Institute for Science, Ethics and Innovation

QUESTIONS ANSWERED:

Question 1

ANSWER:
A greater use of biofuels will be positive only if guided by principles of sustainable development.

Question 2

ANSWER:
In the future development of biofuels the interests of developed countries should not outweigh the needs of developing countries and short-term interests should not jeopardise long-term interests.

Question 3

ANSWER:
Yes, I consider myself well-informed about biofuels. I get information from intergovernmental organisations (e.g. the Food and Agriculture Organisation; the World Bank), NGOs (e.g. Oxfam), research groups, scientific organisations (e.g. the Royal Society, National Academies of Science), governments, and media sources.

Question 4

ANSWER:
The most important factors driving the future development of biofuels will be the economic and energy security policies of major industrialised countries and regional blocs, particularly the US and the EU. Their energy security policies will be influenced by increasing energy demands of large developing countries such as China and India. Priority should be given to the international effects of policies of the major states and to work towards sustainable development, particularly in regard to changes in production and consumption patterns and the need to reduce poverty and associated problems such as food insecurity and ill-health.

Question 5

ANSWER:
Having a local approach will be most successful in generating GHG emission savings. Growing, processing and distributing the feedstock and biofuel locally will avoid GHG emissions from transport. It should also make minimal use of chemical inputs (such as nitrogen-based fertilizer). New approaches should not be encouraged if they cause significant displacement of other crops (indirect land use change). Any policy to encourage or discourage approaches to biofuels must not be considered in isolation – the amounts of feedstock likely to be produced will only make a small contribution to GHG emission reduction and must be combined with other strategies e.g. to promote switches to public transport.

Question 6

ANSWER:
Again, local production, processing and distribution are important. When biofuels are traded on a large-scale in international markets they become strongly linked with oil markets (because of substitutability) transferring instability and price volatility. Where traded internationally (which is inevitable) market interventions will be appropriate to cover externalities. Again, biofuel use needs to be combined with other strategies to reduce dependence on fossil fuels. There is a problematic dimension to local production as

well. The new generation biofuels are likely to be more technology intensive than current biofuels, and developing countries may lack capacity to benefit from the new biofuels, which could exacerbate inequalities and environmental degradation.

Question 7

ANSWER:
In terms of industrial development it is likely that employment will shift from other sectors to biofuels production rather than increase overall. Support of small-scale feedstock growth, production and processing is most likely to be beneficial to agricultural and industrial employment. Large-scale feedstock growth in developing countries in the past few years had seen land ownership shift to large companies and labour conditions have deteriorated. Large companies can benefit from economies of scale and are likely to dominate biofuel production without market intervention.

Question 8

ANSWER:
I have no detailed knowledge of the technological developments in second-generation biofuels. The risks associated with land use change and food price rises remain, even if feedstock is sourced from non-food crops.

Question 9

ANSWER:
There is no reason that these technologies should not be used as long as appropriate risk assessment and management (e.g. on environmental impacts) is undertaken. It is worth noting, however, that: a) Public resistance to genetically engineered crops may be problematic. b) Commercial practices relating to such technologies may well place them out of reach of small producers and concentrate benefits in large companies and developed states. c) Developing countries may lack capacity in the relevant scientific fields and be unable to keep pace with developed states.

Question 10

ANSWER:
Because of the massive and vital joint benefits that could be achieved, all technologies and knowledge for adaptation and mitigation of climate change should be openly accessible to all. Current intellectual property rights regimes are inappropriate for this. Given the indicated range of technologies likely to be involved in production of a single biofuel, the area seems particularly prone to situations of patent-stacking and patent thickets, which have proved extremely problematic in the pharmaceutical area. In relation to plant materials, the International Treaty on Plant Genetic Resources for Food and Agriculture and its Multilateral System on Access and Benefit-Sharing provide a more developed and concrete model of governance than the Convention on Biodiversity (though this may change when the current negotiation of an international regime on access and benefit-sharing is completed). This system focuses on food and feed crops of importance to food security. A similar system could be designed for biofuel feedstock sources. Commercial interests may need to be protected in alternative ways e.g. prize funds, patent-pooling, or open-source models and it seems likely that a shift to increased public investment in R&D will be necessary in order to balance market distortions. The international governance of IPRs anyway needs revising to ensure the interests of developing states are better protected against economic and commercial pressures. The problems of climate change and poverty alleviation are too complex to be addressed with current political and economic approaches and substantial changes must be contemplated e.g. routine market interventions, restrictions on population growth, and large reductions in consumption in developed states.

Question 11

ANSWER:

Question 12

ANSWER:
R&D strategies should be developed with international consultation in order to ensure that interests of different states and populations can be balanced equitably. Collaboration between scientists in developed and developing countries will be important for capacity building, and increased public funding will be necessary.

Question 13

ANSWER:
Yes, new approaches to biofuels are likely to raise problems related to land use. There is a finite amount of land available. If feedstock production increases, either it or the crops it displaces will have to shift to land previously used for other purposes. This may include marginal land underused at present, but due to profit motives it is also likely to include grassland and forest that fulfil important ecosystem functions. Such changes will have both environmental and food security impacts.

Question 14

ANSWER:
Currently – and without intervention there is no reason to think this will change – the policies designed to benefit the developed world (economically, in reduced GHG emissions and in improved energy security) are bringing some benefit to them, but large costs to developing countries and to future generations. In other words, the problematic effects of future biofuel production on land use are likely to be displaced through international markets from developed countries demanding feedstock to developing countries supplying it.

Question 15

ANSWER:
Yes it should, it is a relevant externality. If production of food crops does not reduce by the amount it would have to with biofuel feedstock taking over agricultural land then it will be obvious that iLUC has taken place, and it should be possible to estimate the extent of this. Further research would be necessary to establish the likely change of use that occurred.

Question 16

ANSWER:
Without market interventions new approaches are likely to have the same disadvantages as current approaches – increased use of chemical inputs releasing GHG, deforestation releasing GHG, use of large-scale monocultural agricultural production reducing biodiversity, use of fossil fuels in growth, harvesting, processing and distribution, etc. These externalities need to be taken into account in markets and traceability systems will be needed to ensure that sustainable approaches to growth and production have been used – both of which will need to be coordinated internationally.

Question 17

ANSWER:
Yes, where they are grown on land that food could have been produced on and/or where they make use of other agricultural inputs e.g. fertilizer, equipment, water. As feedstock growth increases demand for

these inputs, the price goes up, and affects those growing food as well.

Question 18

ANSWER:
Populations in developing countries (and equally the poor in all countries) already devote a large proportion of their income to food in comparison with others, therefore any changes in food prices affect them most severely. It has also been noted that increased price volatility is more problematic for low-income groups.

Question 19

ANSWER:
Yes, as large-scale producers benefit from economies-of-scale and will tend to dominate biofuel production. Switches to large-scale corporate land ownership and production have been associated with deteriorating working conditions and human rights abuses. Even if biofuels production provides a small-scale producer with increased income from their land, this may not be sufficient to compensate for the increased price of inputs and the increased price of food.

Question 20

ANSWER:
Wages are, of course, already much lower for developing countries' workers and they tend to receive less protection of their rights and are therefore far more vulnerable to abuse and poor working conditions.

Question 21

ANSWER:
A better balance needs to be achieved between public and private funding in order to mitigate the effects of markets. Local and small-scale projects should be prioritised as they are likely to be more sustainable.

Question 22

ANSWER:
Current policies are focused on short-term rather than long-term gain and the economic and energy security interests of major developed states far outweigh consideration of environmental, food security and poverty alleviation issues. States may recognise the importance of sustainable development of biofuels, but they lack the political will for necessary action and timely intervention. This is the most problematic issue.

Question 23

ANSWER:
Policies on biofuels need to be developed internationally as the effects are inherently global. This needs to be done across issue areas and with the cooperation of several major international organisations. Most of all it needs the political will of major states. Incentives are currently inappropriately targeted – e.g. $11 billion in annual subsidies for biofuel production that produce only a 0.8% reduction in GHG emissions (see OECD, 2008, Economic Assessment of Biofuel Support Policies, www.oecd.org/dataoecd/19/62/41007840.pdf). A halt to and thorough review of current policies is required and before policies are enacted in relation to large-scale production of second generation biofuels, far more research is needed into the full effects of such policies and of alternatives that may be more appropriate.