Total Cost of Ownership

Tetra Pak TCO tool and methodology supporting sustainable decision making

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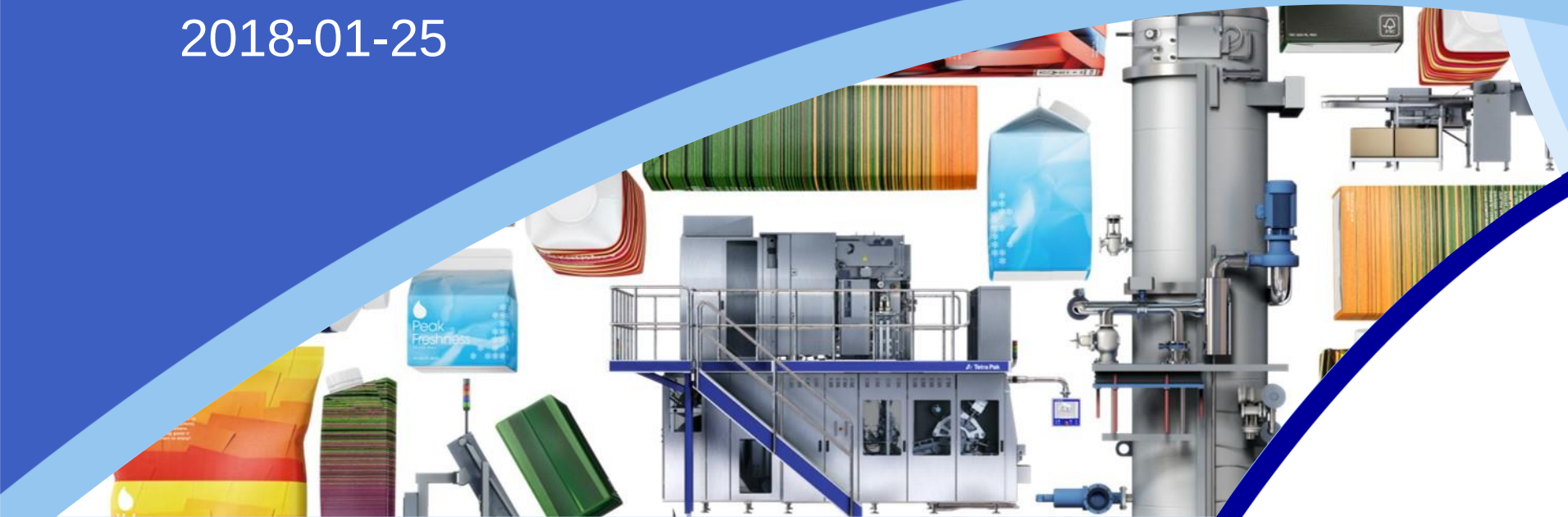


OUR VISION

We commit to making food safe and available, everywhere

OUR PROMISE

PROTECTS WHAT'S GOOD

Tetra Pak®

Protecting Food, Protecting People, Protecting Futures

The pillars of our brand and the chapters of our sustainability story

FOOD

Safety, Quality & Availability

Protecting your products with our processing & packaging solutions

Employees, communities & society at large

Safeguarding, supporting and developing those whose lives we touch

PEOPLE

FUTURES

Materials, water, CO^2 & more

Pursuing environmental excellence along the entire supply chain

Innovative technologies & smart solutions

Understanding and supporting our customers' business growth ambitions

FUTURES

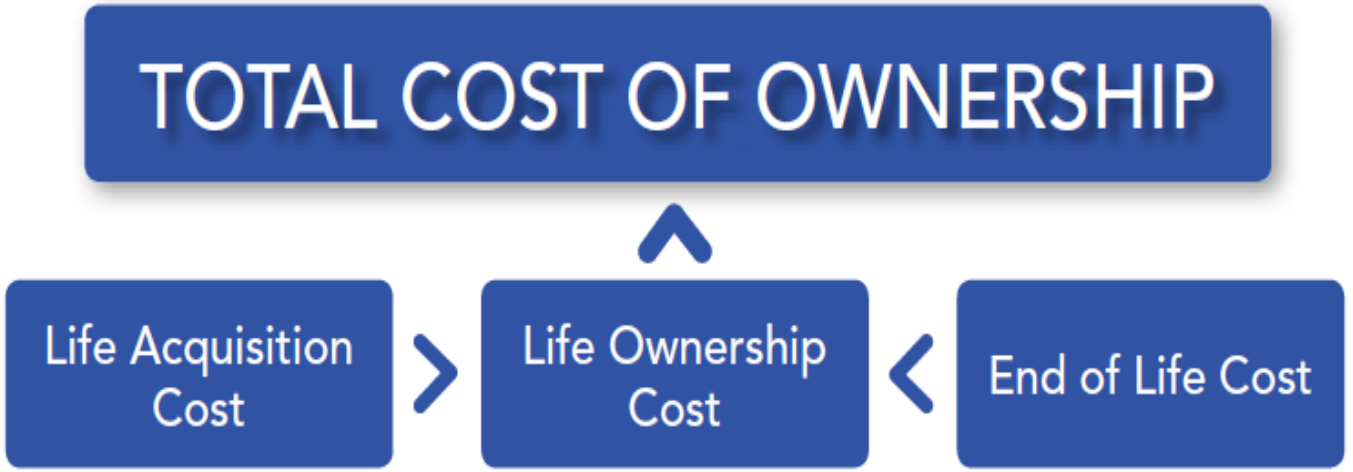
Social responsibility

- We are committed to **social responsibility** including **responsible sourcing**, for ourselves and our suppliers.
  - Corporate Governance Assurance system
  - Code of business conduct
  - Supplier audit programme
  - Membership of the Supplier Ethical Data Exchange (SEDEX)

UN sustainable development goals

TCO introduction

Total Cost of Ownership (TCO) is a methodology to assess the costs involved with food production during a complete machine life cycle from purchase to disposal.

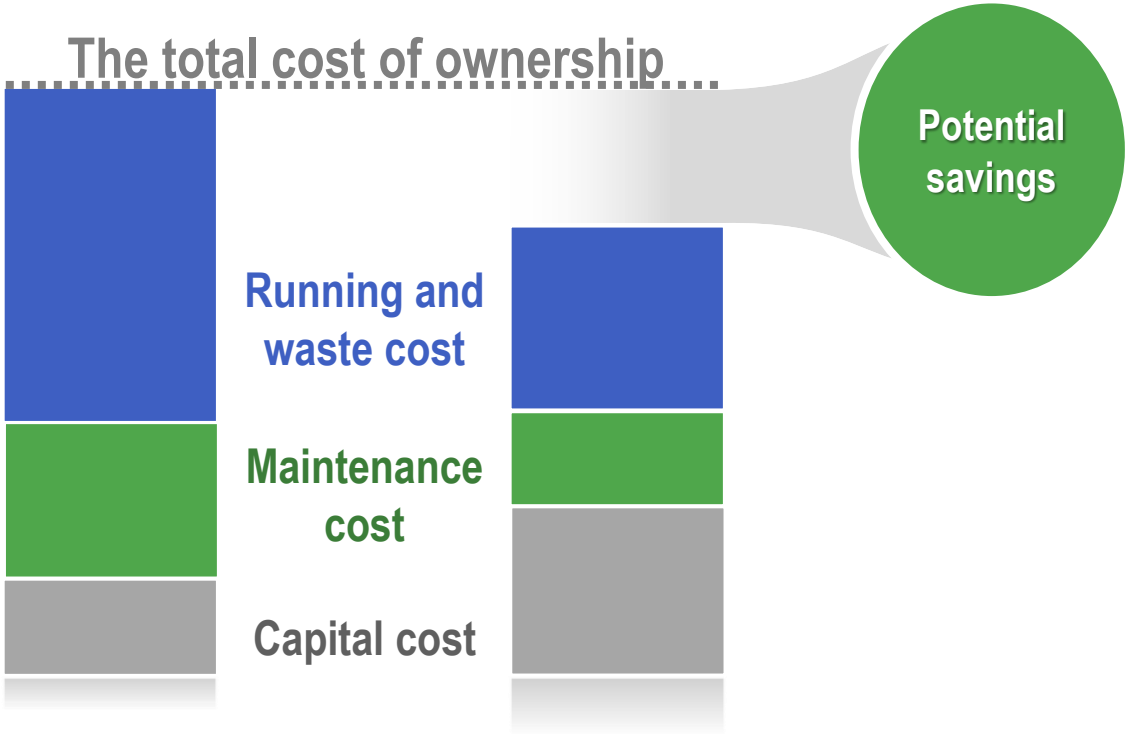


TCO introduction

- Ownership brings purchase costs, but can also bring substantial costs for installing, deploying, operating and maintaining the assets.
- By including costs related to the use of energy, water and chemicals and the generation of waste, TCO could also be used as the base for calculating environmental Key Performance Indicators.
- In this way, TCO can be a powerful tool for supporting sustainable investments, giving our customers a good foundation for informed decision making.
- This can help them meet their strategic CSR and sustainability goals, long and short term.

TCO introduction

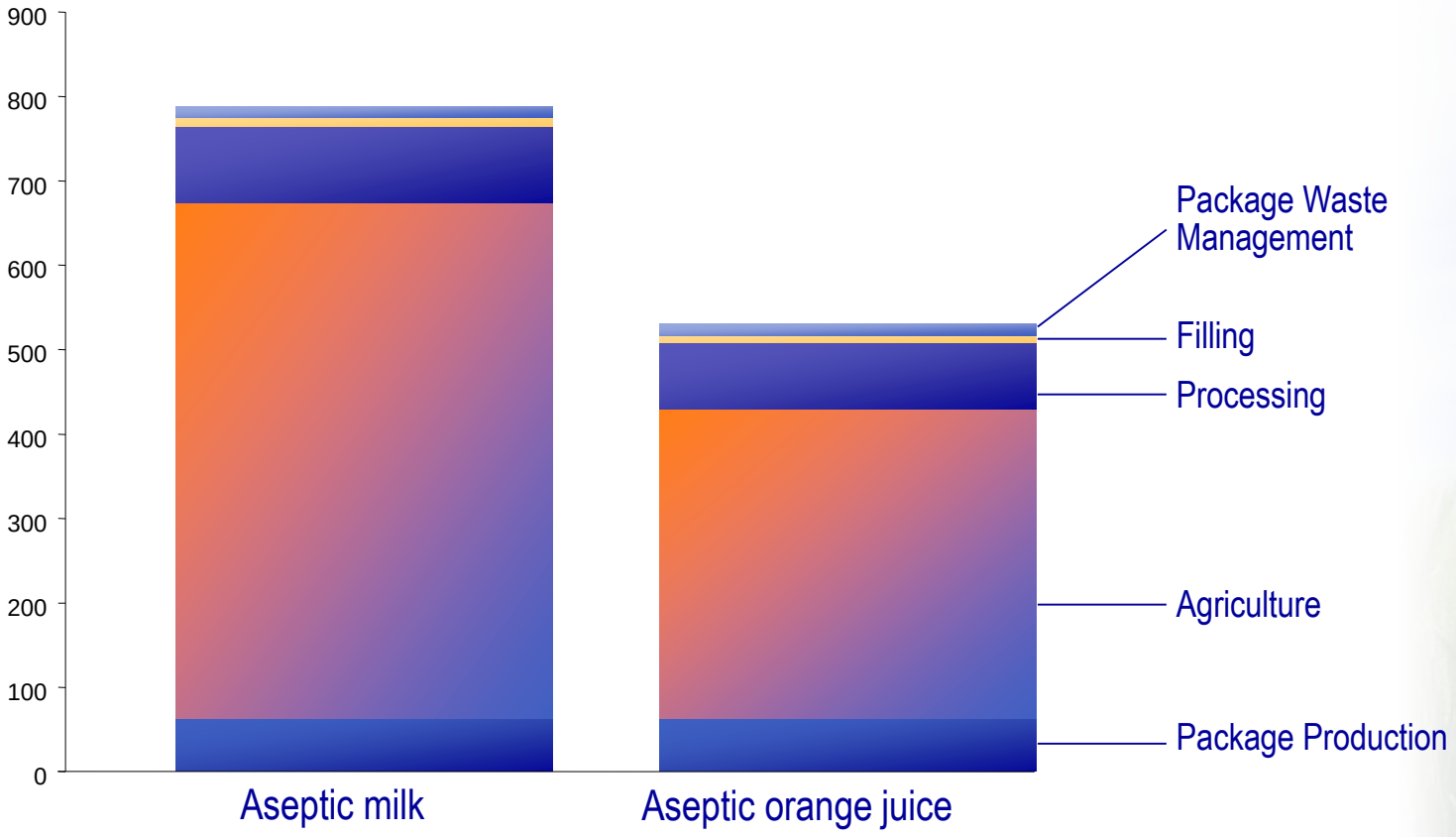
- The methodology has been adapted to suite a dairy processing system, but is not specific to it.
- It is based on an LCA methodology
- We can compare different equipment, production solutions or scenarios from the perspectives of operational cost, plant performance and environmental KPIs, and suggest the most suitable to optimize production.



Life Cycle Assessment

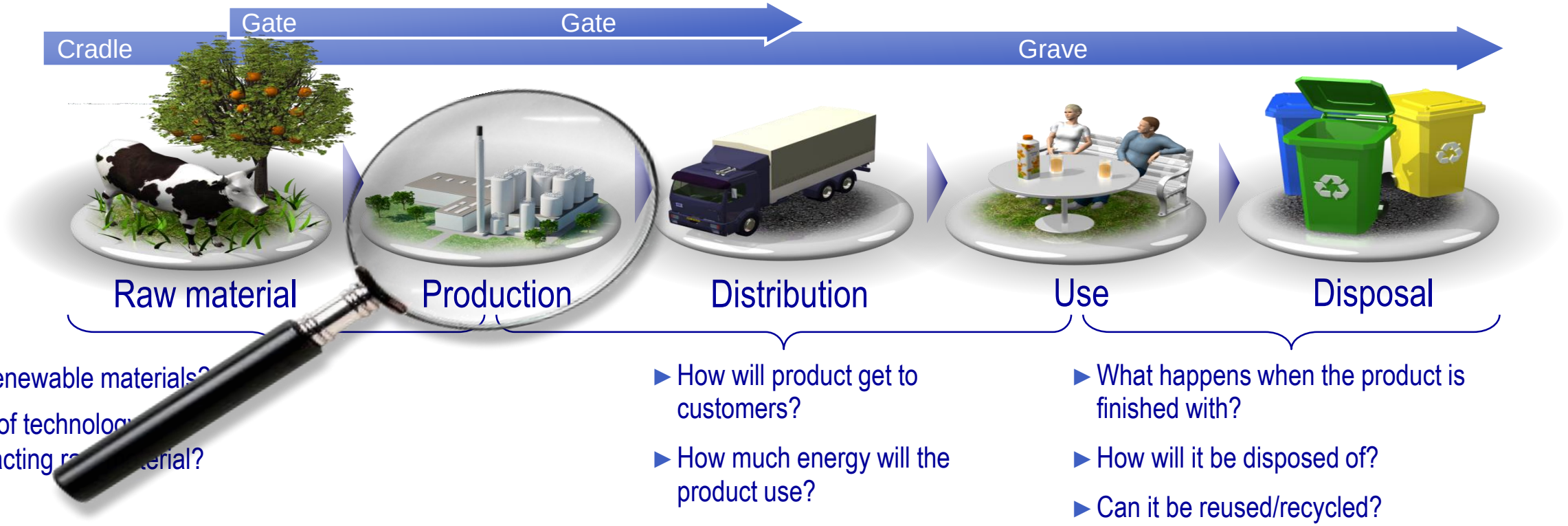
The evaluation of environmental impact of a system over its life span, from production over use, up to the end-of-life, for each “impact category”

Carbon footprint example



Indicative result, g CO2-equivalents/l

Scope of LCA



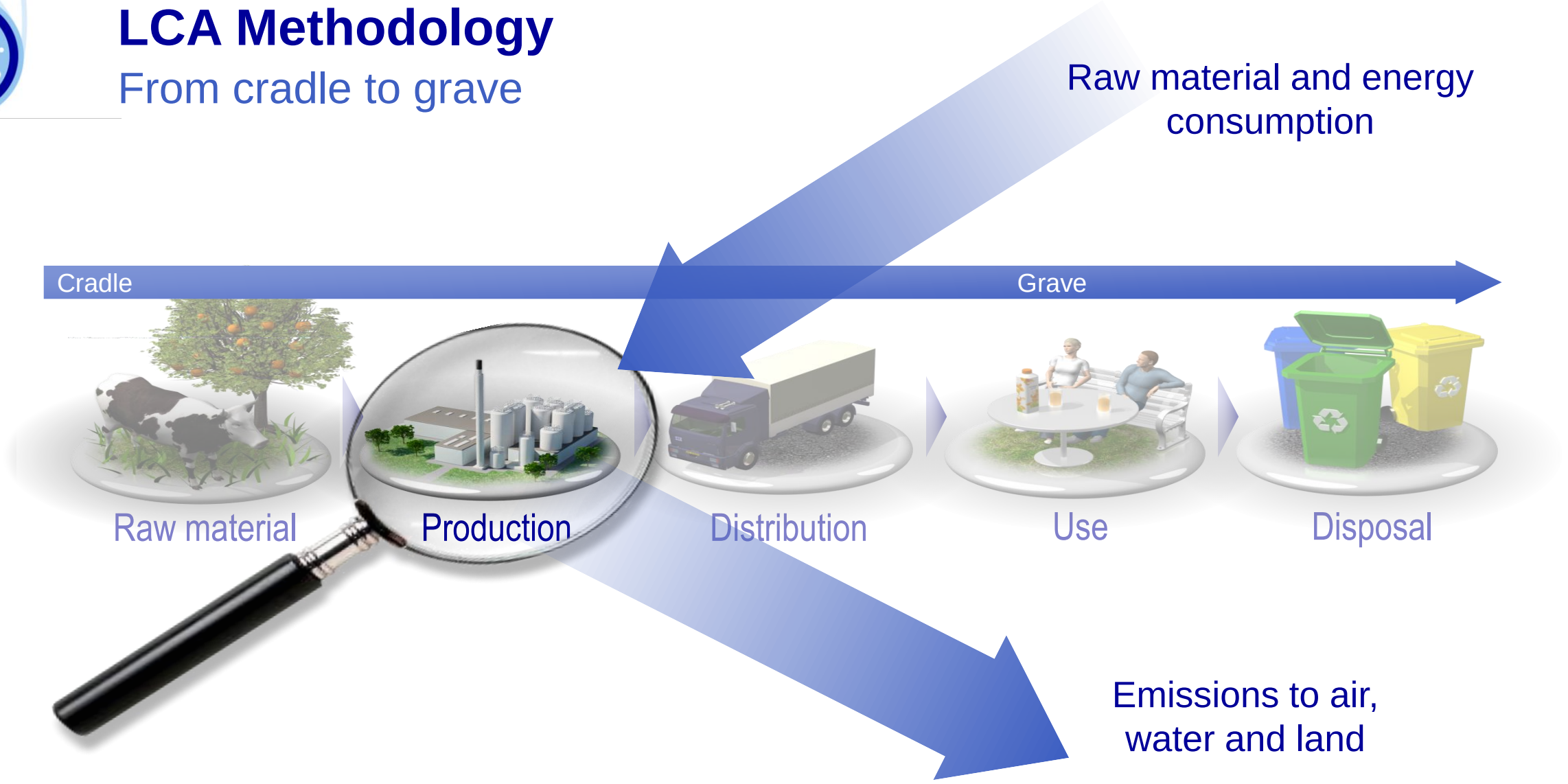
- Using renewable materials?
- Choice of technolog… for extracting r… terial?

- How will product get to customers?
- How much energy will the product use?

- What happens when the product is finished with?
- How will it be disposed of?
- Can it be reused/recycled?

LCA Methodology

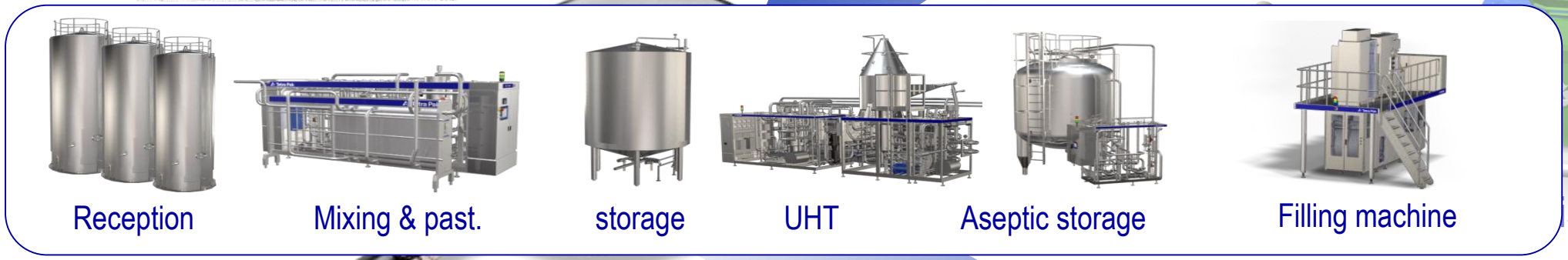
From cradle to grave



LCA Methodology

Gate to gate

Raw material and energy consumption



Emissions to air, water and land

LCA methodology

Build model

Define scope and system boundary

Model processes and activities

Life cycle inventory

Inputs: raw materials, energy carriers, water..

Outputs: Air and water bourn emissions, solid waste

Life cycle impact assessment

Climate change
Acidification
Resource depletion
Eutrophication
Etc

Adapted methodology

Developed by Tetra Pak

- Applying Life Cycle Assessment on food production process is hard because:
  - Complexity of the production process
  - Time and batch dependency
  - Numbers of SKU (allocation problem)
  - Hard to validate the results

- The modified methodology enable us to:
  - Make the modelling time-independent considering Production Time Schedule
  - Make economic allocation for each product produced
  - Enable us to validate the result and guarantee the performance of the system

Adapted methodology

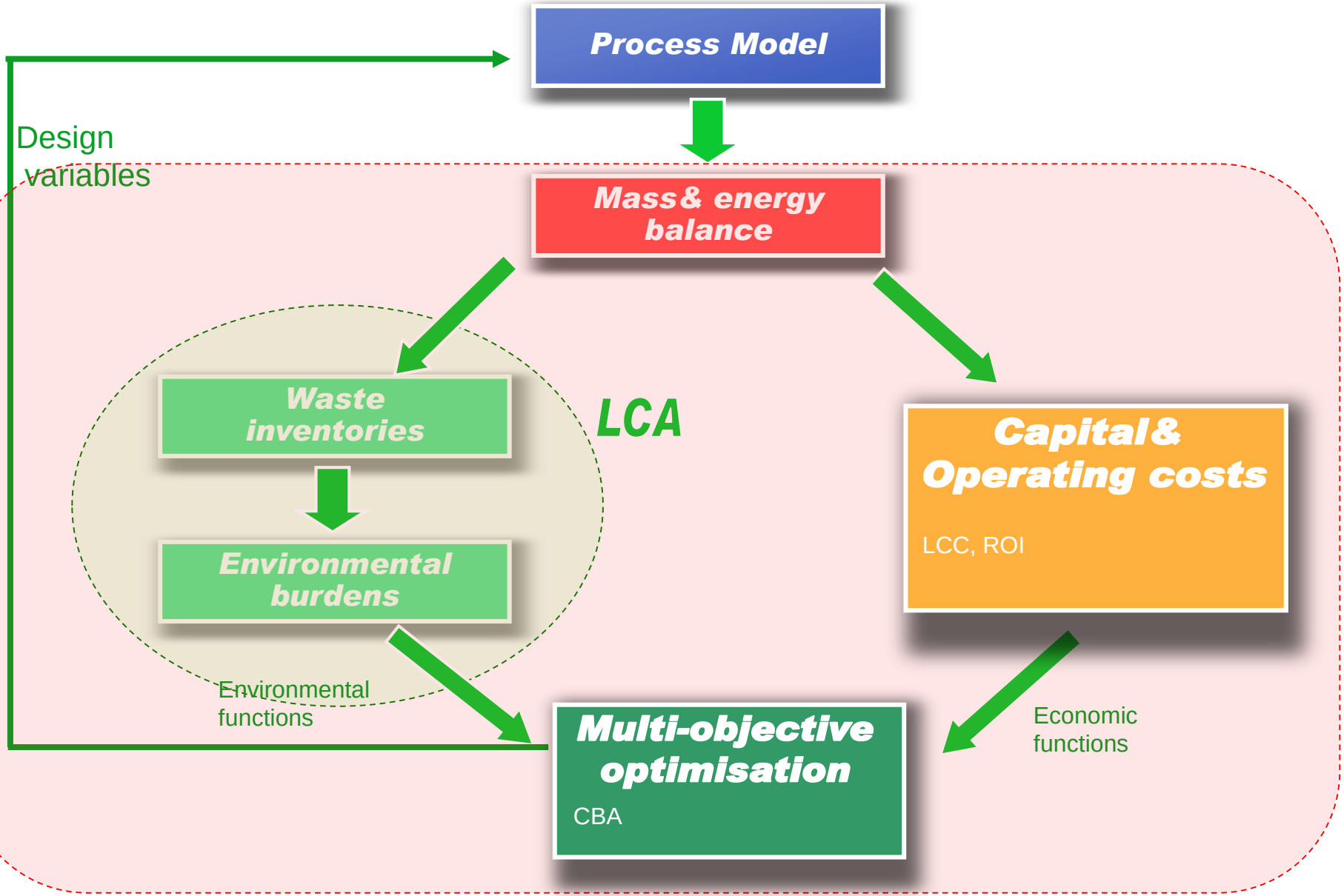
CO_2/carbon footprint
Fresh water scarcity
Effluent load (COD etc.)

Calculations
Energy consumption
Water consumption
Product losses

Measurement
Energy consumption
Water consumption
Product losses

Validation
Energy consumption
Water consumption
Product losses

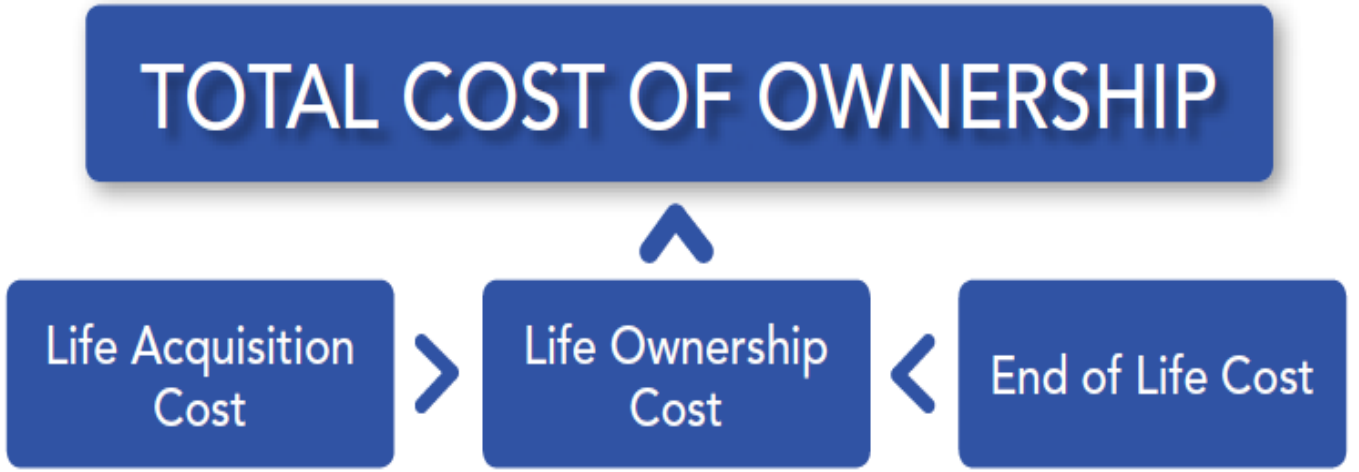
Multi Criteria Decision Making Analysis



TCO common structure

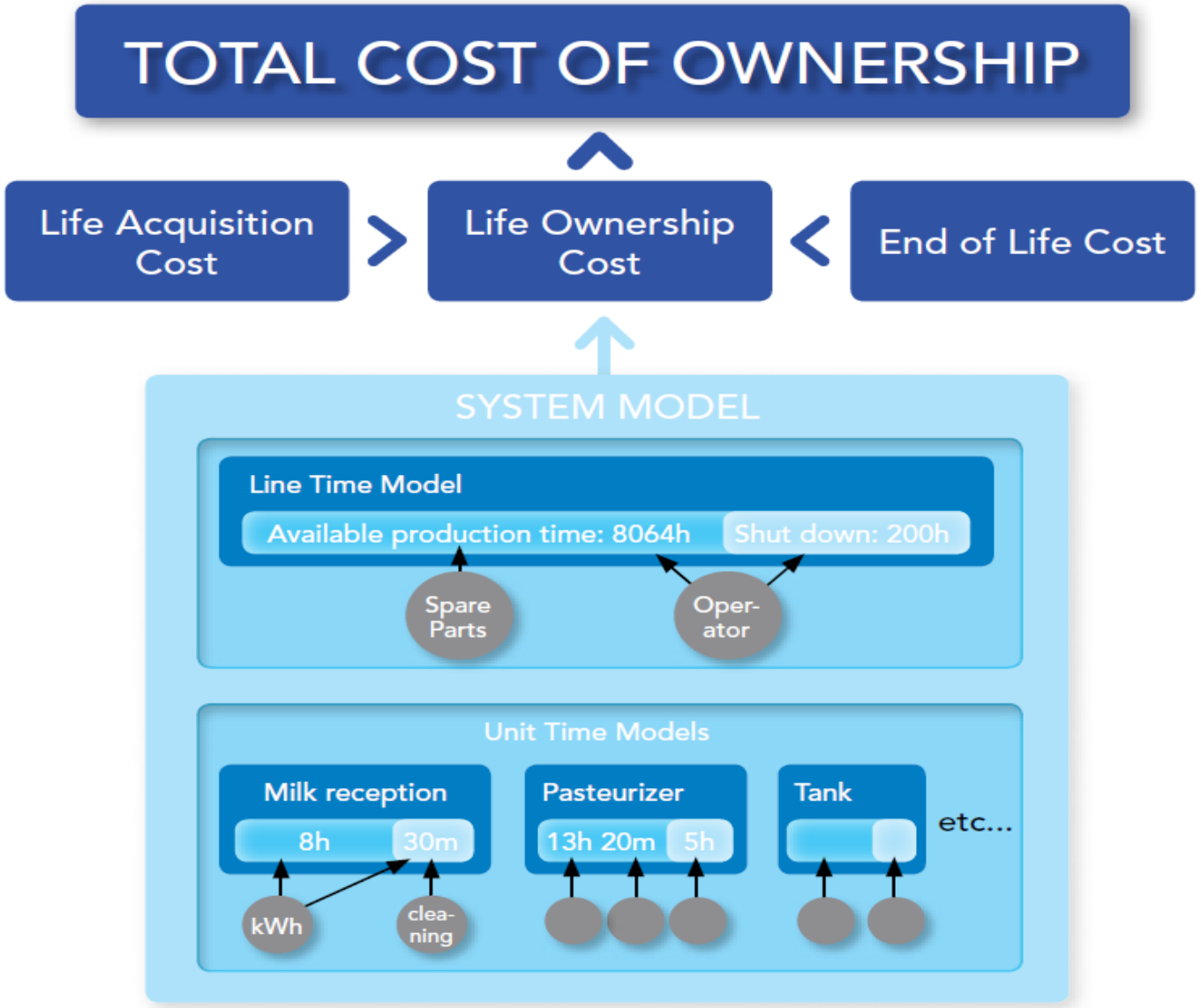
Cost Category Definition

- TCO breaks down to four cost categories
  - Life Acquisition Cost
  - Life Ownership Cost
  - *Life Loss Cost (not used)*
  - End of Life Cost



Introduction

Overview



Customer value

Identify optimal running conditions from operational cost and environmental perspectives.

Life time perspective encourages a more holistic business approach

Deliver better KPI’s in the future

Increase competitiveness of the plant

Get foundation for decision making and fulfil long term strategic plans

Tetra Pak’s TCO approach

Looking at the life time impact and costs of production

Involving the producer in the modelling and calculations

Key is not the tool, but the way of thinking

Producer is encouraged to implement and sustain a more holistic mindset

Translates into other business aspects

Drive a sustainable business