

VISIONS OF THE FUTURE

Don Gimpel
January 2011



May you live in interesting times.

- Ancient Chinese curse

“It is usually easy to predict trends. It is quite another thing to say when those trends are likely to occur.”

- Don Gimpel

Here's what we're going to talk about:

- Where did these forecasts come from.
- The broad picture ... shifts in power.
- Nine industries to watch.
- The post-petroleum age.
- How to profit from these insights.
- What about natural resources ... examples.
- The NIS and its importance ... China and India
- A freebee

I didn't know that!

There's a branch of government called the National Intelligence Council that is charged with making predictions.

Every 5 years it releases a report and the latest is "Global Trends 2025: A Transformed World, released November 2008.

You can find this report on the internet at:

http://www.dni.gov/nic/NIC_2025_project.html

I'll tell you later how it ties in to your investments.

Who prepares this report?

- First, it is chaired by C. Thomas Fingar. It relies on expertise from the US Intelligence Community, other elements of the US Government, the American academic community and by non-US Government American experts with outreach to specialists on six continents.
- It's also sponsored by the State and Defense Departments.
- How does this tie in to my investments? Be patient! Later!

1. The broad picture - relative certainties:

- Relative wealth and economic power is shifting from west to east.
- This trend will continue with consequences: (1) incentives toward geopolitical stability could increase and (2) some states that want to challenge the western order (like Russia) will be strengthened.
- The US will continue to be “Numero Uno” but will have problems with domestic vs. foreign policy priorities.

More relative certainties:

- A billion more people will be added to the world's population.
- There will be a mass migration from the countryside to the cities.
- Many of these people will join the middle class and will seek to emulate a Western life style.
- Market forces alone may not be able to rectify supply-and-demand imbalances.
- I add to this by saying that large oil exporting nations will be less and less able to export oil.

Key uncertainties:

- The first key uncertainty is whether or not the energy transition away from oil and gas will be completed during the 2025 time frame.
- How quickly will climate change occur and whether we can do something about it (and is climate change necessarily bad for us)?
- Will mercantilism stage a comeback and global markets recede. The alternative is resource nationalism.
- What's going to happen in the arc of instability (the middle east)?

What about GDP?

- China's GDP exceeded that of Great Britain in 2008 and Germany in 2010. It is expected to exceed that of Japan in 2015 and the USA in 2036.
- India's GDP is expected to exceed that of Italy in 2014, France in 2017, Germany in 2021 and Japan in 2026.
- Do you think that really matters?

What does matter is the GINI Index

The Gini Index measures Income Distribution.
Here's where we stand:

Latin America:	54
China:	47
United States:	41
India:	37
EU15:	32

Investing in nine countries ...

China ... *by 2025 the world's second largest economy and a leading military power ... largest natural resource importer ... buys companies.*

India ... *try's to be a cultural bridge between east and west ... enjoying rapid economic growth ... is reducing number of people in absolute poverty.*

Russia ... *Has the potential to be richer but has a problem of declining population*

Europe ... *losing clout ... a dream of what could be but won't be.*

Japan ... *caught between east and west with aging & decreasing population ... losing clout*

More of the nine countries

Brazil ... *a solid foundation for a leadership role ... a country that has it all including oil.*

Indonesia ... *gone through successful political reform ... lots of natural resources ... still needs some legal and regulatory reform.*

Iran ... *Rich in some resources and high in human capital but needs political and economic reform ... mired in Arab and middle east conflicts.*

Turkey ... *Terrific economic track growth record, a vital middle class & outstanding geostrategic position ... heavily dependent on energy sources.*

What about energy?

- By 2025 we are going to see the dawning of the post-petroleum age (p40).
- We are going to be well past the peak of the Hubbert curve and global petroleum production will be seen by all as declining.
- Even most OPEC countries will be seeing declining production. (Except for Saudi Arabia)
- Access to secure and clean energy sources and management of chronic food and water shortages will assume growing importance.
- There's no surprises here!

This is important!

“From an economic perspective, when the world runs completely out of oil is ... not directly relevant: what matters is when production begins to taper off. Beyond that point, prices will rise unless demand declines commensurately. Using several different techniques to estimate the current reserves of conventional oil and the amount still left to be discovered, we conclude that the decline will begin before 2010.”

Actually, it looks like 2014 is the best guess.

Ref: R. Heinberg, “The Parties Over,” NSP pg 101

2. New Industries & Opportunities

- Probable, Possible and Plausible industries.
- How do we profit from this knowledge?

Probable future industries:

- Clean water technologies ... *energy efficient waste, fresh and saltwater treatment.*
- Energy storage technologies ... *for wind turbines and solar plants*
- Ubiquitous computing ... *abundant, low cost, powerful computing will get involved in everything.*

Why?

1. Ubiquitous Computing

What: Ubiquitous Computing is the widespread tagging and networking of mundane objects ... food packaging, furniture.

Likelihood: Probable.

Driver: Demand for greater efficiency.

Barriers: Space available for small devices.

Why: Efficiency and cost reduction.

Example: Think UPS tracking devices.

2. Clean Water Technology

What: Clean water technologies ... faster and more efficient fresh water treatment.

Likelihood: Probable

Driver: water cannot be created or destroyed but clean water is becoming scarce.

Barriers: Cost restraints in terms of energy and infrastructure.

Why: Only 1% of Earth's water is available for human consumption. 20% of Earth's population does not have access to clean water.

3. Energy Storage Technology

What: Energy storage technology is necessary for viability of alternative energy resources.

Likelihood: Probable

Driver: High fossil fuel prices, energy independence, wind turbine and solar power plants.

Barriers: Material science, unknown manufacturing costs, infrastructure costs.

Why: The sun doesn't always shine and ...

Example: Ultracapacitors & Maxwell Industries
... more on this later

Possible future industries:

- Biogerontology ... the study of cellular and molecular basis of disease and aging.
- Clean coal technologies ... coal is abundant and dirty.
- Human strength augmentation ... think Avatar.
- Biofuels ... Biobutanol

4. Biogerontechnology

What: Biogerontechnology is the study of the cellular and molecular basis of disease and aging.

Likelihood: Possible

Drivers: Aging population, increasing medical costs, keeping older workers in work force.

Barriers: Cost of development and trials, social concerns.

Why: Development would shift health care costs.

5. Clean coal technologies

What: Carbon capture and sequestration, prohibiting CO₂ from entering atmosphere.

Likelihood: Possible

Drivers: Reduce dependence on foreign energy.

Barriers: Large technology and cost barriers.

Why: Clean coal would enhance coal as a source of energy. The US has very large coal resources.

6. Human strength augmentation

What: Human strength augmentation technologies are mechanical systems that supplement human strength ... Avatar

Likelihood: Possible

Drivers: Demand for workers added strength and endurance & increased physical security.

Barriers: High manufacturing cost and uncertain economics.

Why: People can have superhuman strength and endurance, helps the disabled to work.

7. Biofuels Technology

What: Biofuels technology refers to cellulosic technologies.

Likelihood: Possible

Drivers: High oil prices.

Barriers: Availability of land and water.

Why: Provides a source of alternative energy.

Example: Ethanol vs. Biobutanol

Plausible Technologies

- Service robotics.
- Human cognitive augmentation ... super soldiers

3. Dawn of the post-petroleum age

- Energy consumption is growing exponentially ... *the world uses a billion barrels of oil every 12 ½ days.*
- No elephant petroleum fields have been discovered since 1985 ... *ANWAR and Brazilian discoveries do not have worldwide significance.*
- Major exporting countries will cease exporting oil ... *this will happen in the period 2025 to 2035.*
- *Why?*

4. How do profit from these insights?

- You might remember the 1987 Brinson, Hood Beehower report, “Determinants of Portfolio Performance,” in the July-August 1986 issue of the Financial Analysts Journal, which concluded that:

93.6% of the variance in an institutional portfolios return could be ascribed to the asset allocation decision, 4% to specific security selection and the balance of 2.4% due to market timing.

- What does this mean in plain English?

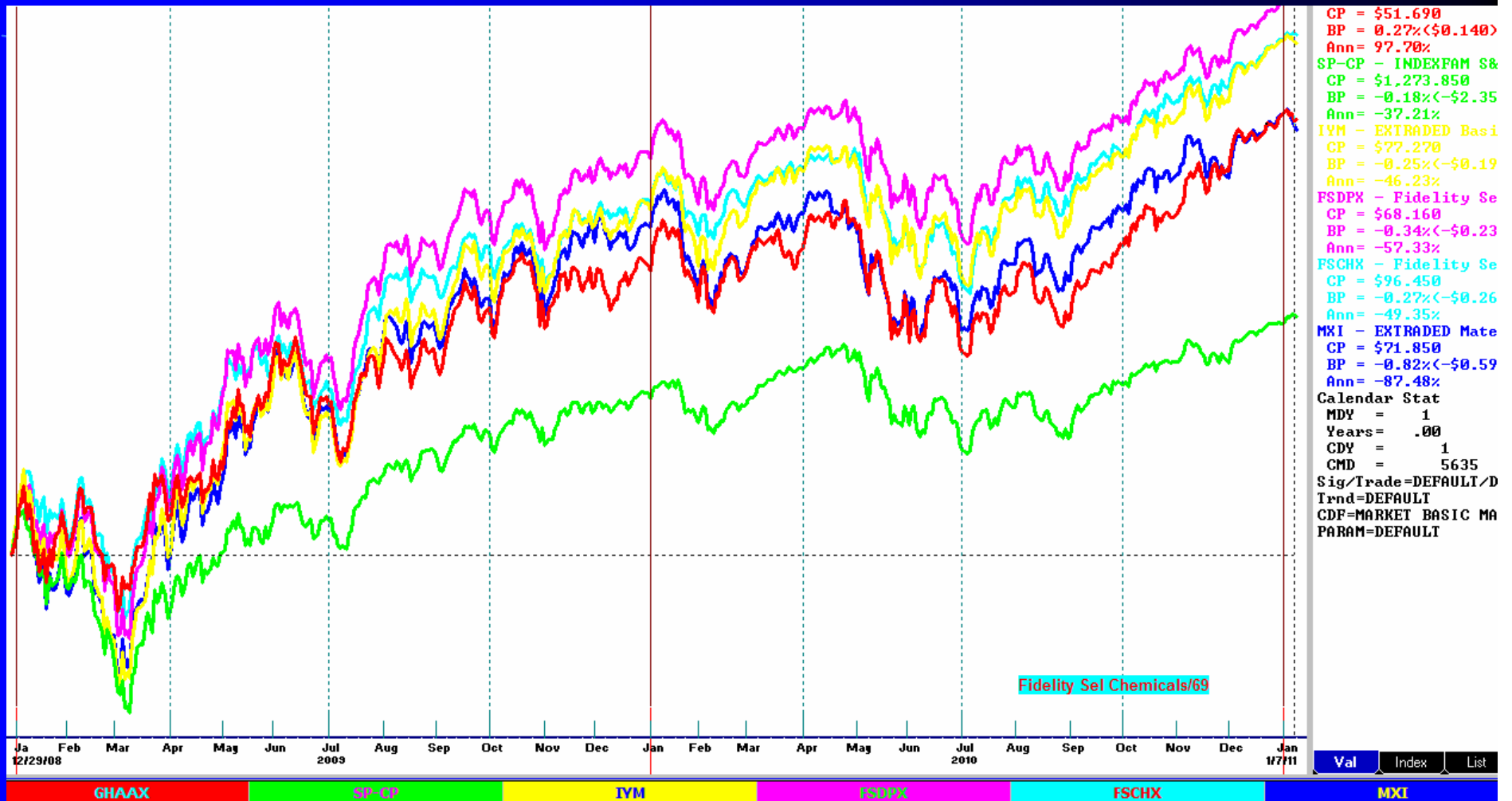
This means:

- The most important investment decision that you can make by far is the asset allocation decision – how much of your portfolio you place in one market or another.
- The choice of a specific security within a market is not important ... “A rising tide lifts all ships.”
- Market timing is not important.

Natural resources and energy...

- China is doing its best to tie up natural resources. Look what it is doing in Brazil and Canada and Central Asia. Look at what it has just done with Chesapeake (shale gas)
- India will begin to do the same thing because they must.
- How can I make money out of this situation?

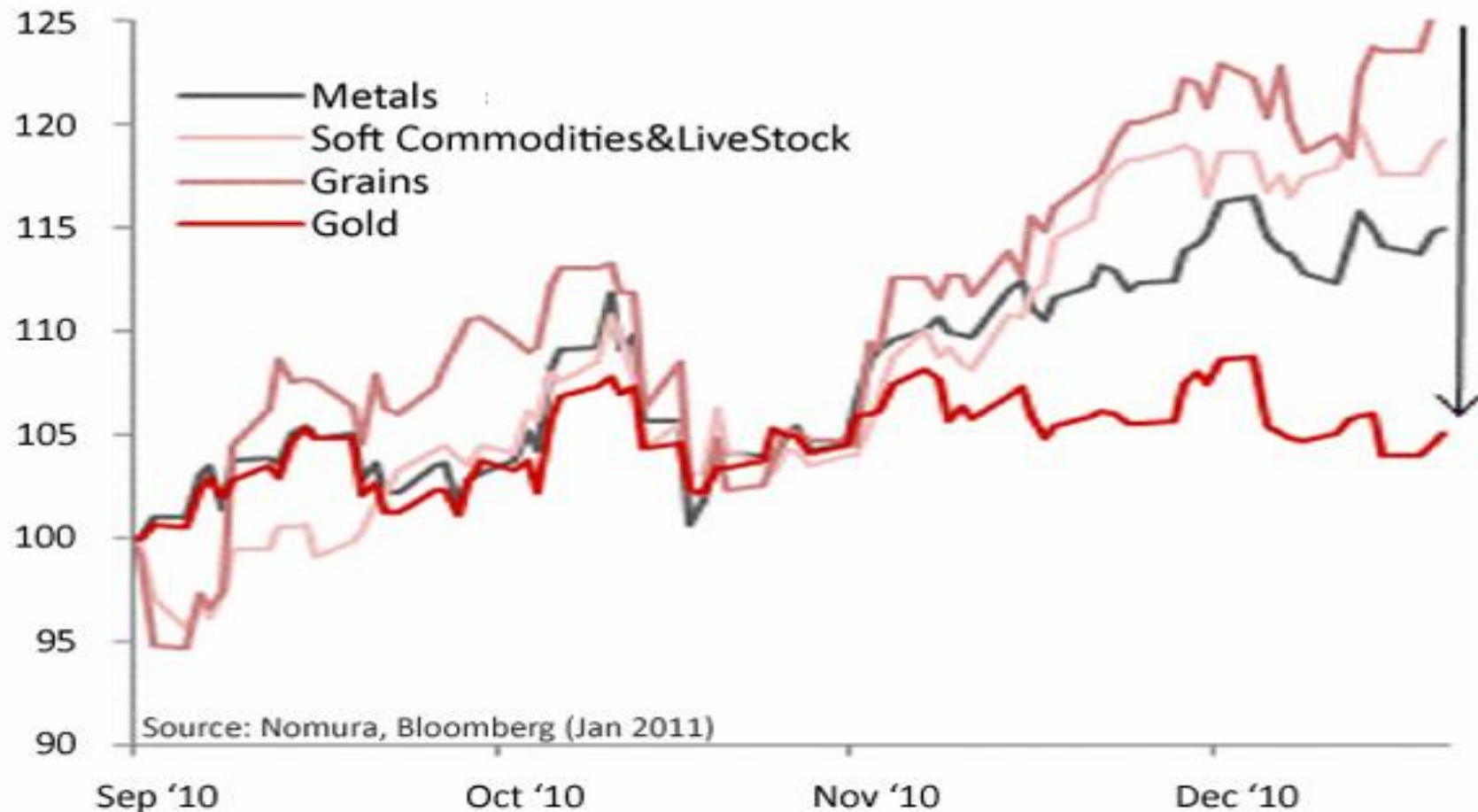
Natural Resources Opportunities:



Which commodity is the most profitable?

Clusterstock  Chart of the Day

Index Gold Underperforms Compared To Other Commodities



Here's some examples:

FSCHX	Fidelity Select Chemicals	51.82%/Yr
IYM	DJ US Basic Materials	49.63
FSDPX	Fidelity Select Materials	41.76
GHAAX	Van Eck Materials	41.76
MXI	S&P Global Materials	40.63

What about rare earths?

- Why are rare earth's important? Neodymium.
- What did China do and why?
- Ever heard of Molycorp (MCP) and California's Mountain Pass Mine?
- Population explosion in Big Timber, Montana!

Some Fidelity recommendations:

Four hot sectors:

1. Commodities
2. Industrials and Materials
3. Technology
4. Energy

What made America great?

The Question:

It's people?

It's religion or lack thereof?

It's Constitution?

None of the above?

Answer:

What makes America great?

America continues to be great because of all countries on Earth, it has been the most successful in moving intellectual concepts toward commercialization.

This is measured by the National Innovation System (NIS) which is a combination of:

(1) Fluidity of capital, (2) flexibility of the labor pool, (3) government receptivity to business, (4) information communication technologies, (5) private sector development infrastructure, (6) legal systems to protect property rights, (7) available scientific and human capital, (8) marketing skills and (9) cultural propensity to encourage creativity.

Where does the US rank?

1. USA	30.3	
2. Finland	29.1	
3. Germany	27.2	
4. UK	27.0	
5. Australia	26.9	
5. Netherlands	26.9	
5. Sweden	26.9	
5. Switzerland	26.9	
9. France	26.8	
10. Canada	26.5	
11. Israel	26.5	
36. India	18.9	
41. China	18.1	41 out of 67 ranked

Source: Nationmaster.com Economy/Innovation

What's the point?

China and India are expected to achieve parity with the US in 10 years on 2 points:

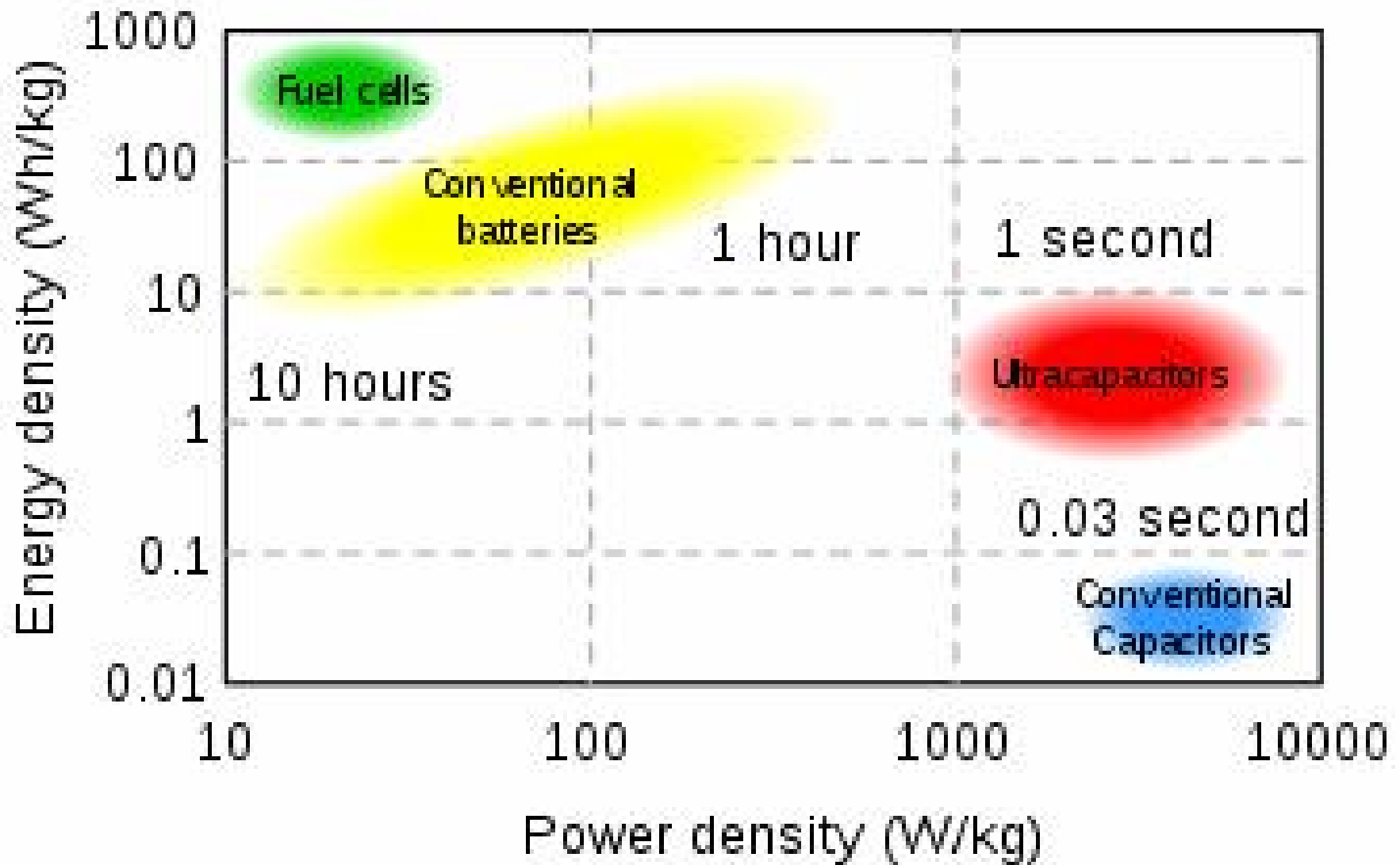
1. Scientific and human capital (India).
2. Government receptivity to business innovation (China).

Both will significantly narrow the gap with the US on the other 7 factors but will not pass the US.

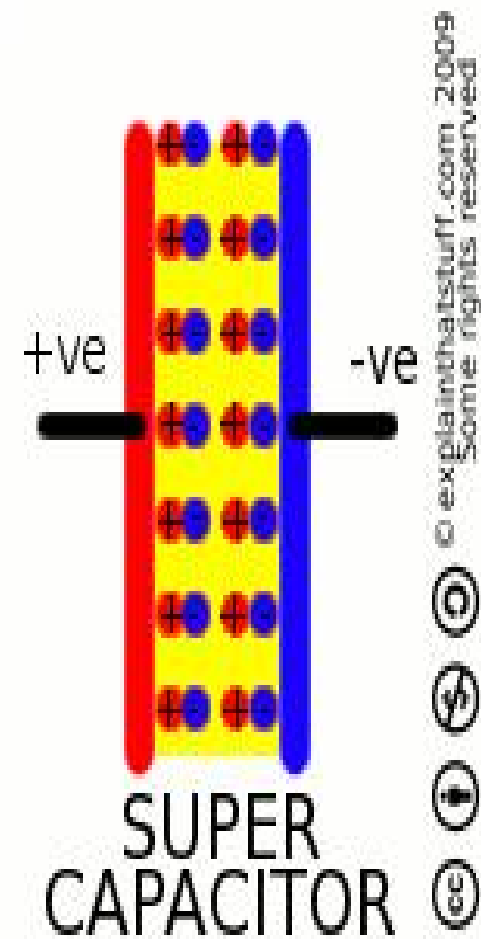
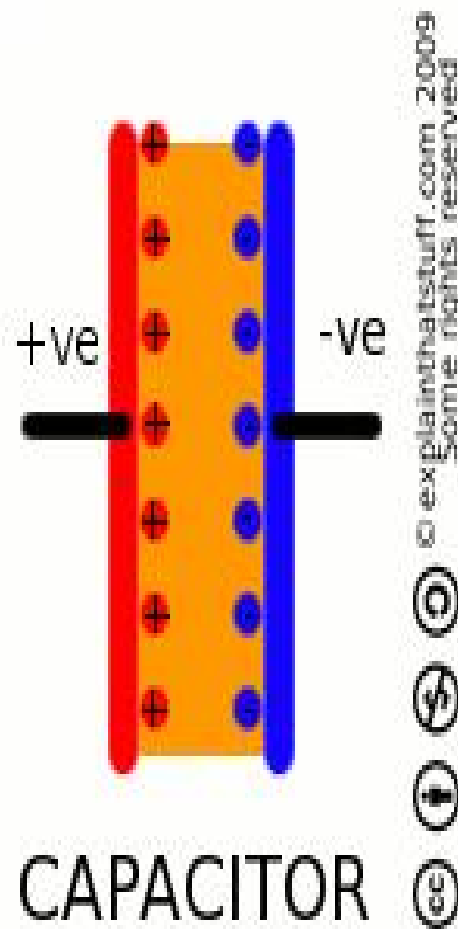
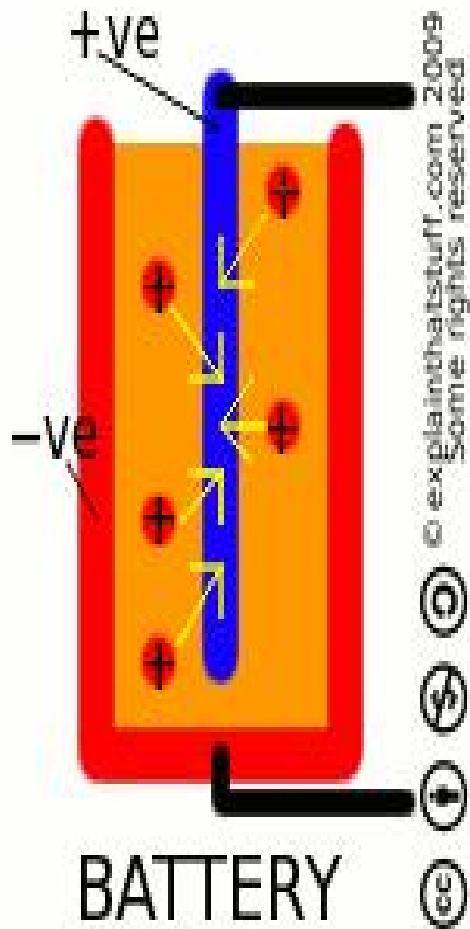
Here's an important point:

- China, India and some other developing countries have a unique opportunity to be the first to develop a host of technologies. Why?
- They can do that because they are building new technologies and are not burdened by historical patterns of development. Think of clean water, electrical power distribution, the next generation of the Internet, new information technologies.
- Early adaptation of these can provide them with significant economic advantages.

ULTRACAPACITORS



How they work:



Why use an ultracapacitor?

- It can improve a car's gas mileage by recovering energy lost in braking.
- It can provide an enormous power burst.
- It can extend battery life and
- Allow batteries to be smaller.

Wikipedia says:

“Only ultracapacitors can capture and store large amounts of electrical energy (generated by braking) and release it quickly for reacceleration.”

Reminder to remind the audience about Maxwell Industries.