

# Opportunities of Circular Agro-Food Value Chains: Boosting the Transition!

## Seminar kick-off

15 March 2019, Ho Chi Minh City

Heike Axmann, [heike.axmann@wur.nl](mailto:heike.axmann@wur.nl)



Kingdom of the Netherlands



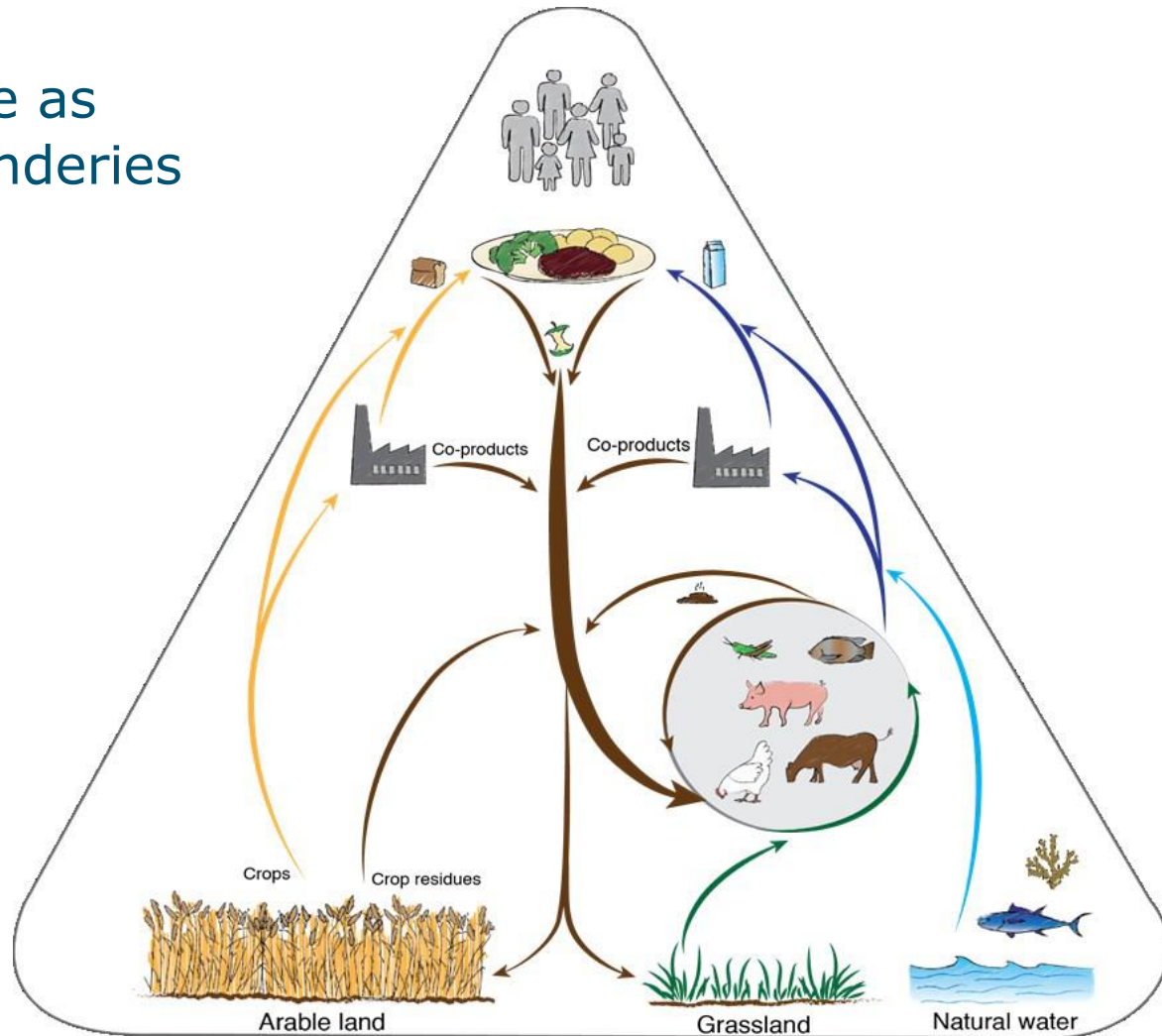
# Content

1. The concept of circular agro-food value chains
2. How far are we with circular chains?
3. How can we boost the transition?
4. What are the opportunities for Vietnam?
5. Resume

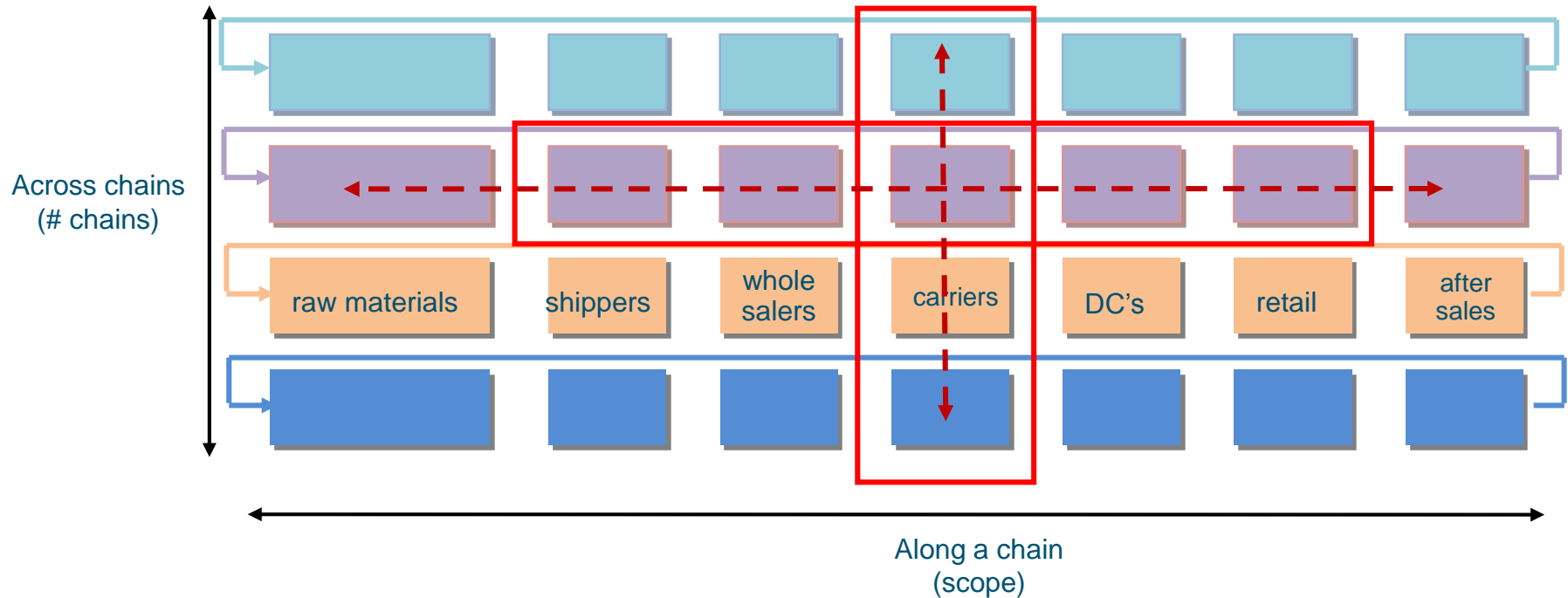


# The concept of circular agro-food value chains

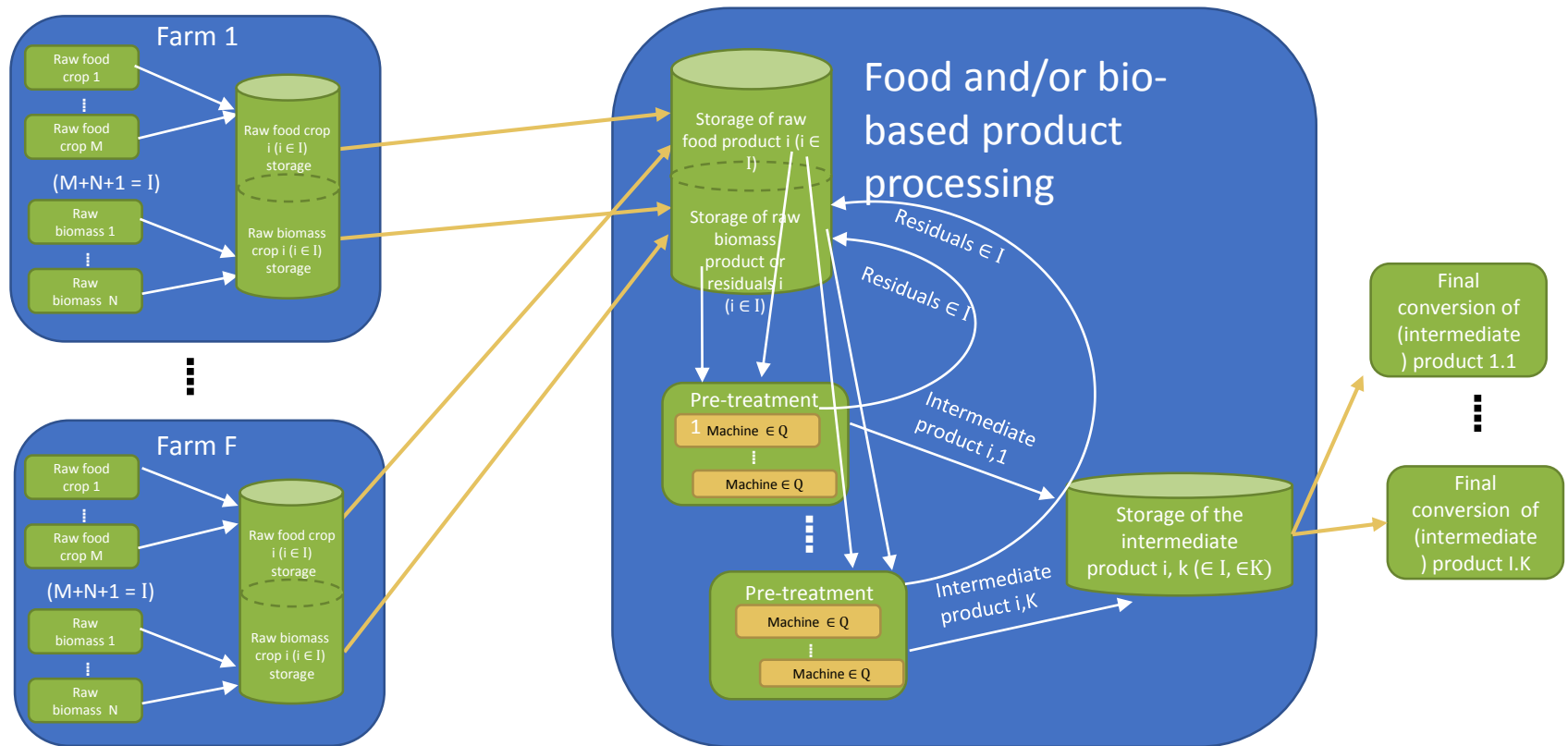
Feeding as many people as possible within the boundaries of the eco-system



# Collaboration, coordination, integration



# The mixed integer programming model



A powerful optimisation tool to optimise the food and bio-based logistic networks and processing procedures

# Content

1. The concept of circular agro-food value chains
2. How far are we with circular chains?
3. How can we can boost the transition?
4. What are the opportunities for Vietnam?
5. Resume



Package material from  
tomato stalks and leaves



# 1/3 of our food is lost or wasted

## The Food Waste Iceberg

Food waste per day/person (gr.)

NL	HCMC
112	500-760*

Bill at producer price:  
\$750 000 000 000  
Bill at retail price:  
\$1000 000 000 000

what  
we see

Thi, 2015

what  
we don't see

Bill from nature:  
\$700 000 000 000

Eroded Land

GHG Emissions

Cleared Forests

Increase in Food Prices

Increased Water Scarcity

Loss of Wetlands

Loss of Biodiversity

Climate Change Damages



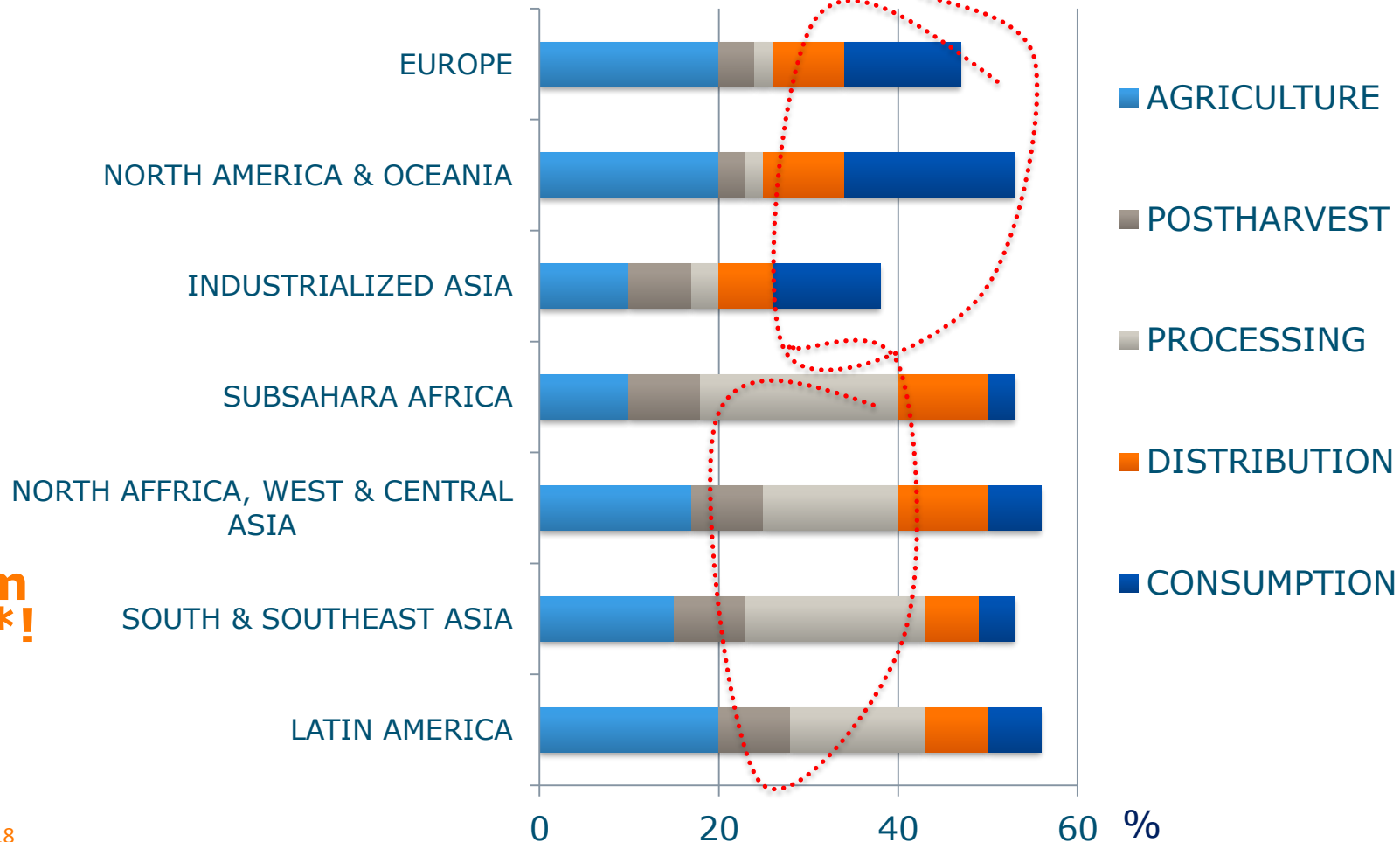
Food and Agriculture Organization  
of the United Nations

\*Thi, 2015

# Almost half of our FFV are lost and wasted



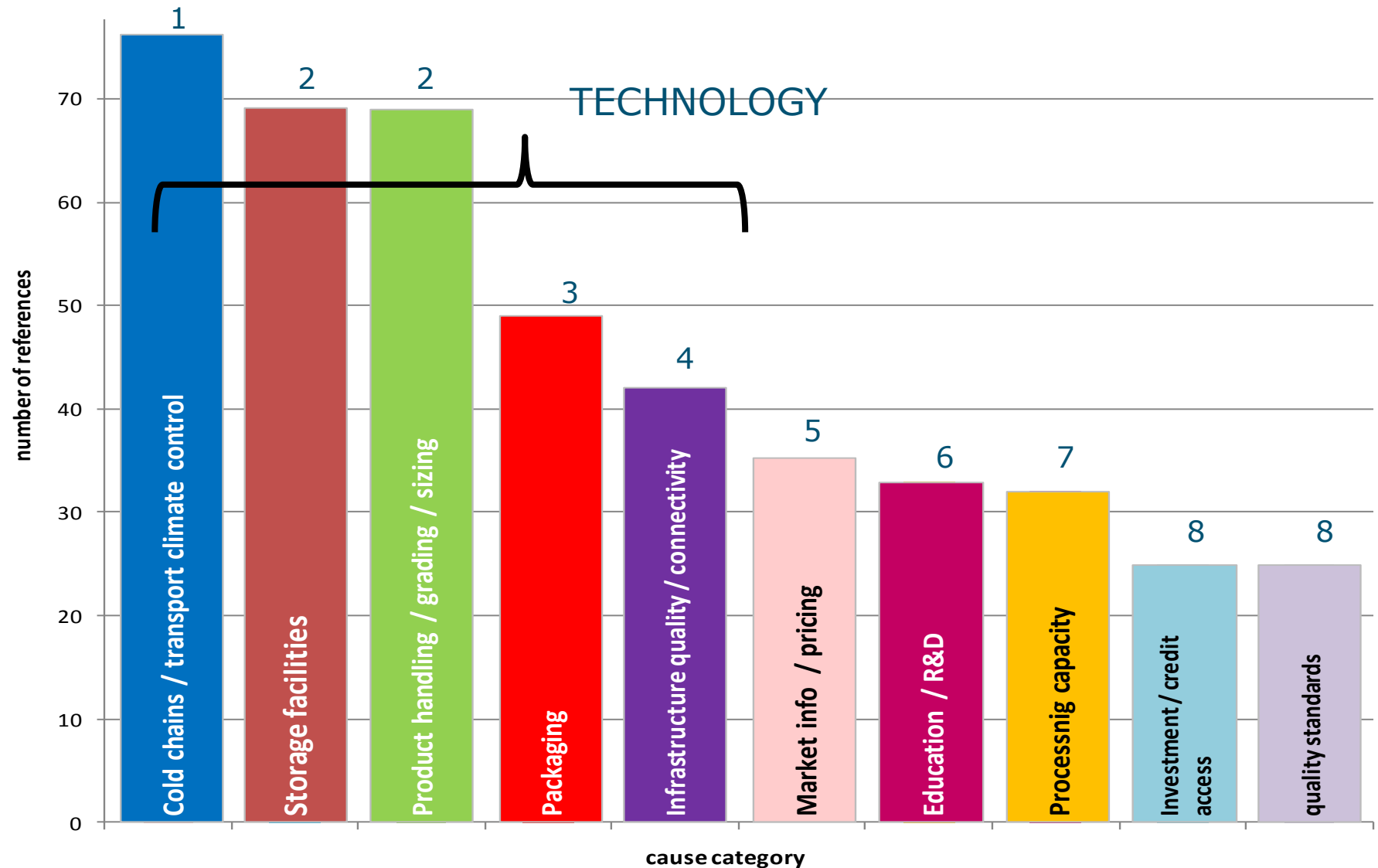
**Vietnam  
± 60%\*!**



\*J.Brun, R.Mattos, 2018



# Top-10 category causes postharvest losses FFV

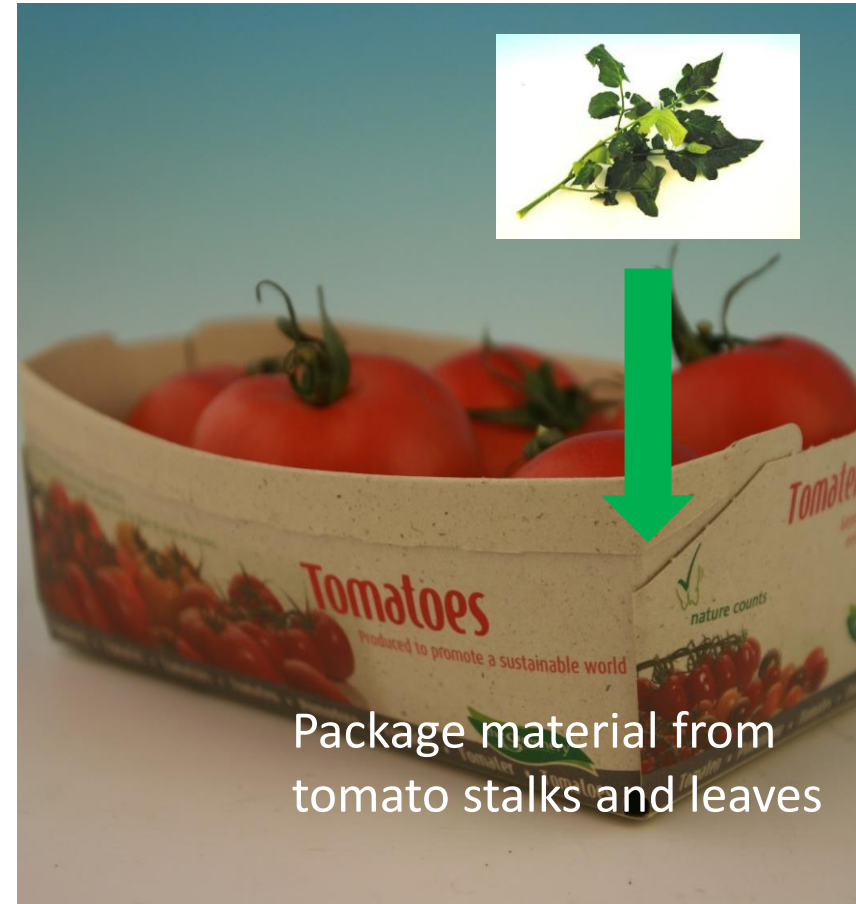


# Top-10 category causes postharvest losses FFV

1. Cooling chain / climate control during transport
  - a. No suitable means of transport (long distance of fresh products)
  - b. No cooling chain (no continuous cooling chain with the same temperature, conditioned processing room, refrigerated transport)
2. Storage
  - a. Poorly functioning or non-existent refrigerated storage, high variation in cooling, poor monitoring, too old, weight loss, contamination due to poor monitoring, too long storage
3. Post-harvest product handling, sorting
  - a. Rough handling, no sorting, low deployment of technology / knowledge, no product specifications, no screening of damaged product, poor harvest planning and therefore old product, little post-harvest treatment, poor temperature control
4. Packaging
  - b. Packaging that is not suitable for long storage, or transport over long distances, resulting in damage during transport
5. Quality Infrastructure / logistics
  - a. Bad road network, especially in bad weather
  - b. No reliable electricity, thus interrupting in the cooling chain
  - c. Long lead times from product to market, due to poor connection
  - d. Poor availability of means of transport
6. Market and price information
  - a. No market information available on supply and demand
  - b. Main season too much product, low prices and big losses
7. Training / knowledge / research
  - a. Employees are not adequately trained,
  - b. Little knowledge about post-harvest / packaging
8. Processing capacity
  - a. No processing industry for 2-3 cat product
  - b. No standards for quality and food safety
9. Shared place: Investment capacity / access to finance
  - a. No access to finance, high interest
  - b. Poor investment opportunity for producers due to relatively small scale
  - c. Little incentive to invest in storage due to low price
  - d. cash-flow problems
10. Quality standards / quality control
  - a. Products do not meet quality standards, in particular export standards (can not be sold in country of arrival)
  - b. Mixing of good and damaged product
  - c. No quality inspection, monitoring
  - d. Manufacturers do not stick to specs

# Content

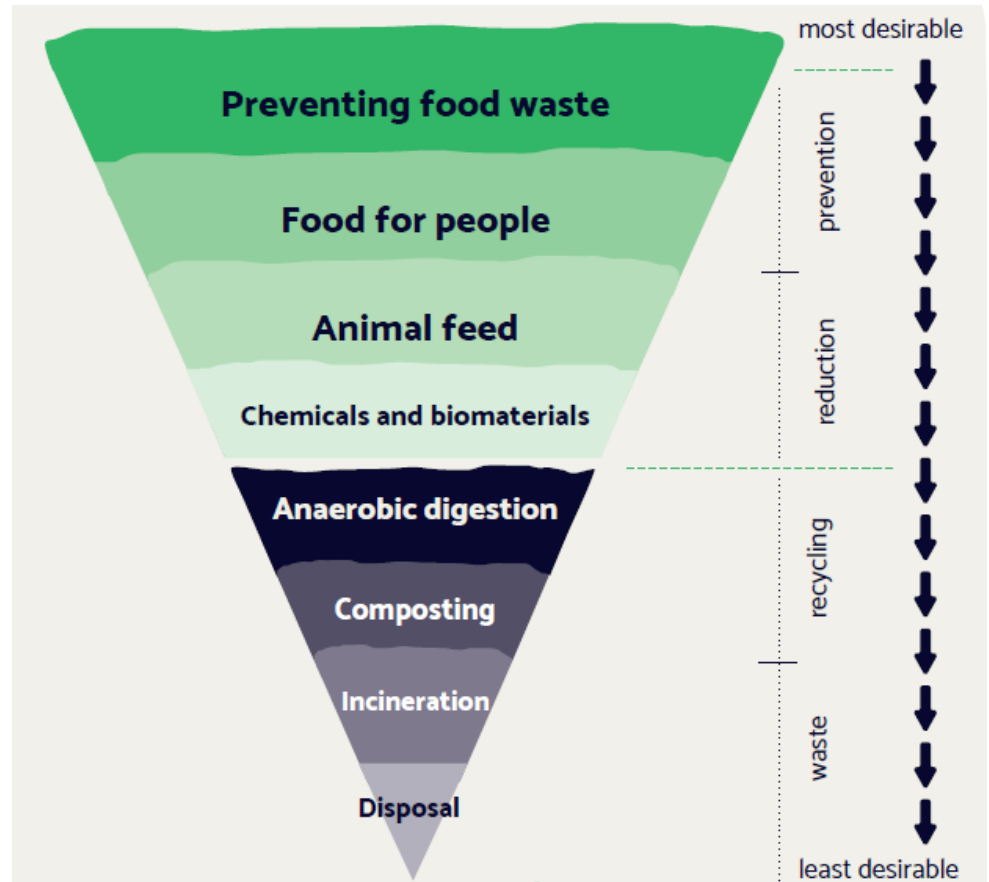
1. The concept of circular agro-food value chains versus the current reality
2. How far are we with circular chains?
3. How can we boost the transition?
4. What are the opportunities for Vietnam?
5. Resume



Package material from  
tomato stalks and leaves

# Food waste hierarchy to combat FWL

- Focus on: prevention, reduction, valorisation
- Target, measure, act
- Innovate!



Food waste hierarchy



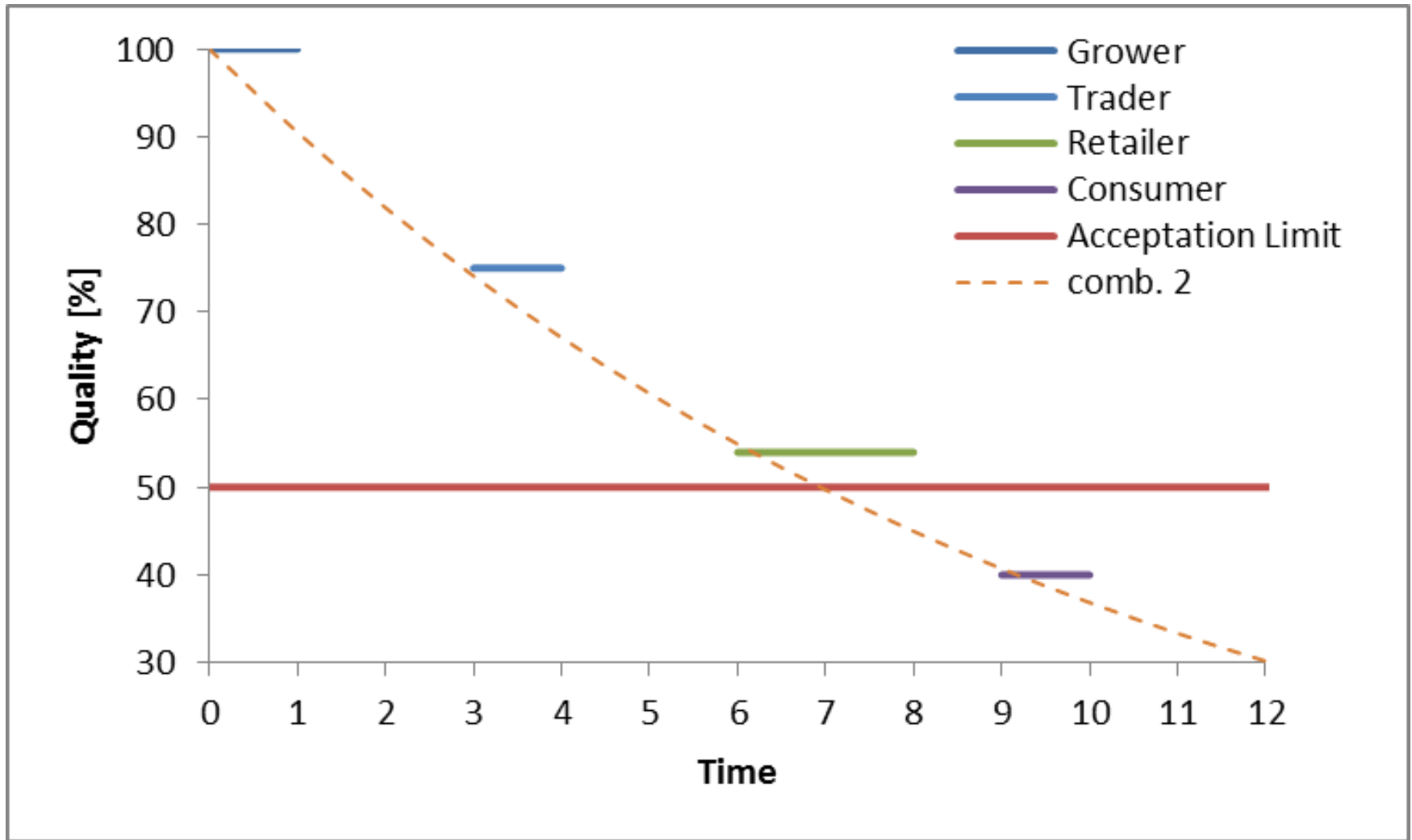
# Develop platforms to fight food waste and losses as a consortium

Cooperation between: companies, research institutes, civil society, organizations, government bodies

➡ Joint agenda on reduction of food waste



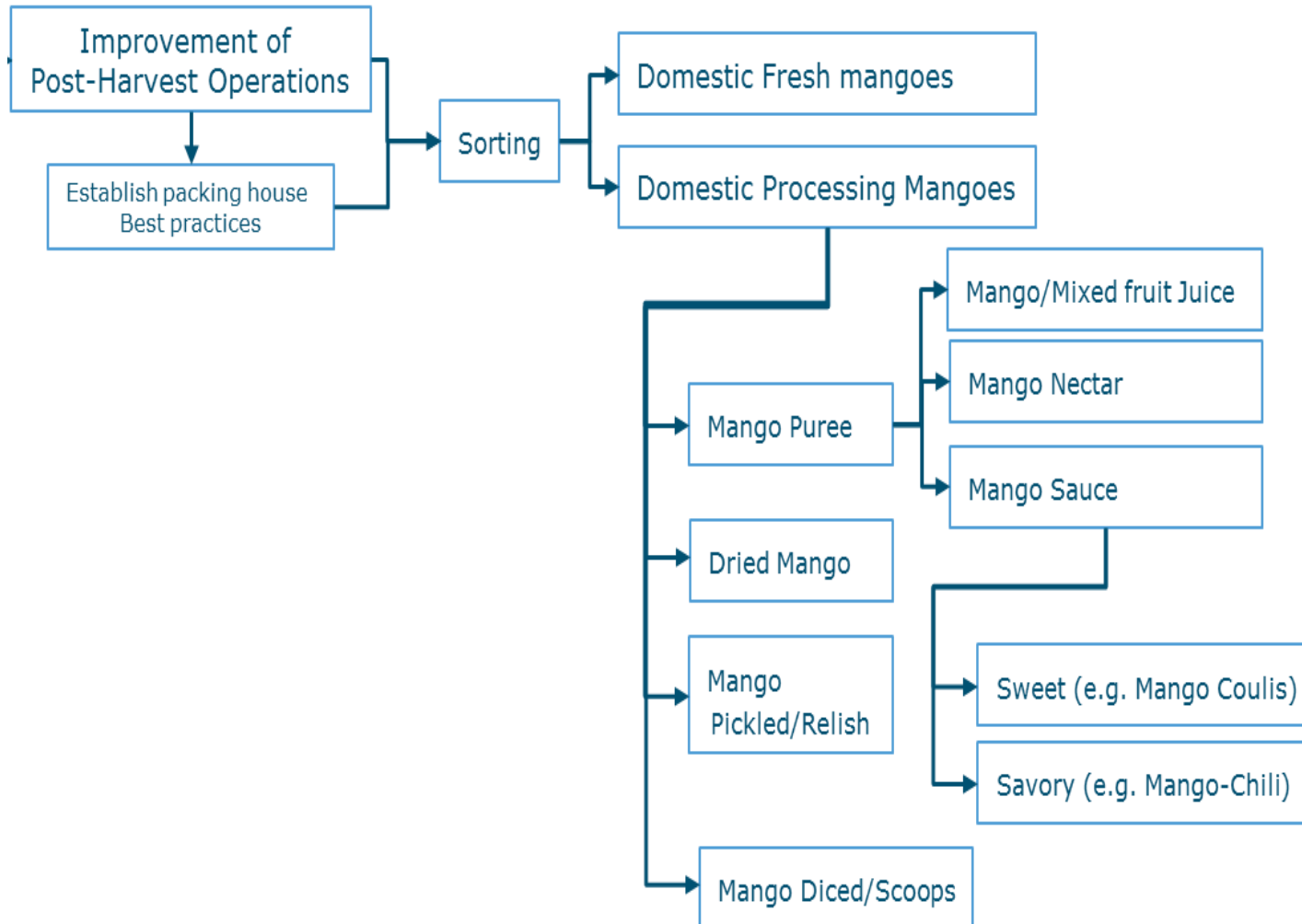
# Fresh Fruits and vegetables are ALIVE



# Circular mango supply chain: export of fresh mango from Vietnam to the US



# Circular mango supply chain Vietnam





# Binderless board from coconut husks

## SOLVE SEVERAL PROBLEMS:

- WASTE
- CO<sub>2</sub> OUTPUT
- WOOD USE
- CIRCULAR REUSE

Outlook: product diversification

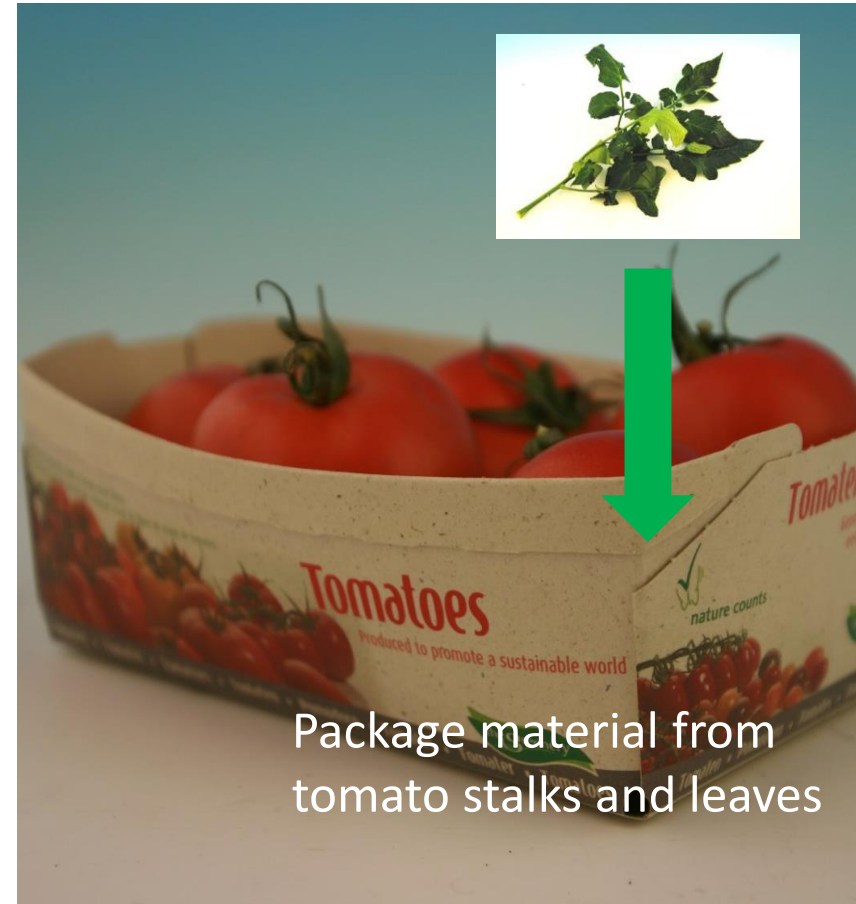
3D moulded shapes:

- Transportation Pallets
- Furniture
- Building materials



# Content

1. The concept of circular agro-food value chains
2. How far are we with circular chains?
3. How can we can boost the transition?
4. What are the opportunities for Vietnam?
5. Resume

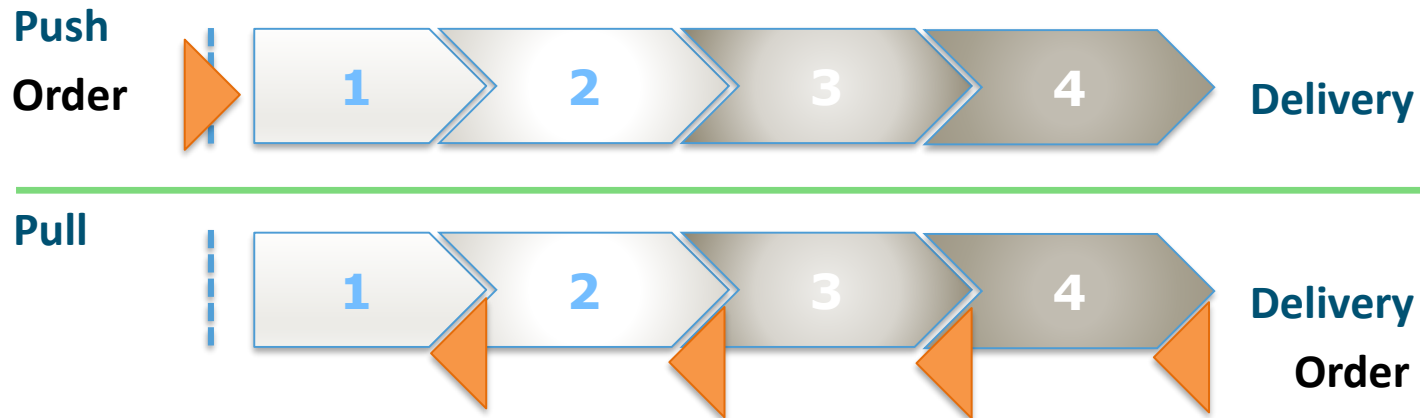


Package material from  
tomato stalks and leaves

# Quality

The race for quality  
has no finish line

# Moving from 'Push' to 'Pull'



## Product oriented

- Focus is on product
- Strive towards production maximization
- Planning is operational
- Information exchange is limited

vs.

## Market oriented

- Focus is on product-market combinations
- Strive is to maximize added value
- Planning is strategic
- Information is shared along the supply chain



# Resource use efficiency

## Reduction of food losses & waste

- Quality raw material supply
- Value adding via processing
- Seamless cold chains
- Appropriate cold storages
- Postharvest technology including packaging

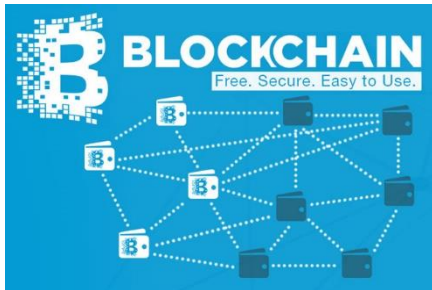
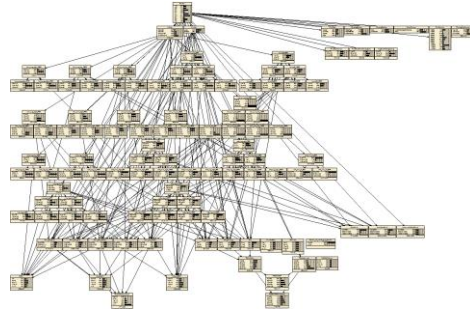


## Reduction of unrenewable energy use

- Modality shift of transportation from air to waterways
- Sustainable packaging



# Use of novel technology



# Content

1. The concept of circular agro- food value chains
2. How far are we with circular chains?
3. How can we can boost the transition?
4. What are the opportunities for Vietnam?
5. Resume



# Resume

1. The gap between the concept of circular agro-food value chains and our todays reality is still big.
2. Combat strategies for zero waste in FFV are there but need to get aligned to high level tasks forces.
3. To boost the transition towards circular chains we should first of all start with the prevention of food losses and waste and then focus on reduction and valorisation. That can be done by moving from 'push-' to 'pull market', and focussing on quality.
4. There are plenty of opportunities for Vietnam out there
  - establish processing for food, feed and other side streams;
  - efficient use of waterways, use novel technology and good practices developed elsewhere.



# Thank You!

Contact information:

e-mail:

[heike.axmann@wur.nl](mailto:heike.axmann@wur.nl)



**WAGENINGEN**  
UNIVERSITY & RESEARCH



100years  
1918 — 2018