

# Towards mineral circularity in farming and industry....

**CONFIDENTIAL**  
Only for discussion



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[www.mezt.nl](http://www.mezt.nl)



# MEZT: a game changing high tech innovation company in both climate tech and agri tech.



MEZT is a 2020 spin-off from Technical University Delft that focuses on:

**Increasing minerals circularity** and thus:

- Reducing ammonia, methane- and CO2 gas emissions in agriculture (and industry)
- Decarbonizing 'agri-upstream' fertilizer mining, production & transport and manure transport

**VALUES**  
*Ambition*  
*Innovation*  
*Integrity*  
*Sustainability*

[www.mezt.nl](http://www.mezt.nl)

## PURPOSE

MEZT develops innovative **high-end electro-chemical solutions** to .....

.... **accelerate the transition to sustainable and circular processes** in agriculture and industrial wastewater treatment ....

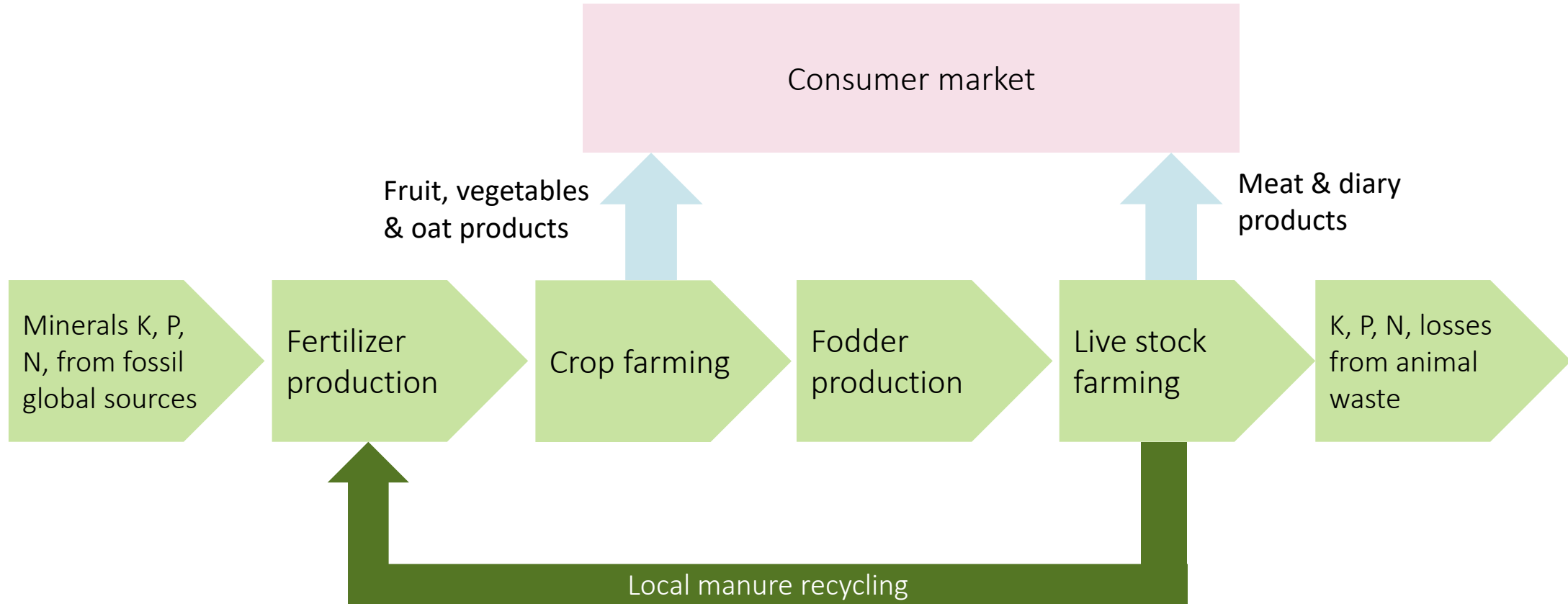
.... improving **animal wellbeing**, farming and industrial **profitability**, air-, soil- and food **quality** & **bio-diversity**.



# MEZT vision I: Convert the current linear mineral supply chain...

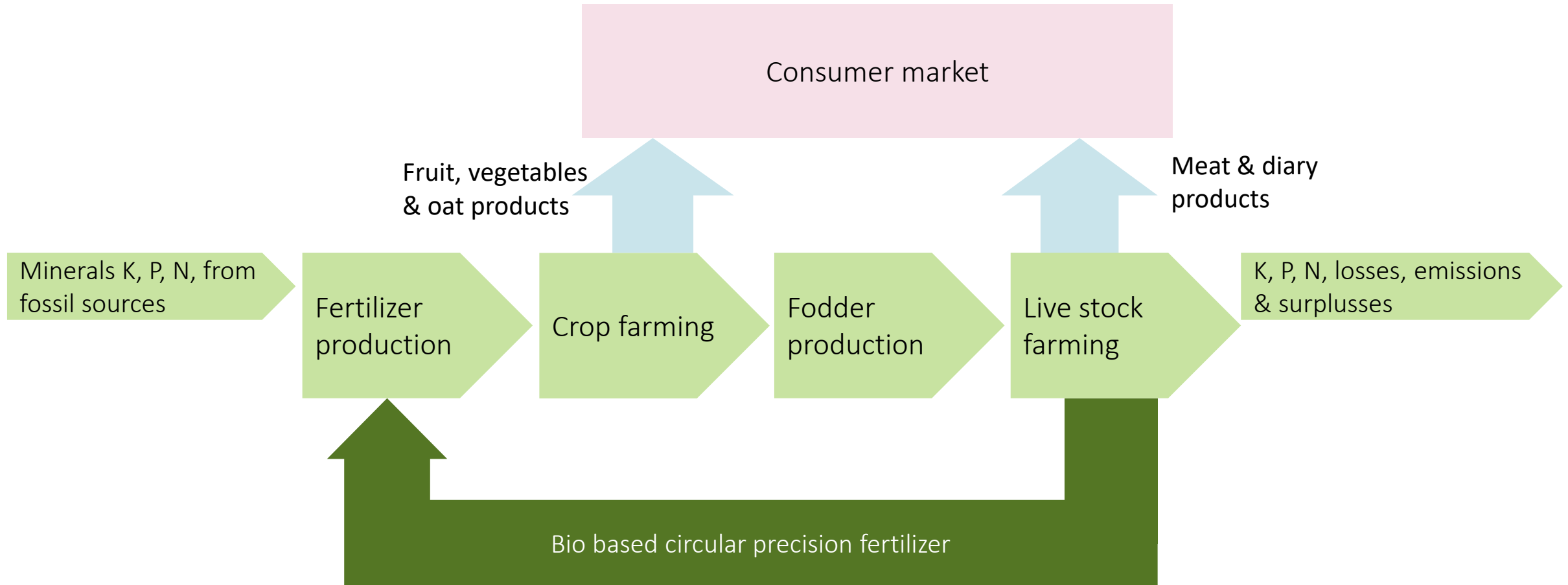
The current agri mineral supply chain is highly inefficient and produces lots of mineral losses.

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# MEZT vision II: .....to circular mineral usage for the entire food chain

With bio based circular precision farming we can re-use the minerals in the production chain and reduce the use of fossil fertilizer and the Carbon/Nitrogen foot print



# MEZT is a lean network organisation:



## Business Partners:



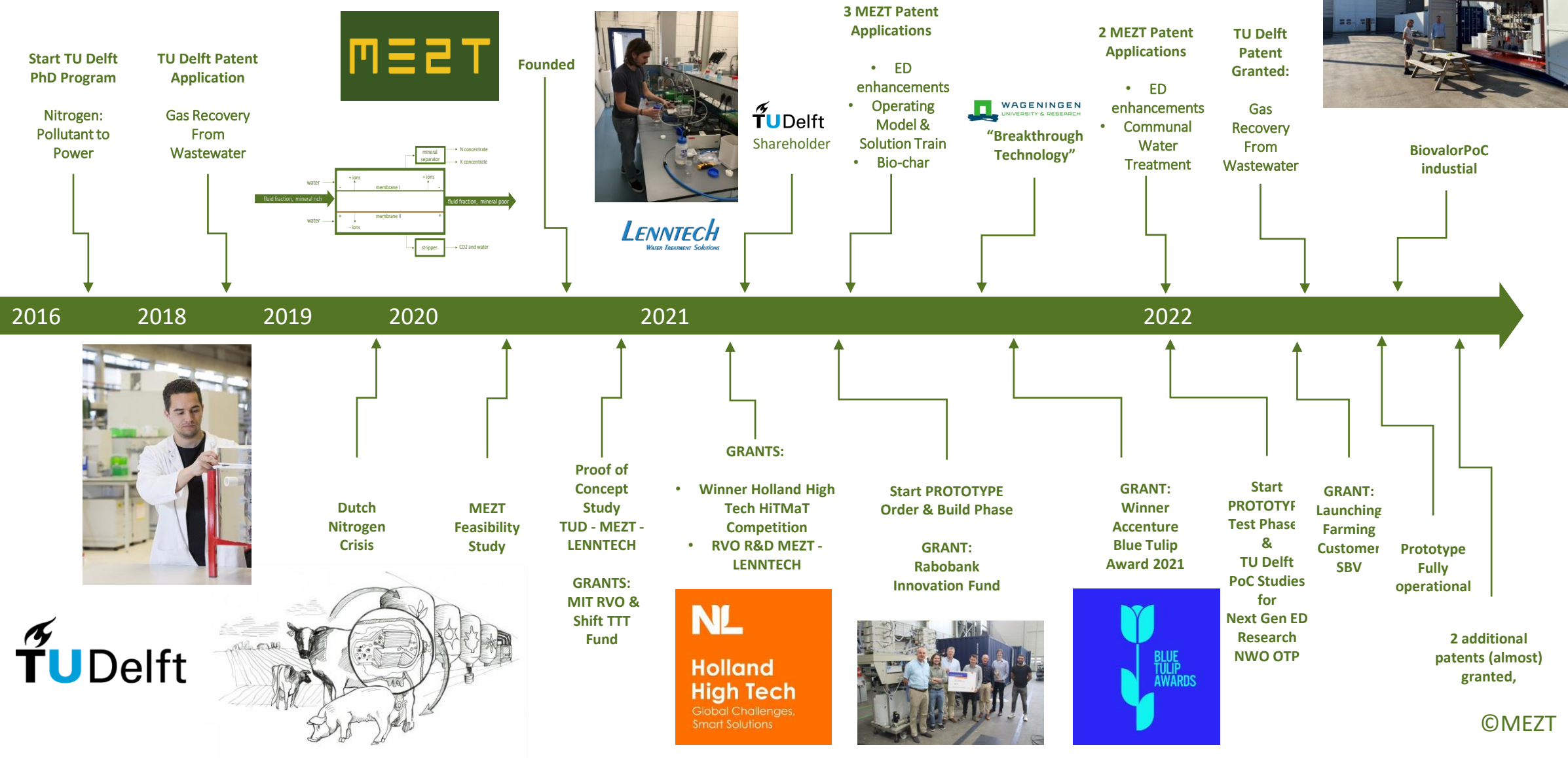
## Research Partners:



## “Friends of the family”:

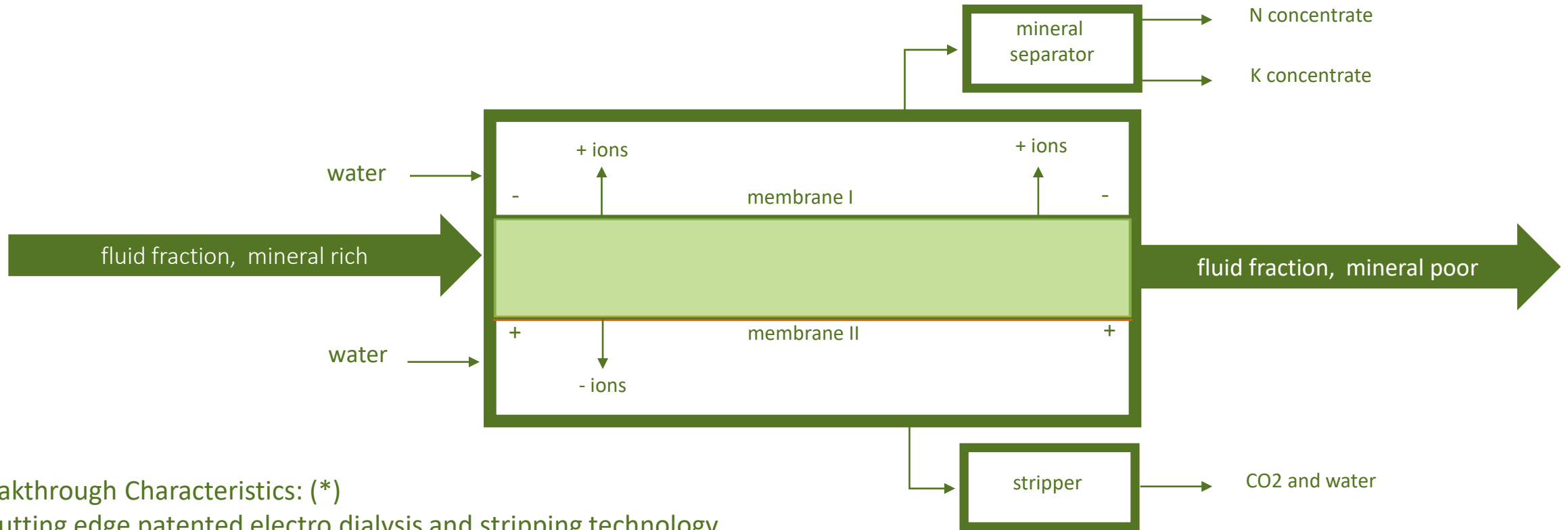


# History - Technology & Company



# The Opportunity: technology – electro dialysis

TU Delft developed robust and sustainable electro dialysis technology that selectively extracts minerals from fluid streams



## Breakthrough Characteristics: (\*)

- Cutting edge patented electro dialysis and stripping technology
- High extraction rates (Agri 70-89%, Waste-Water Treatment 99%)
- Low energy usage, no chemicals, no waste, no/low scaling/fouling
- Selective K,P,N mineral extraction (enabling low-emission sustainable circular precision farming)
- 2nd & 3rd NL patents granted and positive IPER on 4th patent application (International Preliminary Report on Patentability)

\* <https://edepot.wur.nl/539373>



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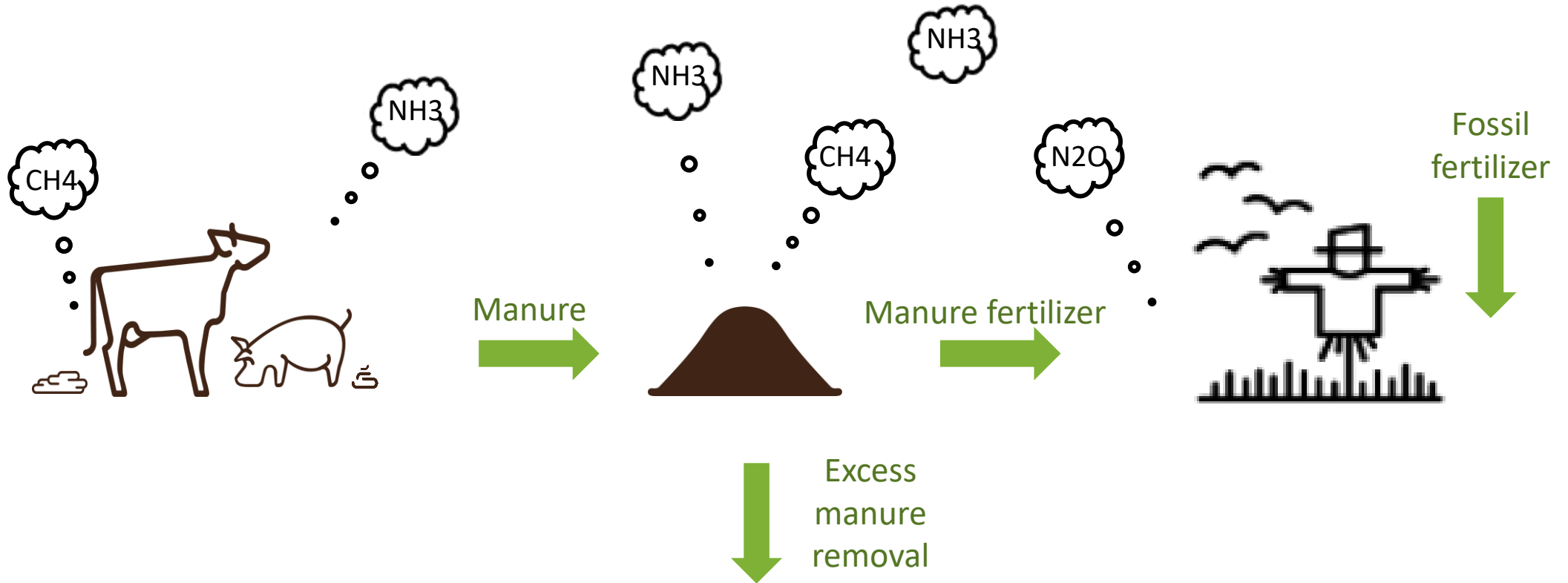
The MEZT  
prototype on  
farm scale





# Current nutrient recycling is cumbersome for farmers

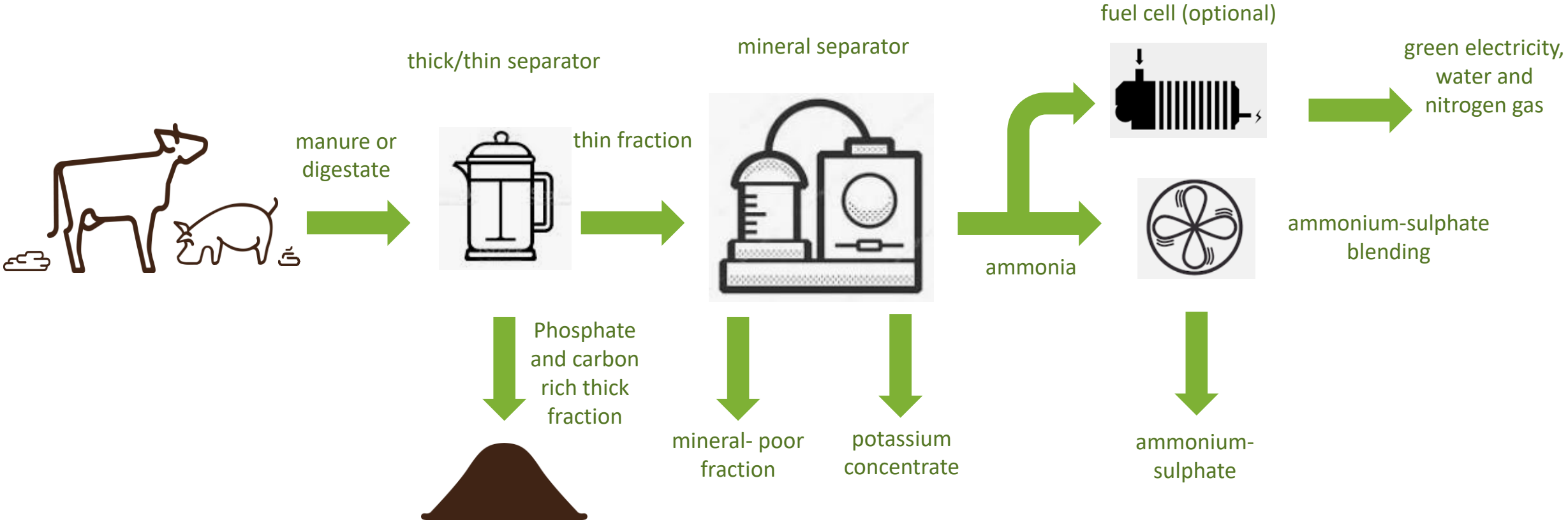
Government regulation contains manure-based-nutrients application thresholds that limit the use of animal manure as bio-fertilizer on farms. Excess manure and its bio-nutrients are removed at significant costs, while fossil fertilizer has to be procured....



At the same time, the NL government promotes an ambitious 2030 circularity vision, plans for stricter thresholds and encourages technological innovation...

# On Farm manure Refining & Recycling is possible

The MEZT Solution Train can selectively extract minerals from manure and produce bio-based fertilizer concentrates on-farm. This enables low emissions compliant with expected regulation and circular precision farming.



# Value proposition for live stock farmers

MEZT technology investment is supported by solid business cases for livestock farmers ...



## **Licence to operate:**

- Low-cost alternative for expensive farm buy-outs by government by significant emission reduction of NH<sub>3</sub>, CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O

## **Savings:**

- Reduction manure disposal costs
- Reduction fossil fertilizer purchase costs
- Reduction of animal fodder purchase costs
- Reduction of production losses (increased animal wellbeing)

## **Revenues:**

- “Green label” product sales (low emission, bio fertilizer)\*
- Enhanced crop growth and soil biodiversity through precision fertilization
- Mineral concentrate sales for fossil fertilizer replacement
- Emission rights trading (ammonia, phosphate, carbon)

\* e.g.: the “On The Way To Planet Proof” -label of Friesland Campina or “Beter Eten” label of Albert Heijn

# Value proposition for industrial clients

MEZT technology investment is supported by solid business cases for industry ...



## **Shift from fossil depletion to circular use of minerals:**

- Pressure on use of fossil minerals N, P and K and others
- Pressure on carbon footprint of traditional mining / production of minerals

## **Licence to operate for industrial activities**

- Increasing regulation on emission reduction and CO2 footprint

## **Savings:**

- Reduction of discharge and emission costs

## **Revenues:**

- “Green label” product sales recycled nutrients (low emission, bio fertilizer)\*

# Value proposition for the agri sector and society as a whole

... and a solid business cases for the agriculture sector and society as a whole



## Short term:

- Game changing technology for ammonia- and greenhouse gas emission reduction and phosphate outflow reduction to groundwater, rivers and eventually oceans

## Mid term:

- Significant contribution to the UN sustainability goals
- Development and application of circular precision farming
- Enabling 'mineral balance accountability' implementation

## Long term:

- Establishment of global closed mineral loop in agriculture
- Termination of fossil mineral reserve depletion
- Retain Dutch leading global position as product and technology supplier in agriculture



MEZT supports 8 of the 17 sustainable development goals





mineral circularity and emission reduction

# MEZT: at the crossroads

Window of opportunity opens now.....



## **Technology:** (does it work?)

PoC and Prototype development farm application successful

PoC industrial (Nitrogen extraction from bio waste streams) successful

## **Market:** (is demand expected?)

Cabinet has announced ambitious N-emission reduction regulation

Demand for circular fertilizer increases due to Cop 26 objectives

Fossil fertilizer prices “through the roof”

Launching customer has been granted SBV subsidy

## **Delivery:** (can MEZT deliver fast enough?)

Leadership team available

Strategic sourcing partners contacted and very co-operative

Accelerated growth plan is under development

Additional funding required

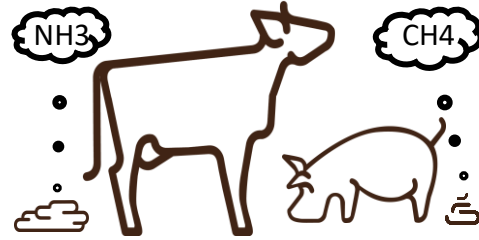
# Low Emission Circular Precision Farming

The road towards regenerative sustainable agriculture ([www.mezt.nl](http://www.mezt.nl))

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## Issue:

Agri sector is a major contributor to nitrogen and greenhouse gas emissions (NH<sub>3</sub>, CH<sub>4</sub>, N<sub>2</sub>O etc)



## Opportunity:

Extract minerals K,P & N from animal manure and convert into bio-based low-emission fertilizers

## Market:

Demand is huge:

- License to operate
- Positive business case for individual farmer
- 20 Bn€ gvt subsidies available in NL only
- 5000 units in NL, similar amounts in G, D & B

## Goal:

NL Government objective is 50% reduction by 2030

## Team:

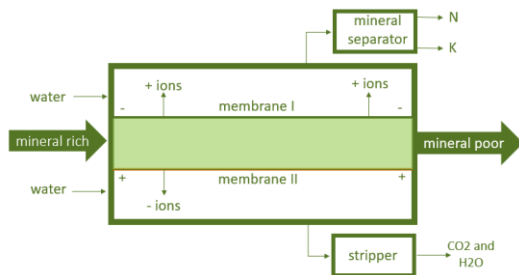
- Corporate ready founders
- Talented, committed tech team
- Strong academic support

## Effect:

- Apply precision farming
- Close the global agri mineral loop replacing fossil fertilizers
- Enhance yield & eliminate emissions

## Innovation:

Cutting edge patented innovative Electro Dialysis technology



Low energy, no chemicals, high selective extraction rates of K,P & N, TRL 6



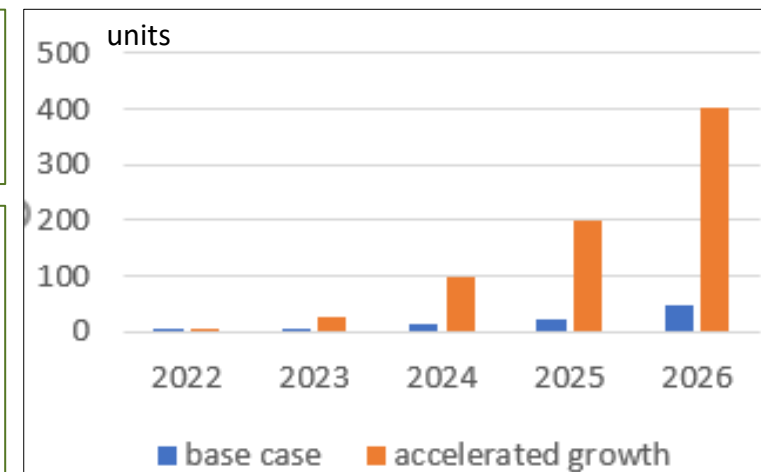
## Basic financials:

Average unit price: 400k€, Margin 25%  
Steady base case growth scenario (100% annually)

## Major Risks mitigated:

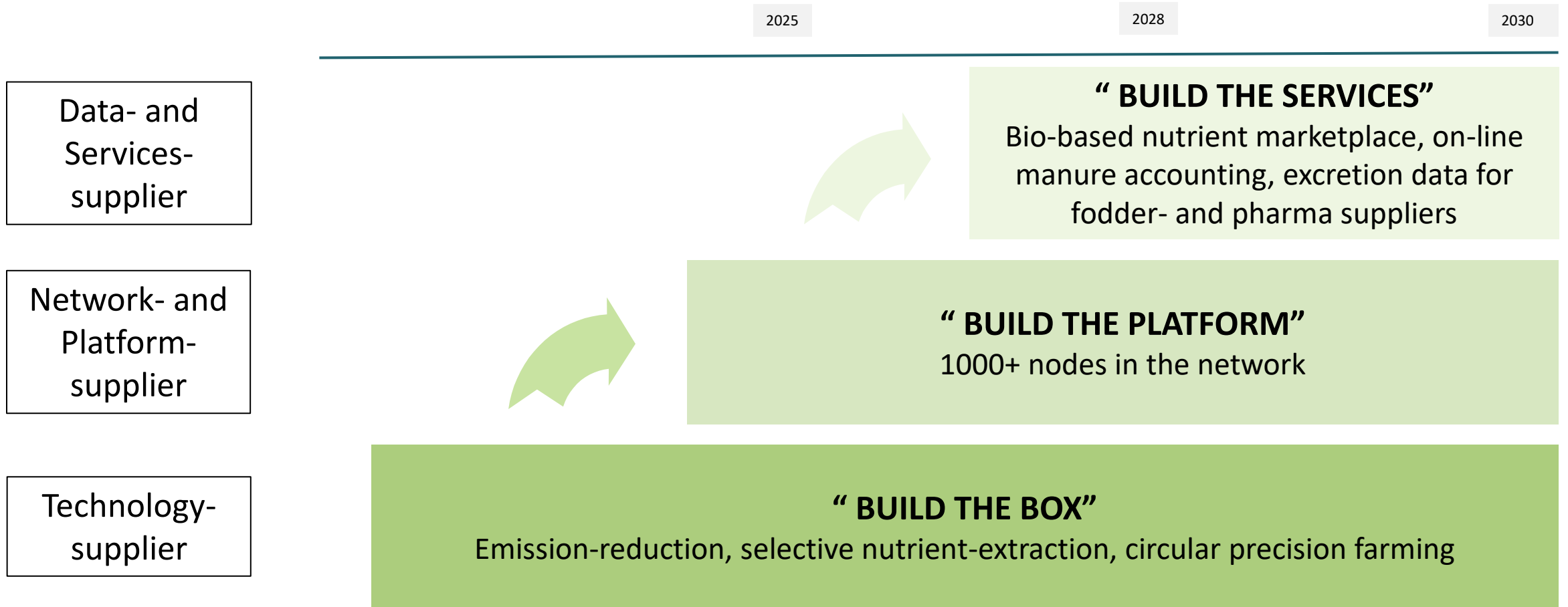
- Demand secured, healthy subsidy landscape
- Launching customer and sales pipeline
- Technology proven (prototype tested)
- IP protected and expanding

**Investment opportunity (10m€ Series A)**  
**Funding for accelerated growth scenario**



# MEZT Long Term Technology Roadmap

MEZT launches with distance monitored and -controlled hardware. At installed base critical mass, MEZT creates a Platform/Network, on which digital /data services will be offered over time. In this way MEZT evolves from HW provider to HW, SW & Services provider.





# Business & Growth model

MEZT is at the crossroads, organic growth or accelerated growth.....

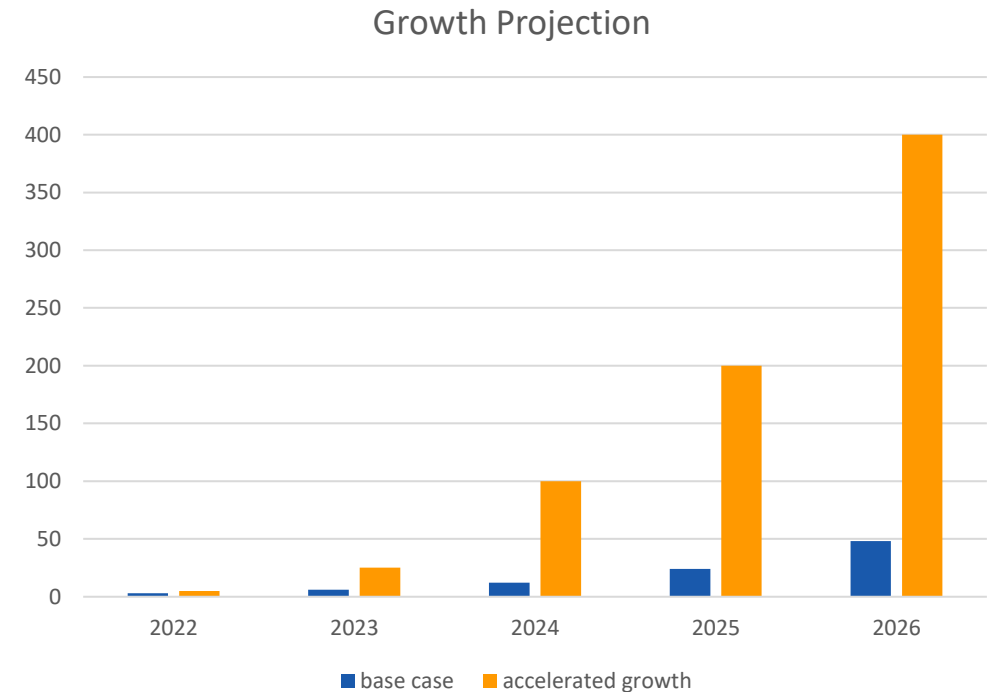


## Operating model

- Strategic Partnering Network model
- Strategic sourcing partners contacted and very co-operative
- Leadership & tech-team available with strong academic support

## Growth model

- Currently working with organic growth plan
- Accelerated growth plan is under development
- Additional funding required



# MEZT Accelerated Growth Scenario Funding Plan

version 16-5-22

