Sustainable biological conversion methods for Renewable Organic Material

All support must go to cascade use and to biological conversion methods of Renewable Organic Material (ROM) such as methane fermentation in hygienic, local, smart and high-tech biogas plants.

Incineration of ROM in residues and waste as well as other thermal methods such as thermal gasification and pyrolysis cause pollution of air, water, soil and crops, and death of microorganisms living in and on the material. Therefore, we must say that they are unsustainable.

Unfortunately, composting is also an unsustainable method. Of 100 kg of raw material, about 30 kg of compost of very uncertain quality is produced. Bioenergy is released as heat, water vapor and carbon dioxide. At the same time, various nitrogen compounds and other plant nutrients are released into the air. With leachate, other plant nutrients are released. We cannot afford to pay for composting that causes 70% weight loss of the raw material and pollute environment.

Does everyone know that the most important energy for humans is bioenergy in food? Bioenergy is found in food and toilet waste, and in all waste originating from plants, animals and microorganisms. Each ton of mixed organic material, bioenergy is estimated at an average of about 3,000 kWh (between 1,500 in the low-calorie food to 7,000 in fat).
Most of the time, bioenergy is wasted in today's systems for waste and sewage, and sometimes it is done with energy-intensive methods that use fossil energy sources.

Have any economists calculated how much of the sun's radiant energy has been captured per year?
How much has been used and how much has been wasted and turned into environmental problems that affect health and climate?
How much electricity can be produced from biogas produced from food and toilet waste without dilution with water but with admixture of other organic residues and waste products?

When food and toilet waste from 500 people is mixed daily with suitable drier plant material, we get about 1 ton of substrate. With methane fermentation, biogas and biofertilizer can be produced. Both contain some bioenergy from the raw material.
The energy of the biogas can be converted into at least 300 kWh of electricity and 650 kWh of heat. If necessary, the heat can be converted to cooling.
The energy of biofertilizer is partly reduced to carbon dioxide, partly used as energy for soil organisms. Biofertilizer promotes soil fertility.

Current biogas plants have poor profitability because old methods are used, and the losses are large. To prevent polluting losses, increased precision is needed
1) during the collection of wet and moist materials
2) in pretreatment to produce a suitable substrate for methane fermenting bacteria
3) during the conversion into bioreactors
4) when using biogas and biofertilizer.

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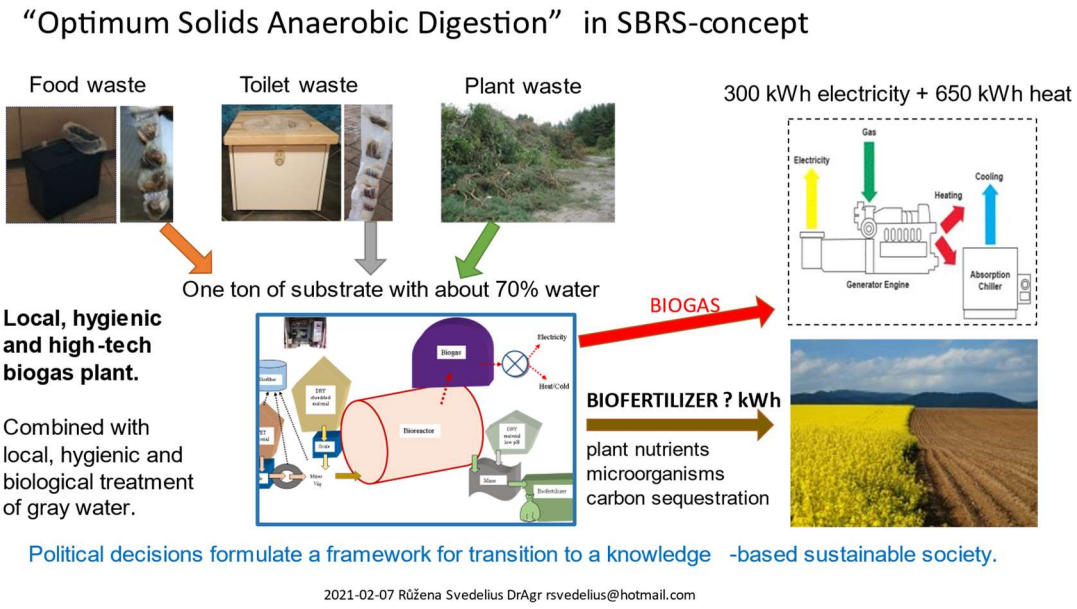
The SBRS concept (Sustainable Biological Recycling System) consists of numerous innovations

- hygienic collection system (CC BAS and CFW BAS)
- modern logistics with digitization
- high-tech biogas plant with OSAD (Optimum Solids Anaerobic Digestion) which will produce biogas and biofertilizer adapted to cultivation systems
- plant BIO H2O for biological treatment of household grey water.



Hygienic, smart and high-tech local biogas plants connected to microgrids are the future of clean air and water, safe access to electricity, heat and biofertilizer as safe production of safe food with its bioenergy, i.e., biofuel for human cells.