A business ecosystem:

Breaktrhough of nutrient cycling in Finland

Mathias Bergman, Ph.D.
Secretary General
Baltic Sea Action Group (BSAG)

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Baltic Sea Action Group

Approx. 85 million people live in the Baltic Sea riparian area

The Baltic Sea

The greatest threats of the Baltic Sea are **eutrophication, hazardous substances maritime traffic and loss of biodiversity**

The ***internal nutrient load*** of the sea, i.e. nutrients already accumulated on the bottom, is the major obstacle for restoration of the ecological balance

BSAG's vision: Stop nutrient leakage by recovery and re-use of nutrients

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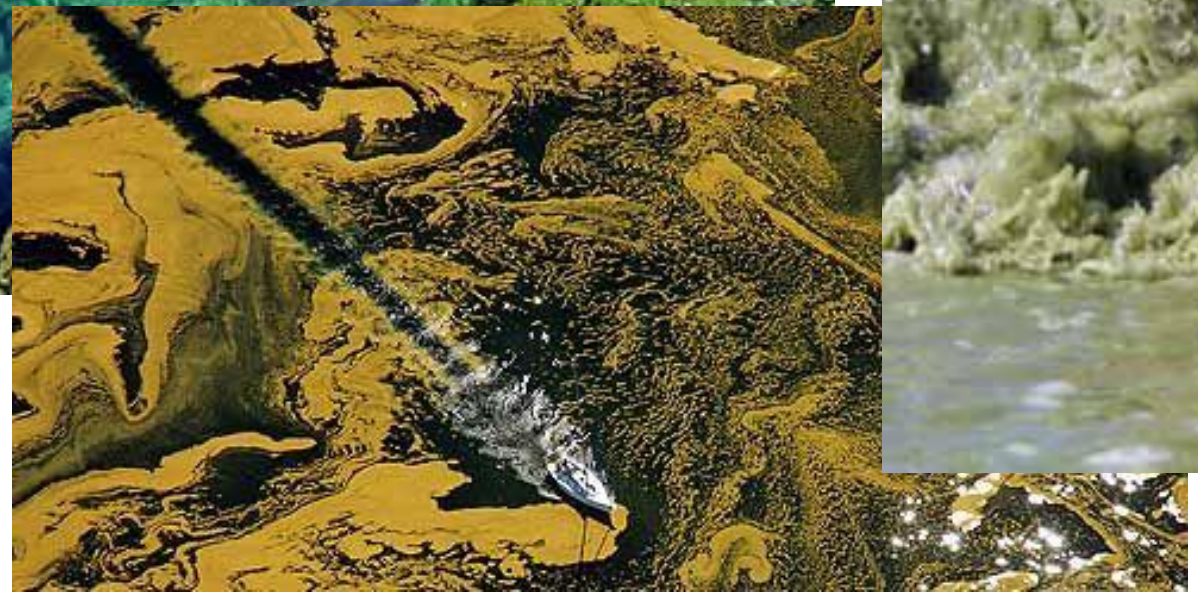
Algal bloom in the Baltic Sea

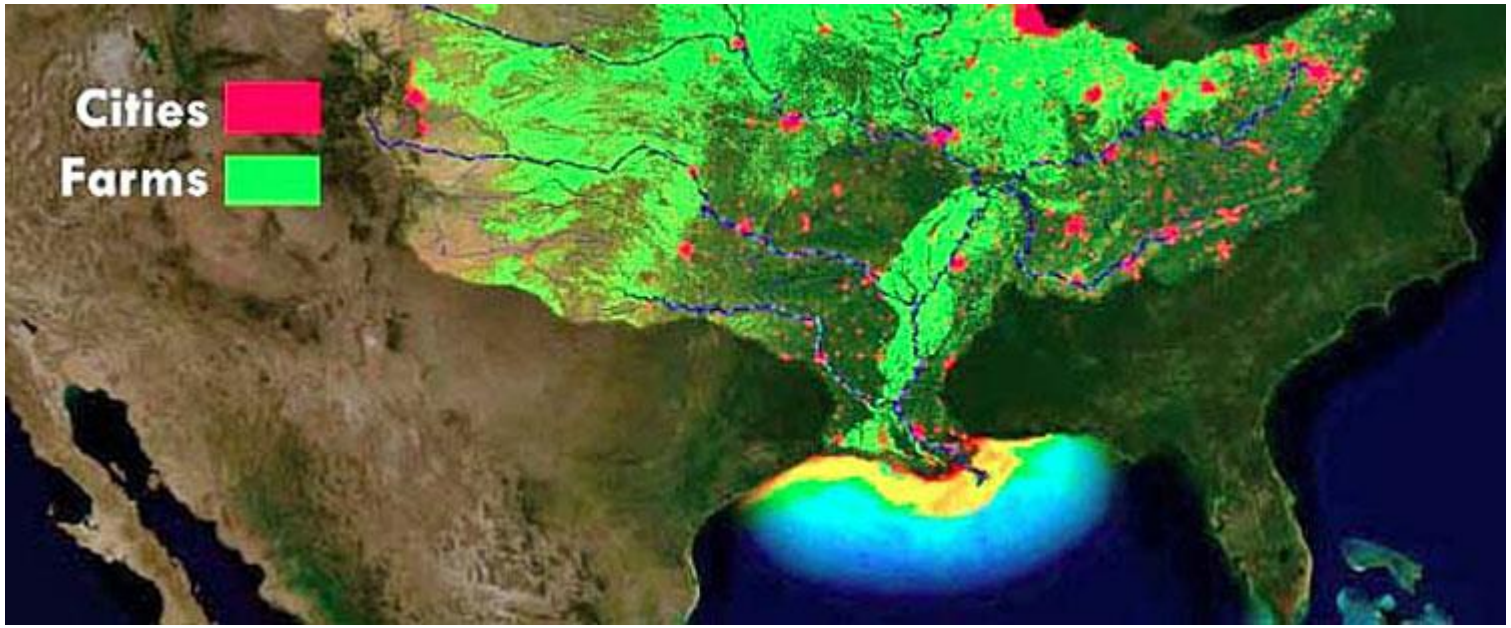


Yellow Sea, China

Annual algal blooms

Photograph: ChinaFotoPress/Getty Images
Source: http://www.theguardian.com/environment/2013/jul/04/china-algal-bloom-yellow-sea-green

Gulf of Mexico



The Mississippi riparian area and the Gulf of Mexico. Dead sea bottom areas marked yellow.

Image by NOAA's Environmental Visualization Lab.

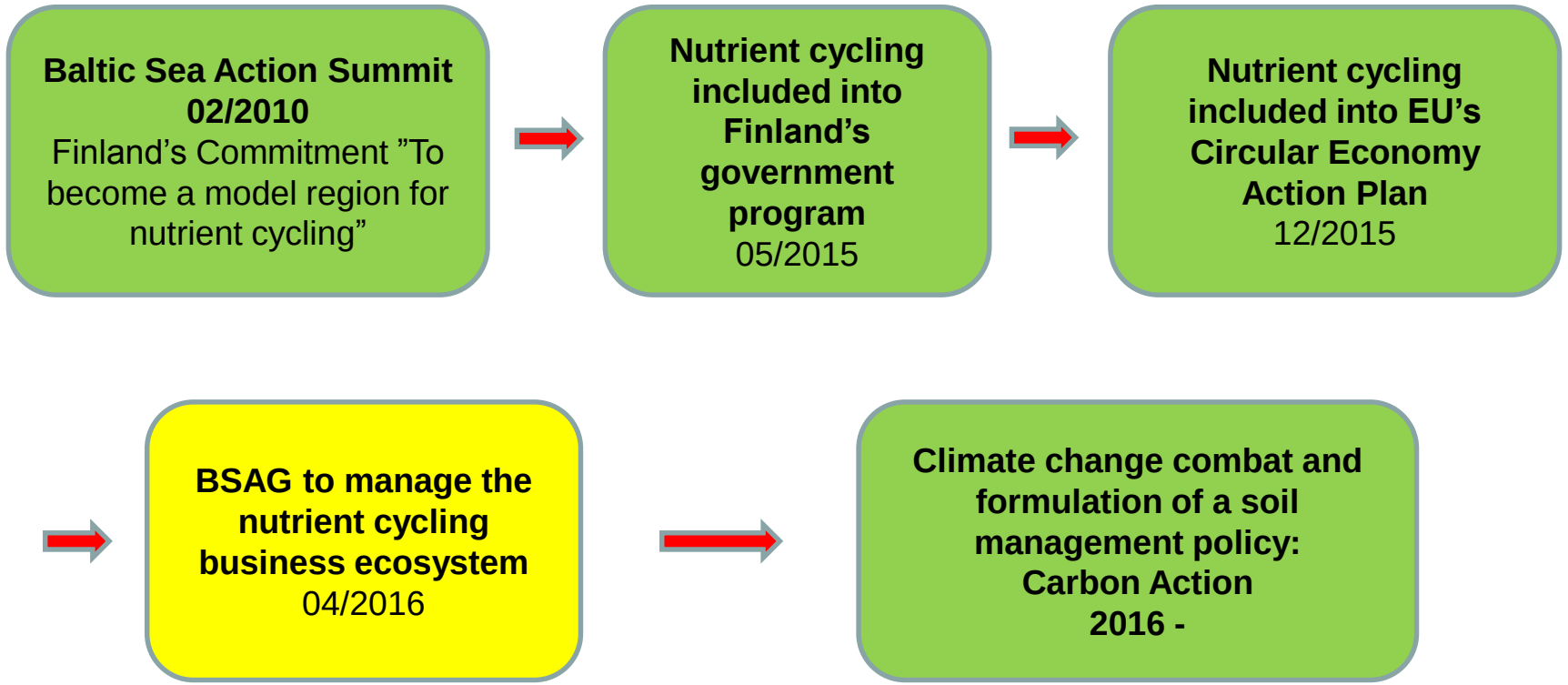
Foundation for a Living Baltic Sea

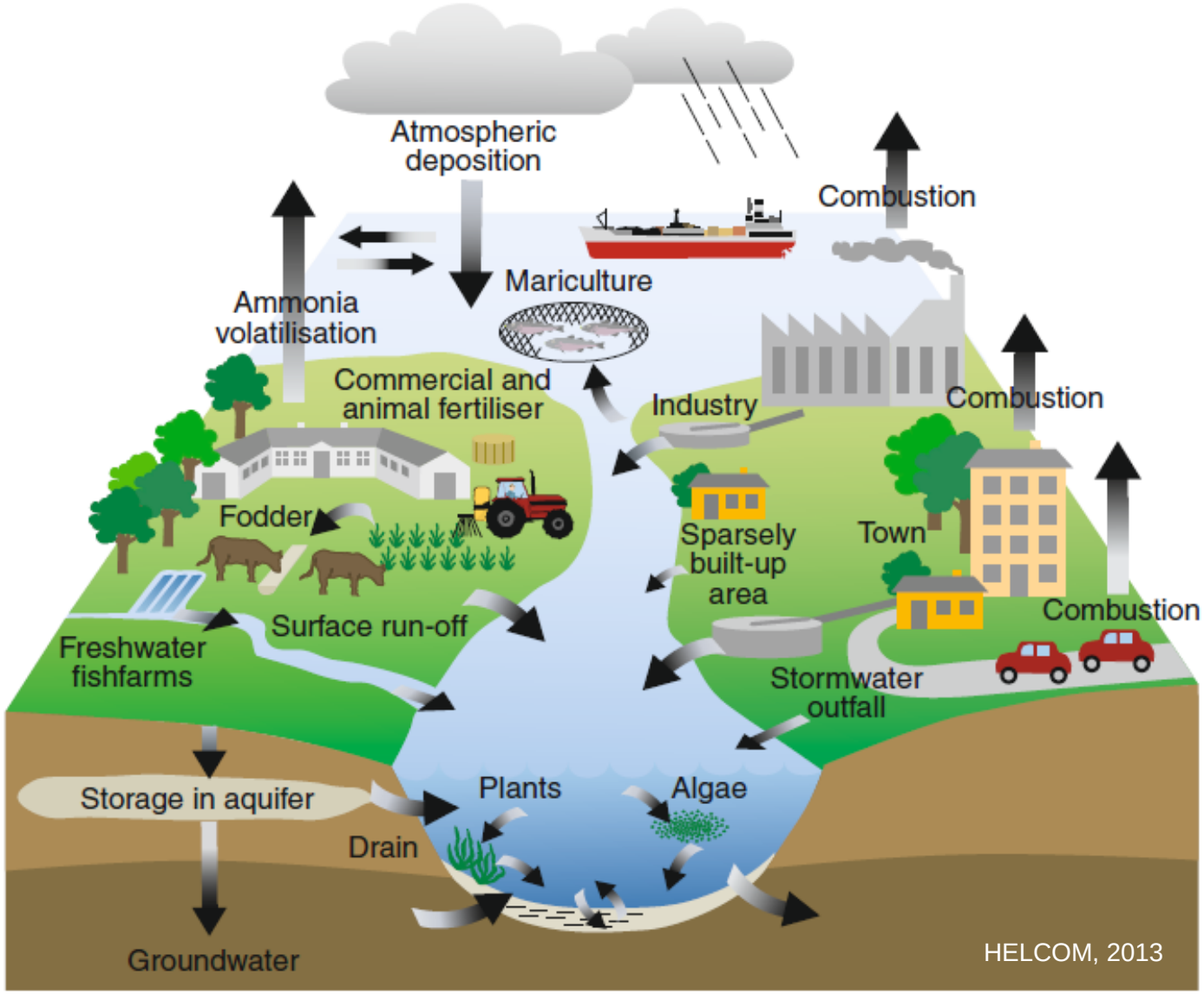
= Baltic Sea Action Group (BSAG)

A private independent Finnish foundation
Founded 2008
Operates in all countries around the Baltic Sea
HQ in Helsinki
Office in Stockholm

BSAG works mainly on the system level

Nutrient cycling





Leakage of phosphorus and nitrogen from human systems into the ecosystem

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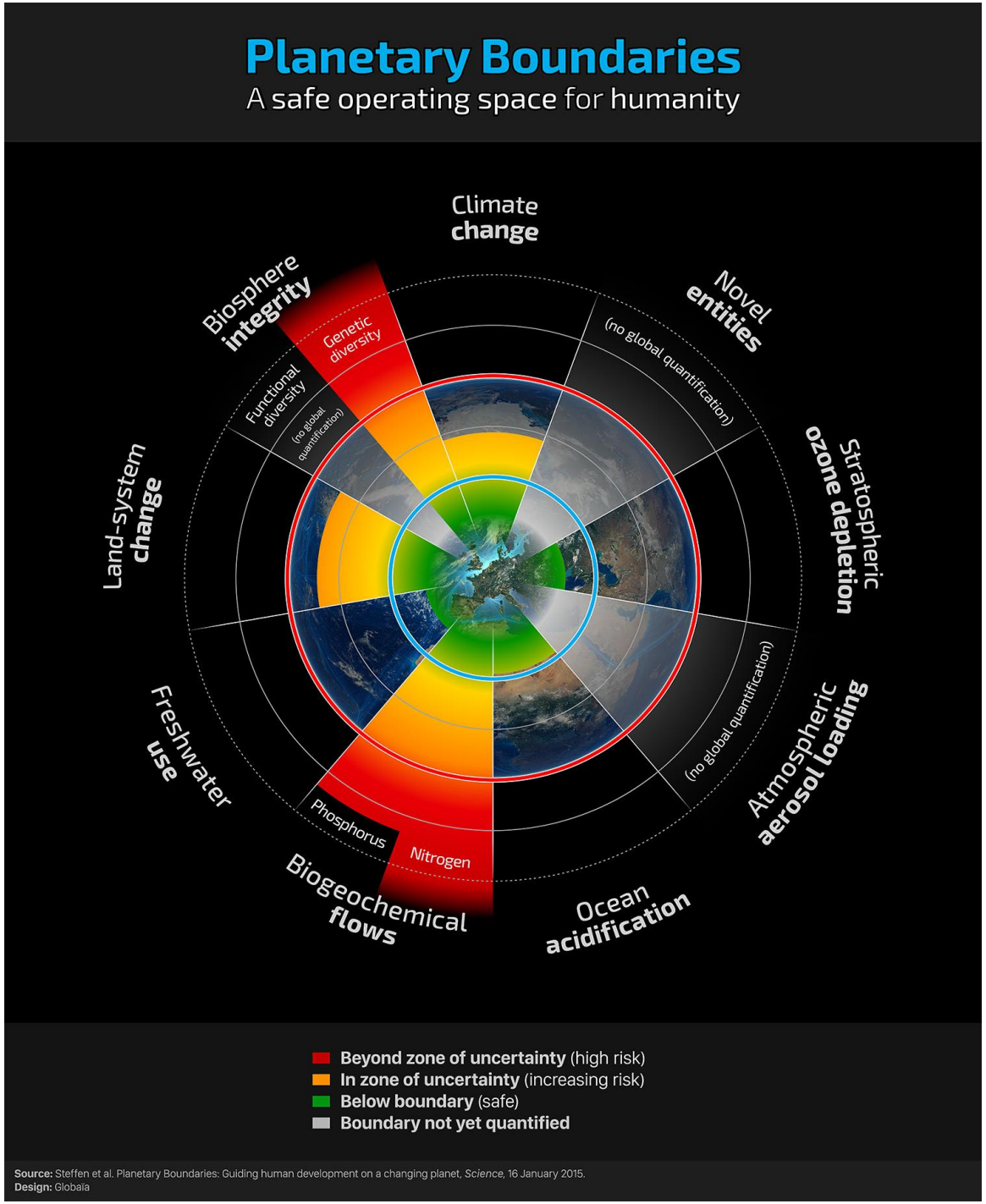
Steffen *et al*., 2016



RAKI

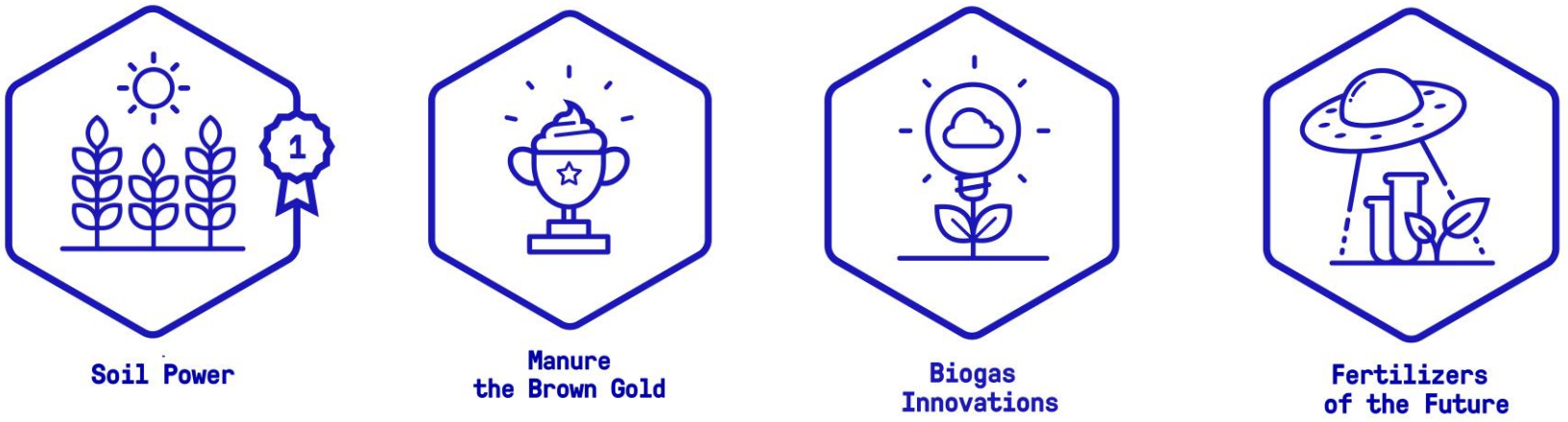
Ecosystem

Breakthrough in nutrient cycling

BSAG’s business Ecosystem

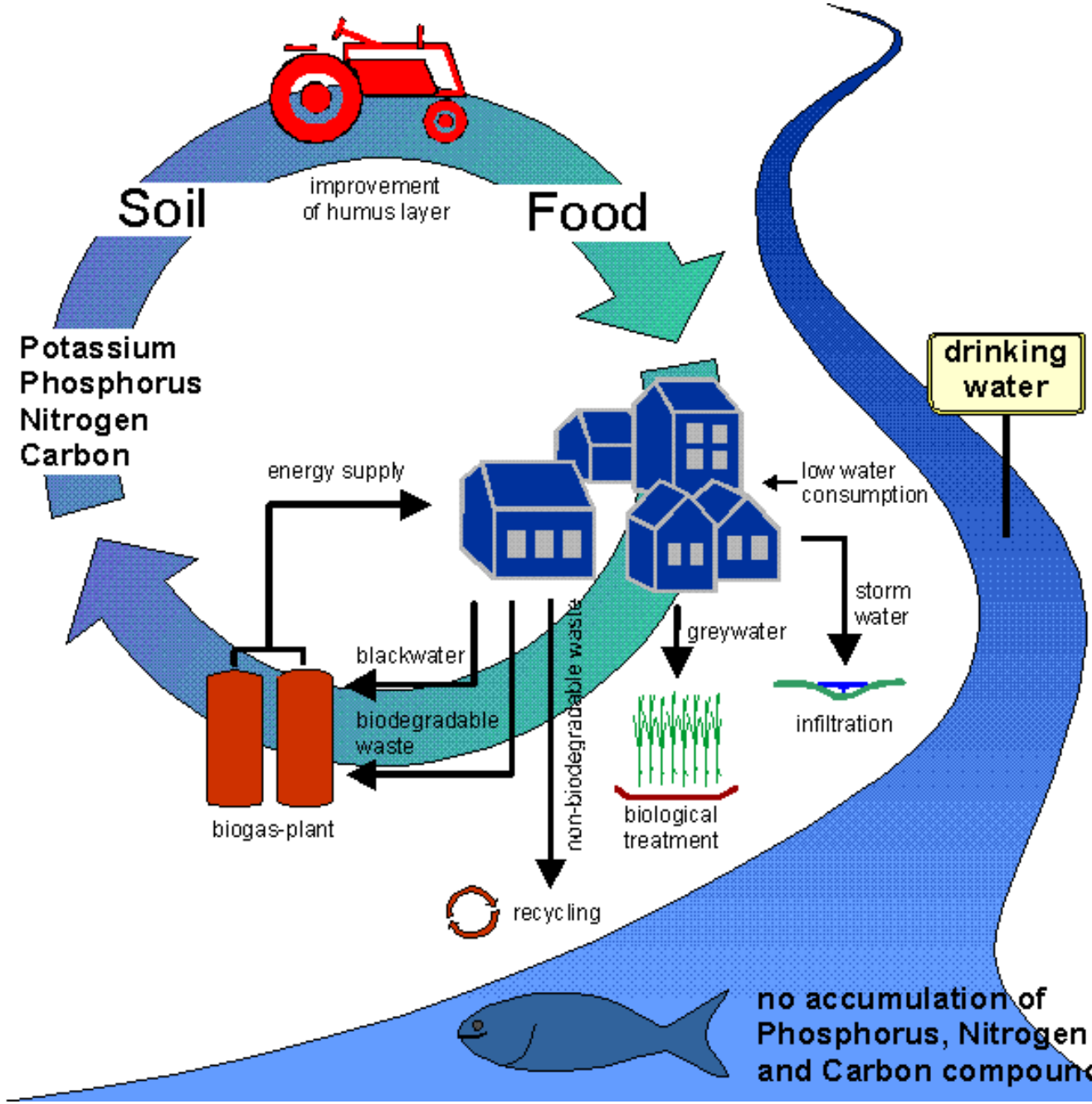
A project partly financed by Business Finland

Four main topic areas



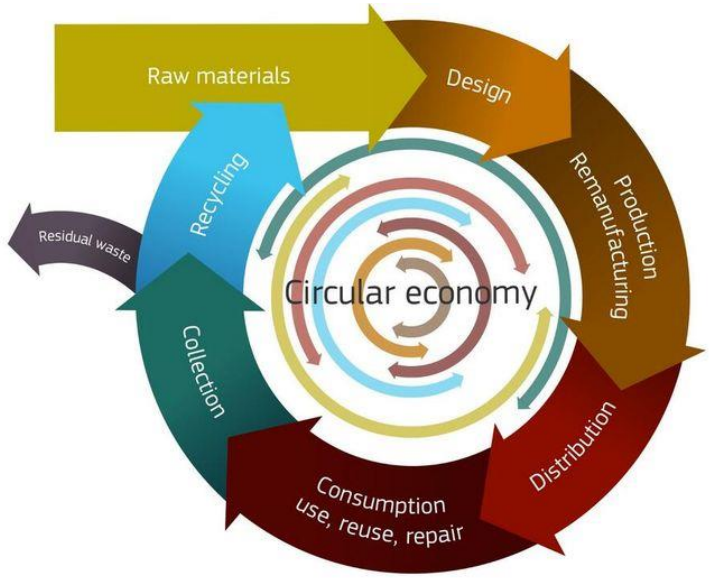
Digitalization; measuring, monotoring, logistics

EU contacts, legislation; export promotion


Soil
improvement
of humus layer
Food
Potassium
Phosphorus
Nitrogen
Carbon
drinking
water
energy supply
low water
consumption
storm
water
greywater
blackwater
biodegradable
waste
non-biodegradable waste
infiltration
biogas-plant
biological
treatment
recycling
no accumulation of
Phosphorus, Nitrogen
and Carbon compounds

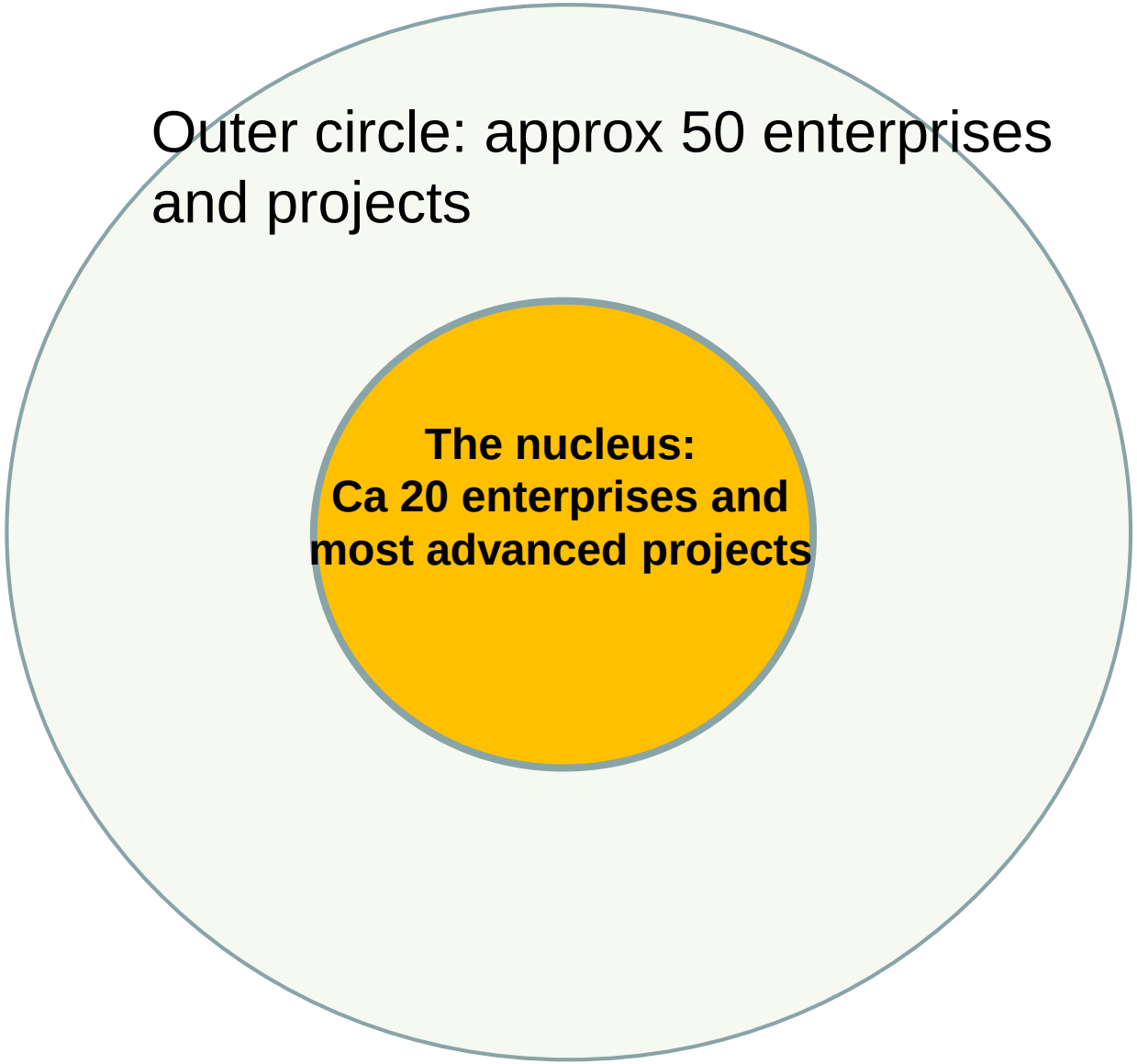
The concept of Circular Economy

- The linear economy *take-make-dispose* –model relies on use of finite resources. The Circular model retains the value of products as long as possible. The key idea is to turn waste into resources.
- The amount of waste is minimized by reducing the use of primary raw materials.
- Global population growth and changing consumption habits make the transition towards Circular Economy necessary.

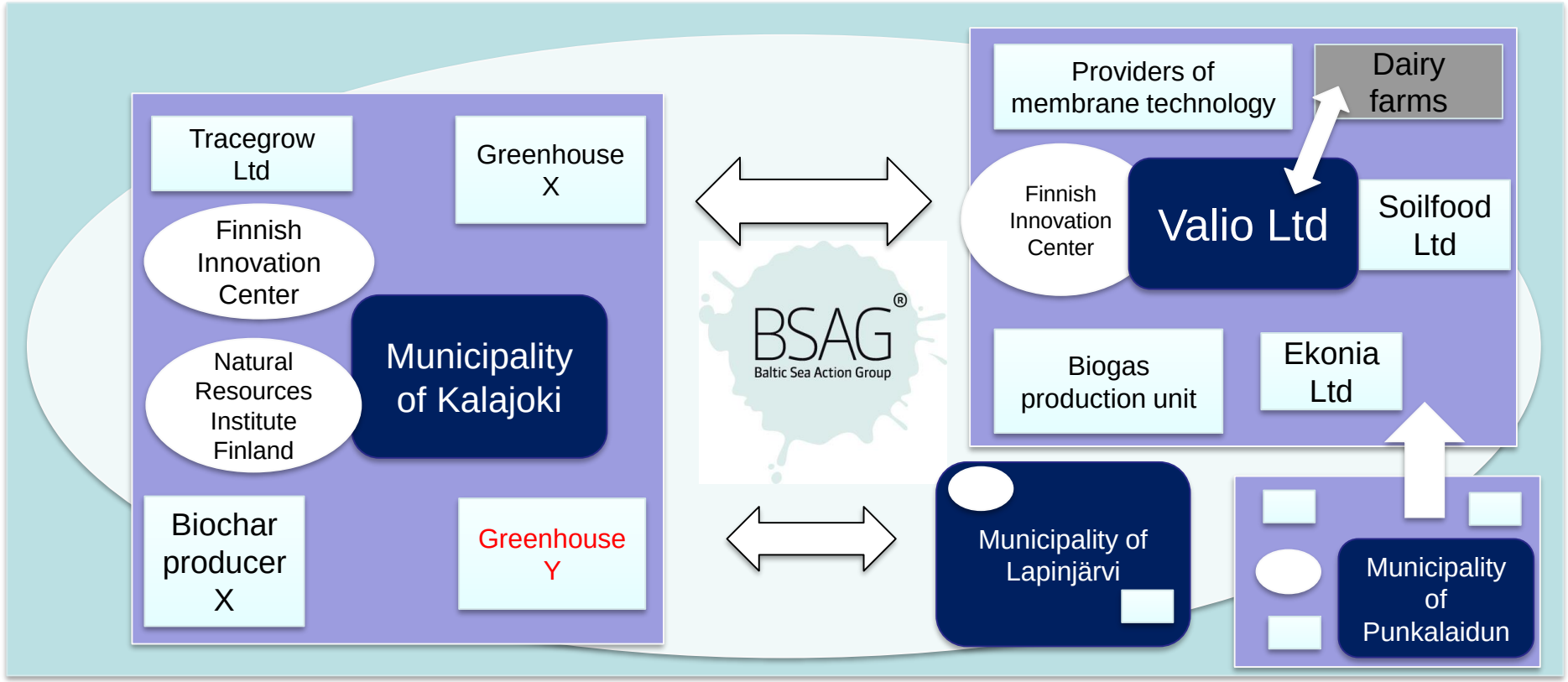


Vs

A tool for system change and implication of circular economy



Cooperation projects and partnerships



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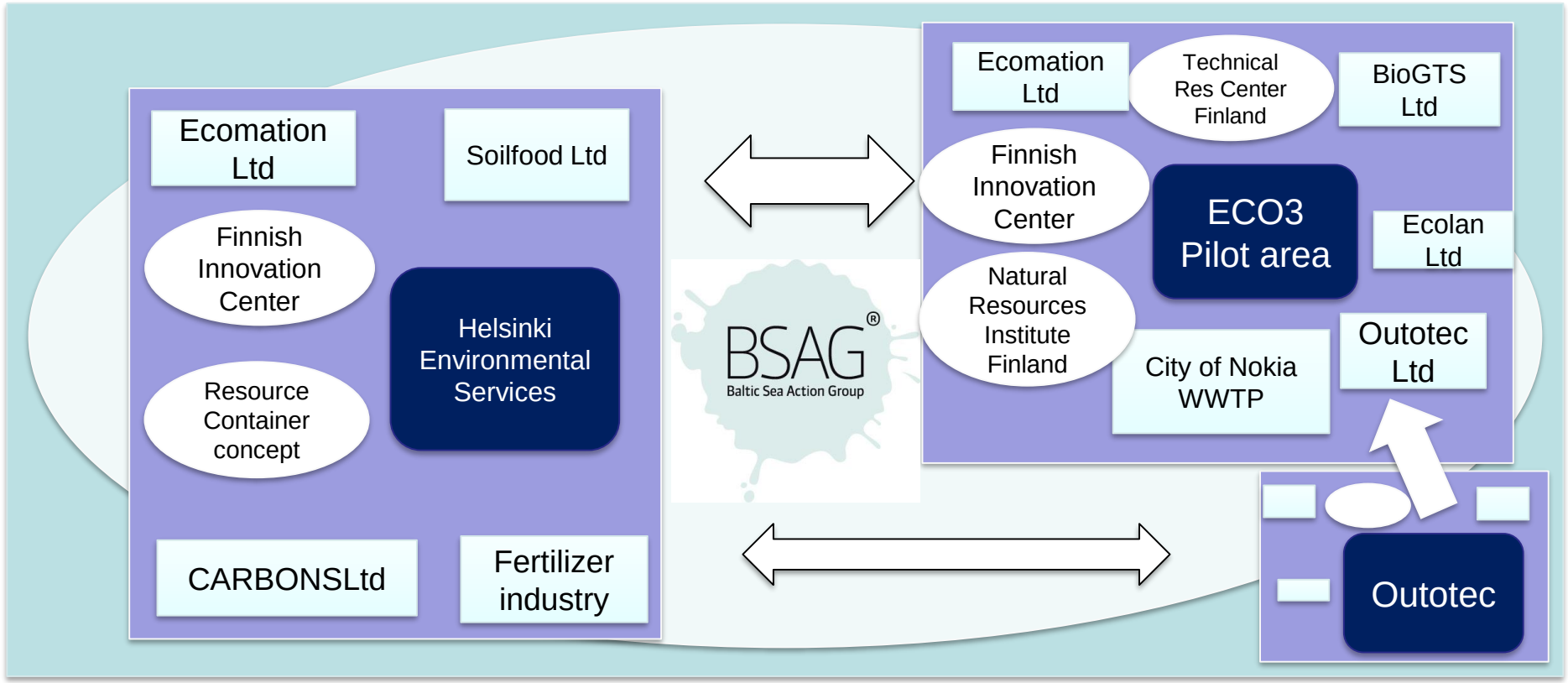


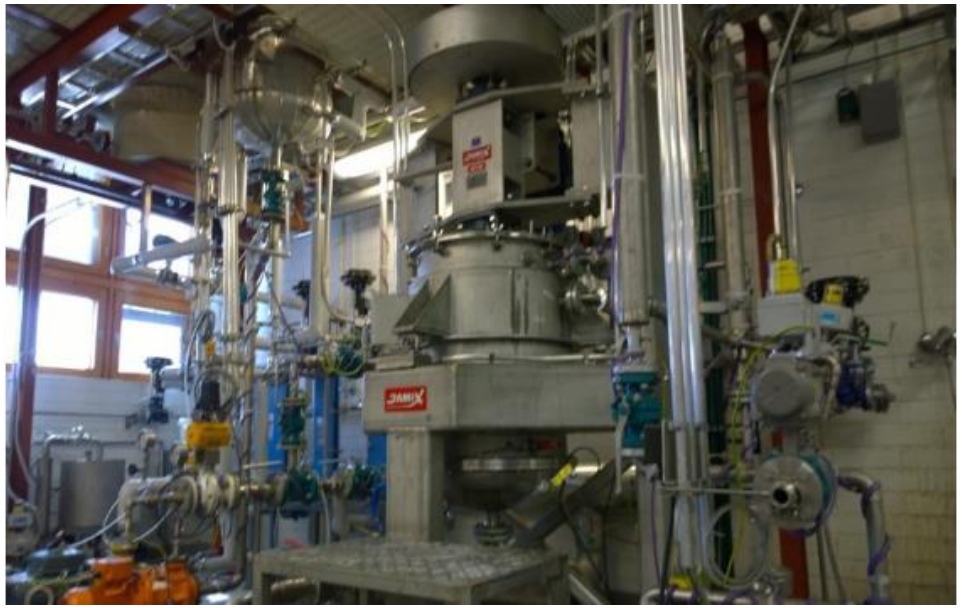
Business ecosystem partners

Municipality of Punkalaidun:
A new biogas plant for manure

Tracegrow: a new plant for production of micronutrient fertilizer products

24.01.2018

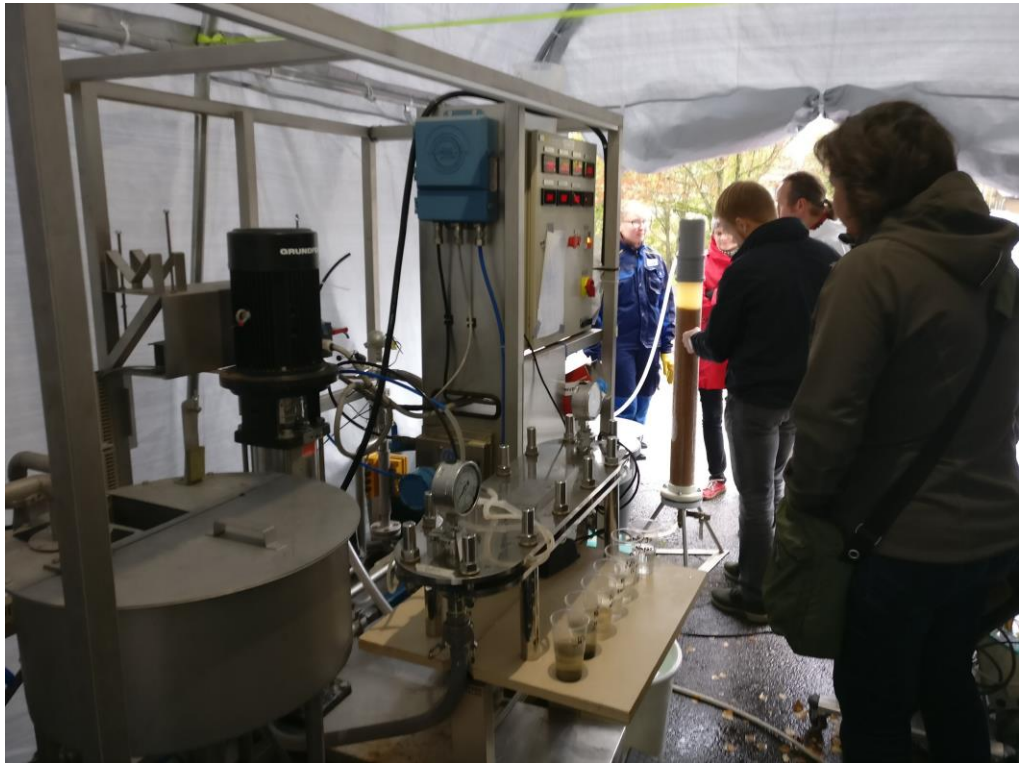
Tracegrow's product sample deliveries begin



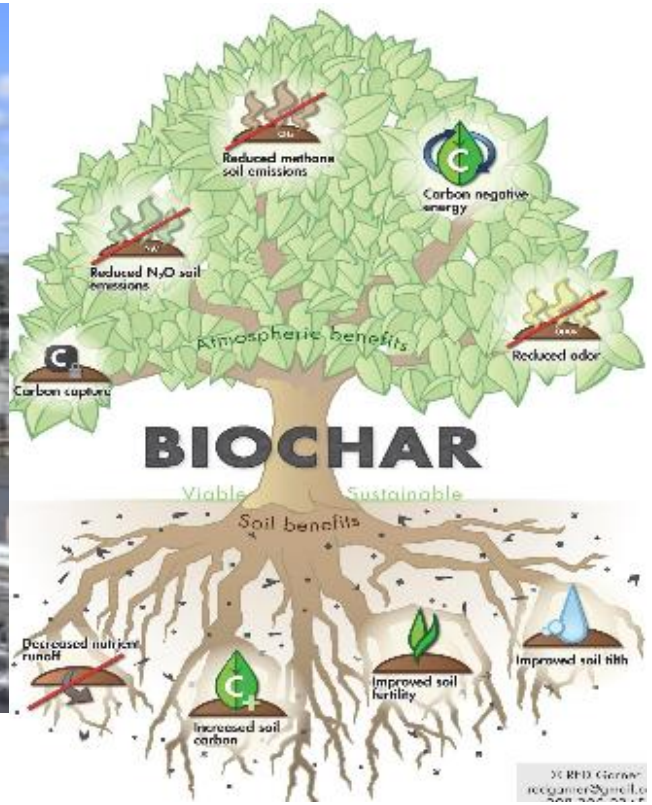
Helsinki Environmental Services, HSY:

A next gen nutrient recovery plant
at Viikinmäki, Helsinki

VTT Technical Research Centre of Finland:
Mobile waste water material recovery unit



Biocore Ltd constructs Finland´s first industrial scale biochar production plant



Bihii Ltd, Kalajoki:
Production of organic fertilizer products from fur animal manure

Nutrient Cycling in EU's Circular Economy Action Plan:

- **Nutrient cycling** is included in the revision of the EU Fertilisers Regulation, which aims to create an internal market for the fertilizers made of recycled nutrients

- Market access of products containing organic material is currently depending on mutual recognition which has proven difficult -> varies between member states

- The revision allows valorisation of secondary raw materials, hence enabling improved use of raw materials and turning eutrophication and waste management problems into economic opportunities for public and private operators