Interview — Growing food or fuel on our land?

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Only a decade ago, biofuel production from plants was hailed as an ecological alternative to fossil fuels. Recently, it has come to be seen as competing with food production and not always an effective solution in reducing emissions of greenhouse gases or air pollutants. We talked to Irini Maltsoglou, Natural Resources Officer at the Food and Agriculture Organization of the United Nations (FAO), about biofuel production and agriculture and if and how it can be done sustainably.

Why has biofuel production been so controversial in recent years?

The downsides of biofuel relate to unsustainable agricultural production more generally. As in any agricultural activity, biofuel production can have negative impacts when it does not take into account the local community or the local labour force, and does not consider the environmental and social context. It is not a very straightforward formula in the sense that, as in any form of agricultural production, we need to see what is currently produced and how biofuels could be integrated into this local production. We also need to assess biofuel production's potential for poverty reduction and economic development in the area.

In this light, we cannot say that biofuel production is bad in itself. It depends very much on the type of agricultural practices adopted and whether or not these are sustainable. For example, agricultural production in a natural forest area — for biofuels or other crops — would have very negative impacts because it uses land that should not be touched. On the other hand, a specific and sustainable set-up for biofuels using suitable land that tries to engage the local farmers could benefit the local community and offer new economic opportunities.

Is biofuel production competing with food production for land and water resources?

This dichotomy — biofuels or food — oversimplifies a very complex issue. First of all, biofuels are very context and country specific. We need to look at the country context to see if the specific biofuel production being considered is viable in that specific agricultural landscape. Likewise, we need to see why a country produces biofuels and what it wants to achieve. Is the aim to enter a new agricultural market or to reduce greenhouse gas emissions? For example, in a country where yield levels are currently very low and additional investment could help increase agricultural productivity, biofuels might be a valid option if they are integrated into the agricultural production system.

A few years ago, experts were debating the relation between biofuels and the rise in food prices. There was no clear-cut consensus. On the whole, they agreed that a large number of factors contributed to the increase in food prices. Biofuel production was one of many factors, along with a decline in investments in agriculture, a decline in cereal stocks, demographic growth, economic growth, dietary changes, etc. They could not agree on the extent to which biofuels were to blame. The spectrum of factors was rather large, with the contribution of biofuels ranging from 3 % to 75 % of the price increase.

Are second-generation biofuels more efficient in terms of land and water use?

At this stage, it is not clear whether or not second-generation biofuels are always a viable solution to the problem. In fact, some first-generation biofuels might make a lot more sense in some specific contexts. The second-generation technology is not yet mature and seems to be very much in a pilot or experimental mode. There are also issues with feedstock and technical capacity. In other words, we do not know if we can produce enough of the appropriate crops or if we have the right technology and sufficient production capacity. In addition, second-generation technology is still very costly.

We did some back-of-the-envelope calculations comparing a first-generation sugar beet option with a second-generation miscanthus option. The numbers showed that by planting sugar beet (i.e. a first-generation biofuel), we can actually get more ethanol from the same plot of land than if we were to plant miscanthus (a source of second-generation biofuels). We would also need more water for miscanthus. Similarly, we might need more electricity as an energy input to produce second-generation biofuels, albeit that this would very much depend on the technology selected and the possible feedback loops in the second-generation system.

These issues are dependent on basic agriculture. Are you in a country well suited to sugar beet production? Do farmers have long-standing experience with sugar beet? In this case, sugar beet would be a better option, particularly when we consider the level of maturity of the available technology. Are you in a country where second-generation biofuel production is more viable? If so, this might be an option. Nevertheless, at this stage, setting up a second-generation plant from scratch requires large investments. The investment needed for a second-generation biofuel plant is four to five times the amount needed for a first-generation plant.

Can biofuels become a clean energy source for Europe?

Irrespective of where in the world it is, the key question is whether or not biofuels can be a viable clean energy option. This depends very much on where the feedstock comes from and if it can be produced sustainably. Does the country in question have the agricultural produce to source the biofuels? Are the farmers looking for a market outlet for their agricultural produce? What is the purpose of producing biofuels?

In Europe, biofuels are being considered to both reduce greenhouse gas emissions and diversify domestic energy sources. In this case, the question needs to be whether or not the specific biofuel chain achieves these objectives. The next step would then be to determine whether European countries have the capacity to produce the feedstock internally or will have to source the feedstock from outside Europe. If the primary objective is to diversify domestic energy sources and enhance energy security, then the feedstock would probably have to be produced in Europe. If the focus is on reducing greenhouse gas emissions, other options might also prove feasible.

What is the FAO's role with respect to biofuels?

The FAO actually covers a broader spectrum — it works on bioenergy. We look at bioenergy as a form of renewable energy that is sourced from agriculture. When countries ask for our support, we first try to identify the main reason why they are considering bioenergy. Is it for energy security? Are they trying to stimulate the agricultural sector and create jobs? It might even be for sustainable charcoal production for cooking and heating. Is it for rural development opportunities or rural electrification? Rural access to electricity grids is often very limited in many developing countries and using agricultural residues for electricity generation could be a viable alternative when residues are unused.

Working together with the countries, we define the options that could be viable given country-specific contexts and needs. We have an extensive set of tools to assess bioenergy potential, which integrate the agriculture sector, and therefore consider food security, that we use to assist countries to formulate a bioenergy roadmap and to assess their technical capacity.

In recent years, we have taken a closer look at agricultural residue and bioenergy production. We are trying to look at agricultural residues that are sustainable and food secure. Although it is explicitly forbidden in most cases, these residues are very often burned and this constitutes yet another source of greenhouse gas emissions. Given this, building bioenergy supply chains around agricultural residues would not only reduce greenhouse gas emissions but could also meet part of the existing energy needs at the same time. Next year, we will be exploring how that biomass could be mobilised. Agricultural residues are often scattered, so collecting them is a challenge. In addition to collection centres, we could also analyse potential payoffs for farmers

and how much the industry could pay for the residue. Agricultural residues could then become a commodity that is too valuable to burn.

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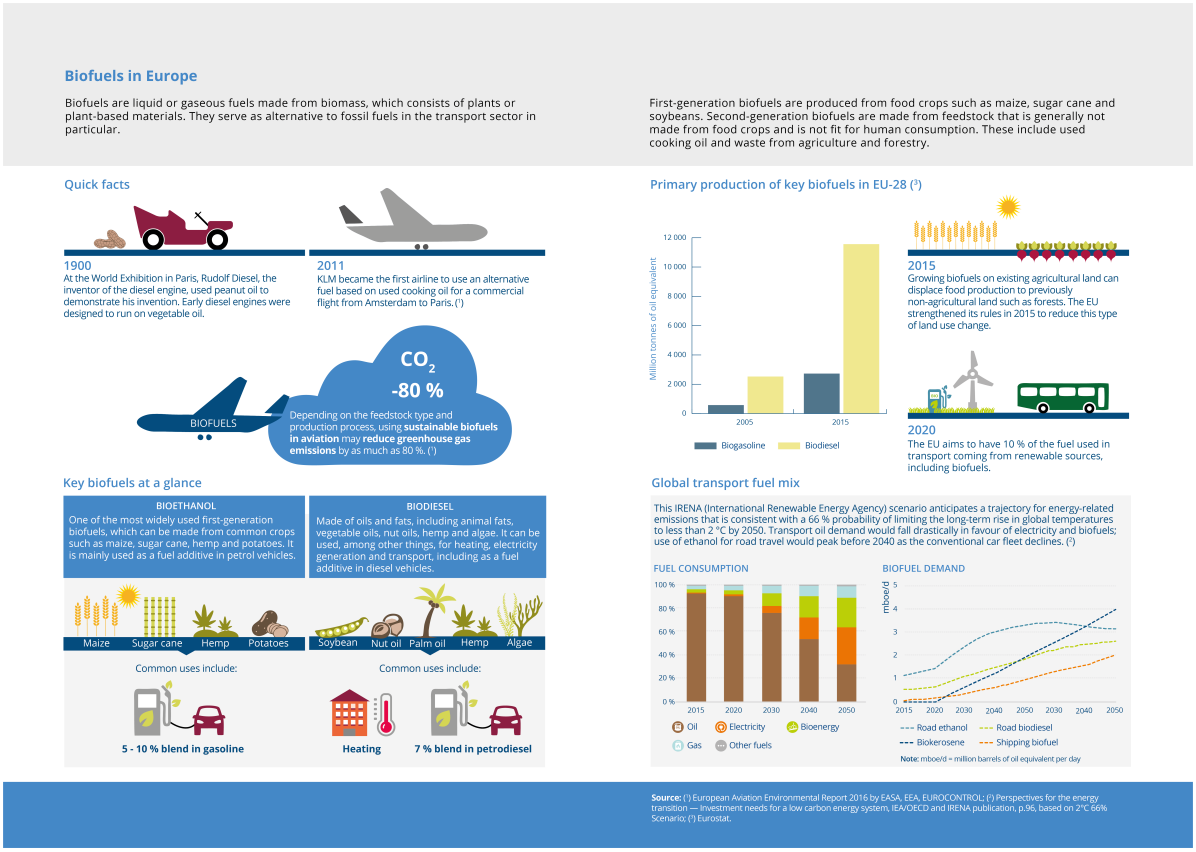

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