

# The Geopolitics of Biofuels-Mapping the Future

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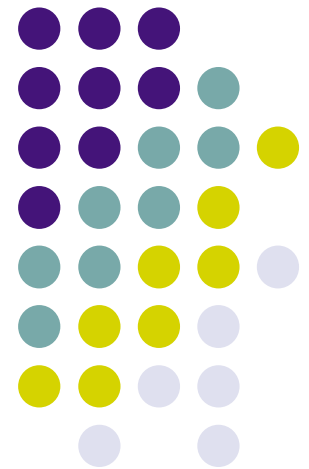
University of California

Biofuels Conference

October 5, 2007

Presented by Gerald Harris

Founder of Harris Planning and Strategy, Practitioner with  
Global Business Network

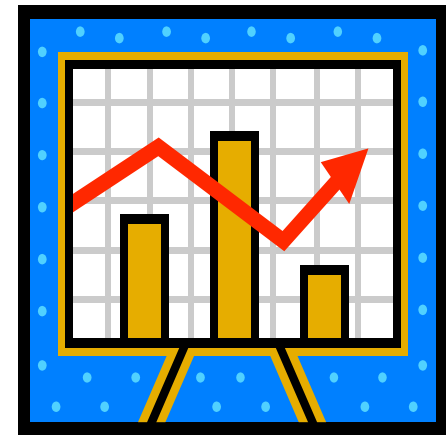


# The Geopolitics of Biofuels

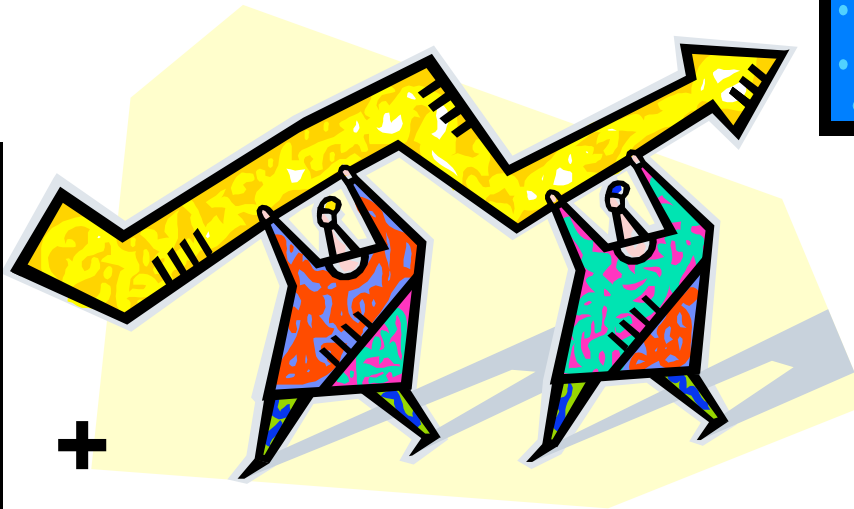
## Some Nice Pictures!\*



Profits



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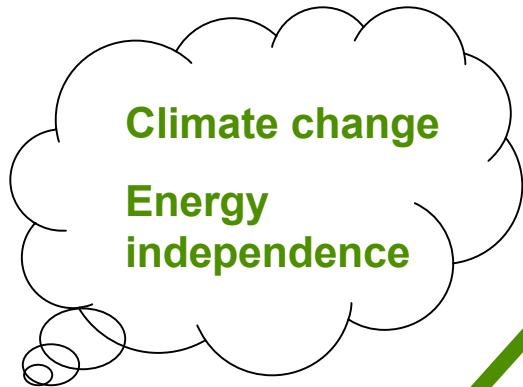
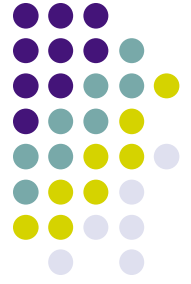


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\*Explanation of my speech to my 13 year old son

# What is the whole biofuels movement about?



Make Money!

Availability of low cost biomass

Basic chemistry

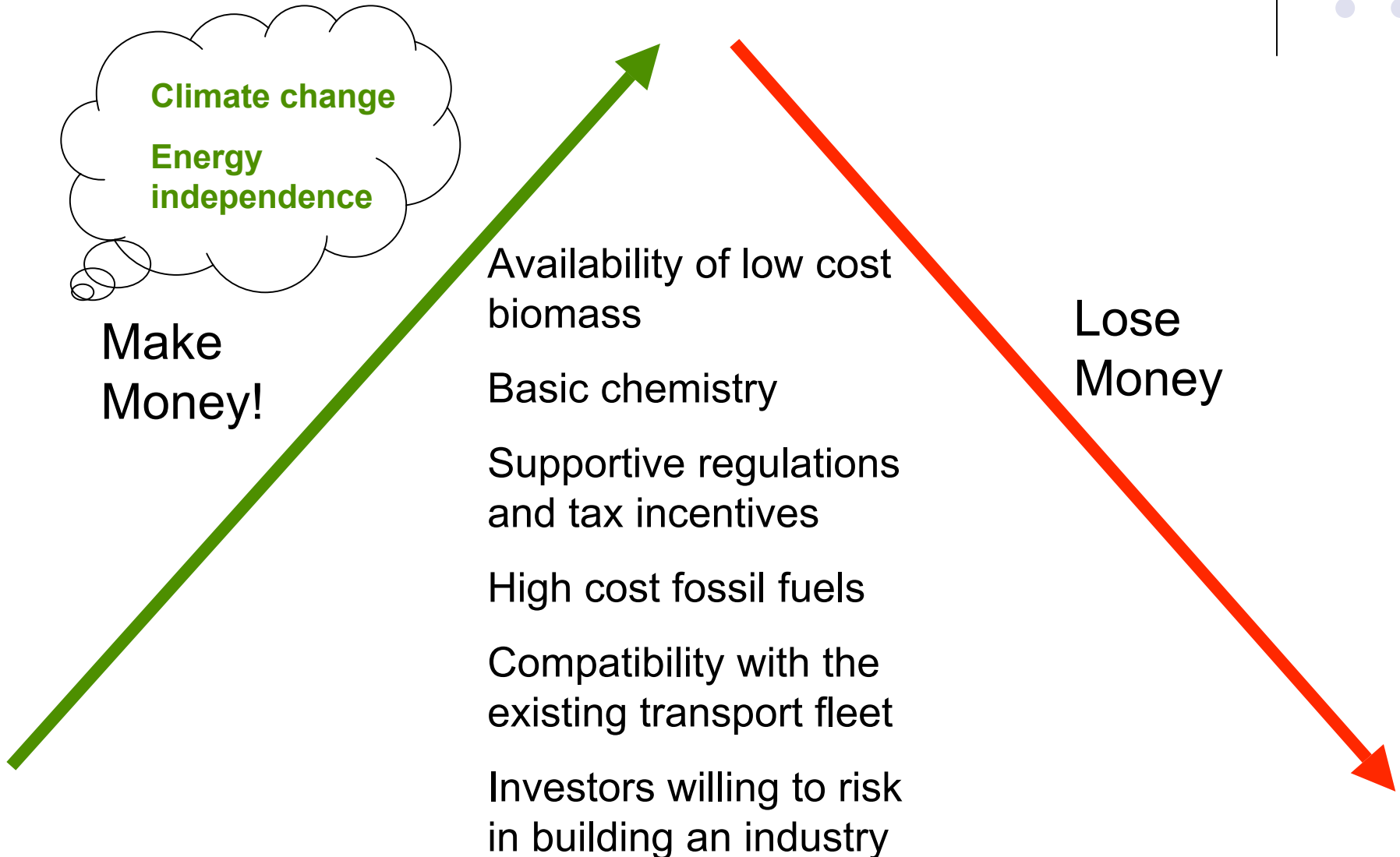
Supportive regulations and tax incentives

High cost fossil fuels

Compatibility with the existing transport fleet

Investors willing to risk in building an industry

Lose Money



# Some things you can figure out on the back of an envelope



The world cannot solve the green house gas emissions/climate change problem through growth in the use of biofuels in the transportation market.

*According to British Petroleum the transport sector makes up 21% to 23% of GHG emissions. Assume 2% World GDP and related transport sector growth; biofuels representing a 10% to 90% relative GHG reduction compared to oil; and biofuels penetrating 20% to 30% of transport fuels market. In 20 years the transport market will be 40% larger, therefore in best case it will be putting about 10% to 25% more GHG into the air even with biofuels use.*

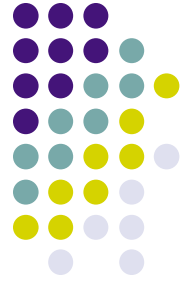
# Some things you can figure out on the back of an envelope



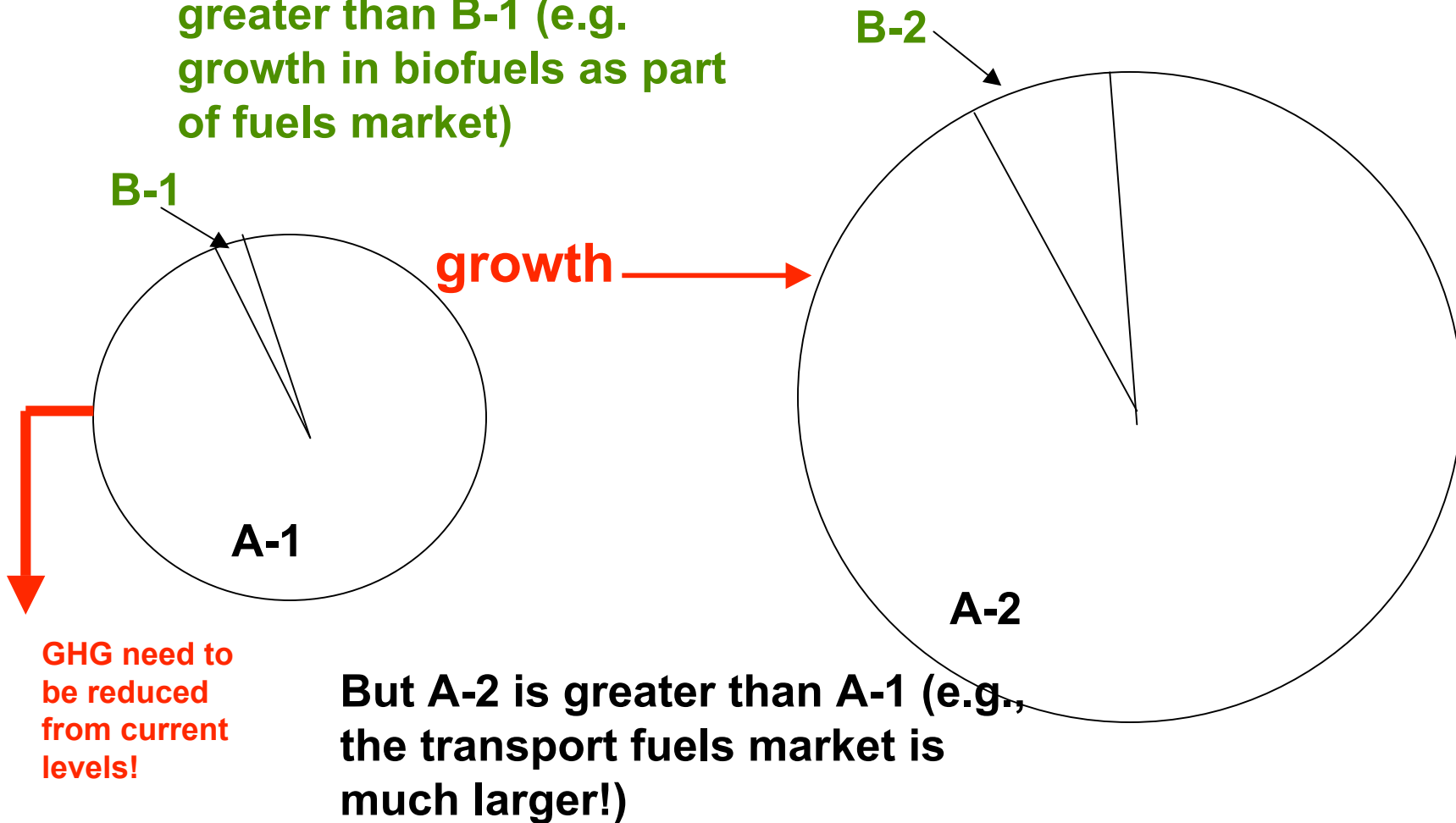
The U.S. is unlikely to become energy independent over the next 20 years through growing use of biofuels in the transportation market.

*According to British Petroleum and the U.S. Department of Energy, biofuels might serve 20% to 30% of the transport market by 2030. But again assuming 2% U.S. GDP and related transport sector growth, the transport sector will be about 40% larger. So U.S. oil imports will be larger. Thus 70% to 80% of larger imports still leaves the U.S. heavily dependent. Even with the highest estimates of biofuel use the U.S. will be importing about 15% more fossil fuels.*

# Some things you can figure out on the back of an envelope



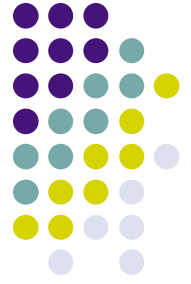
It is nice that B-2 is greater than B-1 (e.g. growth in biofuels as part of fuels market)



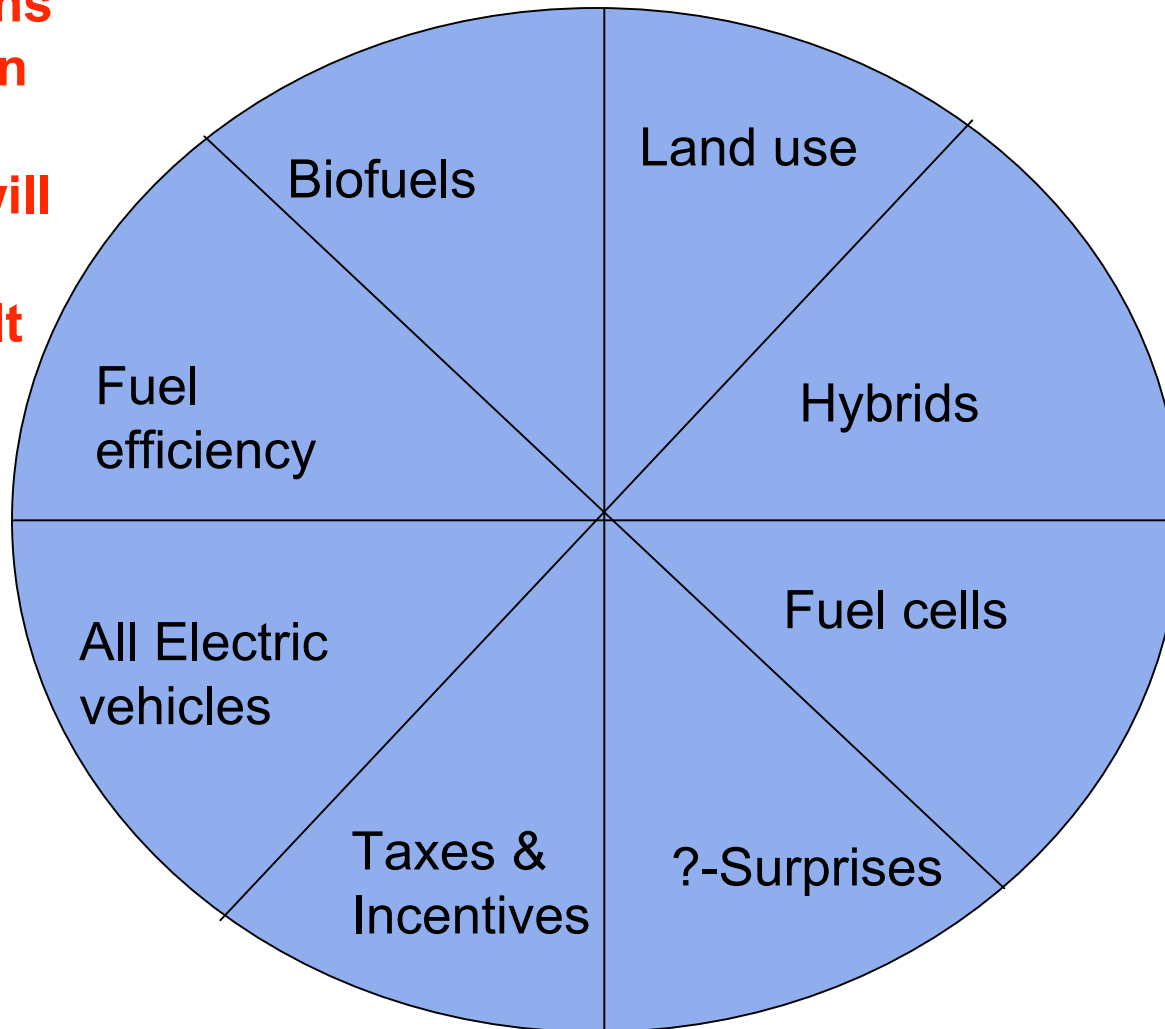
GHG need to be reduced from current levels!

But A-2 is greater than A-1 (e.g., the transport fuels market is much larger!)

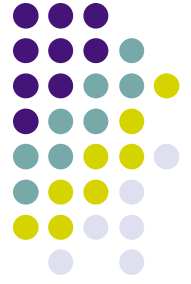
# Biofuels are just one of many solutions to transport issues



**These solutions will compete in the market. Regulations will continue to change and tilt the field.**



# So why is the U.S. and others willing to invest in biofuels?

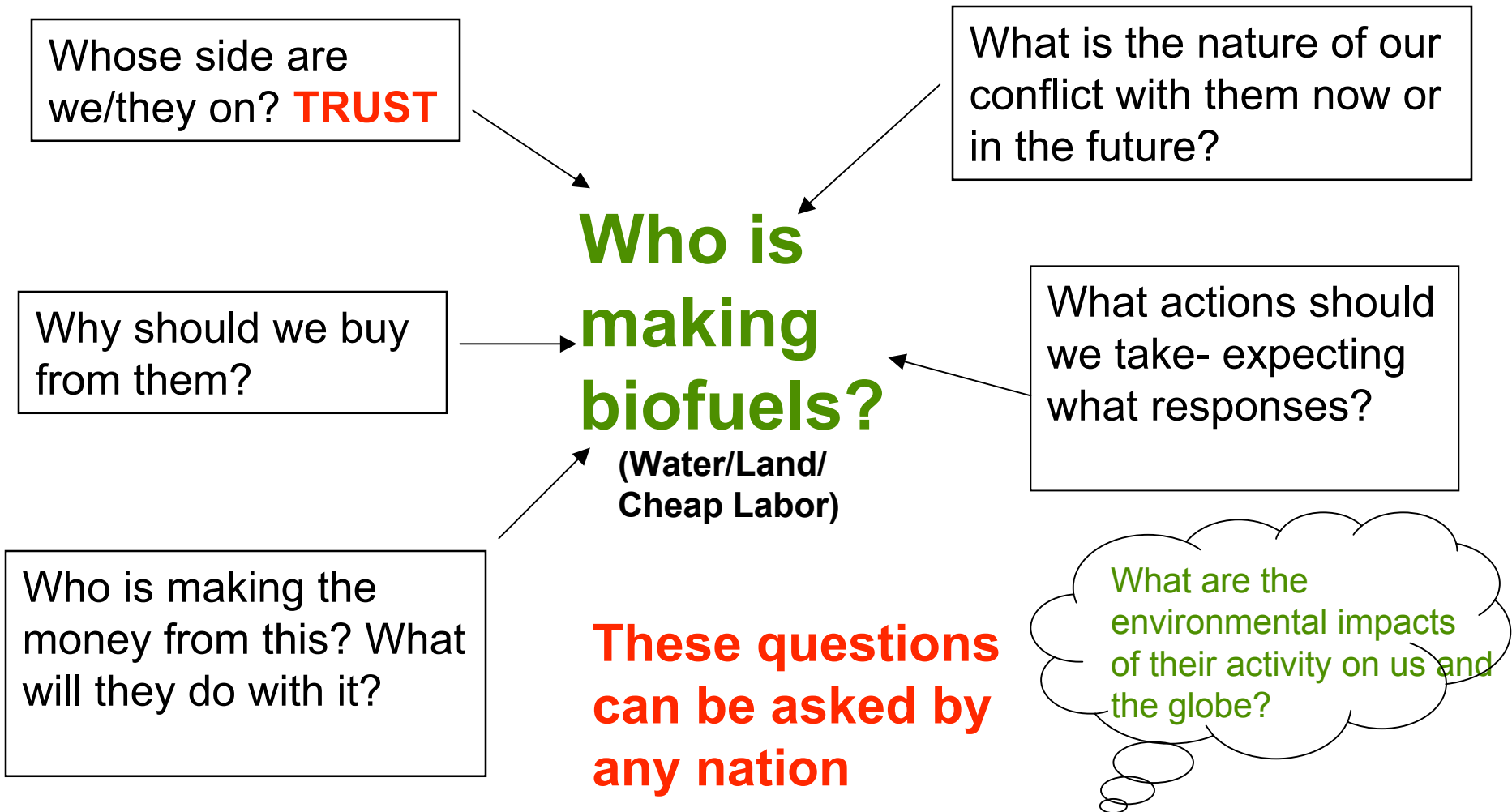
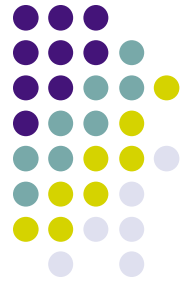


- The modest benefits in potential GHG reductions and fuel diversity are better than doing nothing.
- A lot of economic activity and money can be made.
- It sounds good to both politicians and the general population (not energy experts).
- It supports the “green” marketing image of the traditional energy players.

**The Pink Elephant: There is unlikely to be enough good land and water to grow both enough food and biomass for a biofuels industry to seriously compete with fossil fuels. The technological innovations needed to achieve this would revolutionize the world economy. Biofuels also deliver lower mile per gallon than fossil fuels.**



# What drives the Geopolitics of Biofuels (Industry in general)?

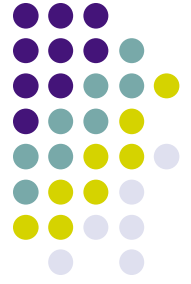


# Key Drivers that will shape the global biofuels market to 2020



- Research and selection of the base crops
- National and international trade policies related to agriculture
- The improvements in the chemistry-yields, conversion efficiencies, etc.
- Structure of demand: reliability of long term supplies; vehicle modifications as the fleet turns over; performance characteristics; price and availability of alternatives
- Regulations and incentives that encourage use within nations
- The economics and investment performance of distribution infrastructure needed for biofuels consumption on a large scale
- The course of fossil fuel prices and availability
- Continued interest by investors willing to take risks
- Non-fuel developments in transport markets aimed solving issues of CO2 (hybrids, electrics, efficiency)

# Most Uncertain and Important Global Drivers



Expansion in Biofuels Technology and Investment



Low Penetration  
Small Compared to Fossil Fuels  
Small in scale

High Penetration  
Impacting Fossil Fuel Investment  
Global in scale

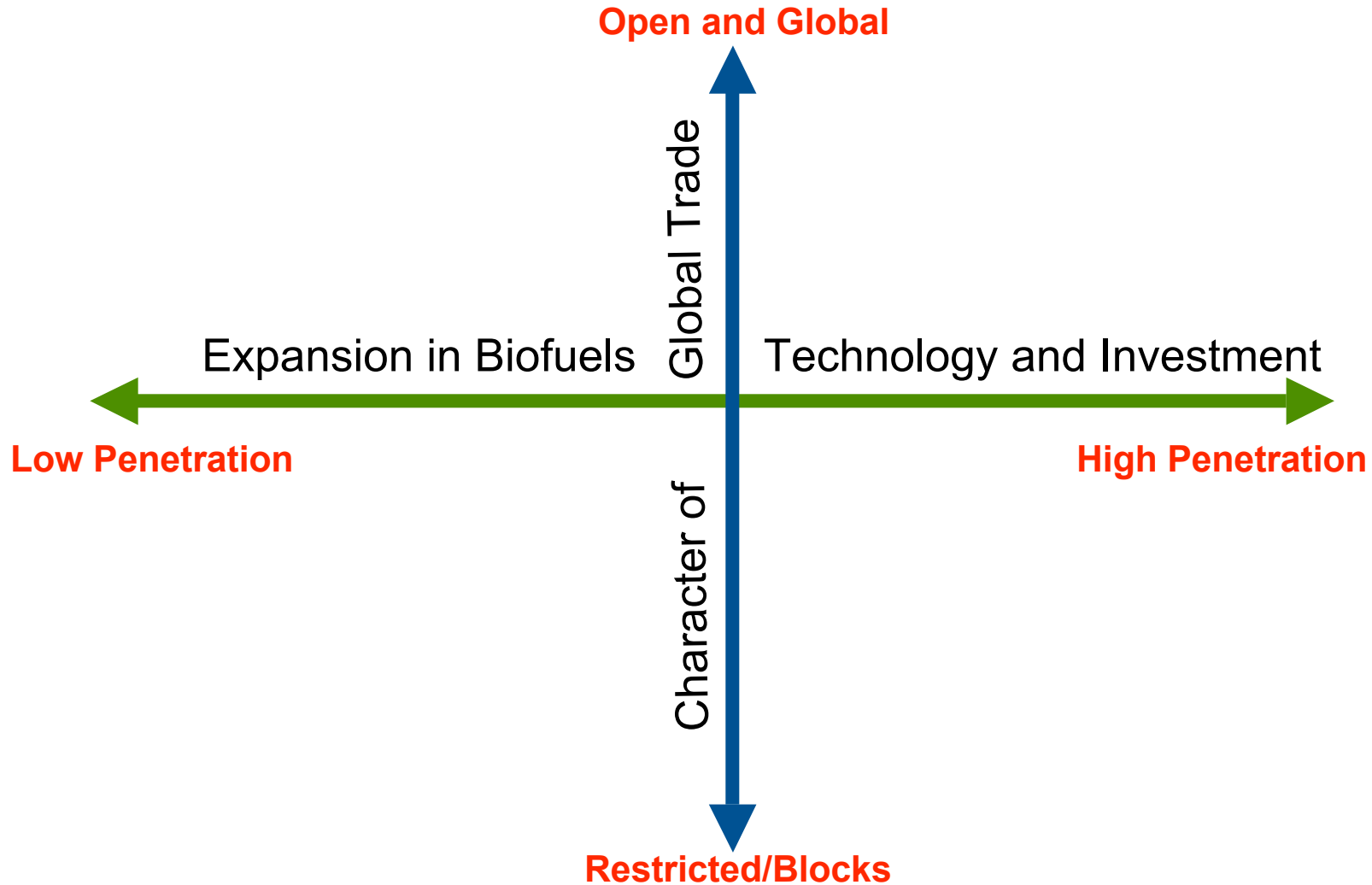
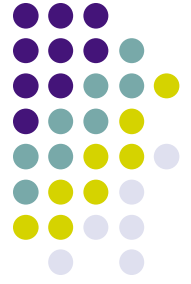
Character of Global Trade



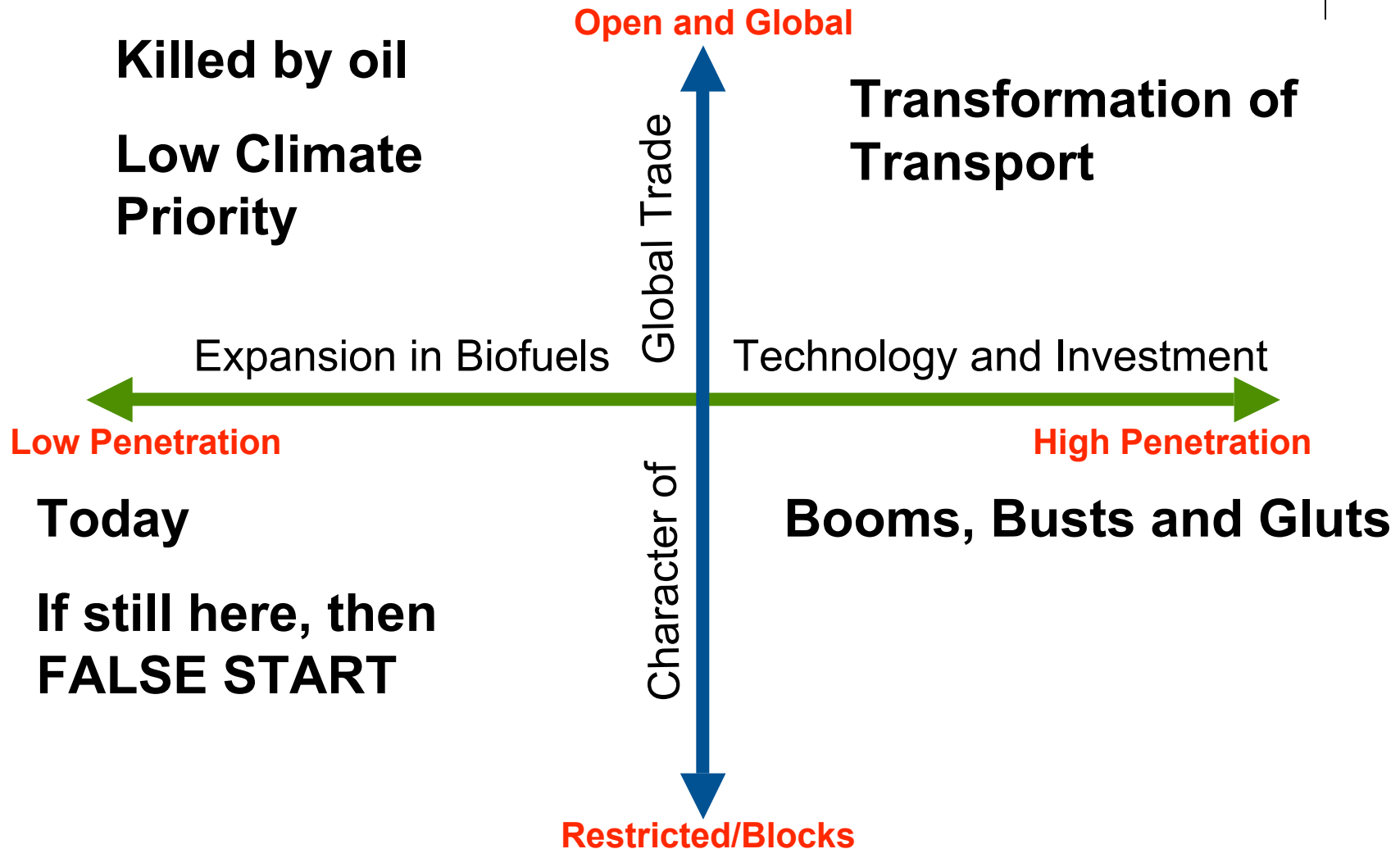
Restricted  
Blocks/zones  
Protectionist

Open/Free  
Low Barriers  
Pro-competition

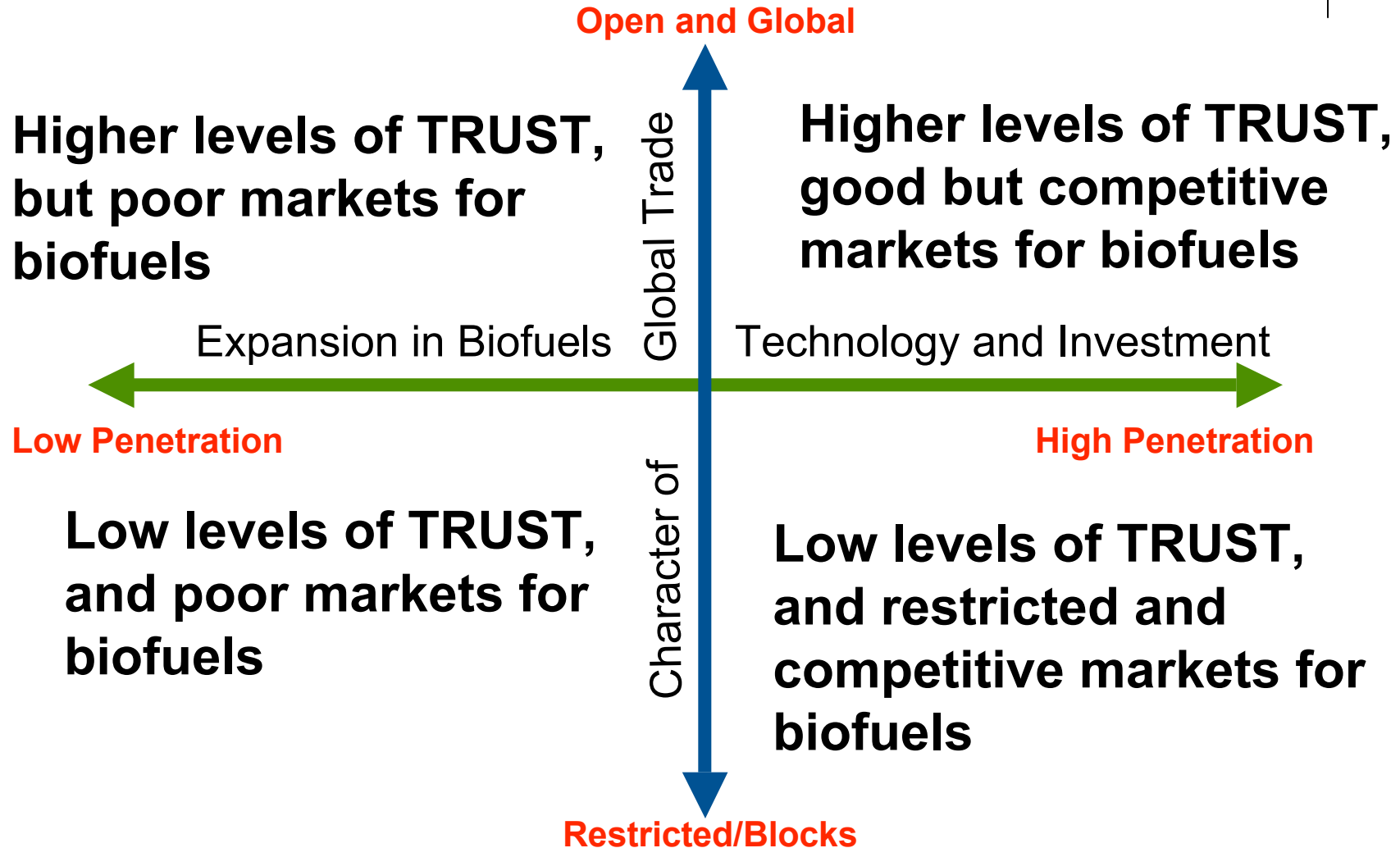
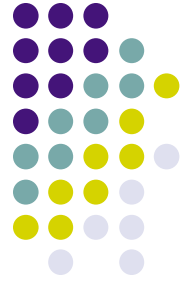
# Scenario Map of the Future for Geopolitics of Biofuels to 202



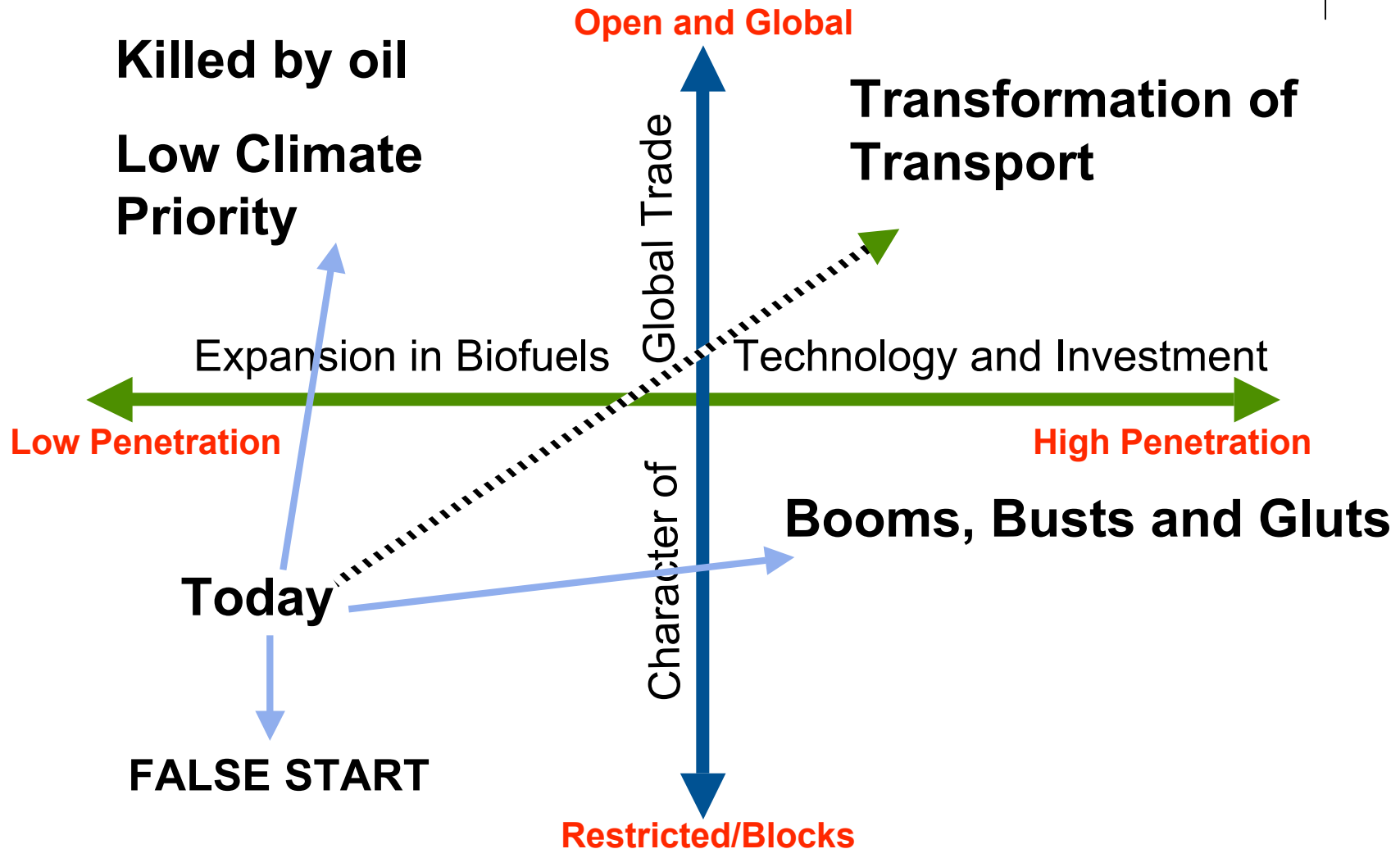
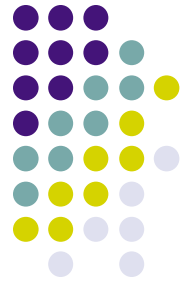
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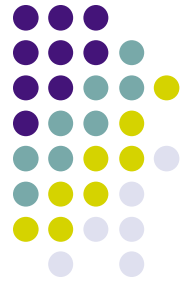
# Some Guesses on the Global Players



|                         |   |
|-------------------------|---|
| United States           | Policy will lead to Boom, Busts and Crashes to protect U.S. agricultural interests, fight the War on Terror, and desire to protect key industries from big changes.                                   |
| China and India         | Likely to be net importers, will want freer trade and more investment to diversify sources and keep prices low. In the long run will want some domestic sources, but food interests may make it hard. |
| Europe                  | Similar to the U.S., but may be more open to imports in view of land use, water and GHG issues.   |
| Developing World-oil    | Little need to be interested in biofuels, likely to have barriers to import. Unlikely to feel any competitive impacts.  |
| Developing World-no oil | May cause more trouble than it is worth in view of impact on domestic agriculture. Some few may be lucky enough to have large export volumes.   |



# Professional Background on Gerald Harris

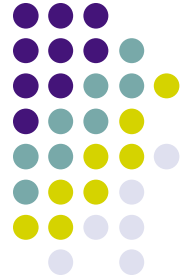


**Gerald Harris Planning and Strategy:** In 2002 Gerald formed his own firm to allow him to work with small to mid-sized organizations and those in minority communities. Some of his clients have included: The National Society of Black Engineers, The National Black MBA Association, the Kellogg Foundation's Mid-South Delta Project, The Schott Foundation for Public Education, and the University of Chicago's Urban Schools Institute.

**Global Business Network:** Gerald is an independent consultant with GBN where he continues to work with GBN's scenario planning practice with special focus on the energy industry, capital intensive companies, and regional economic development. Gerald was a full time consultant with GBN for eight years. He joined GBN in 1993 as a Principal Consultant where he began to work internationally in the energy industry, and with capital intensive industries such as mining, telecommunications and construction. Gerald works exclusively with GBN's staff on large company projects.

**Prior Experience:** Gerald started his career in Project Financing at the Bechtel Corporation. He worked 13 years for Pacific Gas & Electric company in Corporate Finance and Strategic Planning, leaving in 1993 as Director of Planning for the Engineering and Construction Group. Gerald has an M.B.A. (Finance and Business Economics concentrations) from the University of Chicago and a B.A. in Economics from Morehouse College.

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References provided upon request.

Customized planning proposals to meet the specific time tables and needs of your organization are my specialty.

