Knowledge Based BioEconomy
Towards 2020 Conference

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Speaking points for the concluding remarks

From an agricultural perspective, there are three main points which are worth to be considered: What role will agriculture play as a supplier to the bioeconomy? What does the bioeconomy mean for regional and rural development? And finally: How can agriculture evolve into an activity which is less based on finite resources, thus becoming part of the bioeconomy? (So, agriculture as a supplier, as an user and where our policy stand for it.)

1. "Agriculture as supplier to the bioeconomy"

There are two important facts I want to underline first when discussing the future role of agriculture:

- Global food demand will continue to increase due to growing population and rising income. The UN Food and Agriculture Organization estimates that agriculture will have to increase its output by 70% until 2050, of which 50% will have to come from improved productivity and only 20% may be gained from additional area, taken into production.

- Second, photosynthesis is at the origin of biomass, and alternatives technologies are today far from being competitive. Since fossil resources will be depleted at some point in time, biomass from forestry, agriculture and aquatic systems together with biowaste will be the only carbon source left for material use. As biotic systems have limited production capacity – given that there are other huge challenges to cope with (food security, biodiversity) – use of biomass will have to be as efficient as possible (zero waste).

Taking these facts together, the conclusion is that in a near future fossil carbon-free economy, biomass production will have to be used predominantly for food and material use.

The pathway to follow to develop a biobased economy is controversial and a broad discussion is needed about the best pathway to choose for the transition, taking into account the urgency of the matter, as we cannot afford not to start mitigating challenges like climate change as from now.

2. "Bioeconomy means regional and rural development"

We don't know yet how exactly an economy and a society based entirely on renewable resources will look like. But views start to converge that this transition means more decentralized production and consumption of food, energy and goods, as globalisation is being inflated by the depletion of fossil resources.

As biomass is today the only renewable source of carbon the transition to a bioeconomy will be at the same time a huge challenge and a tremendous chance for rural areas where the main genuine production potential lies. Since energy-intensive transport will become less affordable, local production and consumption cycles will be strengthened, adding value to and creating jobs in rural areas.

That is exactly what the Rural Development Policy of the EU is aiming at, and the European Commission is currently reviewing how the instruments in place can be improved or adapted.

It is difficult – if not impossible - to anticipate whether this – inevitable and necessary – transition to a bioeconomy can be called "good" or "bad" for agriculture, forestry or rural areas in general. There are too many unknown parameters. One should not sell this as a boon to sectors.

But it is important to clearly convey the message where we are heading for, that farmers, foresters and actors in rural areas need to produce more sustainably, to innovate, to adapt and to improve the way they produce, maybe at a higher pace as they have been doing up to now: the Common Agricultural Policy is assuming its role to support this transition, as we all know that biobased economy is the final stage after transition.

3. "Making agriculture sustainable is a huge challenge"

The transition to a bioeconomy means not only that agriculture and forestry will face increasing demand for biomass, it means also that agriculture will have to change its way of production. Agriculture in its current form is consuming predominantly fossil fuels either directly as energy for transport, machinery, heat, or indirectly incorporated in inputs like fertilizers or agrochemicals. Productivity is growing, but this growth is based on increasing use of finite resources. For instance, a key nutrient extensively being used to enhance yields - mineral phosphorous – is a finite resource. Global reserves are projected to be depleted in about 50-100 years.

Making agriculture sustainable is tantamount to substituting finite resources. I will illustrate in just two examples what this implies:

Will tractors run on biofuels grown by the farms themselves? For this they would need about up to one fifth of their productive area, reducing production potential for food, feed and material use. Maybe electricity from the solar cells on the farms' sheds and stables will be the solution? Maybe fuel cells which run on hydrogen generated from methane produced on farm with manure and organic residues using solar energy?

How do we replace nitrogen fertilizer, whose main input is currently fossil energy in the form of natural gas? Leguminous crops are capable of biological nitrogen fixation – can we mimic this reaction and produce nitrogen fertilizer from renewable atmospheric nitrogen based on biochemical methods and renewable energy?

Many questions which shed light on the scope of the changes needed. Research into sustainable agriculture has to be intensified, transfer of knowledge has to be facilitated, and farmers have to enable to respond quickly and innovatively to the challenges ahead.

To conclude:

Keep in mind that, at the same time as making itself more sustainable and less based on finite resources, agriculture has to cope with rising temperatures and a changing pattern of rainfall, that agriculture is called upon to ensure food security for a growing world population, to reduce its own emissions and to contribute to reducing the loss of biodiversity.

This equation does not seem to have a solution at all – unless the transition is embedded in a systemic change of the whole society including changing patterns of consumption, and with an appropriate support in terms of public policy and investments.

As some author has written, the biobased economy can and should be to the 21rst century what the fossil based economy was to the 20th Century

Let me just add that the European Commission is currently doing its homework, assessing how the Common Agricultural Policy should be further improved to help EU agriculture to cope with these challenges.