



Energy In Agriculture:

Managing the Risk

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Farm Foundation



**USDA's Office of Energy
Policy and New Uses**



**Risk Management
Agency**



U.S. Agriculture: A Major Player in the U.S. Energy Scene

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Photographer unknown

Before Hurricane
Katrina




After
Katrina






“We will also fund additional research on cutting-edge methods of producing ethanol, not just from corn, but from wood chips, and stalks, and switchgrass.”

*President George W. Bush,
State of the Union Address,
January 31, 2006.*





Energy Risk Issues

- 1) \$70/barrel oil
 - 2) War in Iraq
 - 3) Global warming
 - 4) Severe hurricanes
- 



Agriculture Risk Issues

- 1) Exceptional efficiency
- 2) Overproduction much of the time
- 3) Expensive farm programs
- 4) Little change in farming patterns
- 5) U.S. behind some other countries





Objective:

To remove all doubt, relative to technology, that U.S. Agriculture can play a significant role in our energy future, and in national security.

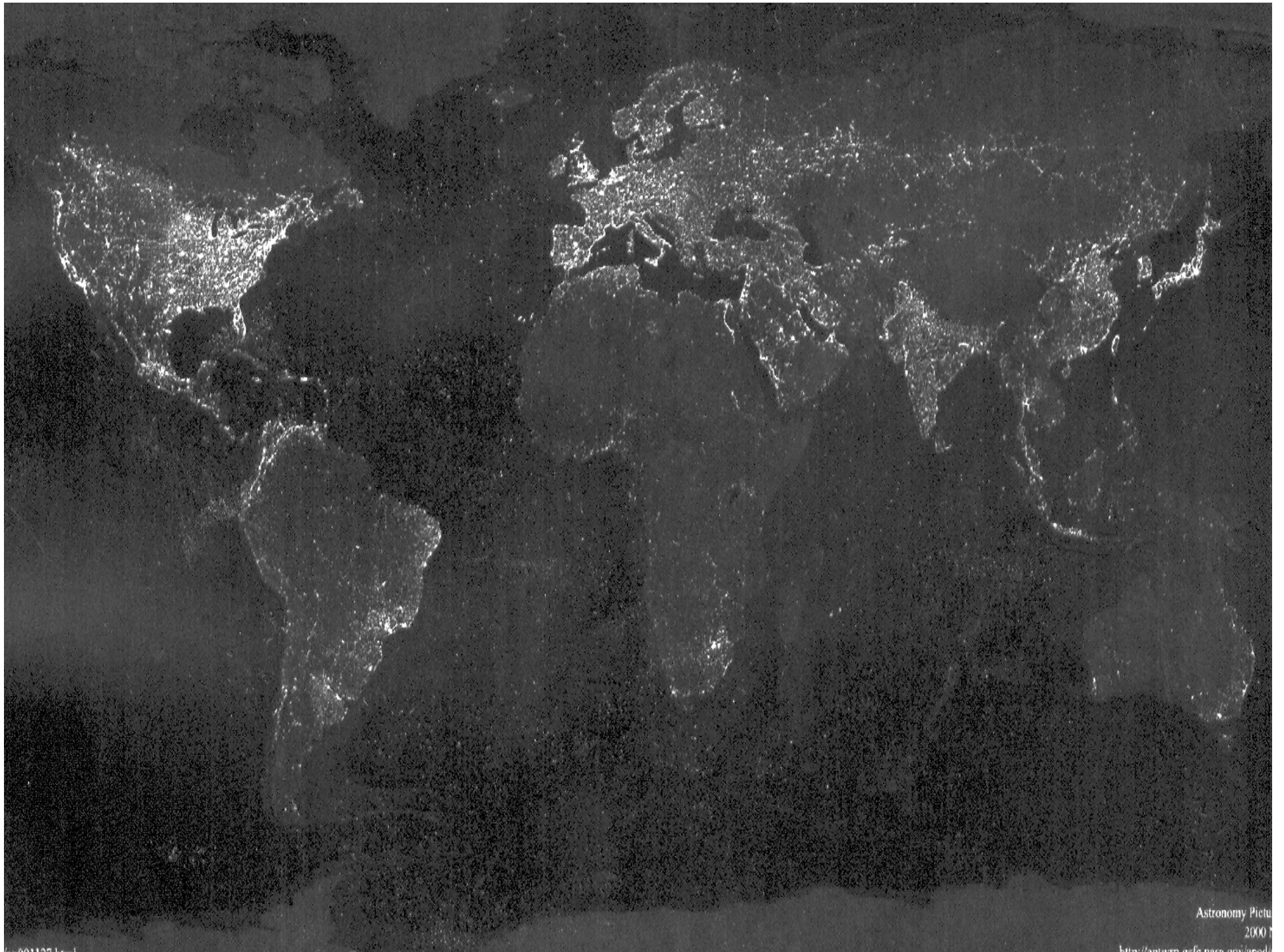




Which involves more Risk?

Electric Power
vs. Transportation Fuels





Astronomy Picture


2000 7

<http://antennae.gsfc.nasa.gov/apod/>




Blackout of August, 2003





We face considerable risk, even
with respect to our power supply.

Important points:

1. Without power you can't pump gas!
 2. We haul coal thousands of miles
(Wyoming to Florida) to make power.
 3. Our power plants are mostly large.
 4. This makes us vulnerable.
- 



Power supply poses less risk than
supply of transportation fuels.



The Risk: Sources of Imported Oil

<u>Source</u>	<u>% of National Consumption</u>
Canada	10.4
Mexico	10.3
Mid East	14.6
Saudi Arabia	(9.3)
Iraq	(4.1)
Kuwait	(1.2)
Venezuela	8.7
Nigeria	7.1
Other	<u>9.9</u>
TOTAL	<u>60.0</u>

Adapted from Manternach, 2004.





Summary


- 1) 30.4% of our oil comes from the Mid East, Venezuela and Nigeria.
- 2) Corn ethanol can provide about 10% without increasing feed and food prices.
- 3) Reducing the risk requires moving to cellulosic ethanol ASAP.





Focus on Cellulosic Ethanol


To be addressed with a series of
cellulosic ethanol FAQ's





Question: Can we produce enough biomass to have a major impact?

Answer: Yes. A recent study by the DOE and USDA indicates this is feasible.



Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply

April 2005

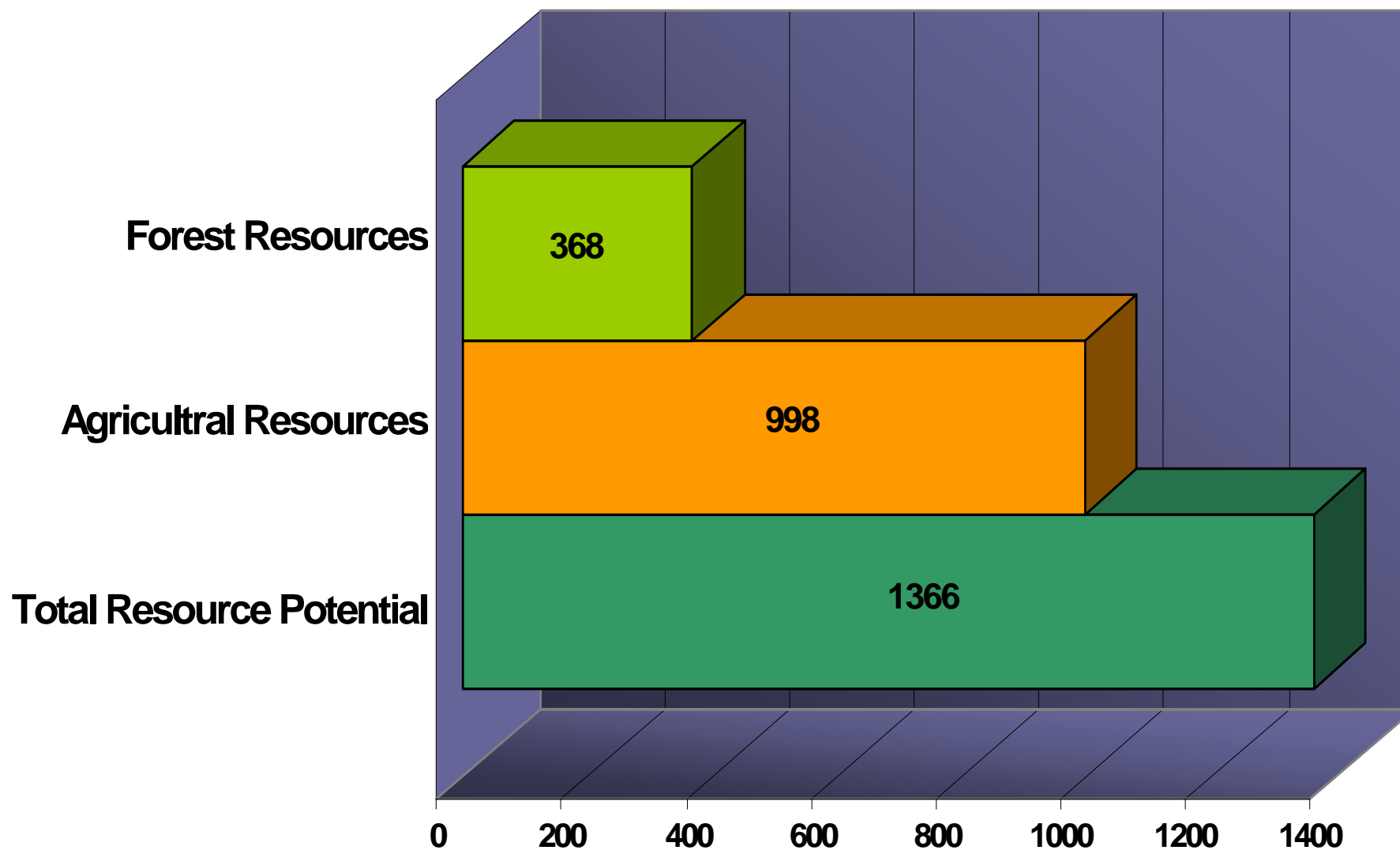


U.S. Department of Energy



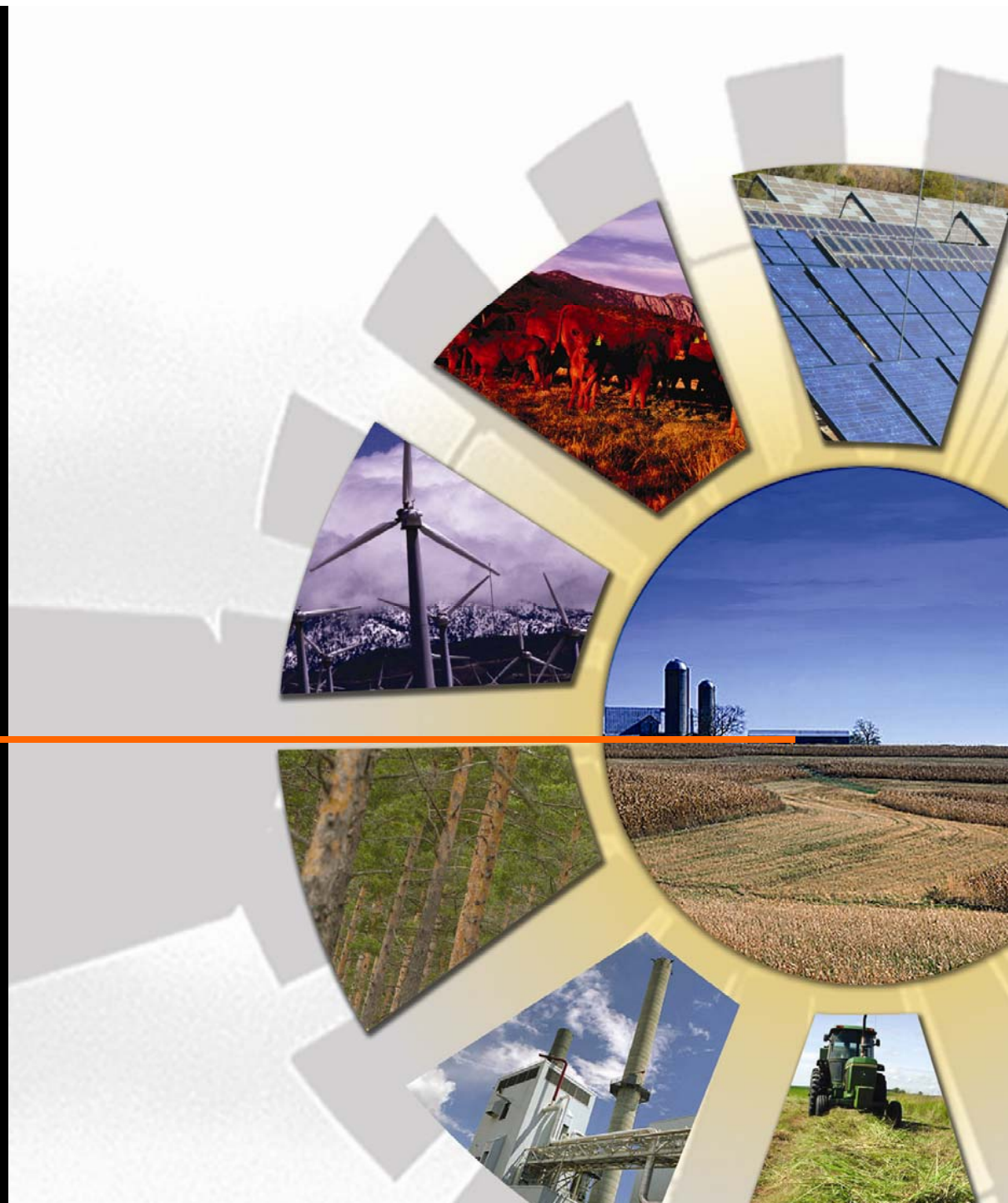
U.S. Department of Agriculture

Annual biomass resource potential from forest and agricultural resources



American Agriculture: **Powering the Future**


25x'25






25 x '25 VISION


By the year 2025, renewable energy from the nation's farms, ranches and forests will comprise 25% of the total energy consumed in the United States.





Question: What biomass resources are we talking about?

Answer: Wood chips, crop residues (stalks), crops like switchgrass, and animal manure like broiler litter.



We have a surplus of wood!







Corn Stalks



Cotton Stalks



Switchgrass



















Question: Can we rely on farmers to deliver biomass consistently?

Answer: Yes. American farmers are among the most innovative people in the world – give them a fair market and they will deliver.





Neighbors

MARCH 2003

A Publication of the Alabama Farmers Federation







Bale or..... chop
















Question: Do we have the technologies to produce ethanol from biomass (bioethanol)?

Answer: Yes. Several are already at the pilot scale, ready to go commercial.

Note: SASOL in South Africa has been producing gasoline from coal using the Fischer-Tropsch process for over 40 years. We can do something similar with biomass.






Question: How are we doing compared to other countries?

Answer: Brazil and several European countries are ahead of us. China and India are catching us fast.

Note: In some cases other countries are using our technologies!







Question: What about energy balance – do you have to put more energy into the system than comes out as ethanol?

Answer: No. For corn-to-ethanol the energy balance is 1.67 out for every 1 unit in, and for switchgrass and wood it is about 4 out for every 1 unit in.


Note: For gasoline it is negative: 0.8 units out for every 1 unit in.






Question: Does ethanol compromise the power in a car?

Answer: No. Police are now using E-85 vehicles, and even some race cars.








Question: President Bush said we would be into commercial production by 2012. Is that feasible?


Answer: Yes, maybe even sooner, but real action on the part of the federal government continues to be slow.





Question: What do we need to do next?

Answer: Get innovative in funding the first commercial cellulosic ethanol plants to create market pull.





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Photographer unknown



Let's do it !

