QUESTIONS ANSWERED:

Question 1

ANSWER:
Rapid growth in biofuels use in the past five years has contributed to a range of problems, including a sharp increase in food prices, increased water pollution, declining freshwater resources, and competition for global conversion of land. First generation fuels also lead to only minimal-- if any-- reductions in greenhouse gas emissions. If we are to increase our reliance on biofuels, we need to take time to get them right rather than continue on the same unsustainable path we have taken thus far.

Question 2

ANSWER:
There are three main areas to highlight: 1. Food security: making sure expanding biofuels production does not jeopardize food security directly or indirectly (including competition for land and increased food prices) 2. Environmental concerns: biofuels need to be improved to further reduce GHG emissions and to address existing concerns like water pollution due to heavy chemical inputs. 3. Societal/ economic: Expanded biofuels use should not jeopardize land rights of local peoples or threaten jobs by further establishing large monoculture agribusiness.

Question 3

ANSWER:
Yes. I have researched biofuels for nearly two years and have a background in energy and environmental policy.

Question 4

ANSWER:
The most important factor will be setting the right price. Energy policies across the globe are skewed, providing subsidies and incentives for some of the most polluting energy technologies. This makes it hard for cleaner and newer technologies to compete. Policies should focus on achieving the biggest cuts in GHG emissions while finding a way to increase and further social and economic development. We need to find a pathway that is sustainable on all levels.

Question 5

ANSWER:
I think algae for biodiesel shows great promise, although its development is likely further out than cellulosic ethanol. One concern I have with cellulosic ethanol is the potential for genetically modifying feedstocks to increase their production. GM crops are dangerous and difficult to control outside of lab production. The best way to encourage development of new biofuels is to provide funding for research and to reset the energy subsidies so that they can compete once they have been developed.

Question 6

ANSWER:
Energy security is very dependent on local circumstances. That said, the easiest and surest way to improve security is to minimize the amount of energy needed to start. A focus on public transit, smart growth, and other similar approaches is fundamental.

Question 7

ANSWER:
The biofuels development that would be most helpful for developing countries would be a decentralized approach that takes into account local factors such as resource availability, land tenure structure, social organization, and other similar factors. There is no "one size fits all approach;" any monoculture biofuel crop grown on a massive scale would lead to the same problems we already know from global food production.

Question 8

ANSWER:
We will likely need a combination of improvements and breakthroughs in all of these areas-- feedstock, pretreatment, and processing. To focus on one above the others would mean overlooking important developments. In all cases, we need to make sure that we are not creating additional problems to solve one problem. Relying on toxic chemicals or genetic modification to deal with one problem can create even more problems in other areas. It is important to look at everything as a whole interconnected system. Commercial production of biofuels will take several years. Until they are ready, we should be working to reduce our transportation fuel demand.

Question 9

ANSWER:
Research has continually shown the dangers of using genetically modified organisms outside of controlled lab experiments (spreading to other crops, for example). Also, as new GM feedstocks or synthetic biology inputs are developed they are often patented and otherwise protected, making them very expensive and not possible to transfer to developing countries.

Question 10

ANSWER:
These issues are not new and we can learn many lessons by looking at how the process has unfolded with GM food crops. Patenting technologies will greatly hinder technological transfer and will impede spreading the most effective technologies. Unfortunately, many developing countries have greatly reduced the amount of funding they provide to in-country plant research and development, which has opened the doorway to large agribusiness research companies. We should increase public financing and multilateral coordination of research. If large agribusiness companies are allowed to patent the knowledge, they will have an interest in their bottom line rather than creating the most effective and significant technological advances.

Question 11

ANSWER:
We need more public financing and inter-agency cooperation.

Question 12

ANSWER:
Ideally, we should focus research and financing on the most promising technologies without fully shutting off funding from other areas to allow for random breakthroughs and advances to occur. It would be worth considering whether an agency should coordinate research efforts to avoid duplication. This is why public financing is key-- private companies will continue to keep their research secret in hopes of a big payoff.

Question 13

ANSWER:
Yes. The problems began under early biofuels production and are not likely to quickly disappear even as second generation biofuels are commercially produced. Even if all new biofuels are not made from food crops, we will still have an existing surplus of production capacity from first generation crops.

Question 14

ANSWER:
At a very general level, developing countries may have less stringent environmental and social safeguards in place for agricultural land development than in developed countries. This underscores the importance of international sustainability certification standards for biofuels.

Question 15

ANSWER:
Yes. We should use a combination of existing economic and agricultural models that have already been proven to be effective.

Question 16

ANSWER:
The potential advantages and disadvantages are vast. However, the best way to ensure that they are minimized is to establish an international certification system that verifies the sustainability of any given biofuel based on a range of factors like environmental, climate, and social.

Question 17

ANSWER:
Any new biofuels that rely on agricultural production will likely be related to food security issues. The best way to guarantee that these issues are as minimal as possible is to find the feedstocks that can make the most fuels for as little agricultural land and inputs as possible. Certainly relying on non-food feedstocks is a great step in the right direction of reducing negative implications on feedstocks.

Question 18

ANSWER:
In general people in developing countries are more susceptible to small changes in food security and price changes than are those in developed countries. While small adjustments in developed countries' food access and prices may not cause many problems, in developing countries it could mean the difference between being food secure and malnourished.

Question 19

ANSWER:
Yes. Large scale monocrop agricultural production often leaves little profit at the local level while decentralized varied production can mean greater social benefits. This will likely continue as biofuels production grows.

Question 21

ANSWER:
Investment must be based in biofuels development to bring about a new generation that minimizes the

negative impacts witnessed in corn ethanol, soy biodiesel, and other first generation fuels. When possible funding should be publicly financed to help make sure the technological advances are public and able to be transferred to other places and countries.

Question 22

ANSWER:
Sustainability minimums to qualify for incentives and a need to balance existing energy incentives.

Question 23

ANSWER:
Promoting biofuels must include shifting and rebalancing the current energy subsidies rather than only adding additional benefits. They should be combined directly with eliminating fossil fuel benefits, for example, and should have a guaranteed end date or situation clause for phase out to encourage quick development. Biofuels policies should always include minimal sustainability levels. For example, greenhouse gases must be reduced by X percent, water use must be below Y per liter, or biofuels must produce Z net energy per unit.