

“From Photosynthesis-to-Photosynthesis” by SBRS concept Sustainable Biological Recycling System

A planned innovation project by
BAS-konsult AB
that offers consultation on strategic innovations
in waste and sewage
which are necessary to achieve the 17 sustainable goals of Agenda 2030.

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More information at www.biotransform.eu

2022-05-11

An innovation project **“From Photosynthesis-to-Photosynthesis”**

according to SBRS concept which stands for "Sustainable Biological Recycling System".

Consists of local high-tech biogas plants that are connected to digitized logistics for collection and transport of waste.

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Sustainable use of bioenergy and all essential chemical elements.

Food waste



Human waste

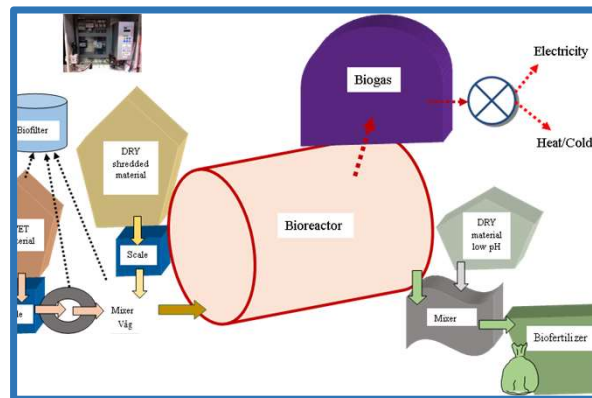


Plant waste

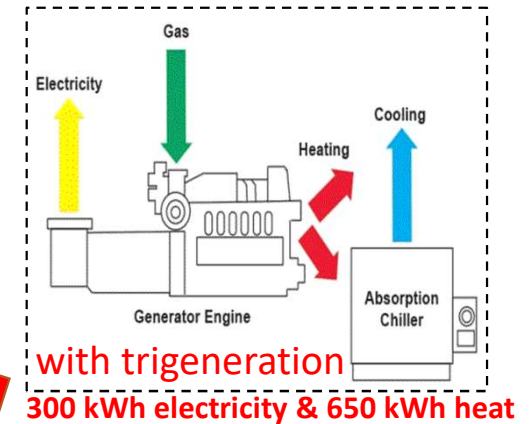


Local, hygienic and high-tech BIOGAS FACILITY with digitized logistics for collection and transport of renewable organic material is combined with **local and hygienic biological treatment of grey water**.

One ton of substrate with about 70% water

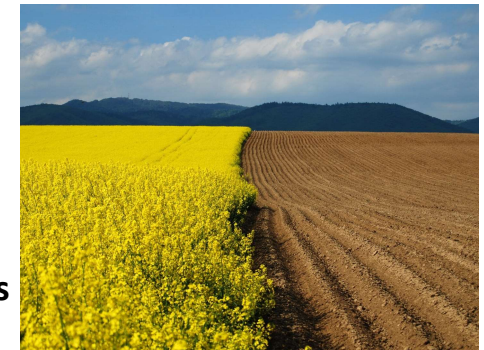


**1 000 kWh
in BIOGAS**



BIOFERTILISER kWh?

**all plant nutrients
microorganisms
organic carbon structures
= carbon sequestration**

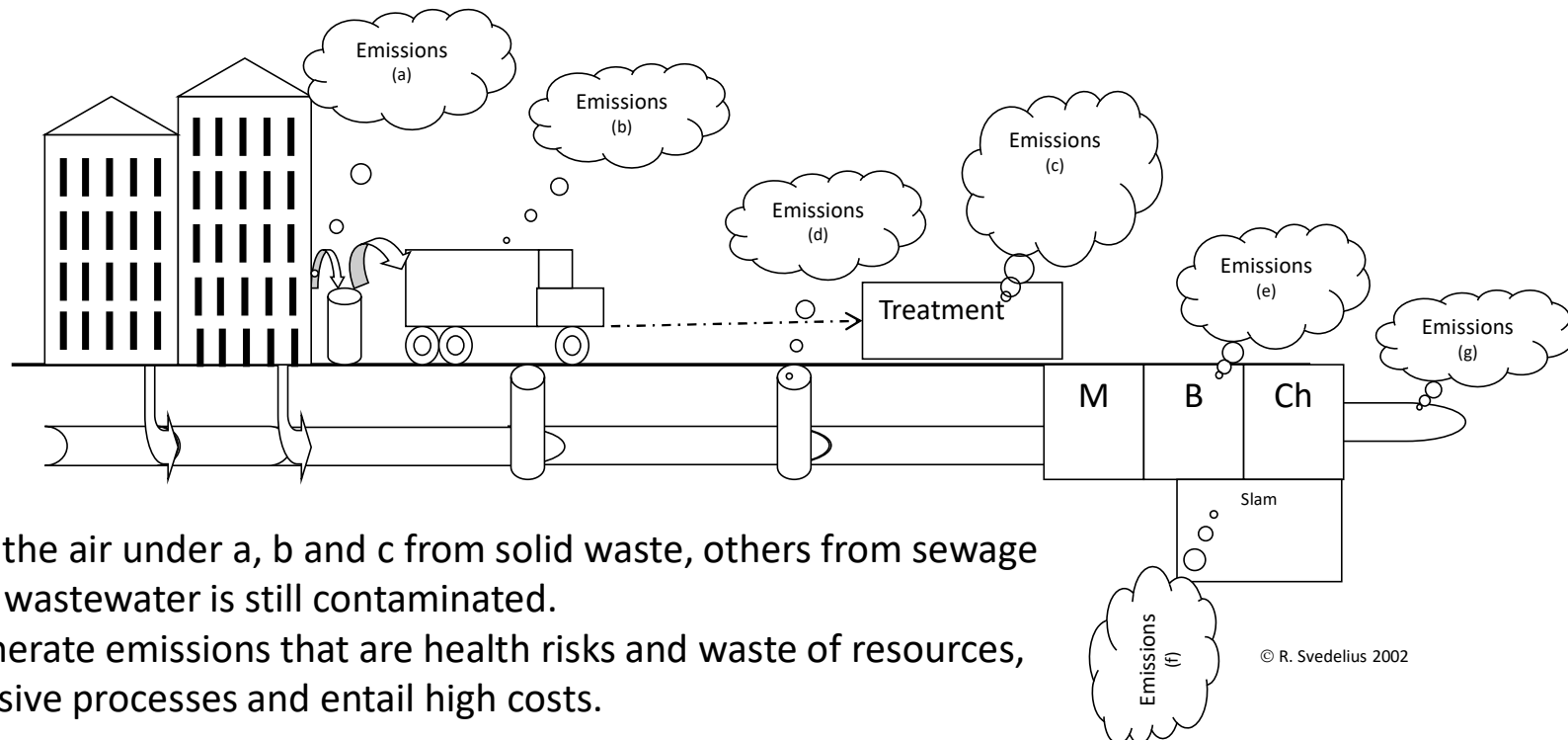


Political decisions formulate the framework for the transition to a knowledge-based sustainable society.

Problem 2022

Waste and wastewater management in today's central system

Emissions = pollutants + losses from renewable organic material.

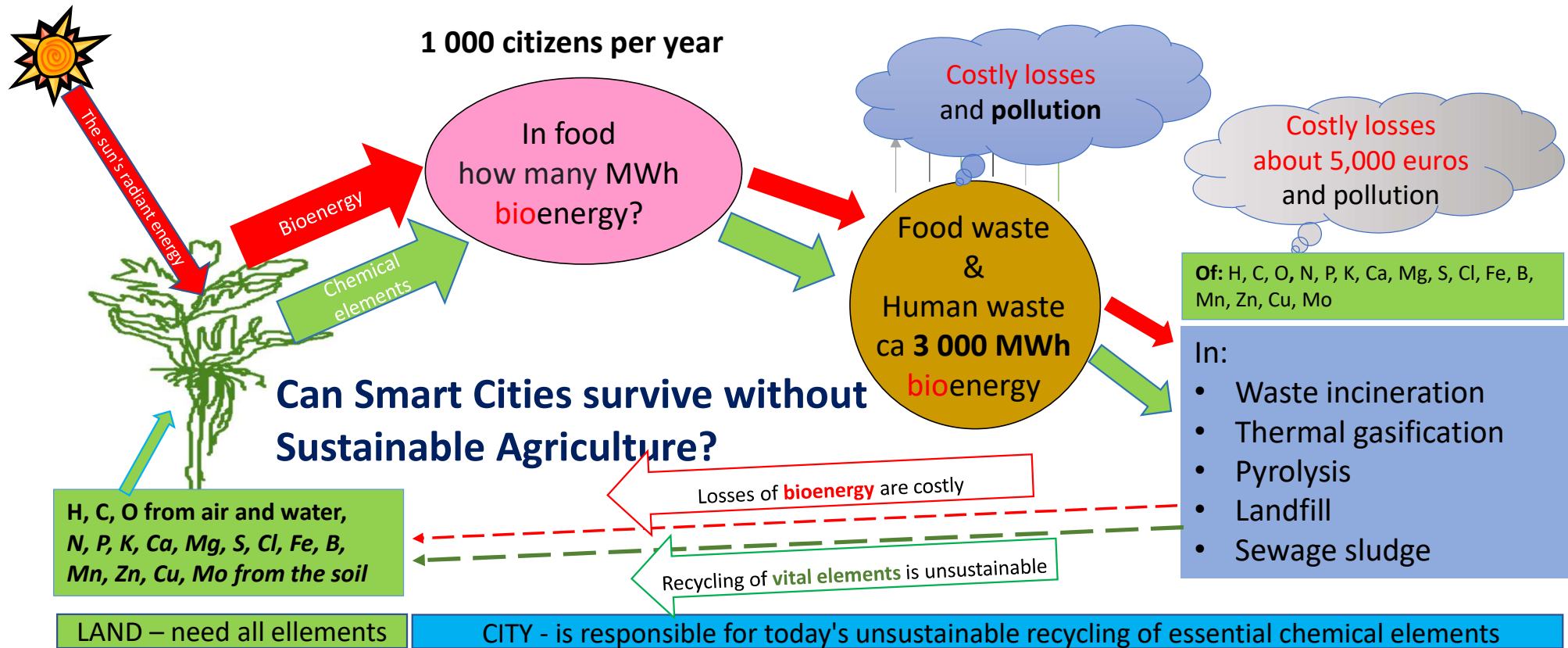


Contaminants of the air under a, b and c from solid waste, others from sewage systems. Treated wastewater is still contaminated.

Both systems generate emissions that are health risks and waste of resources, use energy-intensive processes and entail high costs.

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The picture illustrates the current unsustainable handling of renewable organic material in the waste.



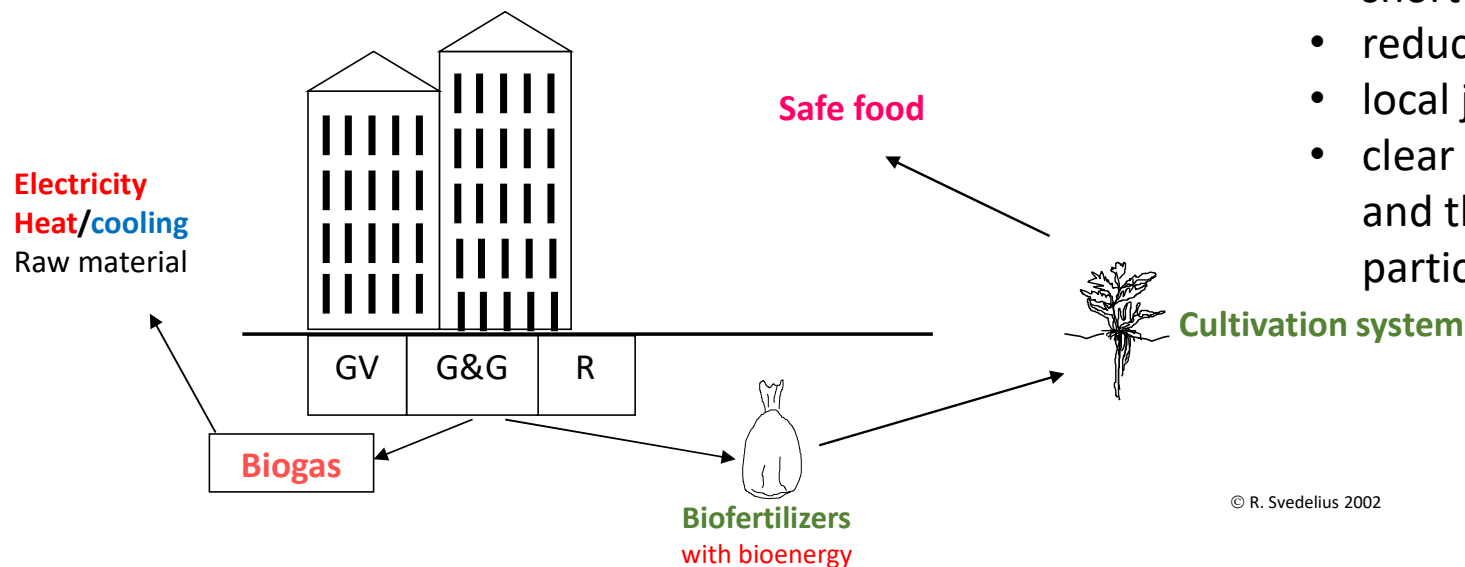
It is estimated that less than 2% of the plant nutrients are returned from cities to cultivated land. This means that **98% are costly losses** that are pollutants of the environment and negatively affect health and the climate.

Solution 2023 - Overall picture of the SBRS concept

Sustainable management of sewage and waste

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Local management - close to source, minimizes emissions, hygienic, cost-effective



The SBRS concept means:

- short transports
- reduced vulnerability
- local jobs
- clear transparency and thus greater participation

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GV – gray water is treated locally with biological methods

G&G* – biogas and biofertilizer are produced from renewable organic material in local high-tech biogas plants

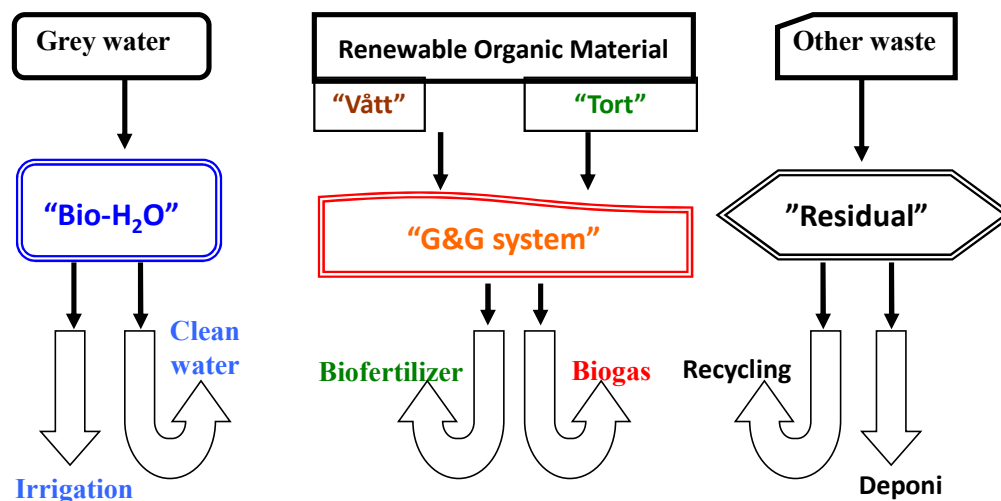
R – residual = other municipal waste that goes to recycling

* **G&G** = **G**as & **G**ödsel/Fertilizer System

Technology in the service of biology

More information at www.biotransform.eu

Solution 2023: Detailed picture of the SBRS concept



"BioH₂O" is a closed local system for biological treatment of gray water from residential areas and the like. The wastewater is led in narrow pipes to a local facility, where the water is led through a number of vessels containing material, which promotes the development of microorganisms.

"G&G-system" (Gas & Gödsel/Fertilizer) for sustainable local management of renewable organic material in completely closed systems where microorganisms convert substrates, consisting of well-composed mixture, into biogas and for cultivation valuable biofertilizer.

"Rester"

Here, packaging, glass, metals, various types of plastics, used and / or broken goods and hazardous waste are sorted. Some fractions are compressed as needed and / or crushed and discarded by those responsible.

Technology in the service of biology

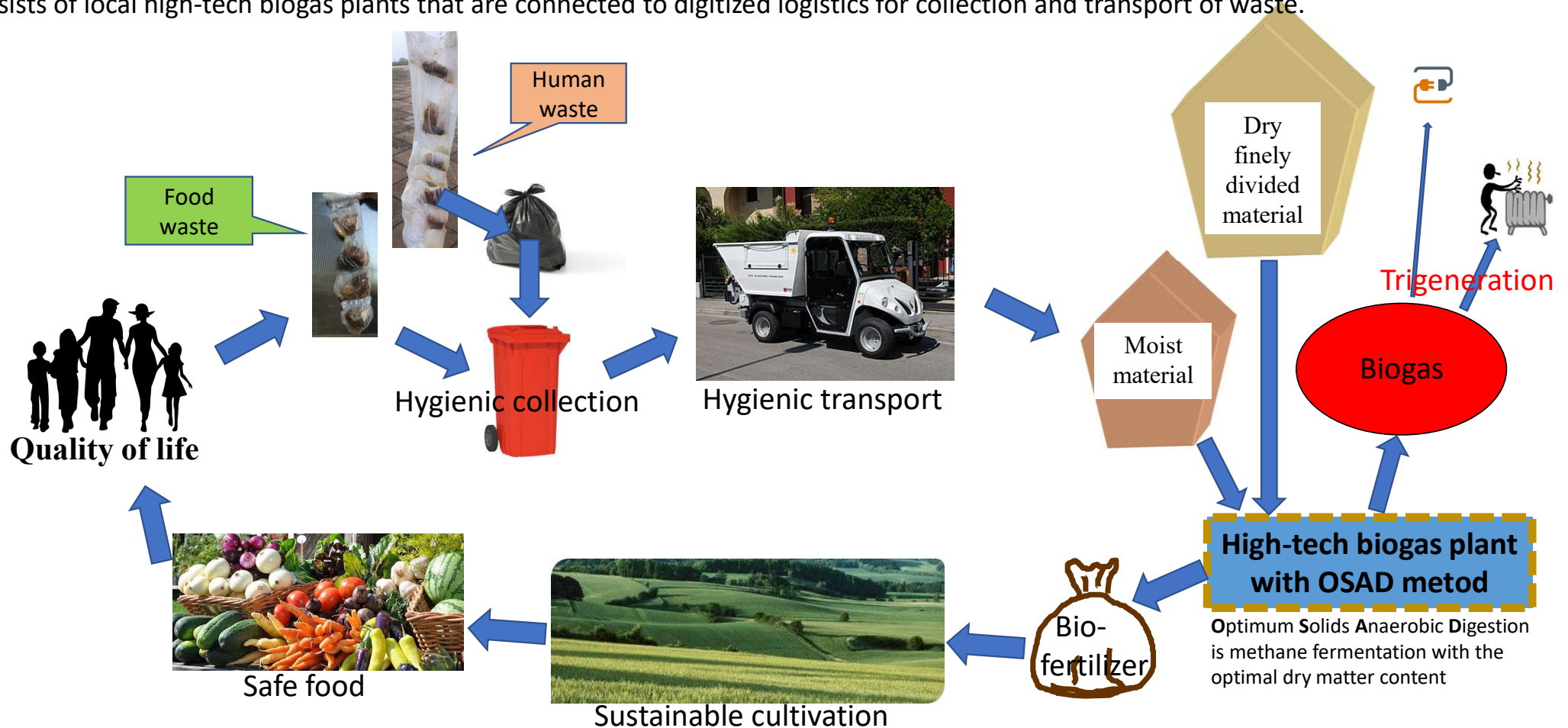
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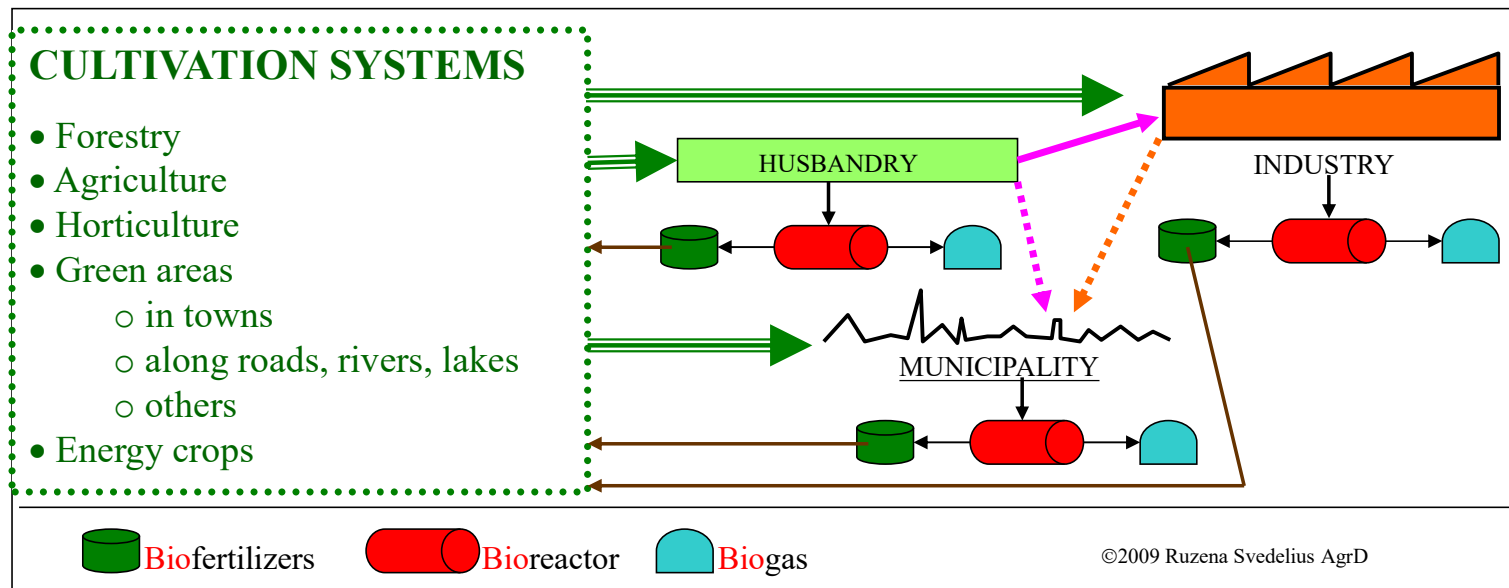
Photosynthesis is the basis of the bio-based economy. Renewable Organic Material in the waste must be handled sustainably.

Bioeconomy for “Rural – Urban – Rural” = Circular Bioeconomy

Cultivation systems deliver **bioenergy** and plant nutrients in food and other goods to husbandry, industry and municipality.

Renewable Organic Material in waste and wastewater have to be used for sustainable production of **biogas** & **biofertilizers** in G&G*system.

Biofertilizers containing **bioenergy** and plant nutrients that have to return back to **cultivation systems** to increase carbon sequestration, **biodiversity**, water and nutrients holding capacity, cation exchange capacity and more factors that positively affects soil fertility / productivity.



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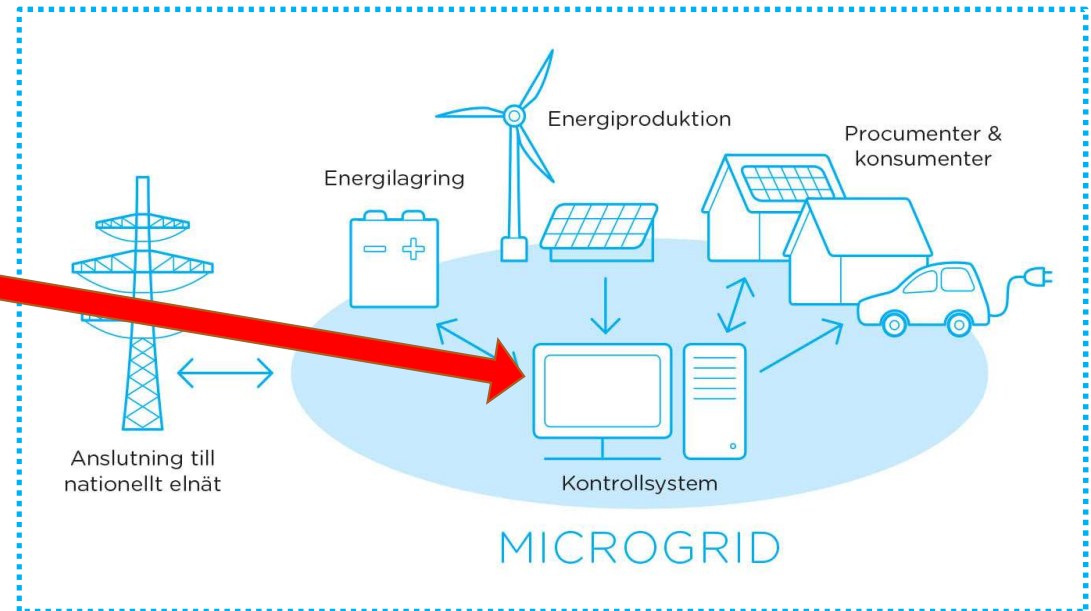
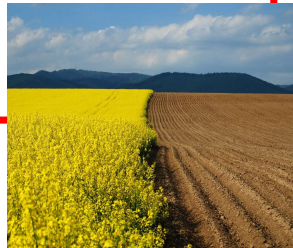
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The picture shows how the SBRS concept can be useful in all districts, villages, agricultural companies, etc.

SBRS concept

- minimizes emissions to air and water
- prevents costly losses
- **biogas** with trigeneration turns into electricity + heating / cooling
- **biofertilizer** increases the possibility of **sustainable cultivation**
- creates many green jobs
- REDUCE VULNERABILITY etc.



What are microgrids?

A microgrid is a local self-sufficient energy system that can distribute, consume and store energy. It can work on its own or be connected to the large electricity network.

Microgrids have previously mainly occurred in remote locations where the national electricity networks do not reach but are now **relevant as a sustainable solution for cleaner electricity** and to solve the lack of power for the large electricity network and at the same time **transfer more power to consumers**.

Translated from <https://se.ramboll.com/press/artiklar/vad-ar-microgrids>