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.

Question 1

ANSWER:
Oil will be difficult to replace: many different feedstock and fuel technologies will need to be developed before any significant part of oil can be replaced. But there are potential solutions and the development work must continue.

Question 2

ANSWER:
Land use GMO Biological monocultures Water issues

Question 3

ANSWER:
There is information overflow but also lack of sounc scientific information where all aspects would be considered. Stil, I consider myself fairly well informed.

Question 4

ANSWER:
We must limit our GHG emissions. Regional and national biofuel targets drive the development. Regulators should only set the targets and then let the industries find the most effective solutions. Therefore, strickt technology and feedstock neutrality are needed in regualation.

Question 5

ANSWER:
Lignocellulosic biofules will be a significantpart of the solution. However, we should not disregard the current biofules just because they may be first generation. There are ways to make them better in terms of GHG savings by improving farming practices and waste handling at farms. It is another question how the first generation biofules compete in terms of fuel quality. From the customers point of view this is equally relevant.

Question 6

ANSWER:
All of these will be needed for better energy security. But putting too much weight on domestic sources will cause problems: 1) Price of energy will be artificial, not a market price 2) Free trade will suffer 3) Best technologies will not be able to win due to protectionism

Question 7

ANSWER:
Biofuels provide living for many already now and there are many more opportunities in this are in the poorest countries. We should encourage all efforts to get the widest possible international and binding agreement on sustainable farming and land use, and allow the the poor to benefit from the (rich people's) thirst for energy.

Question 8

ANSWER:
Gasification is a promising route. Pilots for this exist.

Question 11

ANSWER:
We started too late, and therefore good "final" solutions are not ready yet. Perhaps even incresed funding can't solve this because it is difficult to speed up basic research.

Question 12

ANSWER:
Regulators should only give targets for biofuels and feedstock sustainability, the industry will come up with solutions.

Question 13

ANSWER:
Land use issues are very topical at the moment. There are good opportunities to tackle them by improving farming methods, developing higher yield plants and using land areas, which are not currently in food production. Also, there is food for all people but it is not available to all people!

Question 14

ANSWER:
Developing countries are more likely to take new land for farming. Also, if the income on biofuel feedstock is higher than the income on farming food, there is a problem.

Question 15

ANSWER:
Yes it should but on scientific metrix. This is needed to protect e.g. rainforests.

Question 17

ANSWER:
Current financial crises demonstrate that biofuels crops are not directly linked to food price increases: as the economy suffered, feedstock prices dropped despite the continuous increase in biofuels production.

Question 19

ANSWER:
Disputes on human rights and land rights are partly true and partly only used as disguise for earlier disputes between tribes, families or individuals.

Question 22

ANSWER:
It is utmost important to maintain technology neutrality and base all regulative actions on sound science. There is a lot of protectionist thinking in the area of biofuels.

Question 23

ANSWER:
Current EU mandating systems works best.