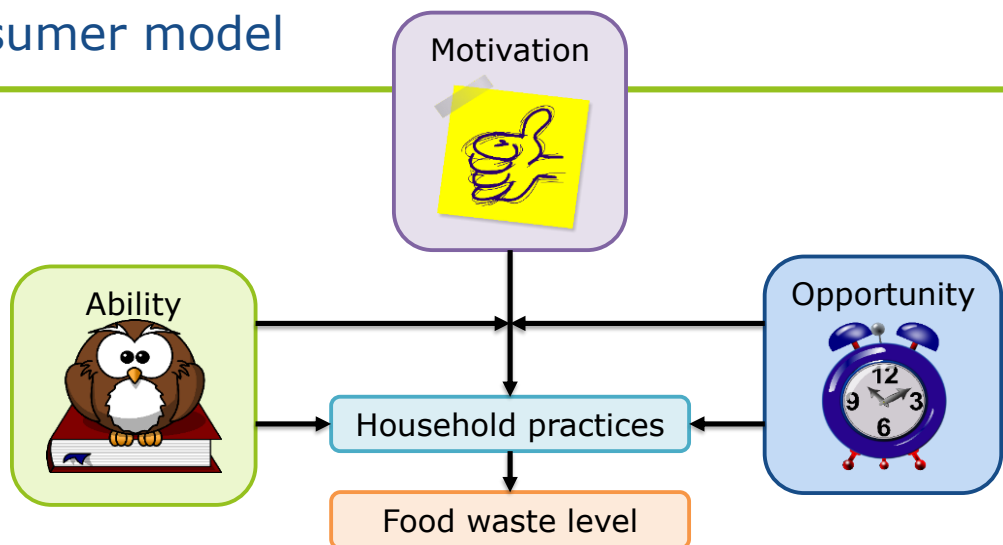
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## REFRESH: impact oriented dissemination



## Consumer model



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## Policy review and action plan

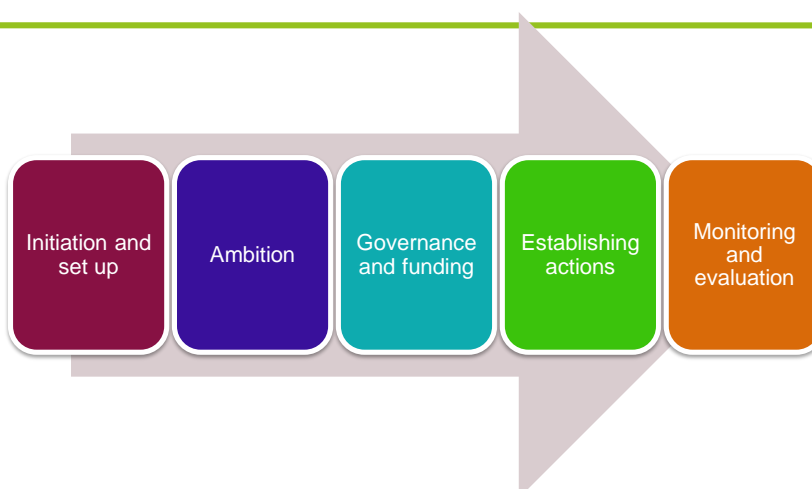
- 🍌 **Mapping food waste drivers across the food supply chain**
  - 🍌 identifies drivers of food waste and resulting waste streams across the supply chain in five food categories
- 🍌 **EU policy review**
  - 🍌 Identifies the impact of EU policy areas on food waste generation and/or prevention and discusses opportunities for improvement
- 🍌 **Policy workshops**
  - 🍌 2 Upcoming workshops in 2018-2019:
    - National approaches and voluntary agreements (19 June 2018, Amsterdam)
    - Consumer behaviour
    - Animal feed
    - Synthesis workshop: implications of REFRESH results for policy
- 🍌 Propose an **Action Plan** for policy change

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## Framework for Actions 'Blueprint'



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## Germany

Coordinating  
Partner CSCP

### Priorities

- Grocery/retail sector
- Out-of-Home
- Consumer
- Supply chain/ production



#### Business

- Aldi Nord
- Aldi Sud
- Metro
- Nestle
- Penny
- Sodexo
- Associations (food & retail)

#### Academic

- Professor Dr. Guido Ritter (FH Munster)

#### NGOs

- WWF
- Foodsharing
- Consumer organisations
- Die Tafeln

#### Government / Public Organization

- Federal Ministry of Food and Agriculture
- Environment Ministry NRW
- Bavarian State Ministry for Food, Agriculture and Forestry
- German Council for Sust. Dvlpmt

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## Hungary

Coordinating Partner  
Hungarian Food Bank Association

### Priorities

- Quantification of food waste
- Supply chain / retail
- Consumer
- Hospitality



#### Business

- Wholesale Market
- HORECA Marketing Club
- Budapest
- TESCO

#### Academic

- Agricultural Research Institute

#### Government / Public Organization

- Ministry of Agriculture
- Ministry of Human Resources

#### NGOs

- ÉFOSZ (Alliance of Hungarian Food Manufacturers)

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## Spain

Coordinating Partner  
Creda

### Priorities

- Consumers
- Hospitality
- Primary production



### Business

- ACES
- AECOC (GS1)
- ASEDAS
- COAG
- FCAC
- Espigoladors
- Gastrofira
- Mercabarna
- PACKNET

### Academic

### Government / Public Organization

- Waste Agency of Catalonia
- Metropolitan Area of Barcelona
- NGOs**
- Barcelona Food Bank
- HISPACOOOP
- Plataforma Aprovechemos los Alimentos
- PROSALUS
- Nutrición Sin Fronteras

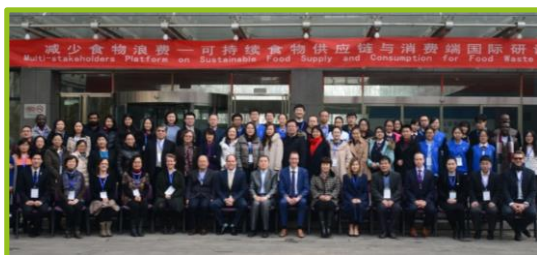
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## China

Coordinating Partner  
IVLC

A multi-stakeholder conference was held in Beijing November 2016 to launch **REFRESH in China**. It attracted **100 participants** from Governments, research institutions, NGOs, public (youth)



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# China

Coordinating Partner  
IVL

## 减少食物浪费 ——行动在中国

### 发起机构

中国连锁经营协会 (CCFA)  
中国家用电器研究院 (CHEARI)  
瑞典环境科学研究院 (IVL)

### 指导机构

联合国粮食及农业组织  
联合国环境署“思前、食后、厉行节约”  
(Think, Eat, Save) 行动

### 技术支持方

欧盟REFRESH项目  
更多机构……

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### 谁在行动

为响应联合国以及中国政府的行动和倡议，我们发起以推动减少食物浪费为目标的伙伴关系平台，旨在搭建一个开放、跨界的交流网络，面向生产端、市场端以及消费端，系统开启减少食物浪费行动，最终以引导公众关注绿色消费习惯与生活方式的转变，参与到减少食物浪费的行动中来。同时，作为联合国“思前、食后、厉行节约” (Think, Eat, Save) 活动在中国主要合作机构，参与国际平台交流，分享最佳实践和贡献。

### 发起机构：



### 指导机构：



h.org



# Netherlands

Coordinating Partner  
Wageningen Research

## Priorities

- Actions, solutions & business case development
- Supply chain collaboration & transparency
- Valorisation
- Integrated consumer action



### Business

- Albert Heijn
- CBL
- Hutten Catering
- LWM
- McDonalds
- Rabobank
- Unilever
- Protix
- Sligro Food Group
- MVO-NL
- Foodtech Brainport

### Academic

- Wageningen University

### Government / Public Organization

- Ministry of Agriculture, Nature & Food Quality

### NGOs

- Natuur & Milieu
- Youth Food Movement
- Kids University

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## The Netherlands, Cooperation with industry

- Cooperation between industry (sector organisations) and government since 2009
- Joint agenda on reduction food waste
- 2014 year against food waste



Rijksoverheid

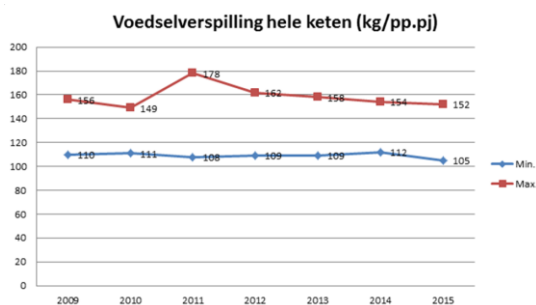
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## The Netherlands, time for a next step (2016)



- Food waste losses on political en business agenda
- Awareness
- Lots of individual actions (research, campaigns, new businessmodels)
- But: no 20% reduction
- New phase

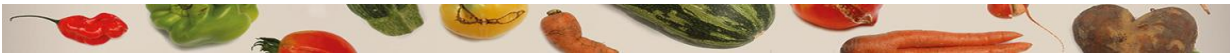
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# Dutch Taskforce Circular Economy in Food



## UNITED AGAINST FOOD WASTE

**WHAT IS THE TASKFORCE?**

Prevention and reduction of food waste is a crucial part of achieving a circular economy. All partners in the Taskforce Circular Economy in Food will collaborate and accelerate to minimize food waste, both across the food chain and by consumers, and to contribute in a transparent manner to this aim.

**WHY JOIN FORCES TO COMBAT FOOD WASTE?**



A third of the world's food is lost or wasted every year.<sup>1</sup>

**1/3**



Food waste in Europe causes **6%** of all greenhouse gases emitted through human activity.<sup>2</sup>



That is equal to **105-152 KG** per capita annually in the Netherlands.<sup>3</sup>

**Wasting less food = helping to achieve climate goals and ensuring there is enough valuable food for the growing global population.**

**The focus of the Taskforce**

The Taskforce focuses on reducing food waste throughout the entire food chain. We will accomplish this by preventing and reducing as much food waste as possible and creating value from side flows according to the "Moerman Food Use Hierarchy".

**2015 - 2030  
50%  
reduction**

**OUR OBJECTIVES**

**In a joint effort, we aim to make the Netherlands one of the first countries to cut food waste in half. We will make the Netherlands a leader and a global role model in terms of realizing Sustainable Development Goal 12.3.**

**WOULD YOU LIKE TO PARTICIPATE?**  
**Join the Taskforce!**

**The Taskforce acts in four distinct ways:**

**1. Monitoring progress and impact:** The Taskforce measures the effects of its individual and joint approach.

**2. Joining forces to combat food waste across the food supply chain:** Taskforce members and leaders combine their strengths, networks and knowledge to develop innovative solutions.

**3. Joining forces to combat food waste by consumers:** The Taskforce aims to achieve sustainable changes in behaviour through campaigns, interventions and living labs.

**4. Changing the rules:** The Taskforce promotes the legislation and instruments needed to create a circular economy.

**SAMEN TE GENVOEDSEL VERSPILLING.NL**

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<sup>1</sup>FAO, Global Food Losses and Food Waste—Extent, Causes, and Prevention, 2011.  
<sup>2</sup>FUSIONS, Criteria for and baseline assessment of environmental and socio-economic impacts of food waste, 2016.  
<sup>3</sup>Wageningen Food & Biobased Research, 2017, Monitor Voedselverspilling, update 2009-2015, rapport nummer 1747.



# Ecosystem for implementation & action

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## Business pilots on Surplus Food concepts



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## Ugly fruits and vegetables



**KROMKOMMER**

IT'S TIME FOR  
**A NEW DEFINITION OF QUALITY**

KROMKOMMER CALLS FOR ABOLITION OF SPECIFIC EUROPEAN MARKETING STANDARDS FOR FRUITS AND VEGETABLES

image 1 skin damage

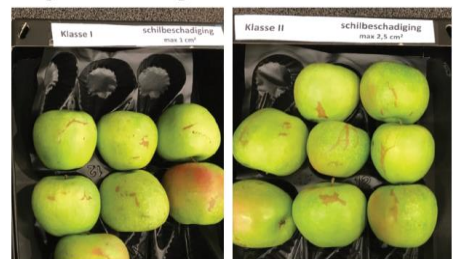
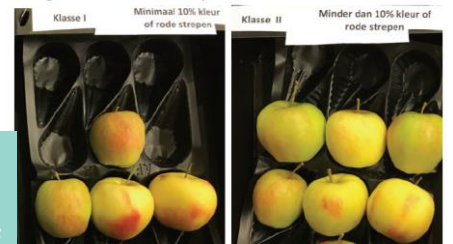
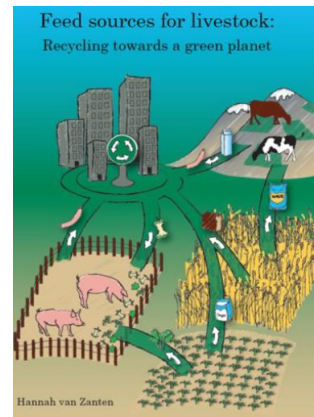
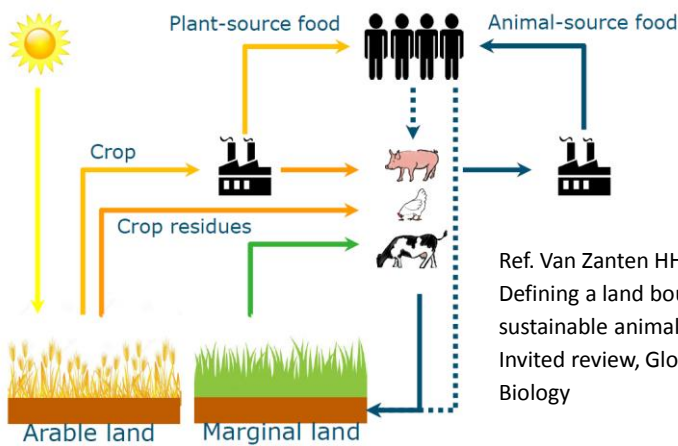


image 2 color or red stripes





## Concept of a Circular Narrative



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## Circular systems & novel products



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**Proti-Farm**  
The Protein Company

**PROTIX**

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# Use of food stuff for animal feed



Expert panel on the risk management of using treated surplus food in pig feed ([www.eu-refresh.org](http://www.eu-refresh.org))

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## ENVIRONMENTAL IMPACT OF FOOD WASTE RECYCLING

|                                            | Pig feed (wet) | Pig feed (dry) | Biogas | Compost |
|--------------------------------------------|----------------|----------------|--------|---------|
| Damage to the ozone layer                  | Green          | Green          | Yellow | Red     |
| Carcinogens                                | Green          | Green          | Yellow | Red     |
| Non-carcinogenic toxins eg heavy metals    | Green          | Green          | Yellow | Red     |
| Ionizing radiation                         | Green          | Green          | Yellow | Red     |
| Photochemical oxidant formation            | Green          | Green          | Yellow | Red     |
| Global Warming Potential *                 | Green          | Green          | Yellow | Red     |
| Freshwater eutrophication                  | Green          | Green          | Yellow | Red     |
| Marine eutrophication                      | Green          | Green          | Yellow | Red     |
| Terrestrial eutrophication                 | Green          | Green          | Yellow | Red     |
| Eco-toxicity                               | Green          | Green          | Yellow | Red     |
| Fossil fuel depletion *                    | Green          | Green          | Yellow | Red     |
| Depletion of other non-renewable resources | Green          | Green          | Yellow | Red     |
| Acidification                              | Green          | Green          | Yellow | Red     |
| Particulate matter emissions               | Green          | Green          | Yellow | Red     |

\* The Global Warming Potential and fossil fuel depletion calculations use the current UK energy mix. If renewable energy were to be used for the processing of the feed, feed would score better on these aspects.

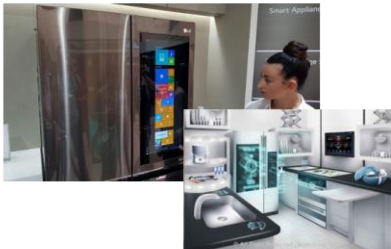
FEED BACK



ENVIRONMENTAL BENEFITS



# New Business models



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based







## Frameworks for action, some systemic aspects

- **Transparency** (Target, Measure, Act), Actions & Monitoring progress
- Supply chain **collaboration** (forecasting, utilisation & circular business models), value chains & **responsibility**
- **Externalities** & balance in economic, ecologic & social-economic impacts
- **Policy coherence** (prevention should come first)
- **Economic & legal frameworks** (food -> feed)
- Commitment for a collective **consumer driven** action program  
(building on harmonised consumer insights research)

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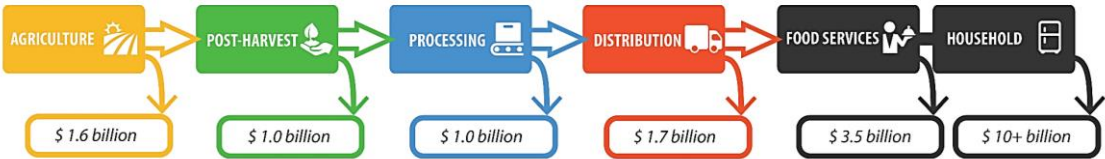
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# THE OPPORTUNITY IN AUSTRALIA



Value-chain Food Waste losses: \$19 billion p.a.



## CRC Programs

**REDUCE**  
food waste throughout  
the supply chain

**TRANSFORM**  
unavoidable waste into  
valuable co-product

**ENGAGE**  
with industry and consumers  
to deliver change



Knowledge and Best  
Practice on Food  
Waste Prevention

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