Food Not Fuel

Question 1
What is your view on society moving towards greater use of biofuels?
Industrial biofuels exacerbate climate change and destroy ecosystems such as rainforests that regulate our weather patterns. They contribute to speculation on the food markets, world food price rises and world hunger. They are linked to human rights abuses and displacements of peoples from their land in South America, Asia and Africa. Society moving towards a greater use of biofuels will exacerbate all the above problems further and lead to extreme changes in weather patterns, food and water insecurity and therefore increases in climate refugees and societal unrest and possibly societal collapse even more quickly then predicted by mainstream climate scientists.

Question 2
What are the most important ethical challenges raised by the prospect of future generation biofuels?
The ethical challenges raised by the prospect of future generation biofuels include all the ethical challenges of first generation biofuels but on an even larger scale. They may also include some new ethical challenges.

All first generation industrial biofuels generate higher green house gas emissions then fossil fuels if their whole life cycle is taken into account. These emissions come from:

- nitrogen fertilisers used in industrial farming which release nitrous oxides, a green house gas almost 300 times as potent as CO2 . Industrial tree plantations for second generation biofuels also require a lot of agrochemicals.
- land use changes caused directly or indirectly by industrial biofuels. The GHG emissions come from the destruction of ecosystems such as forests and savannah and from the carbon that was stored in the soil and is released when the soil is ploughed to cultivate plants for agrofuels.
- Emissions caused by farm machinery, the refining process, the transportation of the agrofuels and the burning of the agrofuels.

Second generation biofuels that use technology to convert solid biomass to liquids present the same problem, except that it is hugely exacerbated.

I do not believe that some people's vision of low-impact, biodiverse grasslands where grass is cut once a year for biofuels is realistic at all due to the fact that second-generation biofuel refineries will have high capital costs. Economics of scale are required and this will make consideration of long-term sustainability infeasible .

If any solid plant could be converted into liquid fuel then that puts every single ecosystem on earth at risk of destruction. If all solid matter can be used then what is the motivation to use any organic matter to regenerate the soil with? Soils will degrade further and require yet more fertilizers.

First generation agrofuels compete with land used for food production. So will solid to liquid technology second generation agrofuels.

First generation agrofuels are linked to land grabs and human rights abuses in developing countries. Future generation agrofuels will not be immune from the same injustices.

Ethical issues around the ever bigger power held by and profits made by multinationals such as agribusiness companies, energy firms, logging companies, etc. These firms are forming ever larger conglomerates.

Other ethical issues

The process of converting solid biomass to liquid involves the use of genetically engineered microbes and fungi. GE microbes and fungi could be potentially lethal if they manage to escape into the wider environment as they could destroy everything.

The impacts of GE algae on ecosystems are unknown and unpredictable.
There are also ethical issues around genetically engineered crops and trees.

Question 3

Do you regard yourself as well informed about biofuels? Where do you get your information from?

I do regard myself as well informed about biofuels. I have been campaigning with Food Not Fuel since early 2008. I have been heavily involved in leading campaigns against six biofuel power stations and have read many of the planning documents and spoken to planning officers and company employees. I get information from many sources including Biofuelwatch website and Biofuelwatch daily digest which is a digest of media articles about biofuels. I have read reports by many NGOs and have given talks about agrofuels. I have met activists from Indonesia and South America who have first hand experience of agrofuels in their countries. I have researched agrofuels online and watched programs about agrofuels on TV and heard radio programs about agrofuels.

Drivers, hopes and benefits

The development of future generation biofuels is mainly driven by three factors: the need to mitigate climate change and achieve lower greenhouse gas (GHG) emissions; worries about energy security; and an interest in agricultural and economic development, both in the developed world and developing countries. It is hoped that future generation biofuels will be successful in addressing these concerns. There might also be other benefits to future generation biofuels.

Question 4

Which factors are going to be the most important in driving the development of biofuels in the future?

EU and UK targets and subsidies and investment by other countries including the USA. Most uses of agrofuels are not profitable without the subsidies and investment in research and without mandatory blending in transport fuel. Targets, subsidies and other incentives for agrofuels are causing the expansion of agrofuel use and making it profitable for companies to invest in agrofuels. These include the UK's Renewables Obligation Certificate that gives double subsidies to power stations burning agrofuels (including palm oil) versus only single subsidies for onshore wind or half a subsidy for using methane from landfill or recycled vegetable oil.

The UK's Renewable Transport Fuel Obligation are setting mandatory targets for agrofuels to be blended in with transport fuel, as does similar legislation in many other countries, and the EU Renewble Energy Directive sets a mandatory 10% target for 'renewable energy' in transport which is widely understood to be primarily a biofuels target.

The UK's Renewable Heat Initiative may well subsidise and give incentives for the burning of agrofuels in heating appliances in homes, schools and places of work.

To what policy concerns should priority be given?

- Finding real solutions to climate change (true renewables like wind, wave and solar and not agrofuels –
- Greatly reducing demand for energy and other resources in Europe. by creating a more energy efficient societies. Eg. Through a programme of home insulation amongst a host of other programmes
- Preserving ecosystems and agro-biodiversity.
- Increasing national food security (self sufficiency) of the UK and national energy security. Increasing dependence of foreign imports of food and agrofuels goes against this idea.

- Reversing and halting the colonialist system where we rely on countries from the global South for resources including food and agrofuels. We should be helping countries in the global South to build a green economy and build up their defenses to climate change and peak oil.

What advantages not mentioned here could and should future biofuel production aim to deliver?

Climate change
If we continue to use fossil fuels at current and projected levels, the scientific consensus suggests that there will be a detrimental impact on the Earth's climate which may have global implications. To reduce the potentially destructive social, environmental and economic consequences of climate change, greenhouse gas emissions (GHG) need to be lowered. Some *first generation biofuels* were shown to generate only small reductions in GHG emissions in their *lifecycle assessment*. New approaches could do better in this regard. For example, *lignocellulosic biofuels* produced from agriculture or forestry residues have been estimated to have GHG savings of 80 to 90 percent, when compared to petrol or diesel. This assumes no land-use change has occurred in supplying the biofuel *feedstock*.1
Question 5
Which of the new approaches to biofuels will be most successful in generating GHG emission savings? How should these be encouraged? Are there any reasons why these new approaches should NOT be encouraged?
1 Renewable Fuels Agency (2008) *The Gallagher Review of the Indirect Effects of Biofuels Production*, available at: http://www.renewablefuelsagency.gov.uk/_db/_documents/Report_of_the_Gallagher_review.pdf, p24.
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Lignocellulosic biofuels will have to be be industrially produced to make the technology economically viable. If Lignocellulosic biofuels do take off they will be used on a large scale. They will inevitably require land use change or if matter is taken to be turned into second generation biofuels that would otherwise have been left to return to the soil then they will result in degradation of the soil. Soil degradation leads to carbon being emitted from the soil. Therefore the quote from the Gallagher review above which discounts emissions from land use change is irrelevant to the reality of the agrofuel life cycle. If ecosystems are to be degraded then GHG savings are not offered.

With regards to algae:
Energy security
Individual nations need a reliable supply of affordable energy – often referred to as energy security. Energy security can be increased by lowering energy consumption, using energy from a diverse mix of sources, and by producing energy domestically to reduce the need for imports.
Question 6
Which of the new approaches to biofuels will be most successful in improving energy security? How should these be encouraged? Are there any reasons why these new approaches should NOT be encouraged?

We cannot have energy security if we are importing biofuels/biomass from abroad and importing extra food to compensate for the land we in the UK are using to grow agrofuels. Recycled vegetable oil would only meet a miniscule fraction of our current energy needs which is why virgin, unrecycled crops are being used for agrofuels. I quote from an article http://www.eea.europa.eu/highlights/suspend-10-percent-

biofuels-target-says-eeas-scientific-advisory-body that sums up the The European Environment Agency's Scientific Committee's 2008 report:

"the land required to meet the [EU's target of 10 % agrofuels in transport by 2020] …exceeds this available land area even if a considerable contribution of second generation fuels is assumed. The consequences of the intensification of biofuel production are thus increasing pressures on soil, water and biodiversity.

• The 10 % target will require large amounts of additional imports of biofuels. The accelerated destruction of rain forests due to increasing biofuel production can already be witnessed in some developing countries. Sustainable production outside Europe is difficult to achieve and to monitor."

In addition to this there is an ever expanding market for agrofuels in the heat and power sector and aviation, demanding the production and importation of more agrofuels and/or food.

Food Not Fuel believes that the use of biofuels that come from industrial monocultures of any kind should be halted.

With regards to algae biofuels, these are currently not commercially viable and are extremely water and energy intensive.

Economic development
New approaches to biofuel production could potentially create jobs and new sources of income both in the developed world and in developing countries – the so-called "Green Economy". This could in turn contribute towards improving infrastructure, and support overall economic and agricultural development.
Question 7
Which of the new approaches to biofuels will be most successful in supporting economic development? How should these be encouraged? Are there any reasons why these new approaches should NOT be encouraged?
7

Truly recycled biofuels (such as waste vegetable oil from restaurants) and the use of biofuels that are grown using inter-cropping or permaculture methods and grown by the community for the community are the only types of biofuels that are sustainable and should be encouraged. These may help aid the prosperity a small community.

Biofuels that come from monocultures grown in the global South to be exported to developed countries are displacing local food production and are if anything creating less jobs because of increased mechanisation. In many cases they are taking food sovereignty and money out of the local economy and making wealthy an alliance of large scale land owners, agribusinesses, oil companies and other multi nationals.

Agrofuel production in the global South is linked to human rights abuses and displacement of peoples from their lands. The UN forum on indigenous issues up to **60 million indigenous peoples** are at risk of becoming 'biofuel refugees'

With regards to green jobs in the UK, agrofuels are not green and therefore would not be part of a "green economy" just a "greenwash economy".
Science, technology and research
Feedstock development and processing
In contrast to most *first generation biofuel* production, research is

exploring the use of *lignocellulosic* biomass – the fibrous, inedible material from plants. Materials for lignocellulosic biofuels include non-food crops such as bushes/trees, and perennial grasses that can be grown specifically for biofuel production; as well as waste materials from agriculture, forestry and other urban sources. Another research area is the development of marine resources, such as algae, as biofuel *feedstock*.
In order to turn lignocellulosic feedstocks into biofuel end products, the feedstock first has to undergo *pre-treatment* to produce an intermediate form that is more amenable to *conversion* and reduces costs. Pretreatment can also make the material denser so it is more efficient for being transported. For example, sugars can be recovered from lignocellulose using chemicals/enzymes to break the lignocellulose down (a process called *lignocellulosis*); carbon monoxide and hydrogen gases (a mixture known as synthetic gas or syngas) can be generated by *gasification*, and bio-oil can be produced by *pyrolysis*. Following pretreatment of the material, conversion processes and refining technologies are applied – including blending – so that the biofuel can be used for transport.

Question 8

Of all the new approaches to biofuel feedstock development, pretreatment and processing (including any additional to those mentioned here), which is looking most promising for eventual commercial and sustainable use? Over what timescales might such developments be commercialised? Are there any risks associated with these developments?

8

Advanced plant breeding strategies, genetic modification and synthetic biology

Some of the new approaches to biofuel production involve *advanced plant breeding strategies, genetic modification* and *synthetic biology*. For example, advanced plant breeding strategies can be combined with conventional breeding to help produce new varieties of plants that express desired traits. Genetic modification can be used to introduce genes to produce favourable traits for biofuel production, such as higher yields or the ability to grow on land which cannot be used for food crops. Genetic modification is also used to enhance the biofuel production process. For example, microbes have been genetically altered to secrete enzymes which help break up the *feedstock* to enable easier *biofuel processing* and energy extraction. The emerging field of synthetic biology is aiming to develop entirely new means of producing biofuels. This might involve, for example, the specific design and construction of microorganisms (such as bacteria, yeast and algae) as *biofactories* producing biofuel: e.g. microorganisms which secrete fuel using waste water, sunlight, oxygen etc.

Question 9

Is the use of the following technologies to develop new approaches to biofuel production appropriate? Why?

Advanced plant breeding strategies

FNF do not believe that plant breeding for the growing of biofuels in industrial monocultures is appropriate as we do not believe that growing biofuels in industrial monocultures in appropriate.

Genetic engineering

Cross pollination of GM crops with food crops and wild relatives is inevitable. There are consequent risks to food safety (for human consumption) and food security and once cross pollination has happened it is irreversible and it's continuation is unstoppable. There are unknown risks to biodiversity.

With regards to GM trees, trees can cross pollinate over long distances and can live longer than people so the effects of cross pollination are impossible to monitor or predict.

Likewise impacts of GM microbes and GM algae are impossible to predict. Algae biofuels have been researched for the last forty years and are still not commercially viable, nor is there evidence that they will become so in the foreseeable future.

Synthetic biology

See above.

Intellectual property issues

Successful future generation biofuel production "from lab to tank" requires knowledge of the technologies involved at different stages of the production pathway, such as plant selection and production, growth/production of the *feedstock*, *biofuel processing* of the material, extraction of the fuel, and finally refinement and blending. Researchers are working to improve each step of the process. For example, *advanced plant breeding strategies* and *genetic modification* of feedstocks can be used to enhance yields or to make crops more resistant to heat or drought. Microorganisms can be genetically altered so that they secrete 'digestive' enzymes that enable more efficient processing of the feedstock into fuels. Several such technological tools and processes in future generation biofuel production have been patented or will be patented in the near future. Thus, if researchers, producers or companies want to use these technologies, they will have to apply and pay for a licence.

In addition, the future development of plants with desired traits may require access to plant material which is only available from other countries. Many developing countries, the main source of novel plant material, are raising concerns about intellectual property and in particular the appropriation of traditional knowledge by companies in the developed world. In some cases countries have adopted intellectual property legislation based on issues of access and benefit sharing in keeping with the *Convention on Biological Diversity*. The full implications of such legislation are yet to be understood.

These intellectual property and patenting systems protect the commercial interest of the patent holder, ensuring they can make a return on their often substantial initial investment. On the other hand, patents can hinder further research and create barriers to using the technology particularly for poorer populations and countries.

Given the rapid technological advances in the field, it is likely that questions regarding intellectual property, knowledge transfer and sharing of expertise will play an important role in future biofuel production.

Question 10

What are the most important intellectual property and access issues raised in new approaches to biofuels? What is the best way of governing these?

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Research and development (R&D)

Several elements of new approaches to biofuel production, including generation and *biofuel processing* of new *feedstocks*, are still being developed. A great deal of research is currently underway in the field.

Question 11

What are currently the main constraints to R&D in new approaches to biofuels?

Researchers have so far been unable to get algae to both grow and produce lots of oil.

Question 12

Where should R&D for new approaches to biofuel be targeted, and who should decide about future biofuel R&D strategies?

Land use, environmental and food security and human rights

Land use

The amount of land that is used for biofuel production has increased significantly in recent years, and is predicted to increase dramatically over the next 20 years. Such land use has raised various concerns over environmental and *food security*, as well as human rights and health. The expansion of biofuel production has in the past sometimes resulted in local populations losing control of their land, and even in their removal from the land. Biofuels might be grown at the expense of basic food commodities resulting in local, and even global, food shortages and price rises. Even if biofuels are grown on land that is marginal for food production, this may result in the loss of natural or semi-natural *biodiversity*-rich areas, and endanger national parks and other protected areas, which in turn may result in severe impacts on critical *ecosystem services* (the benefits people derive from their ecosystem). Discussions around new approaches to biofuels have highlighted an awareness of these land use issues, and a desire to avoid them.

In addition, questions surround whether *life cycle assessments* of biofuels should consider the greenhouse gas (GHG) emissions released through indirect land use change (iLUC). Indirect land use change occurs when farmers direct existing cropland or crops into biofuel production. It is hypothesised that in response, farmers elsewhere in the world convert more forest land into cropland (e.g. for food agriculture), thereby releasing more carbon.

Question 13

Are new approaches to biofuels likely to raise problems related to land use? If yes, how? If not, how do new approaches avoid these issues?

Solid to liquid biofuel technologies will require an even greater expansion of tree plantations. This will cause ecosystem destruction (such as destruction of natural forests, savannah, etc) or the displacement of agricultural land for food.

Question 14

What differences are there between the developed world and developing countries with regards to the potentially problematic effects of future generation biofuel production on land use?

Developed countries will be increasingly reliant on developing countries (where plants grow faster) to grow their energy sources for them. Developed countries may not be able to feed their population but will be exporting food and non food crops to developed countries to fuel their cars and power stations and airplanes.

In the global South a larger proportion of people is directly dependent on the land and forests than in developed countries.

In developing countries there is a huge wealth of knowledge about sustainable farming and forestry management that suits local conditions. There is knowledge of properties of herbs and medicines that has been passed down for generations. There is a heritage of seed varieties of the same crop. We should be preserving such knowledge and diversity of seed varieties as a safeguard for adaptation to future weather conditions. Instead, traditional farmers are being displaced to make way for industrial tree and crop plantations. The seeds and the knowledge and skills are often lost. People are killed or displaced to shanty towns or forced to work on the plantations as it is their only way to earn a wage.

Question 15

Should iLUC be considered when evaluating the GHG emissions savings of new approaches to biofuels, and if so, how?

The fact that Indirect Land Use change is happening must be taken into account when calculating GHG emissions. However, it is impossible to quantify precisely.

It is of concern that much policy tends to focus solely on GHG emissions and neglect to take into the account the importance of the preservation of ecosystems and soils. Soils emit GHGs when ploughed and when degraded and when degraded they require more input of industrial fertilizers which in themselves contribute hugely to climate change by emitting more GHGs.

When ecosystems such as rainforest, savannah or plains are damaged they do cause a release of GHGs and stop playing their ongoing role as carbon sinks. However, it is crucial that we understand that ecosystems regulate the climate in another way too, by creating microclimates that are fundamentally important to the regulation of the world's temperature. The Amazon rainforest is responsible for regulating the rainfall cycles on which much on Latin America and the Southern USA depend. It in turn is dependent on these rainfall cycles. If the Amazon is sufficiently destroyed that it heats up and dries out/burns down then the whole rainfall cycle could collapse and wreak untold havoc on our weather and food producing capacity long before the worst effects of climate change do so. We are already seeing record amounts of forest fires. In September 2007 the Amazon rainforest saw 70,000 forest fires in one day.

We must also consider the impacts on communities, agro-biodiversity and water of agrofuel production.

Environmental security

Current approaches to biofuel production can themselves have some effect on the environment. There have been criticisms over air pollution through activities like deforestation and the drying and burning of peatland. Water pollution can also occur through the escape of sediment and chemicals used in agriculture into water sources. This way, water catchment areas may be reduced. In addition, the use of large amounts of water, the destruction of land of high conservation value such as peatlands and rainforests, and the reduction in *biodiversity* and *ecosystem services* have been attributed to biofuel production.

Some of the new approaches to biofuels have been specifically developed to address these concerns. For example, enhancing crop yields, using waste materials or developing crops which grow under hostile conditions might reduce the need for resources such as water and land. This could relieve pressure on drinking water reserves, help to protect land of high conservation value, as well as potentially alleviate competition with food agriculture. Additionally, new approaches might benefit the environment, for example, by creating new habitats. On the other hand, *lignocellulosic biofuel* crops could actually be planted in areas of high biodiversity precisely because these have hitherto been unsuitable for crops. Moreover, there is a danger that trees in natural environments will be harvested unsustainably since this approach may often be cheaper compared to the management of plantations.

Question 16

What advantages and disadvantages for environmental security could new approaches to biofuels have? How could harms for environmental security be dealt with?

Food security

There have been concerns regarding the effect of *first generation biofuel*

production on *food security* – that is the availability, price and accessibility of food at local, national and global levels. For example, there has been a debate about whether current biofuel production diverts agricultural resources (such as land and water) away from food production, potentially limiting local food supply. The diversion of US corn to produce fuel rather than food has also raised grave concerns over food prices. In January 2007, the price of corn tortillas, a dietary staple in Mexico, rose by over 400 percent, prompting riots.2 Mexico is a net importer of corn.

New approaches to biofuels aim to avoid problems associated with food security. For example, *feedstock*s such as algae and *lignocellulosic* feedstocks might not compete with food.

Question 17

Are new approaches to biofuels likely to raise problems related to food security? If yes, how? If not, how do new approaches avoid these issues?

New approaches are going to raise problems of food security. Lignocellulosic biofuels require vast expanses of tree plantations. The trees may not be edible but they are taking land away from farm land or away from forest communities who rely on the forest for their food source. This is no different from current monoculture plantations of soya in South America or palm in Brazil, for which local and indigenous people are losing their land and livelihood.

As the amount of land being used for growing food decreases, this will continue to push up food prices, again causing more food poverty and starvation.

Both industrial tree plantations and algae biofuels are fresh-water hungry. This would take water away from agriculture for food.

Question 18

What differences are there between the developed world and developing countries with regards to the potentially problematic effects of future generation biofuel production on food security?

2 Ziegler J (2007) *The right to food: Note by the Secretary-General*, available at: http://www.righttofood.org/new/PDF/A62289.pdf, p12.

In developing countries there is a much larger proportion of the population who are partly or wholly self sufficient in food. People spend a much higher proportion of their income on food. As a general rule there tend to be less or no safety nets in the form of state benefits for people who are on low or no incomes in the developing countries. So people who are affected by losing their ability to be self sufficient and/or by rising food prices face a much bigger problem in developing countries.

On the other hand the poorest people in developed countries are also the most affected by food price rises in their society. In the UK people tend to be deskilled in their ability to grow food and preserve what they have should they find themselves without a fridge or freezer due to power cuts that could happen in the future. Many people are even deskilled in how to cook from raw ingredients.

The developed world is pushing itself ever further into food insecurity by growing some agrofuels and importing more food from the developing world.

Rights of farmers and workers

Discussions around new approaches to biofuels have highlighted an awareness of issues around the rights of farmers and workers both in the developed world as well as in developing countries. In first generation biofuel production, as with many other types of agriculture, there have been concerns that workers and farmers could experience inadequate working conditions and negative health effects, for example due to

pesticide use. There have also been reports that workers have sometimes been provided with inadequate wages, particularly in developing countries. On the other hand, both small scale and large scale industrial biofuel production have given farmers and workers new possibilities of income and of developing their businesses.

Question 19

Are new approaches to biofuels likely to raise problems related to rights of farmers and workers? If yes, how? If not, how do new approaches avoid or benefit these issues?

First generation biofuels are already causing thousands of people to lose the ability to work on the land because they are thrown off it/displaced to make way for agrofuel plantations. Only a small proportion of these people will get a job working on the plantation. Slave labour/bonded labour like conditions on plantations have been documented in Malaysia and South America to name two examples. The same problems could occur with tree plantations for second generation biofuels in the global South.

To this date there is not a single credible scheme that can truly certify biofuels as "ethical". The only two bodies claiming to be ethical: the Roundtable on Sustainable Palm Oil (RSPO) and the Roundtable for Responsible Soy (RTRS) have been strongly criticised by civil society groups, particularly in countries where palm oil and soya are grown. The RTRS has not yet began certifying soya, but has decided that it will certify GM monocultures despite strong opposition. *The 'International Declaration Against the 'Greenwashing' of Palm Oil by the Roundtable on Sustainable Palm Oil (RSPO)* has been signed by 256 civil society groups and NGOs from around the world. http://www.biofuelwatch.org.uk/docs/17-11-2008-ENGLISH-RSPOInternational-Declaration.pdf The RSPO has certified palm oil from companies directly linked to rainforest destruction, peat drainage (which is a major cause of climate change) and land conflicts, as well as plantations where highly toxic pesticides (Paraquat) is used and where land was taken without the consent of local communities. The RSPO has certified

"plantations which, according to the assessors, were established without local communities' free, prior and informed consent, even though communities have been offered no form of redress.
"[There have also been Serious concerns over working conditions (overcrowded and inadequate housing, restricted freedom of movement for migrant workers, inadequate wages for families without access to a garden, excessive working hours, lack of information about working conditions) are either being tolerated or are allowed to continue for another year from the date of the assessment report."
http://www.biofuelwatch.org.uk/docs/RSPO_certification.pdf

It would be equally impossible to ensure human rights have not been abused and people have not been exploited for tree plantations for second generation agrofuels.

Question 20

What differences are there between the developed world and developing countries with regard to the effects of the production of future generation biofuels on the rights of farmers and workers?

Please see above.

Investment, policy and governance

Globally, current biofuel production takes place within many different business models, ranging from small scale domestic production (such as of biogas) to large scale industrial production (for example of bioethanol) in both developing and developed countries. Through their investment strategies, industry can shape to some extent how biofuel production

develops. For example, they may be more likely to invest in new biofuel production pathways that are considered to be economically viable for large scale production. Such investment decisions also have a lot of influence on the way research progresses.

Investment in biofuels takes place within a policy context, which is shaped by the desire to mitigate climate change, improve energy security, and support agricultural and economic development without endangering environmental or food security or the rights of farmers and workers. National and international policies issued by governments and international institutions have the ability to promote or inhibit biofuel use and affect financial investment in research and development (R&D) from industry and the public sector. Such policies include greenhouse gas (GHG) emissions and bioenergy targets, incentives, subsidies and regulatory policies, research funding, and trade agreements.

Policies that affect biofuel production currently take the form of guidelines, legislation and agreements specific to biofuels as well as those from areas relevant to biofuel production such as agricultural practice, environmental protection, and technological standards. They operate at both *domestic and regional* levels.

Some policies have been *revised*, following concerns that some *first generation biofuels* might be harmful, and/or that policies might conflict with other regulations. The changeable nature of biofuel governance has created a lack of investor confidence.

Question 21

Where do you think investment in new approaches to biofuels should be directed and where should it come from (public sector, private sector or public-private partnerships)?

We are calling for a suspension on the use of industrial biofuels.

Question 22

Which policy issues in relation to new approaches to biofuels would you like to bring to our attention?

Question 23

What would be the most effective policies a) to promote and incentivise; and

We are calling for a suspension on the use of industrial biofuels, not promotion and incentivizing of biofuels.

b) to regulate the development of new approaches to biofuels? It is impossible to regulate indirect impacts of biofuels.

Any other issues

Question 24

Are there any other issues not mentioned in this consultation that we should consider in the ethical evaluation of new approaches to biofuels? Please expand below.

Thank you. We appreciate your participation in this consultation.