Position Paper: **A Clean Planet for all**

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Introduction

There are countless written proposals which goals should be achieved in order to reduce emissions that pollute the air, water, soil, food and feed. Below are presented concrete proposals
* what is most important
* why is it necessary to quickly switch to circular bioeconomy
* how should decision-makers act and give citizens the chance to be able to act properly in order to positively influence health, environment and climate

Background

Strategic elements in Working Document https://www.eu-events.eu/12451-enve-commission-stakeholders-consultation-a-clean-planet-for-all.html … there are seven parts to the strategy: these are some questions that could frame the discussion:
1. **Maximise the benefits from energy efficiency** including zero emission buildings – What are the challenges entailed in implementing an ambitious and wide-ranging policy of energy-efficient refurbishment of buildings and promoting nearly zero-energy buildings (NZEBs)?
2. **Maximise the deployment of renewables** and the use of electricity to fully decarbonise Europe's energy supply. – What are the challenges of the clean energy transition?
3. **Embrace clean, safe and connected** mobility – What role do you see for your authority/area in promoting a transition to carbon-free, connected and automated mobility? How does this relate to urban and regional planning?
4. **A competitive EU industry and the circular economy** as a key enabler to reduce greenhouse gas emissions – What opportunities and challenges do local and regional authorities have to face in boosting the EU's industrial competitiveness by achieving a circular and digitalised economy? What are the most promising innovative hybrid and transitional technologies?
5. **Develop an adequate smart network infrastructure** and inter-connections – What are the main infrastructure opportunities and challenges for local and regional authorities?
6. **Reap the full benefits of the bio-economy and create essential carbon sinks** – Do you agree with the need to promote a sustainable bio-economy, diversifying agriculture, livestock, aquaculture and forestry and further increasing productivity, while at the same time adapting it to climate change?
7. **Tackle remaining CO2 emissions with carbon capture and storage** – What are the opportunities and challenges for local and regional authorities with regard to carbon capture and storage?

What is most important?

Photosynthesis is the most important process of biological transformation for most living organisms. The solar radiation energy is converted into bioenergy and stored biochemically in the plants' biomass. Then plants are used as the energy source for most organisms, including humans. **Sustainable use of bioenergy increases energy efficiency.**

Point 2. "**Maximize the deployment of renewables**" is the best starting point for a whole society where urban areas cooperate with rural areas and achieve win-win situation.

"Interdependence between rural and urban: **All bioresources have photosynthesis as base.** Therefore, responsibility of decision makers is to support all cultivation systems by recycling of plant nutrients in biologically sustainable way…. Plants, the primary producers, need help. …Renewable organic material supply to the society must be secured by more efficient support to the green sectors that deliver food, feed, fibre and other eco-system services…. Cities depend on products from the countryside. Sustainable smart cities are possible only when management of renewable organic material in the waste and wastewater is sustainable." In https://falf.se/wp-content/uploads/2018/07/FALF2017_abstract_webb.pdf page 62.

Why is quickly change to Circular Bioeconomy necessary?

Sustainable management of "residues and wastes that originate from plants and animals" has positive impact on Sustainable development Goals 2030.

Present management of "residues and wastes that originate from plants and animals" in waste and wastewater systems is unhygienic, polluting, resource wasteful and expensive both for inhabitants and society**.**

To prevent polluting emissions, the highest priority must be increased support for the sustainable use of all "residues and waste from plants and animals". Only with the help of **biological transformation processes in closed systems**, which is the very important tool in Circular Bioeconomy, the transition to a sustainable society can be realized and thereby **counteracted the climate threat**.

Radical improvement of systems for Anaerobic Digestion in high-tech biogas plants that produce biogas and biofertilizers is a very urgent need. **(***This will support* ***point 1.*** *"Maximise the benefits from energy efficiency")*

Anaerobic Digestion (AD) in high-tech bioreactors that use microorganisms which transform mixtures of renewable organic materials to biogas and biofertilizers is the only transformation process that

1. preserves **biodiversity** of microorganisms and contributes to their increase in soil
2. promotes the recycling of all **plant nutrients** – at least the 16 chemical elements that are essential for most of higher plants: C, O, H, N, P, K, Ca, Mg, S, Cl, Fe, B, Mn, Zn, Cu and Mo. Stimulating chemical elements are, for example, Co, Cr, Ni, V, Sn, Li, F, SE and Si. Use of biofertilizers make recycling of all these elements possible, minimize pollutions and helps phase out mineral fertilizers produced by energy-intensive methods.
3. supports the return of organic matter to cultivated fields and thus contribute to **carbon sink**. (*This promote* ***point 6****. Reap the full benefits of the bio-economy and create*

essential carbon sinks).
Only system where carbon return to cultivated soils in biofertilizers - containing organic structures important as energy source for soil organisms **- is sustainable** way compared to very expensive projects for the industrial bonding of carbon dioxide "Carbon Capture and Storage" (CCS). (*Comment to **point** 7. Tackle remaining CO2 emissions with carbon capture and storage*).
Biochar must also be avoided, as production methods are unsustainable. During the pyrolysis, microorganisms that live on and in biomaterials are killed. All chemical elements that should return to cultivated soils are lost as pollution of the environment. Only coal in inorganic form becomes the biochar that in most cases requires in the cultivation context the addition of synthetic fertilizers.

Biogas can be locally transformed to **electricity and heat/cold** or used as raw material in industry. Biogas can be also upgraded to fuel for vehicles with internal combustion engines. Vehicles can be converted from diesel and gasoline to gas operation.

Biofertilizer ensures soil fertility by improvement of physical, chemical and biological properties of cultivated soils. Thus, more of suns radiation energy can be during photosynthesis transformed to bioenergy that ensure societies enough of food, feed and fibre. Growth of crops is only possible when all essential chemical elements are available.

Concrete proposals ***how should decision-makers act and give citizens the chance to be able to act properly in order to positively influence health, environment and climate***

Challenges that require quick decisions to make substantial investments

1) Development and improvement of
equipment and methods for sustainable collection of raw materials suitable for bioconversion. Hygienic collection and transportation of food waste and human waste without dilution in water
a) reduce losses that pollute the air and water
b) reduce the cost of building a biogas plant and then operating them
c) increase the production of biogas and biofertilizers.
It is possible to consider proposals and prototype on

2) **Further development of high-tech local biogas plants** that are better suited to the needs of the micro-organisms and ensure hygienic working environment. (*This will support **point 4**. A competitive EU industry and the circular economy*)
Resources intended for biogas have been incorrectly used for very expensive thermal production of "biomethane". For example, the Energy Agency's contribution to GoBigas in Gothenburg and to various thermal and chemical conversion processes of renewable organic material such as production of biochar.
* **Biogas** from local high-tech biogas plants can be converted locally to electricity and heating / cooling. From large high-tech biogas plants, biogas is suitable for converting to vehicle fuel or used as raw material for industry.

* **Biofertilizers** from all high-tech biogas plants that use optimal water content is suitable both for professional cultivation and for hobby farming.
Biogas plants with waterborne systems (90 to 97% water content) are expensive to build and costly to operate. The optimum water content of the microorganisms is considered to be about

70%. Water is polluted unnecessarily, and aqueous biofertilizer is expensive to transport to fields.

3) Development and improvement of **local biological systems for cleaning of grey water** from households and utilisation of this water for irrigation and other purposes in settlements.
It is possible to consider proposals for a comprehensive solution on http://biotransform.eu/wp-content/uploads/2017/10/Ramiran-fig2-3-RS-2002.pdf (*This supports **point 5**. Develop an adequate smart network infrastructure*)**)**

4) Support shall be provided to all owners to **convert newer vehicles with internal combustion engines into gas operation** in order to reduce the negative impact of gasoline and diesel on health, environment and climate.
Electric vehicle mileage is supposed to be 3 to 5 times longer in the same amount of energy than for vehicles with internal combustion engines. Nevertheless, vehicles with combustion engines will be used several years ahead. Therefore, gas filling stations for vehicle gas should be available. Initially fossil gas benefits will be later phased out when rapid investments in the biogas plants will result in high production of biogas.
(*This will support **point 3.** Embrace clean, safe and connected mobility*)

Important!

1) **Biological transformation is life supporting way.**
   Increasing of **cascade utilization of organics** from forests, agriculture, horticulture and fishery must be of high priority in all countries. **The last step on cascade must be biological transformation to biogas and biofertilizers** – no thermal or chemical transformation that degrade organic matter.

2) **Don't burden small businesses and consumers, empower them to boost the energy transition!** https://bioenergyeurope.org/smallisbeautiful-dont-burden-small-businesses-and-consumers-empower-them-to-boost-the-energy-transition/

3) **Long-term decarbonisation strategy…**
   Bioenergy has the potential to increase significantly within the limits of a sustainably available biomass potential and provides versatile and flexible technologies in the heating & cooling, transport and electricity sector including the **possibility for negative emissions.**
   https://bioenergyeurope.org/wp-content/uploads/2018/11/PR_Long_term_Strategy.pdf

4) **A Bottom-Up Approach to the Use of Forest Biomass. Joint statement on the EU Non-Binding Guidance on the Cascading Use of Biomass**
   Forests cover more than 40 percent of the EU's land area. They are essential for life on earth, providing the bioeconomy with renewable materials, energy as well as other ecosystem services. Sustainably managed forests and the forest sector play a key role in the transition towards a sustainable circular bioeconomy. Their role is therefore crucial towards achieving the objectives of the Paris Agreement and the Sustainable Development Goals. https://bioenergyeurope.org/wp-content/uploads/2018/09/Joint_Statement_EfficientUse_17092018.pdf

Please, inform decision makers at all levels.