

New Directions for Northeast Asia Energy

19th Annual Meeting of the
Northeast Asian Economic Forum

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Alaska and the North Pacific

Source: Defense Mapping Agency
Projection: Mercator



Global Issues that Drive Northeast Asia Energy Issues

- Aftermath of the global financial crisis
- Recovery strategies of the Northeast Asian countries differ
- Dynamic changes in the global economy translate as a significant change in the energy supply and demand equilibrium for Northeast Asian
- As devastating as some of the changes might be, they also allow for unprecedented changes in policy and strategy in addressing changes in the structure of energy markets

NEAEEF has been looking at Energy Demand Growth and Green Growth in NE Asia

- Korea
- China
- Japan

Definition of Green Growth

- Green translates as:
 - Low Carbon Emissions
 - Energy Conservation
 - Energy Efficiency
- Growth, traditionally, is:
 - Increasing demand in energy
- Seemingly inherent contradiction in linking the two concepts

“Green Growth” Strategies

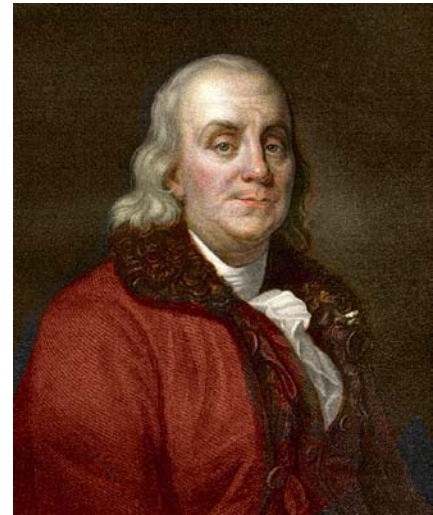
- **Republic of Korea: “A National Vision”**
 - Presidential Committee on Green Growth,
 - enacted legislation *The Framework Act on Low Carbon Green Growth*, and
- ***China***
 - An Inventory of Green Energy (Low Carbon) Economic Achievement
- ***Japan***
 - “Cool Growth” = low carbon emissions
- ***Russia***
 - *Export West is best...*

Energy Supply and Demand

- Depends on Price
- In turn, depends on economic growth, and vice-versa
- Green growth strategies
 - Decrease demand
 - Decrease price of energy, especially of traditional fuels
- In turn, lack of incentive to promote green growth

Energy Security

- Prediction of next energy crisis difficult
- Costs of energy security is enormous
- Costs includes collateral issues
 - Restrictions on trade
 - Expenditure on defense
- *“No nation was ever ruined by trade.”*
 - *Benjamin Franklin*



Who invests in new
technology ??

A collage of US dollar bills, including a one hundred dollar bill and a ten dollar bill, is overlaid on a black and white photograph of a street sign for Main St. The sign is white with black lettering and is mounted on a black pole. The background of the photograph shows trees and a building.

MAIN ST

A collage of US dollar bills, including a one hundred dollar bill and a ten dollar bill, is overlaid on a color photograph of a street sign for Wall St. The sign is black with white lettering and is mounted on a black pole. The background of the photograph shows a building with arched windows.

←1-9
WALL ST

Where does new technology come from?

- Large corporation R&D
- Universities and research institutes
- Government laboratories (including military and space programs)
- Entrepreneurs

Technology

- Recognition of LONG TIME TO IMPLEMENT from idea to mass use
 - At least 3 years from idea to proto-type
 - At least 3 years from proto-type to pilot plant
 - At least 2 years from pilot to mass use of technology
 - Elections cycles are much shorter...

Construction Innovation Relevant for Northeast Asia

- Residential
- Commercial
- Public
- Industrial

“Green” Construction Codes



INTERNATIONAL GREEN CONSTRUCTION CODE™

PUBLIC VERSION 1.0, MARCH 2010

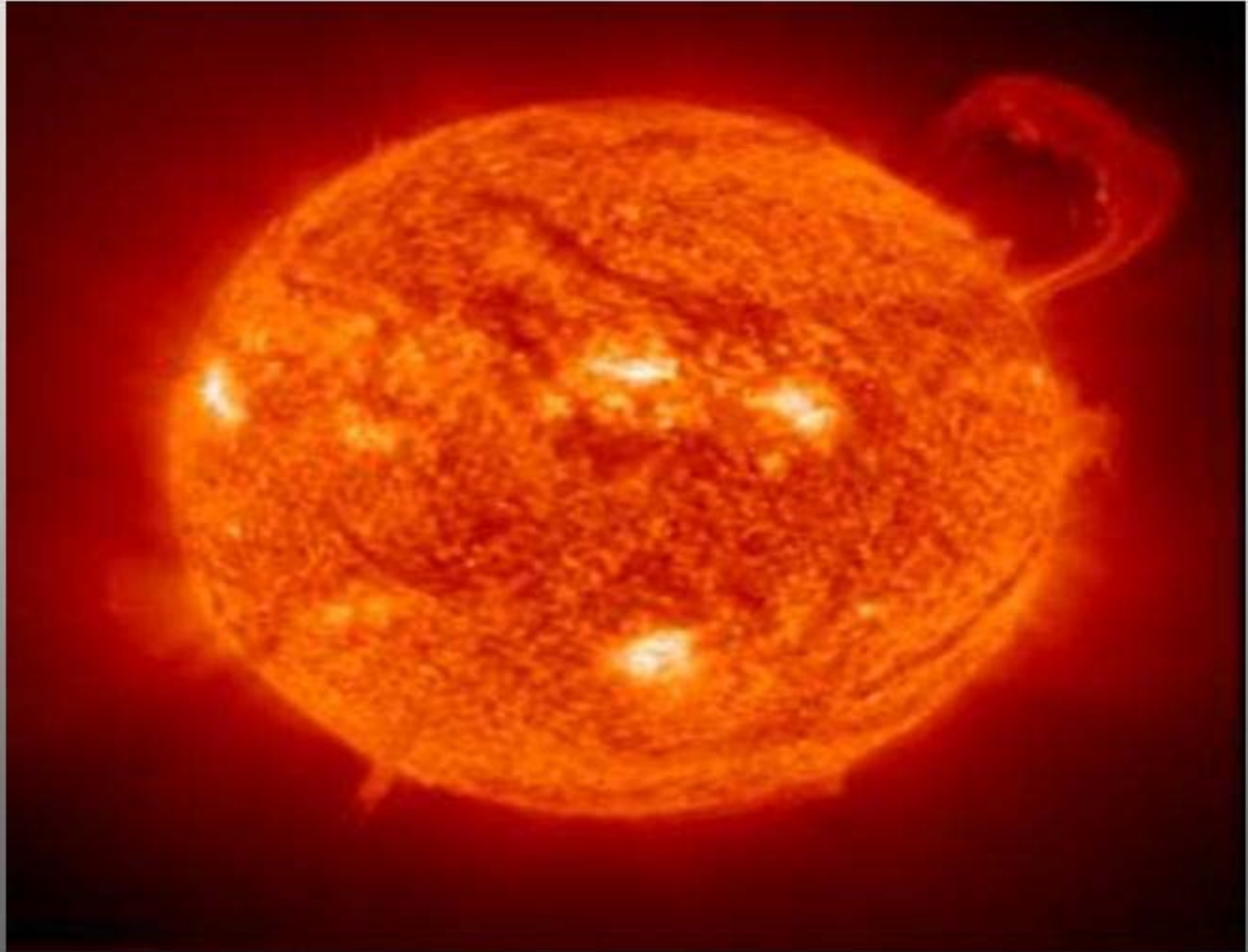
-  ASHRAE/USGBC/IES STANDARD 189.1-2009
STANDARD FOR THE DESIGN OF HIGH-PERFORMANCE GREEN BUILDINGS -
A JURISDICTIONAL COMPLIANCE OPTION OF THE IGCC
-  ICC® 700-2008 NATIONAL GREEN BUILDING STANDARD™ -
FOR RESIDENTIAL OCCUPANCIES (*by reference*)



THE AMERICAN
INSTITUTE
OF ARCHITECTS

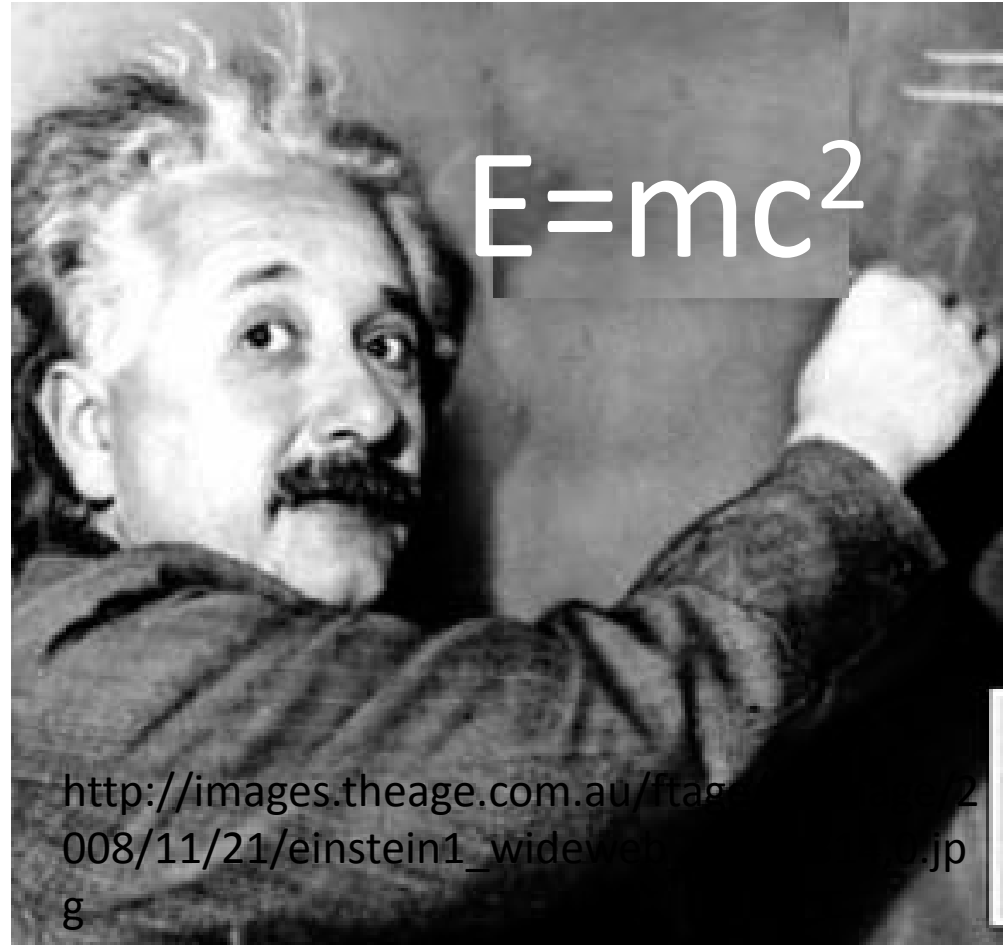


The Resource is ENERGY



Back to Basics

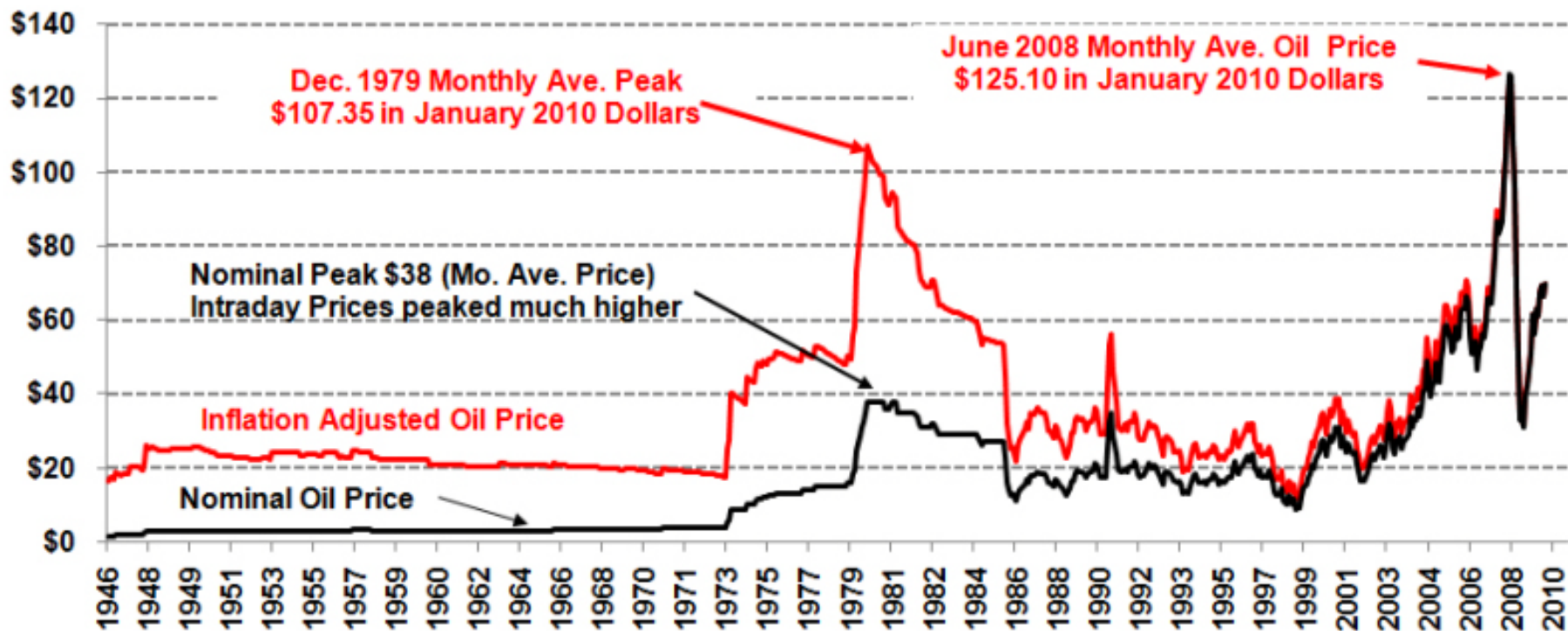
- Energy cannot be created or destroyed – it can only be **TRANSFORMED** from one form to another



The problem may be that fossil fuels are too cheap and are not scarce enough

(1940-Present) in January 2010 Dollars

© www.InflationData.com
Updated 3/11/2010



http://inflationdata.com/inflation/images/charts/Oil/Inflation_Adj_Oil_Prices_Chart.htm

Source of Data:
Oil Prices- www.ioga.com/Special/crudeoil_Hist.htm
CPI-U Inflation index- www.bls.gov

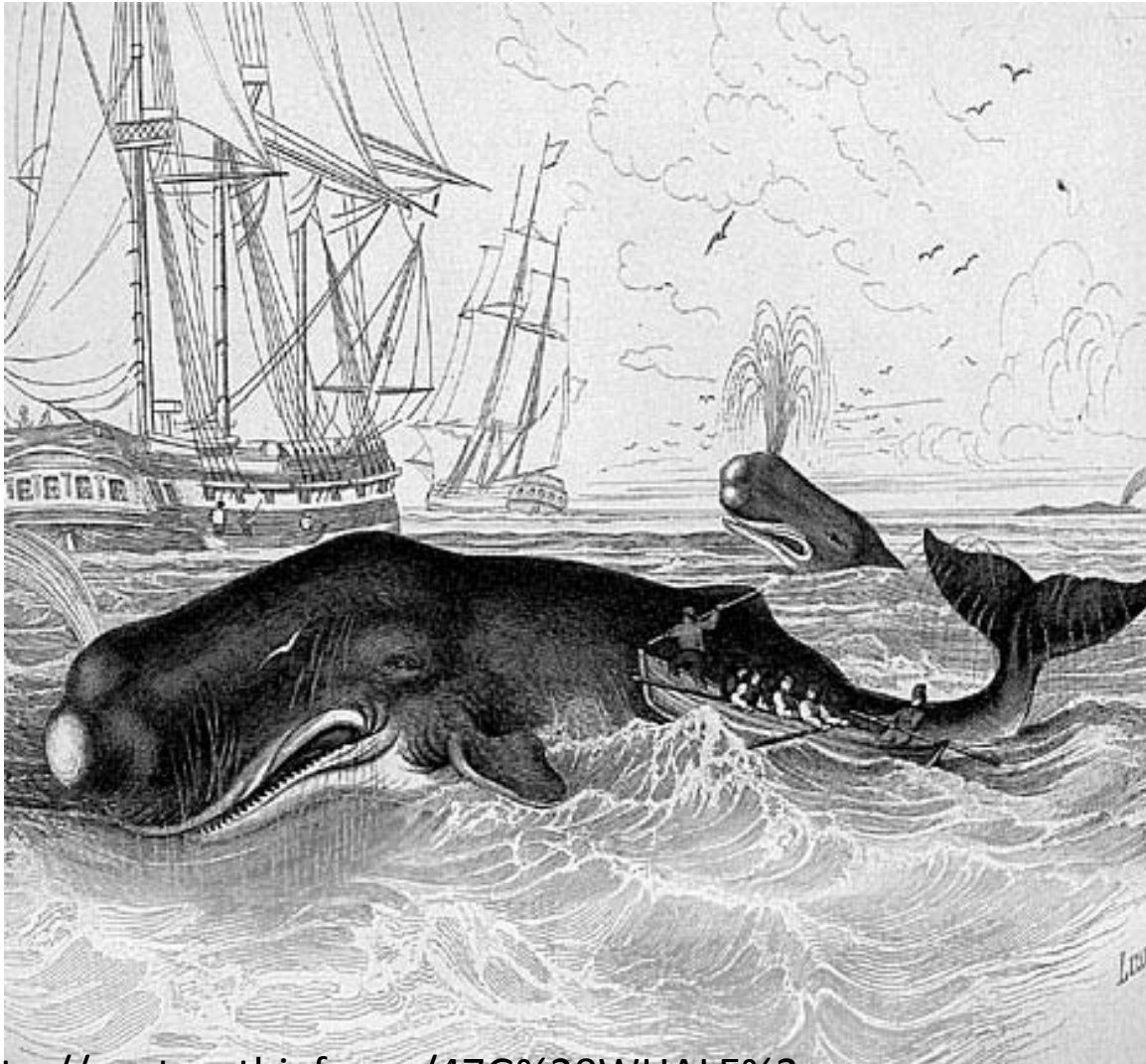
Why not use fossil fuels?



Depleting non-renewable resources to generate energy need NOT be SYNONOMOUS with emissions of greenhouse gases.



Do “future generations” need fossil fuels?



<http://capturethief.com/47G%20WHALE%20OIL%20LAMP%20SMALL%20BRASS%20cropped.jpg>

http://img.dailymail.co.uk/i/pix/2007/06_02/whaleDM1406_468x498.jpg

Goal of reduction of emissions



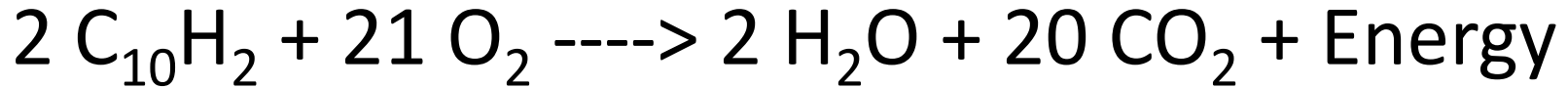
Lower carbon emissions through
traditional resources

- **WHAT ABOUT NATURAL
GAS?**



Combustion of fossil fuels

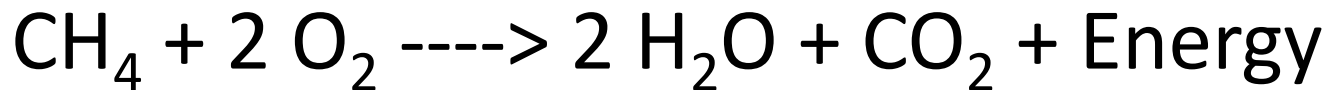
- Coal



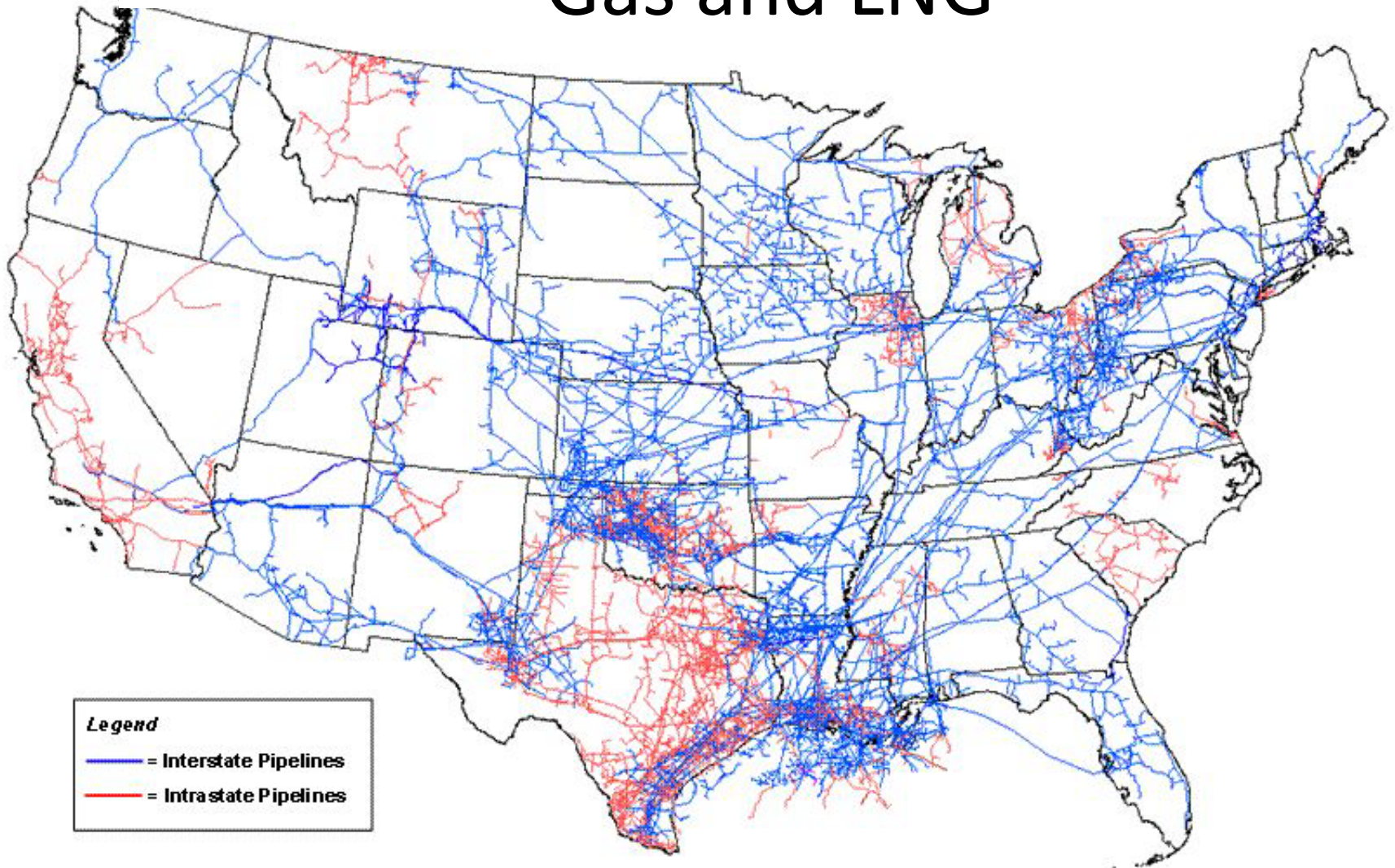
- Gasoline

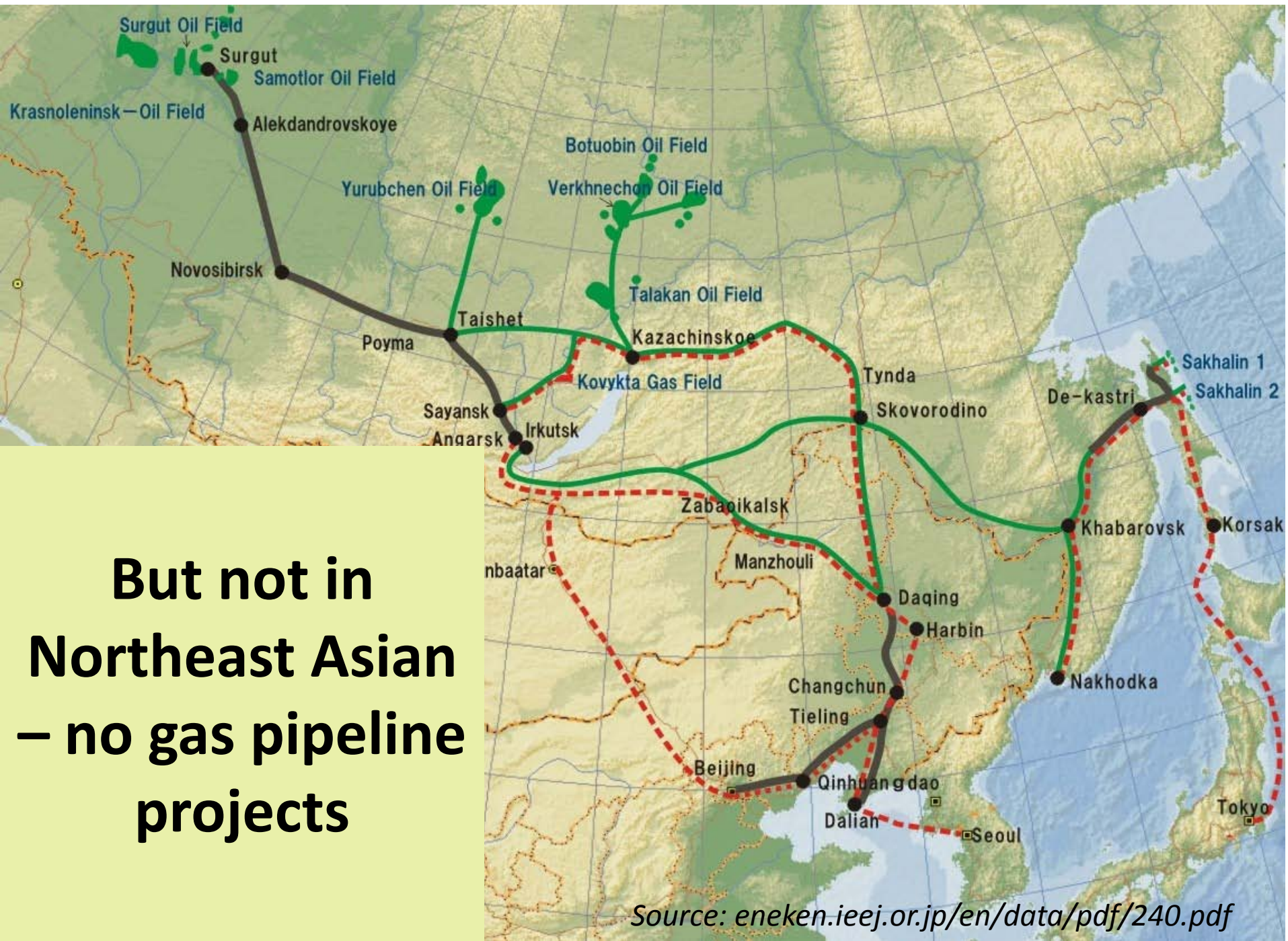


- Methane (natural gas)



Available Infrastructure for Natural Gas and LNG



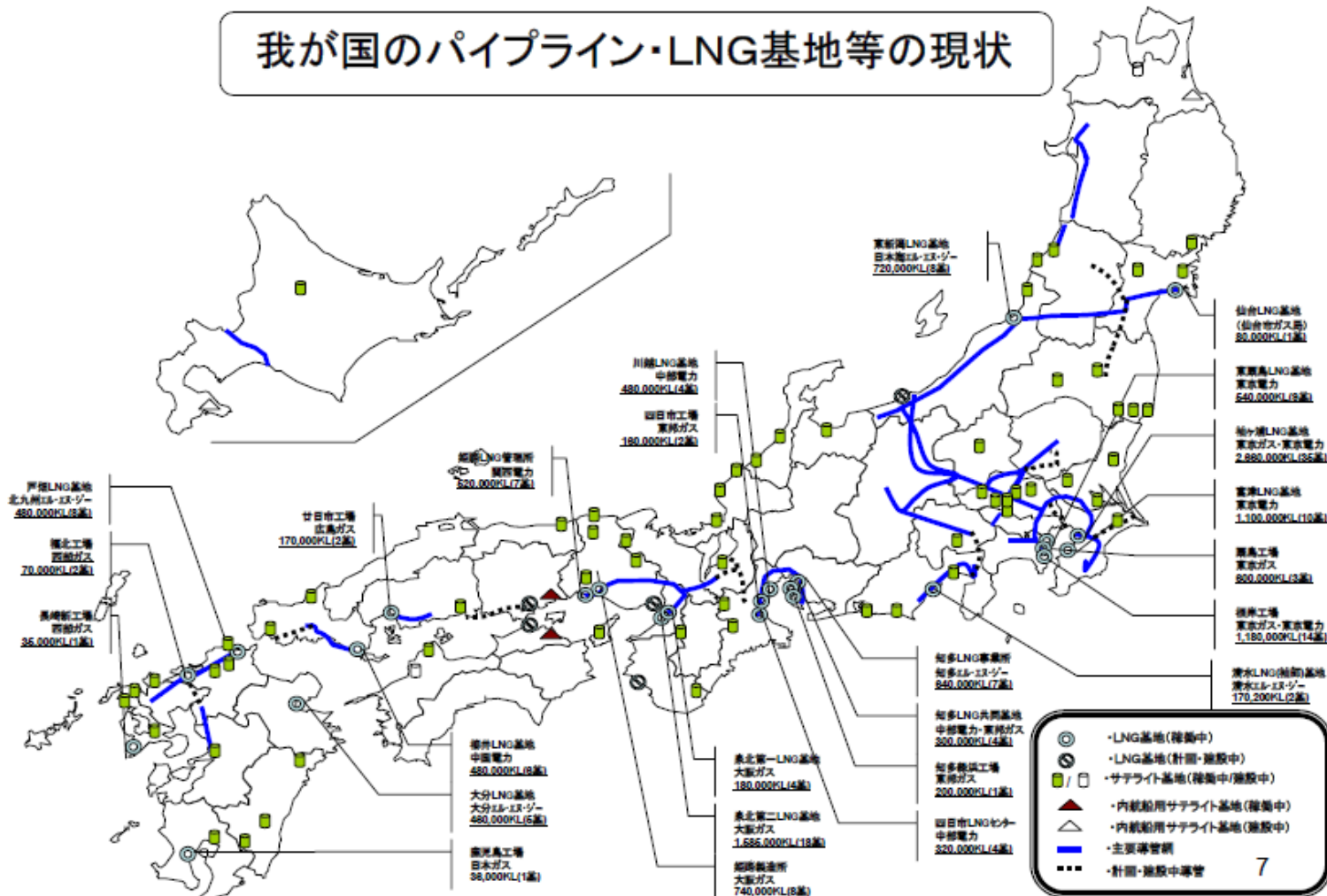


Source: eneken.ieej.or.jp/en/data/pdf/240.pdf

Japan has the “reverse” of US problem

No good pipeline infrastructure

我が国のパイプライン・LNG基地等の現状




(出所)事業者資料等を基に資源エネルギー庁作成

Japan Natural Gas Pipeline Case Study

- A realistic option for Japan might be to bring more natural gas into the Japanese markets.
- Currently, Japan has no real internal trunk-line pipeline infrastructure and almost all natural gas is brought in by about 25 Liquefied Natural Gas Terminals.

- Historically, there has been no incentive for Japan to create a domestic or international gas pipeline network, in contrast to Republic of Korea.

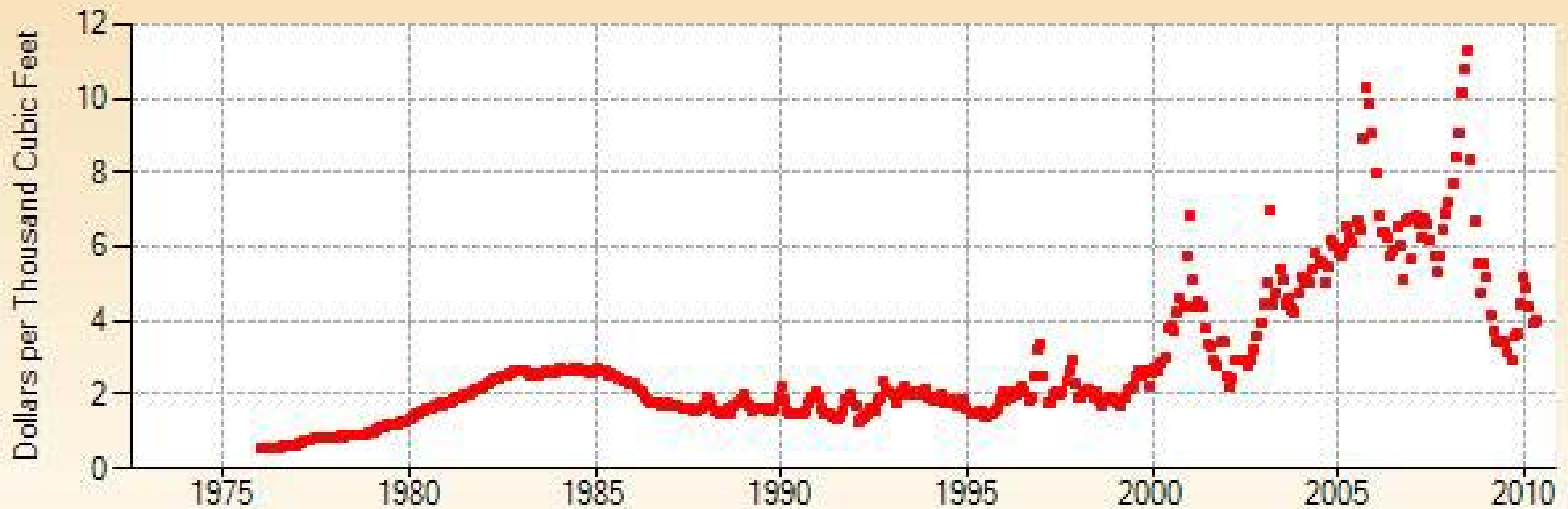


The background of the slide is a collage of US one hundred dollar bills, showing the portrait of Benjamin Franklin and the text 'ONE HUNDRED DOLLARS' and 'FEDERAL RESERVE NOTE'.

WHERE WILL THE MONEY FOR
ENERGY INFRASTRUCTURE COME
FROM??

Long term trend for Natural Gas Prices

Monthly U.S. Natural Gas Wellhead Price



Source: U.S. Energy Information Administration

NEW NATURAL GAS SOURCES?

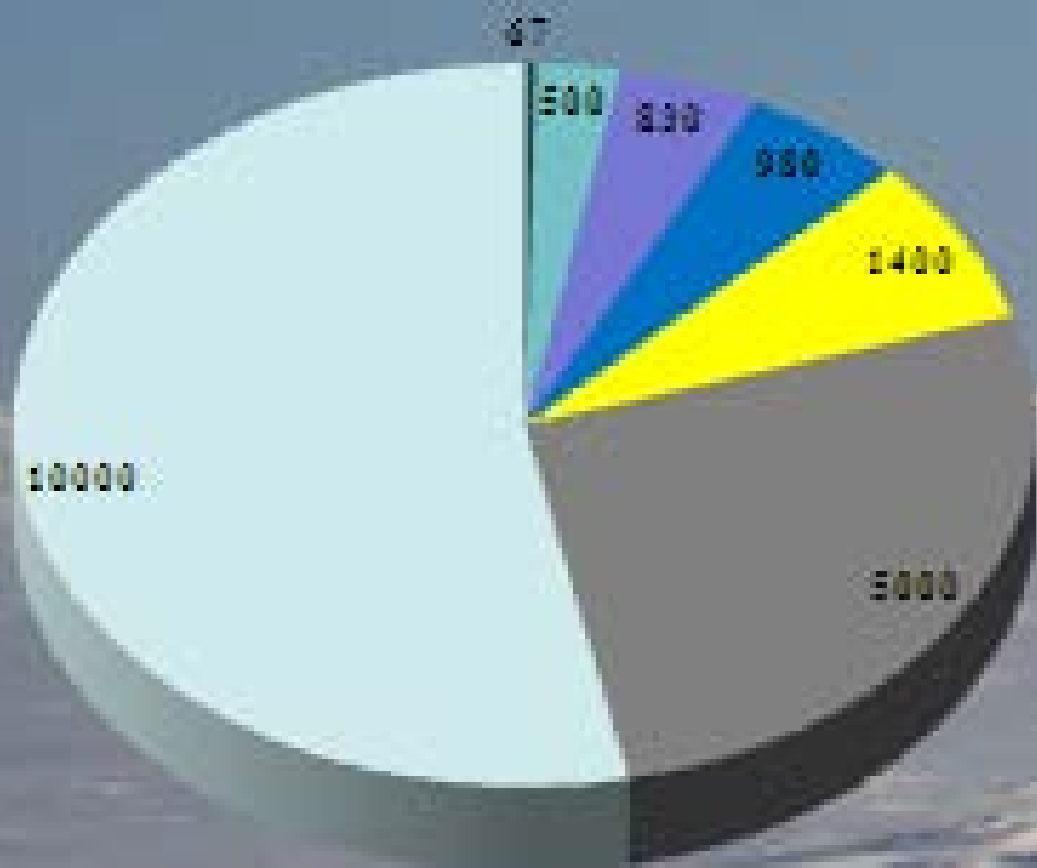
Methane hydrate is
natural gas super-
compressed (120 times)
within an ice crystal

There is more gas in
methane hydrates than
conventional gas



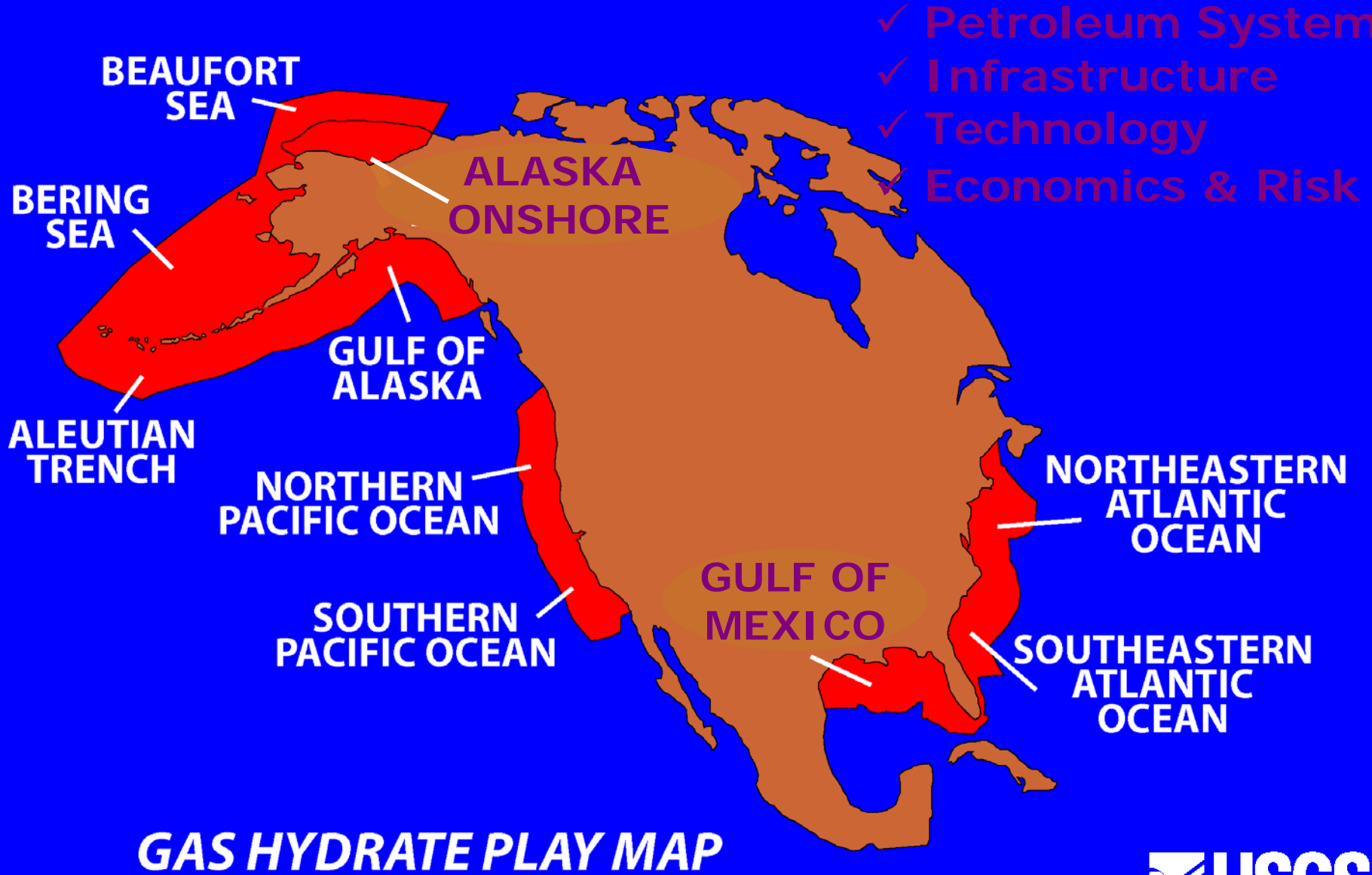
Distribution of Organic Carbon on Earth

Units = 1 billion tonnes of carbon



- Waste material
- Peat
- Land (animals & plants)
- Dissolved organic matter in water
- Soil
- Recoverable & non-recoverable fossil fuels (coal, oil, natural gas)
- Methane hydrates

Methane Hydrate-North America



THE END

