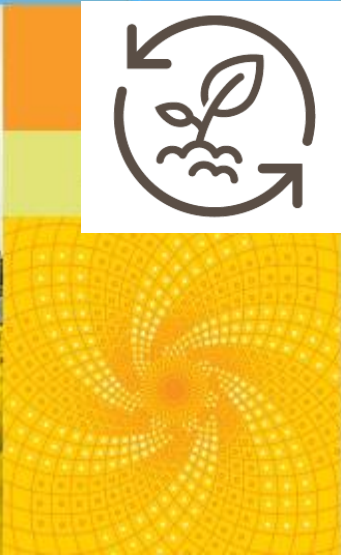




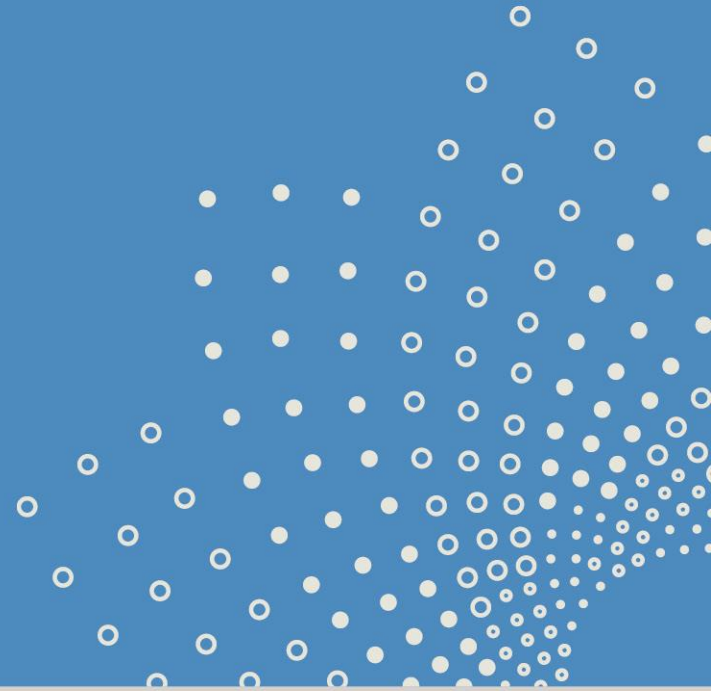
Knowledge grows

Nutrient circular economy: fertilizer company integration in circular value chains

ESPC3 – Helsinki, 11th June 2018



Who we are ?



In numbers

More than
16,000
employees

Sales to about
160 countries

Revenue
NOK 93.8 Billion
(USD 11.4 Billion)

In 2017

What
We
offer

Crop
Nutrition
solutions



Industrial
solutions



Environmental
solutions



Our Mission

*Responsibly feed
the world and
protect the planet.*

Our Vision

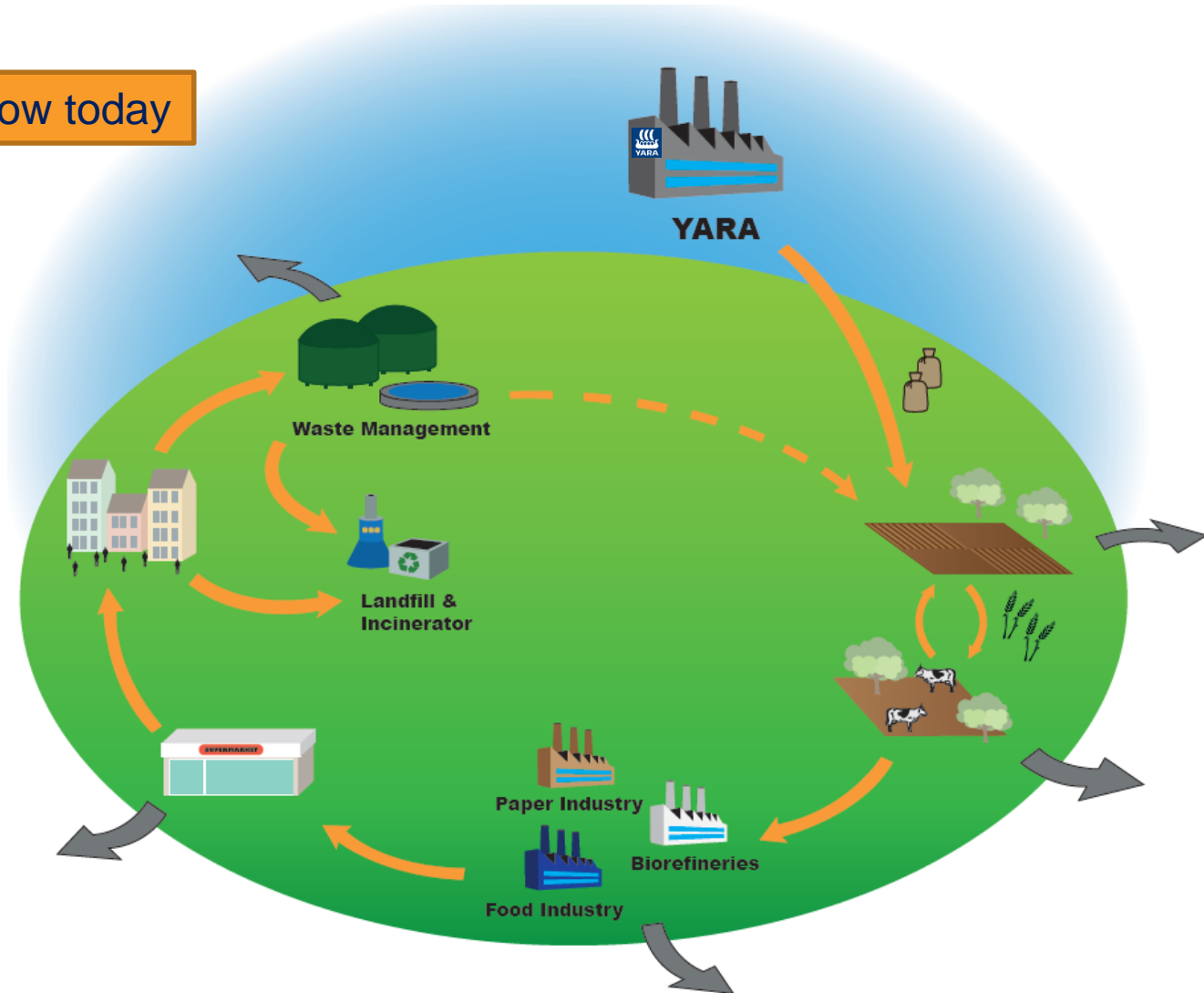
*A collaborative society;
a world without hunger;
a planet respected.*

Circular Economy



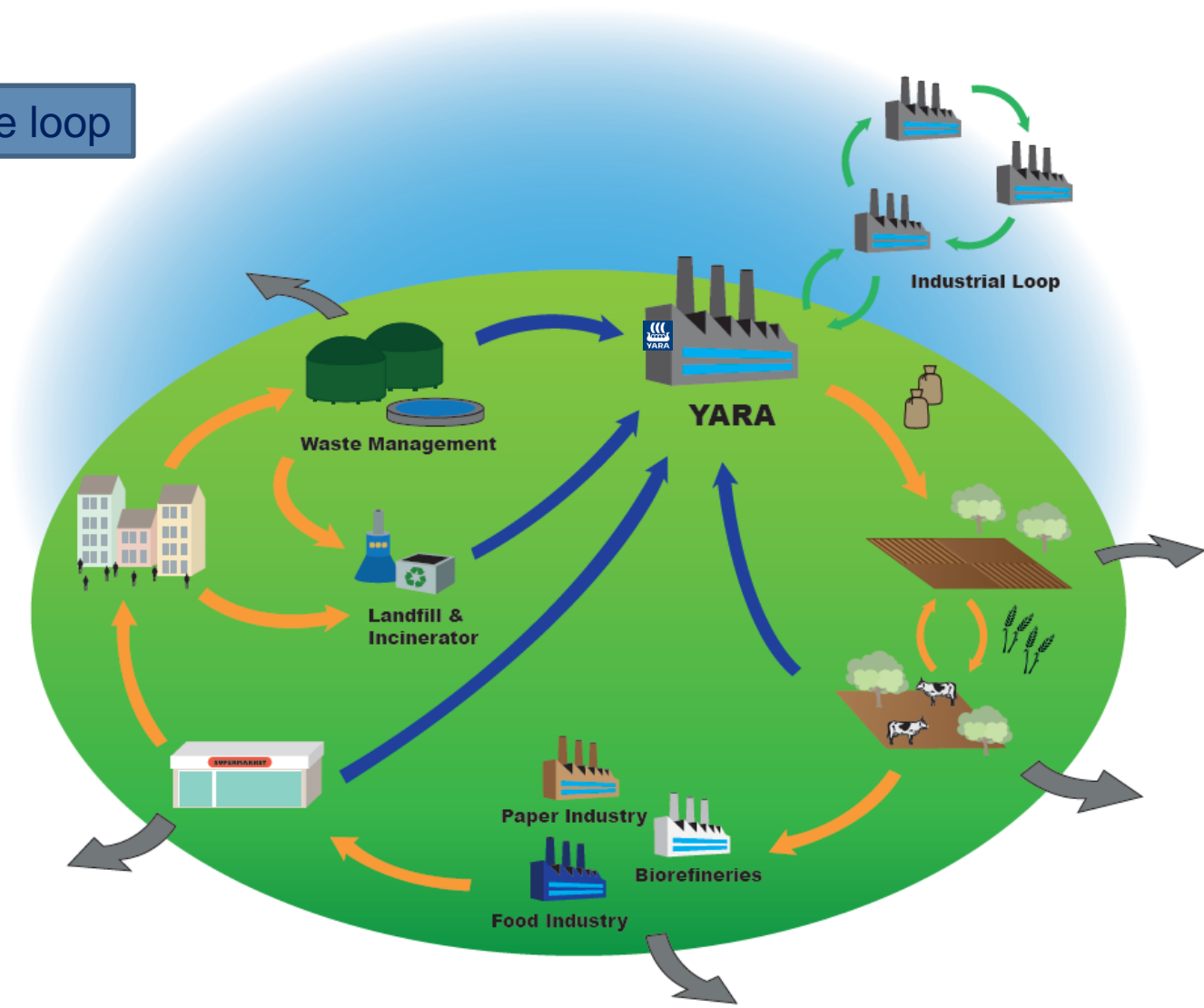
How do we engage in Circular Economy ?

The nutrients flow today



How do we engage in Circular Economy ?

Getting into the loop



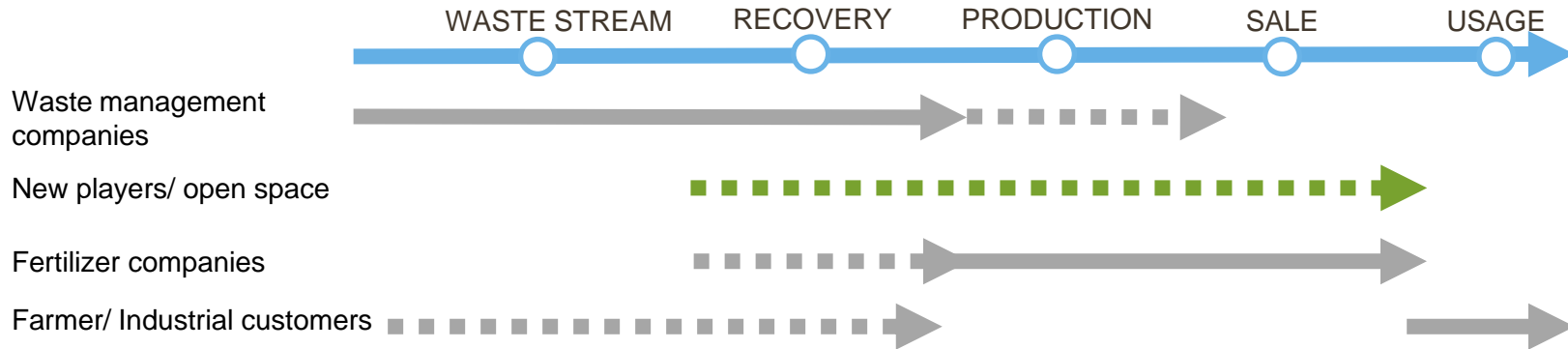
What is Yara view to succeed with Circular Economy?

Integrate the loop

Options

1. Direct product to market (Precipitates & organo-minerals)
2. Waste Mining (extracting pure nutrients for use in our production plants)
3. Industrial loops

Yara cannot create the entire value chain, but needs to establish a position in the loop through partnerships



What is Yara view to succeed with Circular Economy?

PRO's

- ✓ New business opportunities
- ✓ Alternative P supply (Non contaminated P)
- ✓ Sustainability – Yara's mission
- ✓ Answering a global trend. Be the knowledge leader in the new recycled nutrient market

HURDLES

- Fragmented market
- Volumes
- Waste perception
- Quality vs usage
- Cost – Profitability
- Value creation for the farmers

How to move from fragmented pilot solutions to viable large-scale business models for recycled nutrients?

Success stories

VEAS

- ✓ 4000 Tons/y of Ammonium Nitrate recovered from Oslo municipal wastewater



WARMCO

- ✓ **Greener greenhouses:** In Sluiskil, Netherland, Yara supplies warm water from the cooling of our processes as well as CO2 to a greenhouse facility



Knowledge grows

