

Energy roadmap: Rethinking of U.S. foreign policy

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Humanity's Top Ten Problems For Next 50 years

1. **ENERGY**
2. **WATER**
3. **FOOD**
4. **ENVIRONMENT**
5. **POVERTY**
6. **TERRORISM & WAR**
7. **DISEASE**
8. **EDUCATION**
9. **DEMOCRACY**
10. **POPULATION**



Energy security concern

Oil prices are high by historic standards

Oil rich middle east region

Growing turmoil in this area reminds us of limited ability to control events there

Vulnerable U.S. oil infrastructure

Temporary shut down of refineries, pipelines and off load terminals because of hurricanes

Poor maintenance of domestic oil supply pipelines

*Temporary shutdown of Alaskan pipelines to all the 48 states.
As British Petroleum (BP) manages the Alaskan pipelines-reinforces the idea of no control over vitally needed energy supply*

U.S. as substantial net oil importer

Energy security & foreign policy questions are intertwined

Some such arguments

- *Dwindling global oil reserves*
- *Increasing instability in oil producing regions disrupts supply and create price spikes*
- *Geopolitics of oil, certain fast emerging countries like China “locking up” the world's remaining oil supply through long term purchase agreements*

Time to think

Can we ignore U.S. oil interests ?

NO

BUT

At the same time, these interests do not suggest “**Activist Foreign Policy**” approach to allow the oil market to function or to ensure access in coming decades.

- *Spread confrontational democracy across Persian Gulf*
- *Peace time military presence in these areas*
- *Confront China*



How oil market works ?

Two main processes determine oil prices

- The forces of supply & demand
- Constraints on these forces
 - a) *Created by political risk*
 - b) *OPEC cartel behavior*

For oil companies-To earn profits, following details of oil business matter

- a) *various grades of oil*
- b) *complex contracts to buy oil*
- c) *hedge against volatility*

But these details often don't matter for link between oil and foreign policy

How oil market works ?

For countries-their oil policy depends generally on availability and overall price of the oil

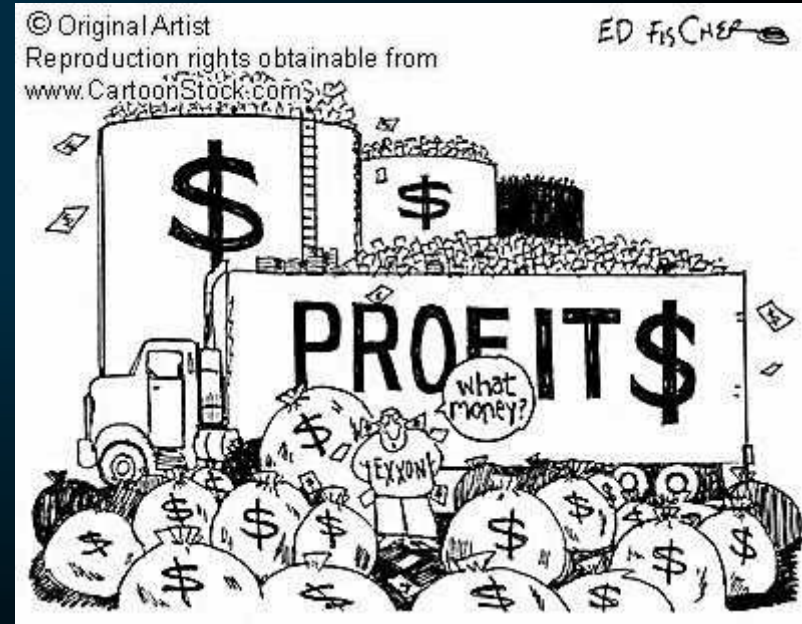
Market forces and not geological features determine “oil supply”

Geological features

Only determine location and whether meaningful oil deposits exist and how expensive to discover & tap

Oil production

From extraction to transformation to refineries to various form to end users, depends on how much money oil companies have invested in given field



Prices drive fluctuations in oil supply

Higher prices

- *To pump fields at a higher rate to maximize profit before price drops*
- *Companies with higher inventories respond to these prices by selling their stocks unless they expect prices to rise higher in future.*

Lower prices

- *Reduce production*
- *Price troughs encourage them to hold or expand their inventories and reducing supply in short term*

Oil prices play a key role in global demand

In short term

- *Demand does not change much in response to price fluctuations.*
- *People need to drive to work, heat their houses, so they tend to cut expenses elsewhere rather than go without oil.*
- *Sometimes, short term climbing spark additional demand, such as, when fear of war and political instability drive up prices*
- *Eventually demand does not commensurate with the actual consumption and price temporarily is dispersed because market draws supply from ongoing extraction and excess inventory.*
- *Day-to-day prices bounce quiet a bit as consumption, extraction and inventory strategies adjust.*

In long term

- *Demand responds to price increase*
- *Companies spend more money on efficient equipment and production processes*
- *More investment in renewable energy sources, reducing demand .*

Political risks tempers making expensive investments

Market forces decides oil prices but political risks equally shape them

Political risks such as:

- *Will local governments nationalize companies investment or raise taxes & fees for future extraction?*
- *Will terrorists destroy key equipment?*
- *Will a war disrupt the flow of oil to markets?*

OPEC affects prices by controlling supply

OPEC: Organization of petroleum exporting countries

OPEC negotiates agreements to produce up to the point where price equals marginal cost.

- *Such agreements are difficult to reach as they have to allocate market shares among themselves.*
- *Uncertain about the actual strength of the demand*
- *Often disagree about how much to restrict supply.*

Each time the global oil supply and demand situation changes, OPEC members have to adjust their cartel agreement.

Fear of Peak Oil

Several energy forecasters alarm about the world's remaining oil reserves

- *According to some analysts-half of recoverable oil has already been consumed. Thus, an irreversible decline has begun*
- *Coming decades, oil prices will soar as supply dwindles and demand grows.*

Some observers argue to use “Foreign Policy tool” to ensure access to the “American share” of oil supplies in the difficult environment.

But this view will have inevitable consequence of drawing United States into
Resource War



Fear of Peak Oil

For decades, analysts have argued that global production will peak in 1989

But since 1989

- *The global crude oil production has grown by 23%*
- *World's ultimately recoverable resources (URR) have been growing over time.*
- *Many fields contain more oil than was originally believed*

Improved Technology- Allowed for greater fraction of reserves to be extracted

In 1980- 22% of the oil in an average field was recoverable

With better extraction technology- 35% is an average recovery of the field



Fear of Peak Oil

In 1972- The “life index” of global oil reserves-the length of time that known reserves could support the current rate of production-was 35 years

In 2003- 31 years of more extraction-the life index stood at 40 years.

No one knows, how much oil is ultimately recoverable from the earth. But there is no compelling reason that reserves are running out or is at peak.

There is a subtle cause of concern that has merit.

- *World's remaining oil supply-are concentrated in politically unstable regions*
- *Fears of instability suppress investment in exploration*
- *Price increase*



Fear of Peak Oil

Such concerns of oil supply has led foreign policy analysts to advocate costly policies to mitigate the instability In key oil producing regions

One such proposal is to do more to police Persian Gulf and Central Asia

This foreign policy prescription is unnecessary and unwise.

Fear of Peak Oil

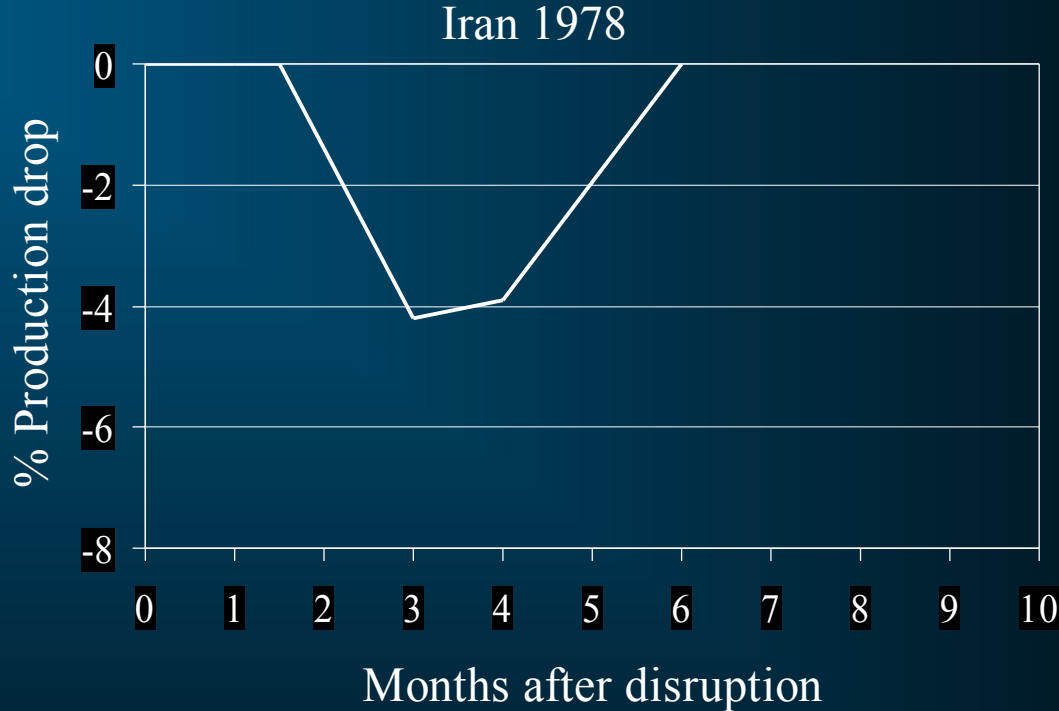
If investment in oil industry dwindles due to instability in oil producing regions-which means raising price and supply disruptions

The policy response should be evaluated on the basis of their ability to enhance supply and reduce price

Investment in oil exploration and extraction technology are more attractive than foreign policy that support dictators

- *Attempt to police or democratize violent regions*

Decline and recovery of World oil production



Iranian Oil industry strikes

This strike deprived global markets of nearly 5mb/d (which was more than 4% of world production). But the world responded quickly and global production had fully recovered in 6 months.

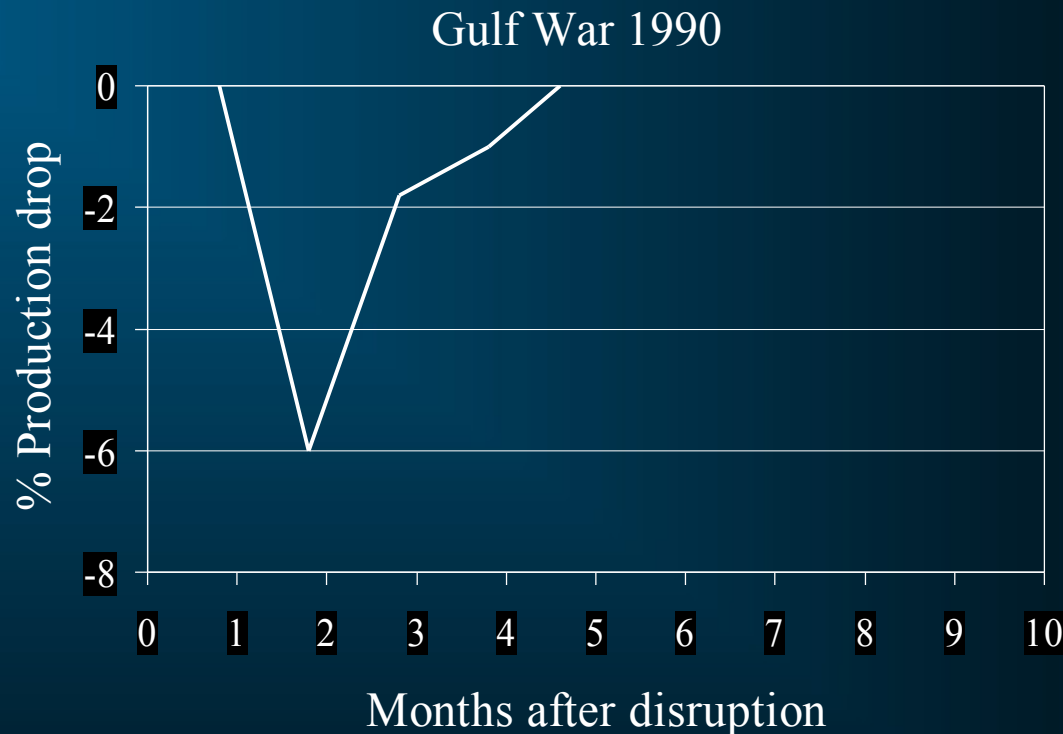
Decline and recovery of World oil production



The start of Iran-Iraq war

This war removed 5.8% of global production, but total global supply did not fall by that full amount. Other producers increased their output within the same month, so, net global supply only dropped by 4.2%. Interestingly, adjustment continued and world market was nearly replaced in 3 to 5 months.

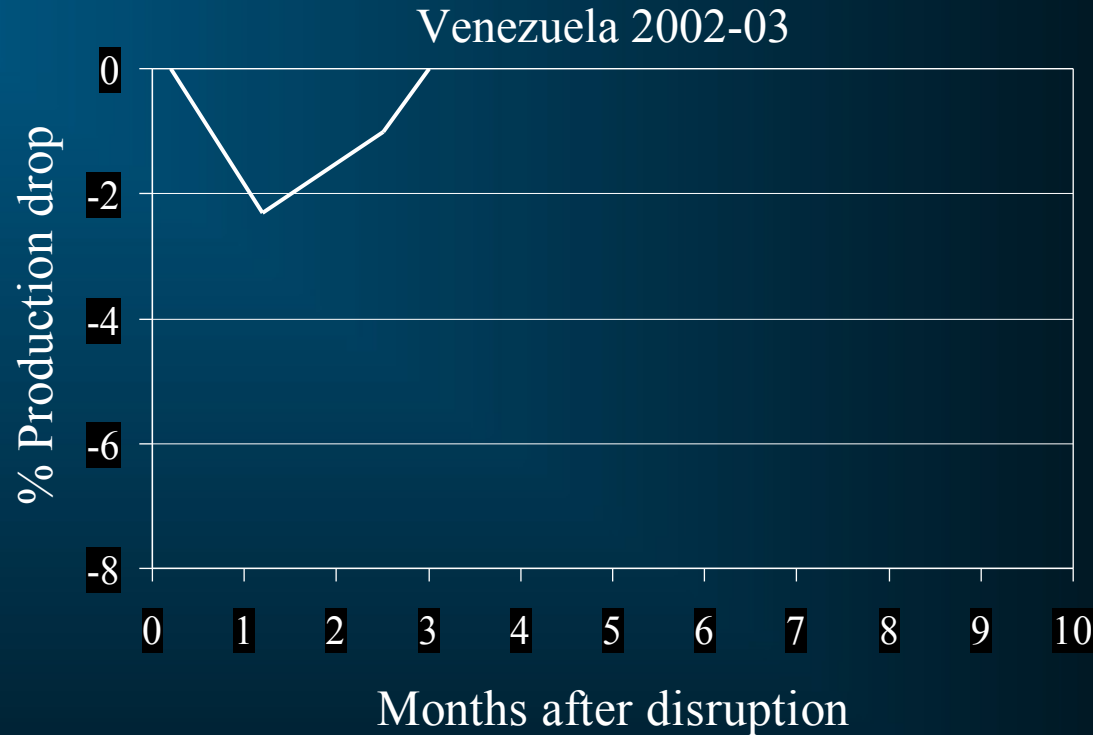
Decline and recovery of World oil production



Iraqi invasion of Kuwait

Iraq's 1990 invasion of Kuwait, UN sanction eliminated 5.3 mb/d of Iraqi and Kuwaiti oil from the world markets (a loss of 8.8% of world production). But total world supply didn't drop that far, because other producers quickly ramped up their production. One month later, net world production was down by 5.9% but one month later, it was short by 1.7% and two months later, it finally recovered.

Decline and recovery of World oil production

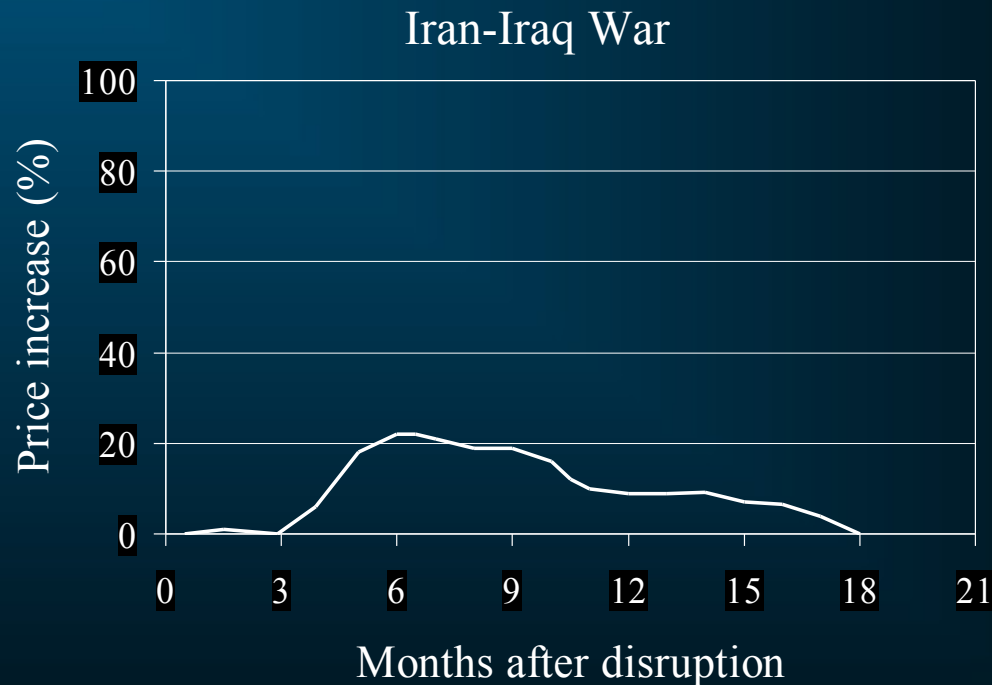


The strike in Venezuelan oil fields

In the Venezuelan case, it took only 3 months to replace 2.3 mb/d disrupted by strikes.

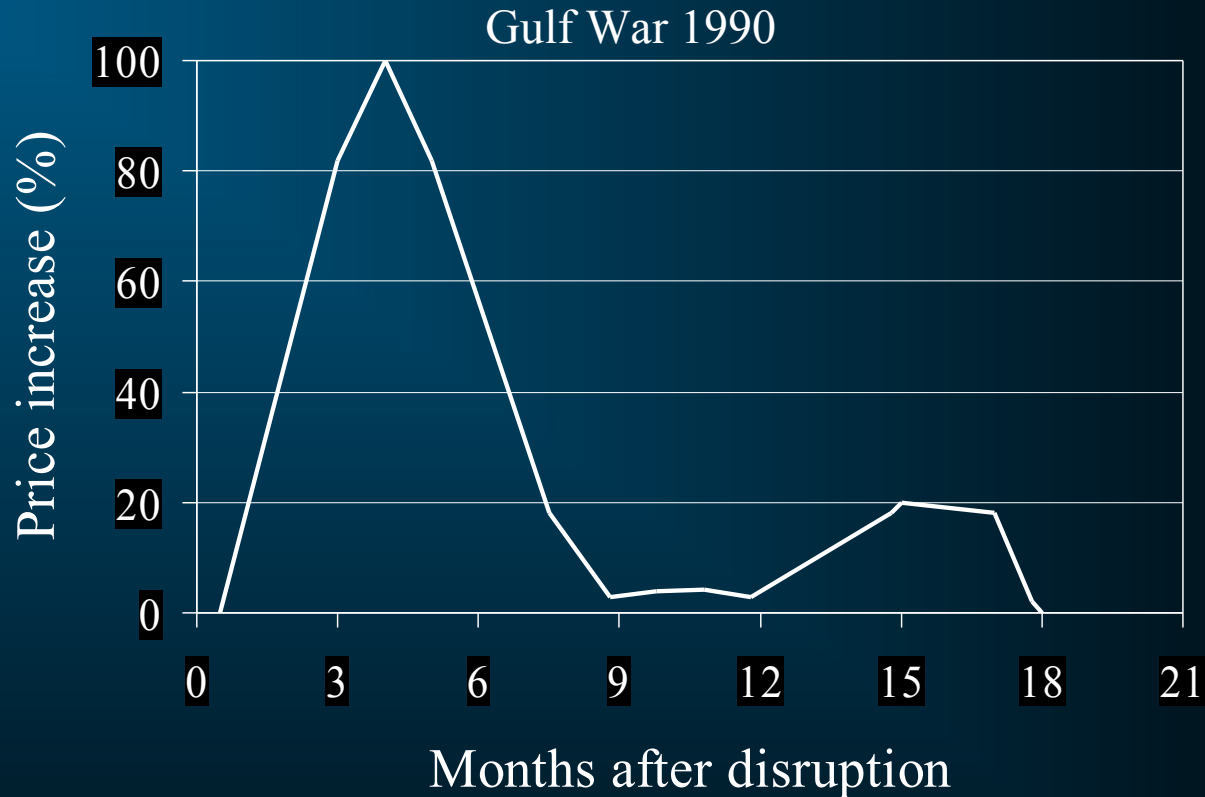
Trends in oil prices

Oil prices either remained nearly constant or quickly returned to pre-disruption levels



The outbreak of Iran-Iraq war triggered a jump in oil prices, but they returned to pre-war levels in about 18 months. Furthermore, even repeated attacks on shipping has no major effect on global prices

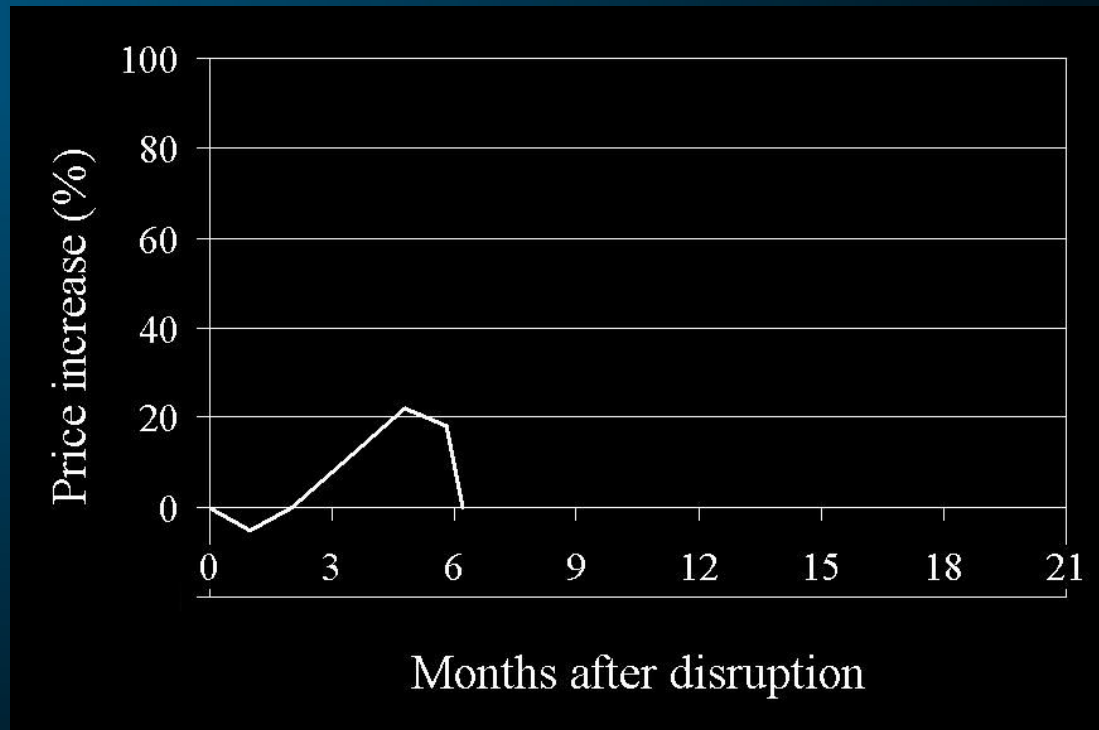
Trends in oil prices



Iraqi invasion of Kuwait and UN oil embargo-oil prices dropped nearly to pre-war levels in eight months.

Trends in oil prices

Venezuela Strikes 2002-03



In case of Venezuelan strikes oil prices were back with in 5 months to their pre-strike level

Conclusions

- **The U.S. does not need activist foreign policy to ensure U.S. access to affordable energy.**
- **There is no need to pacify or democratize oil producing regions to ensure that they will sell us their crude.**
- **The coming decade may present serious energy-related challenges to the world.**
- **-Global warming**
- **-may require collective action on a global scale to reduce emissions**
- **-Growing demand & finite nature of petroleum reserves**
- **-require to develop alternate energy sources to supplement the energy reaped from current sources**
- **Let us worry about real concerns and not about the wrong energy issues-that will be the real Energy Roadmap for the Future**

References

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Henning, Bohn and Robert T. Deacon, “Ownership Risk, Investment and the Use of Natural Resources”, American Economic Review 90, no. 3, June 2000, 526-49.