

This response was submitted to the consultation held by the Nuffield Council on Bioethics on *New approaches to biofuels* between December 2009 and March 2010. The views expressed are solely those of the respondent(s) and not those of the Council.

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## **QUESTIONS ANSWERED:**

### **Question 1**

#### **ANSWER:**

The emphasis on replacing fossil fuels with biofuels stands in the way of looking at a more structural problem of use. Discussion on sustainability has been unclear, due to the nature of that concept. Depending on the process, the ground material and where it is grown biofuels can be a good and a bad thing. What needs more emphasis in the current debate is that biofuels can aid in a transition to more efficient future energy sources

### **Question 2**

#### **ANSWER:**

- the competition between the production of food/feed/fiber and fuels - issues of international distributive justice with regard to land use - issues of limits to (neo)liberalist conceptions of justice - how to secure energy supplies

### **Question 3**

#### **ANSWER:**

I work as researcher on societal aspects of biofuel production at a department of biotechnology in delft. The department focuses on yeast research. I hosted both public events and expert workshops on the subject, and focus on both societal and academic literature.

### **Question 4**

#### **ANSWER:**

drivers 1. energy security 2. the fact that biofuels can be used in existing automobiles 3. a lack of a good alternative when we are out of oil CO2 reduction is not a likely result of current biofuels, for 2nd generation biofuels may be different. It was referred to as the main driver in the public debate about biofuels, but this has changed in 2008 when the amount of negative reports in the media increased

### **Question 5**

#### **ANSWER:**

Biofuels is best considered a transition technology. with regard to the reduction of greenhouse gasses it is very important to acknowledge the complexity and unpredictability of the factors involved. One needs to look at shift of use of land as well as the effects of fertilisers, transport of biomass as well as the type of crops used for biofuels. First generation biofuels don't seem to reduce GHG emissions that significantly, 2nd generation is another issue. But here it also depends on where it is grown and what is the ground material. A reason not to encourage the devt of biofuels might be that the problem is as much a social one, in a world that is addicted to energy use, as a technological one. Replacing one fuel with another does not solve the social and societal problem of over-use.

### **Question 6**

#### **ANSWER:**

Europe has the problem that there is not enough land available for the production of both food and fuel,

not even if we would be able to grow biomass for biofuels in the Ukraine additional to other arable lands. Africa does have enough currently unused but arable land. Turning our faces south therefore seems inevitable to secure the influx of energy, since using less energy won't be a popular measure in the public eye, and using energy more efficiently will only solve part of the problem. In that case, we will need to look at which crops can be grown best in Africa. Next to this, there is an important issue with regard to the distinction between first and second generation. For first generation biofuels, the problem is the competition between food and fuel, connected to (economic) neocolonialism as an aspect of sustainable biofuel development, for the 2nd generation, the issue is the transfer of technology and know-how.

#### **Question 7**

##### **ANSWER:**

one cannot give a simple answer to this question seen the everchanging state of the art with regard to biofuels research (both regard to the crops used for biomass and to the proces). for now, 1st generation biofuels seem to be more economically viable, but this is also due to the realtive easy with which can be grown and processed. New approaches need a more complex infrastructure

#### **Question 8**

##### **ANSWER:**

#### **Question 9**

##### **ANSWER:**

genetic engineering, specifically with regard to the modification of yeasts, is central to whether biofuels will reach an appropriate level of sustainable production

#### **Question 10**

##### **ANSWER:**

Although I am not a specialist in this area, I do see that IPR's may carry along ethical issues with regard to GM crops for biomass for biofuels as well as GM yeasts for second generation biofuels. This specifically concerns the following questions: - who is to hold these rights? - how can one facilitate a transfer of technology and know how to local communities in the current IPR system? - If this is not possible, how can one design an alternative system that does give an impulse for research and development but does not lead to a problem of unequal access.

#### **Question 11**

##### **ANSWER:**

negative publicity may hinder further R & D in new approaches to biofuels

#### **Question 13**

##### **ANSWER:**

2nd generation biofuels reduce the problem of land use, but the fact that plant material that normally autofertilises the land would now be used for the production of biofuels may pose a problem for some types of land.

#### **Question 14**

##### **ANSWER:**

For the developed world, Europe is confronted with the problem of land scarcity, whilst this is not the case for the United States. If Europe is going to try and solve this issue by growing biomass for biofuels production in Africa, this will have consequences for local agriculture, politics and economy. These may be both beneficial and harmful, depending on the scenario. A further problem is that welfare standards in developing countries are increasing, which already leads to a growth of energy consumption. The pressure to develop alternatives for fossilised fuels will only increase, whilst the issue of a discrepancy in know how will necessitate a better transfer of technology, and an increase in the quality of local infrastructures.

#### **Question 15**

##### **ANSWER:**

Indirect land use change should be addressed, but when this will be phrased as yet another demand on the development of sustainable biofuels, it may hamper the innovation and implementation process. Change of land use should therefore be seen as a separate issue.

#### **Question 17**

##### **ANSWER:**

new approaches to biofuels are likely to decrease the problem of food security. innovation trajectories, to a large extent, are driven by the need to solve the problem of the competition between the production of food and the production of fuel.

#### **Question 18**

##### **ANSWER:**

The major issues with regard to future generation biofuel production on food security are: - technology gap - hurdles in technology transfer between the developed and the developing world - the lack of a proper infrastructure - the problem of authority and responsibility (who holds authority over possible intensification of agriculture? local communities, governments in the developing world, multinationals, governments in the developed world etc.?)

#### **Question 19**

##### **ANSWER:**

#### **Question 20**

##### **ANSWER:**

large scale biomass production for biofuels may offer an incentive for agricultural development in the developed world. This is different from the developing world, where local communities may be forced to relocate due to the production of biomass for biofuels. If such production is to offer an incentive for economic and agricultural development in the developing world, this would necessitate a more detailed definition and a further implementation of criteria for biomass production.

#### **Question 21**

##### **ANSWER:**

Investments in new approaches to biofuels should be directed at multiple goals: 1. further incentives for technology innovation with regard to efficient production (public-private partnerships) 2. further investment in the transfer of technology to the developing countries (public sector) 3. further investment in assessing which know how is transferable (public sector) 4. the development of user-linked systems (private sector)

these investments should stem from

#### **Question 22**

##### **ANSWER:**

until now, European policy communication has strongly emphasised sustainability issues, whilst agricultural development and energy security were more important drivers. It needs to be assessed which criteria and demands one should put on the development of biofuels, whilst holding in mind that these are not justified if similar demands are not associated with other agricultural areas or traditional fuel production

#### **Question 23**

##### **ANSWER:**

a) a clear presentation of why one wants or needs to develop biofuels (put energy security on the public agenda) b) a new patenting system, in which the rights of local communities are also taken into account

#### **Question 24**

##### **ANSWER:**

societal perspectives on biofuels have turned from hopeful to negative. This is mainly due to the emphasis on the potential of biofuels to reduce CO<sub>2</sub> emissions. One either needs to disentangle the debate on implementing biofuels from the debate on countering climate change, or demonstrate how biofuels can aid in this respect.