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Recommendations for economists and politicians*

Seven proposals for exploiting the potential of biofuels

1 Improvements in vehicle efficiency and the sustainable use of first generation biofuels should be promoted in parallel – likewise the use of second generation biofuels combined with electrical mobility.

Biofuels and electrical motive power are complementary and create synergies; both help to limit the emission of pollutants and reduce dependency on imports of fossil fuels. Whether priority should be given to electrical power, improved vehicle efficiency or the promotion of biofuel is therefore the wrong question; it is rather the case that ways must be found to promote these three different approaches simultaneously.

2 Long-term strategies must be developed for handling biofuels in order to encourage new investments in this sector with reliable regulatory and statutory framework conditions.

At present, the various stakeholders are still reluctant to invest in the production of second generation biofuels. That is because the many uncertainties are having a deterrent effect: it is doubtful whether sufficient raw materials can be made available, and there are as yet no standards to guarantee that biofuels really will be sustainably produced.

3 Initiatives must be launched to integrate all of the relevant actors into sustainable resource management at national and international level.

If biomass is converted into fuel, this competes with other concerns such as food production and the protection of biodiversity. Without precautionary measures, the intensified promotion of biofuels carries the threat of negative effects for other economic sectors and for the ecosystems concerned.

4 The main focus must be the supply of sustainable raw materials, and therefore to promote the use of waste material and wood, as well as the cultivation of crops on areas of land that were previously of relatively little interest to the farming industry.

Only waste material – including timber from demolition waste – makes it possible to produce biofuels without putting pressure on farming land, water and biodiversity. Wood itself has a relatively major potential as waste, and is also easy to transport and store. If plants for fuel are grown on areas that have not previously been used for agriculture, the concerns of environmental protection must be taken into account.

* from the study «Future Perspectives of 2nd Generation Biofuels», TA-SWISS, ed., vdf-Hochschulverlag der ETH Zürich, 2010

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5 Broadly supported and accepted methods must be developed to record and prevent undesirable and indirect side effects of biofuels.

The indirect consequences of biofuel production are difficult to quantify, but are hugely important. There is a need for multi-sectoral statistics on land use, production of biomass and price trends in order to model, on a global scale, causal chains that would be set in motion by increased production of biofuels.

6 The perspective for the assessment of biofuels must move away from one-sided emphasis on the CO_2 balance and increasingly include social and ecological aspects as well.

Most studies on the consequences of (bio)fuels concentrate on CO_2 balances or energy efficiency – that is, on indicators that are easy to determine. In this case, the effects of biofuels are multifaceted and often difficult to quantify. Methods are therefore needed which go further than calculating material and energy flows and also take into account ownership structures on agricultural land, for example.

7 There must be a desire to learn how to deal with and overcome the uncertainty surrounding the assessment of the future perspectives of biofuels.

The TA-SWISS study cannot answer every question that is raised regarding biofuels. This is principally due to the fact that it is difficult to predict technical breakthroughs. This relates in particular to the development of electro-mobility and the competition from established first generation energy technologies with the second generation technologies that are as yet largely untried in practice. Further scientific investigations, for instance on how to deal with uncertainty and on the interdependency of indicators, should be set in motion.

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