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Siberian Oil Pipeline and Its Implication for Northeast Asia

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**Kensuke Kanekiyo
Managing Director**

The Institute of Energy Economics, Japan

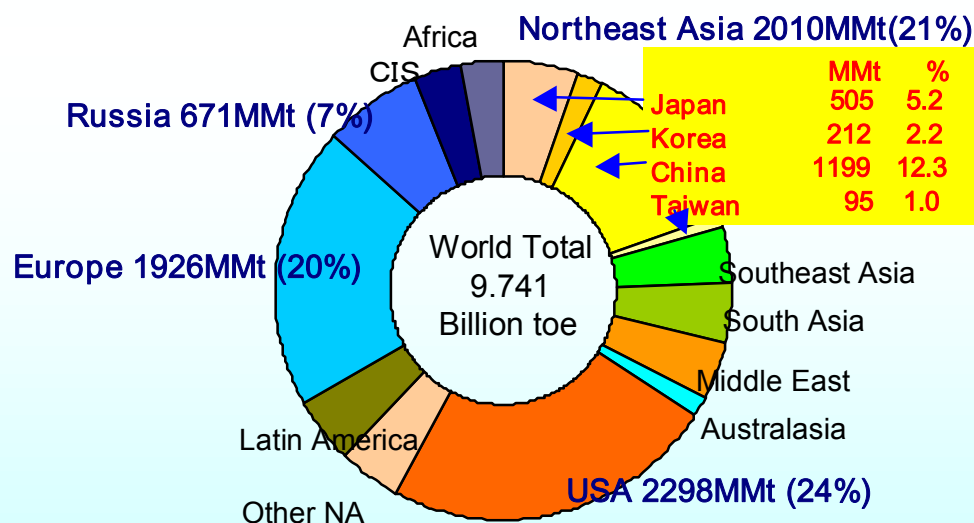
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1.1 Asia in the World

1. Northeast Asia is one of the three major energy market of the world together with North America and Europe.
2. Asian energy consumption is expanding rapidly driven by the fast growth of China.

→ Securing stable energy supply is an important policy objective of Asia.



World Energy consumption (2003)

Energy Total

	Oil Equiv. Btoe	Growth %
China	1.20	+13.6
Other Asia	2.00	+ 2.1
<u>US, Europe, Others</u>	<u>8.54</u>	<u>+1.4</u>
World	9.74	+2.9

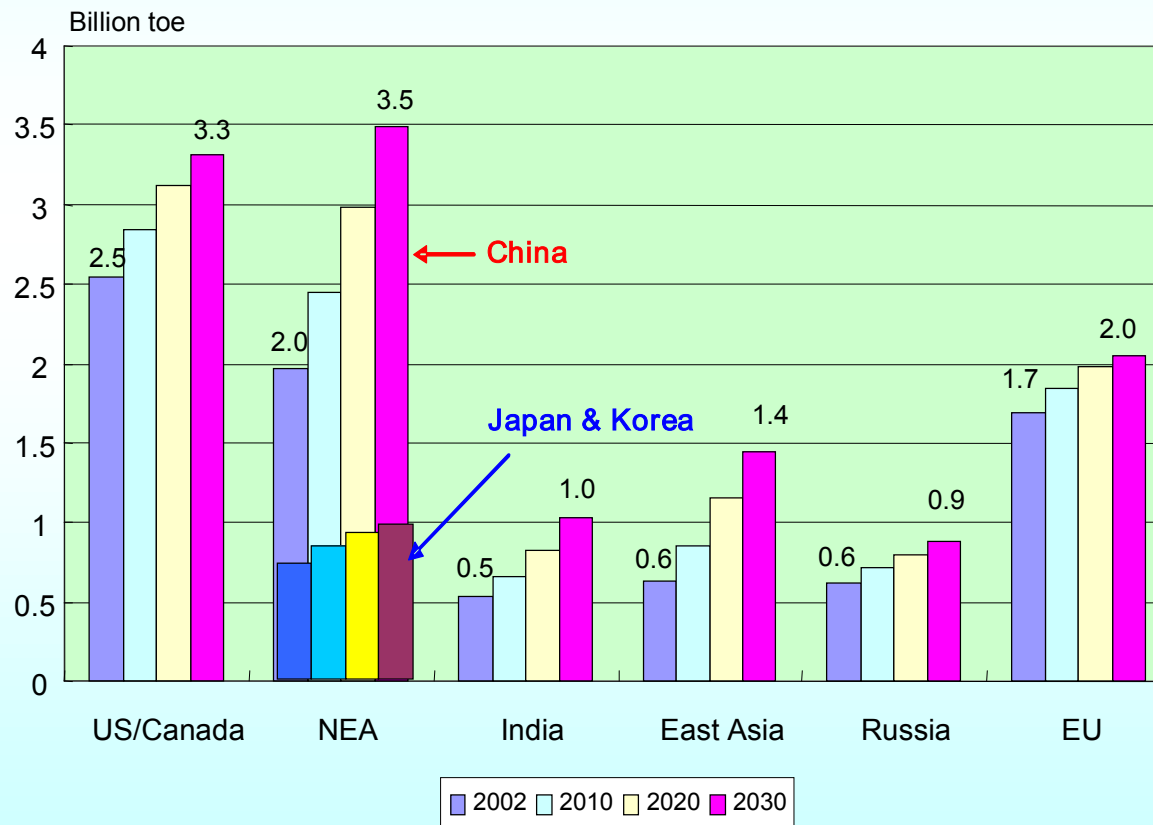
Oil	MMt	%
China	276	+11.5
Other Asia	729	+1.7
<u>US, Europe, Others</u>	<u>2633</u>	<u>+1.3</u>
World	3636	+2.1

Source: BP Statistical Review of the World Energy 2004

1.2 Energy Outlook of Asia

IEA World Energy Outlook 2004

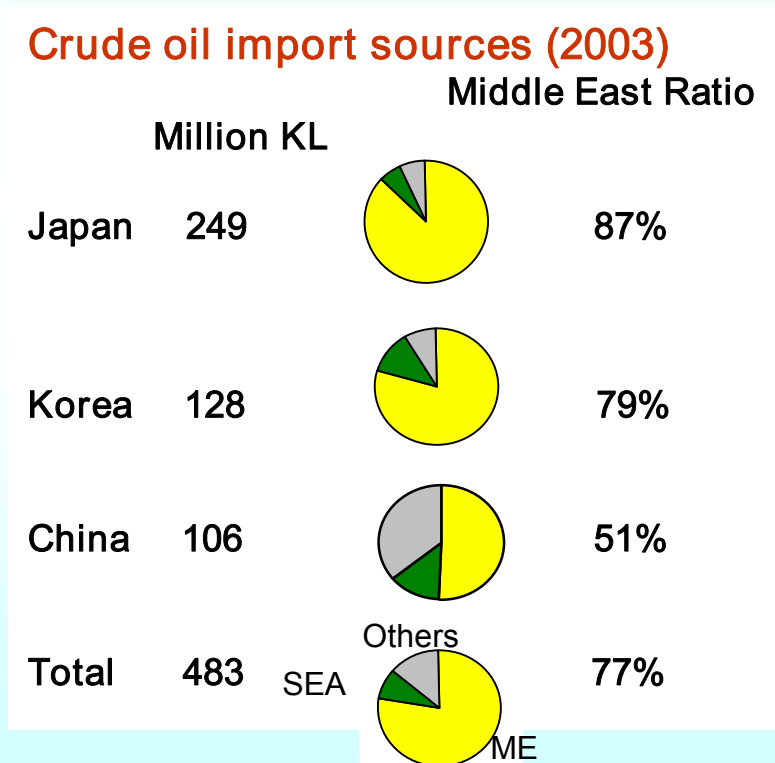
1. Energy consumption of Northeast Asia will exceed north America in 2020s.
2. In Asia, China's energy consumption will grow rapidly, while those of Japan and Korea remain moderate.



1.3 Energy Structure of Northeast Asia

1. Japan & Korea: Heavily depend on import.
Oil and Gas are the major energy sources. Coal is also imported.
2. China : 90% self sufficient, while oil import is expanding rapidly.
Coal is the major energy source, with serious environmental problems.
3. High dependence on Middle East is region's vulnerability.

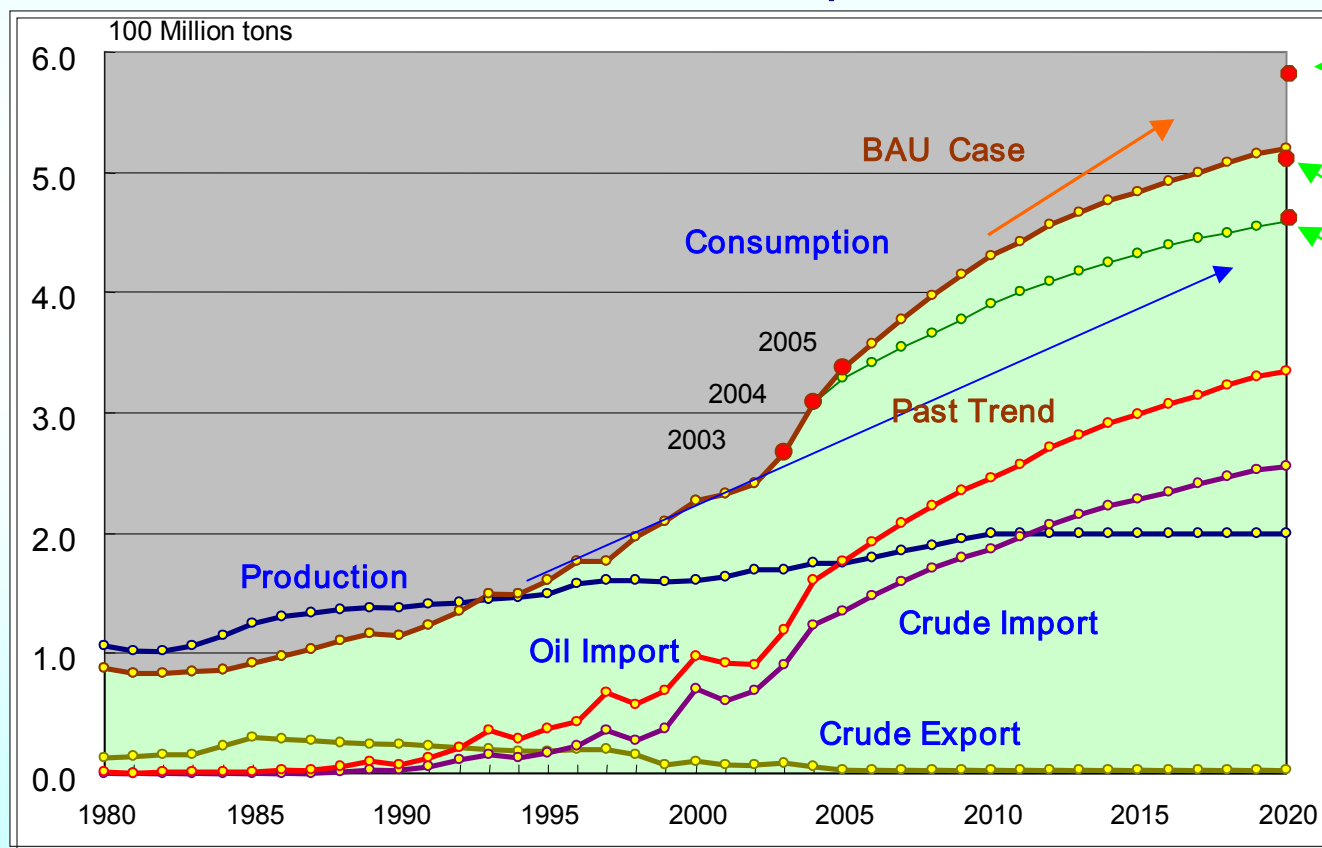
Energy Sources (2003)	
Million tons oil equiv.	
505	Oil 49 %
(-0.4%)	Coal 22%
	Gas 14%
Korea 212	Oil 50%
(+3.4%)	Coal 24%
	Gas 11%
China 1199	Coal 67%
(+13.6%)	Oil 24%
	Gas 3%
Total 1916	Coal 51%
(+8.4%)	Oil 34%
	Gas 7%



Source: BP and others

1.4 Petroleum Outlook of China

1. China's oil demand will continue rapid growth.
2. Existing large fields are depleting. China's oil production will be leveling off despite the intensive exploration efforts.
3. Thus, substantial increase of oil import is unavoidable.



BUA Case
(IEEJ)
590MMT

IEA Scenarios 2004

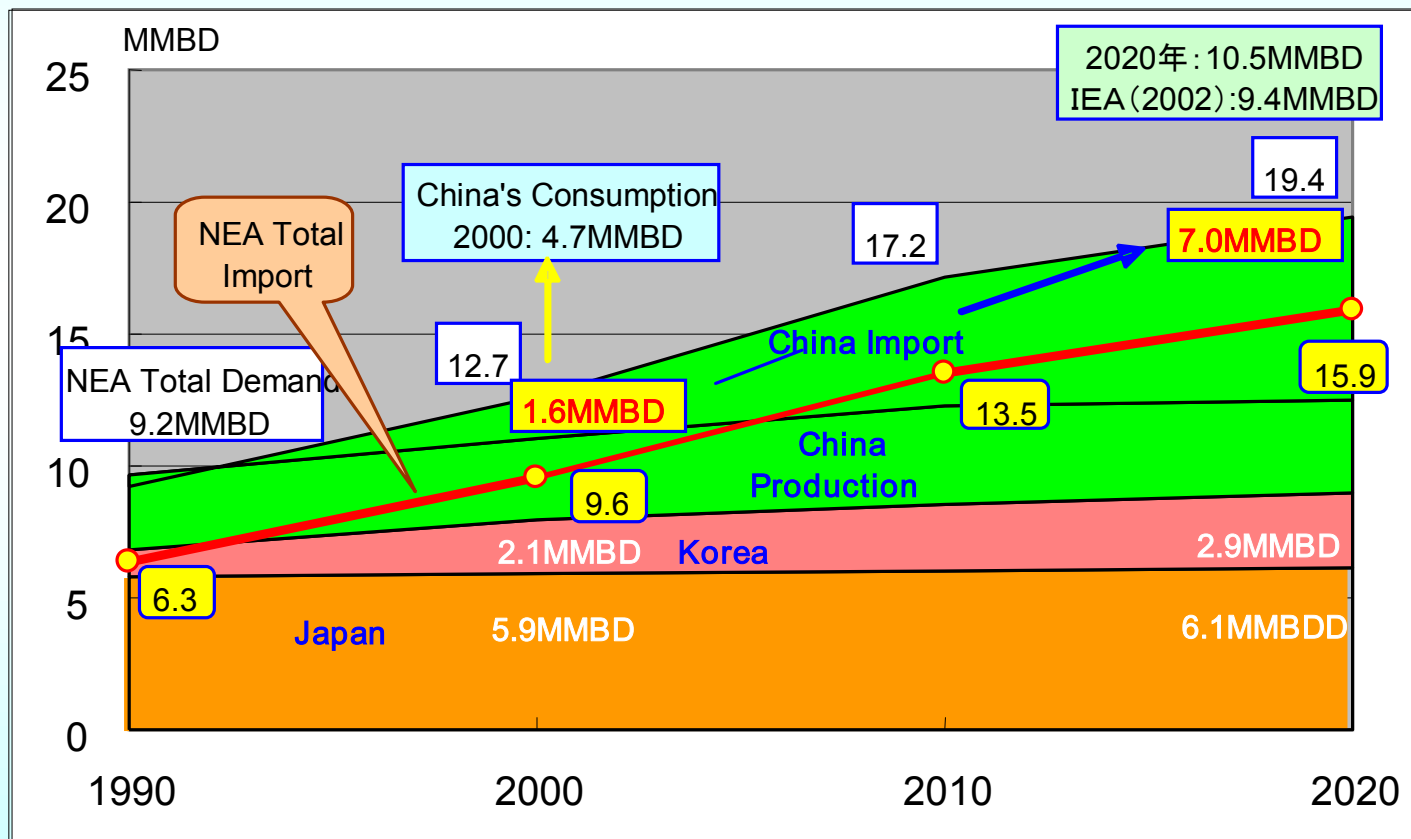
	2020	2030
	MMt	MMt
Reference	503	636
Alternative	464	559

GDP Growth Rate

1971-2002	8.4%
2002-2010	6.4%
2010-2020	4.9%
2020-2030	4.0%

1.5 Petroleum Outlook of Northeast Asia

Oil import of Northeast Asia will increase by more than 5 MMBD by 2020, driving the Middle East dependence upward further.



1.6 Oil Price and Asian Market



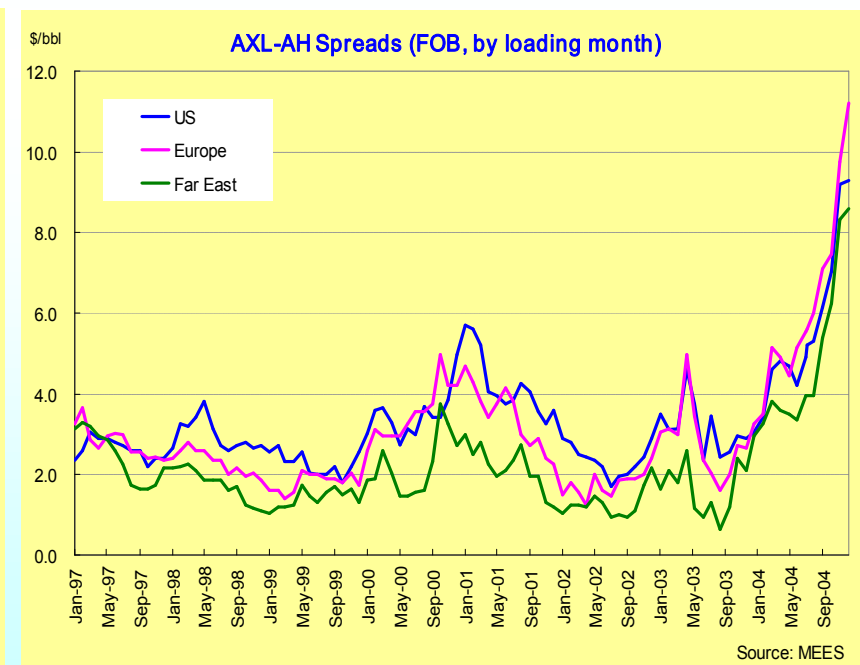
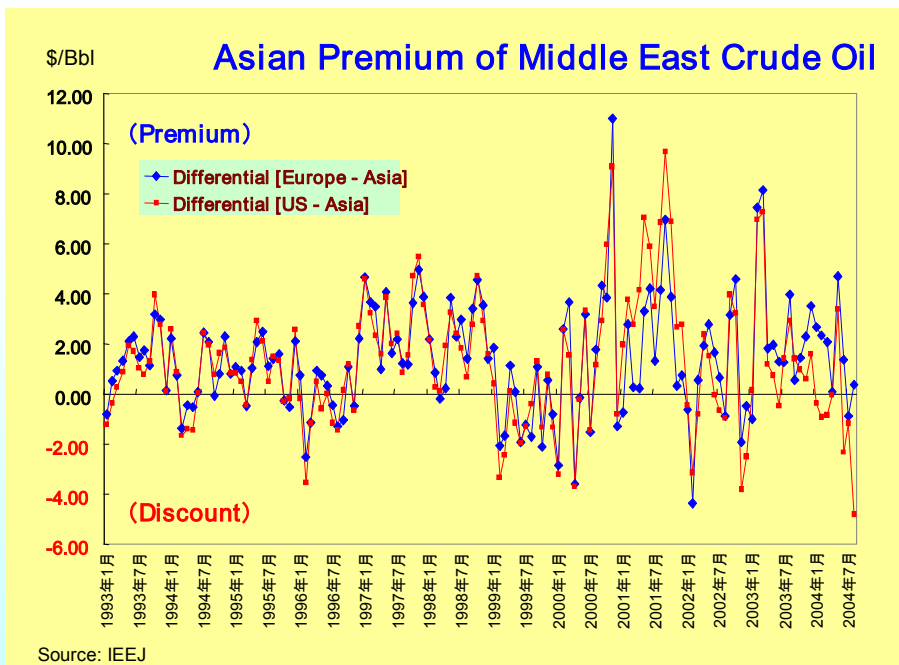
1. Asian Premium

ME crudes are priced \$1/Bbl higher for Asia

2. Light-Heavy Spread of crude oil

Technically about \$2-4/Bbl is expanding abnormally

China's Crude Import	2002	2003	2004
Middle East	49.6%	50.9%	45.4%
SEA	15.4%	13.2%	10.3%
Africa & Others	35.0%	35.9%	44.3%
Total (MMt)	69.41	91.13	122.82



1.7 Facts and Concerns

1. Facts

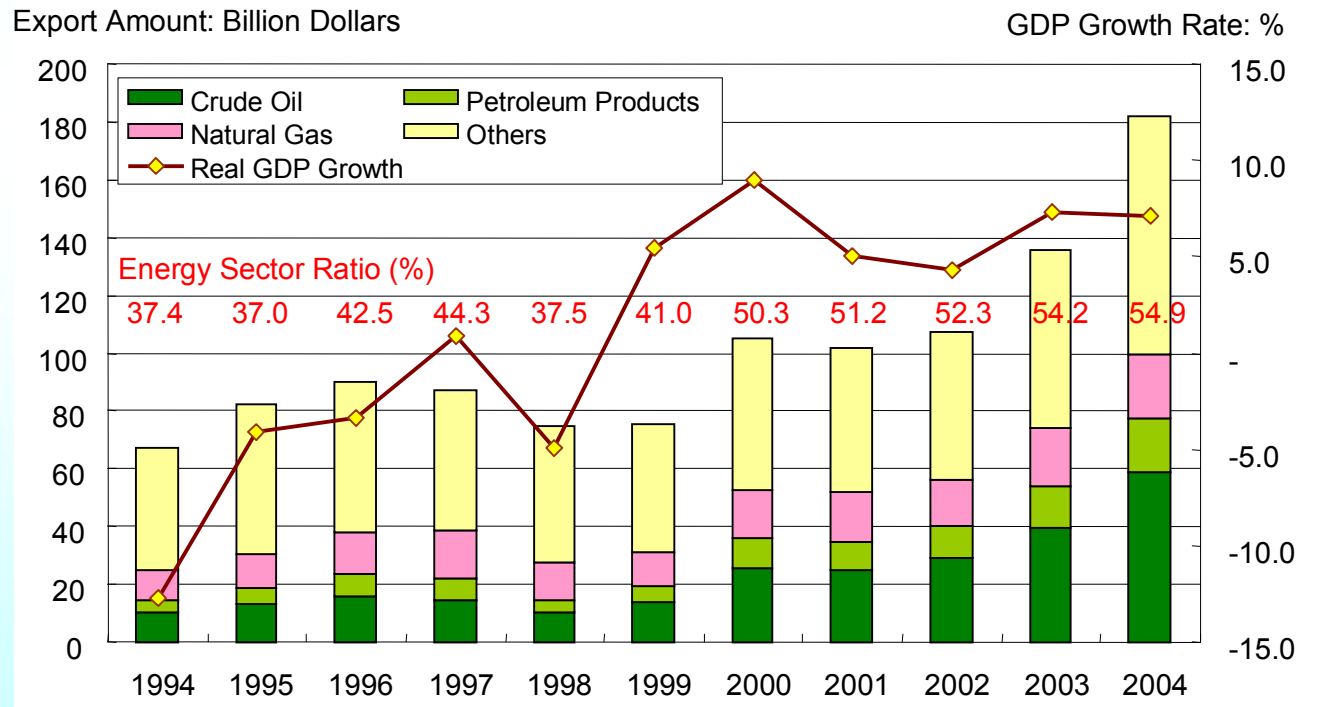
- a. Northeast Asia is a world-class energy market, growing fast to be the world largest energy market in 2020s.
- b. Huge incremental demand for oil and gas have to be imported, as region's indigenous production is leveling off.

2. Issues and Concerns

- a. Northeast Asia needs to secure stable and sufficient supply of energy to realize sustainable development.
 - x Increase of Middle East dependence
 - x Unstable oil price with Asian premium
 - x Congestion and piracy in Malacca straight
 - x China's environment pollution is serious
- b. Introduction of Russian resources will help mitigate these issues, but long and expensive pipeline is necessary.

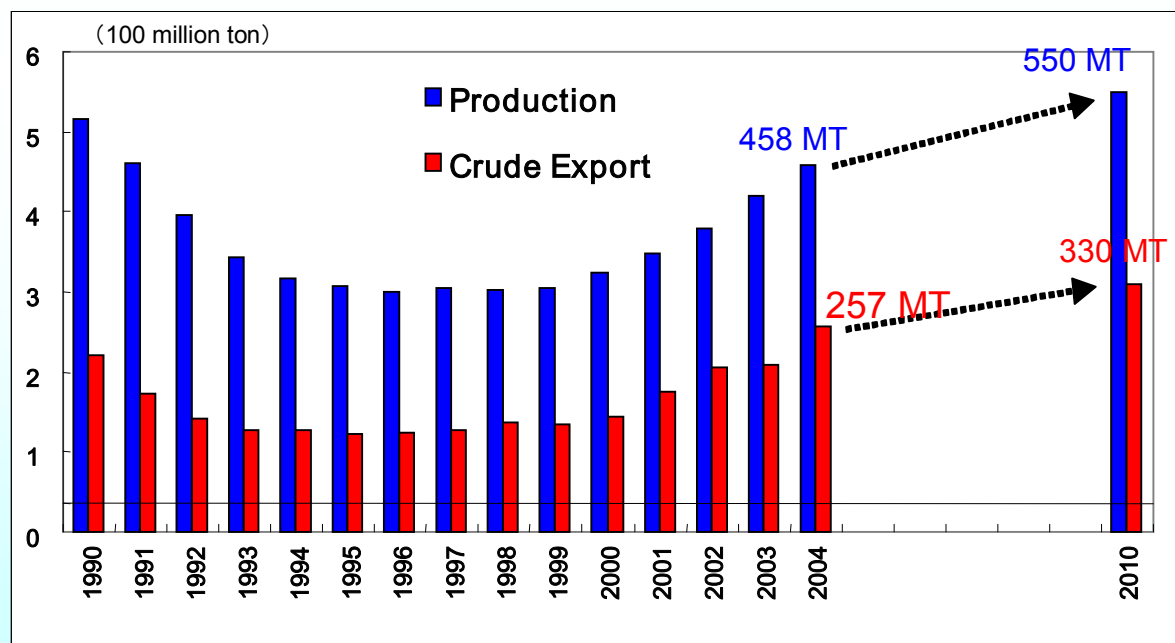
2.1 Russian Economy and Oil & Gas Sector

- 1. Oil & gas are the important income sources for the Russian economy.
- 2. Asian market is highly attractive for Russian export
 - a. European market, the current major outlet for Russia, is maturing and even planning to decrease fossil fuel consumption by 30% by 2020
 - b. Russia needs security and diversification of demand



2.2 Increasing Russian Oil Production and Export

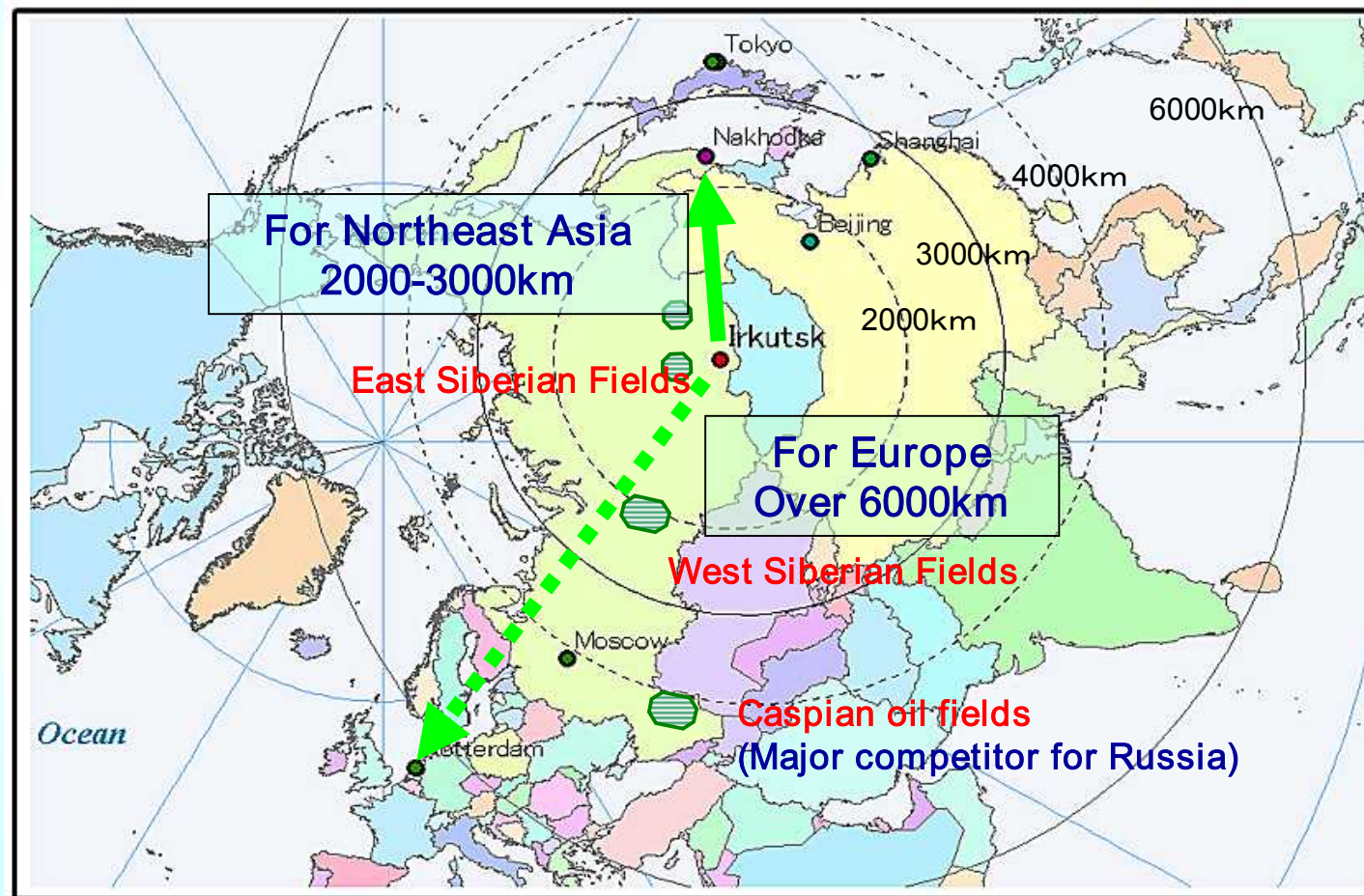
1. Russia is the world largest oil producer
 - a. Federal Energy Agency forecasts 500 MT for 2008 and 600 MT for 2015
 - b. But, production is decreasing since September, 2004
 - x Export facilities are in full operation
 - x Ruin of Yukos and oil industry restructuring
2. Expanding export pipeline is the important policy objective for Russia



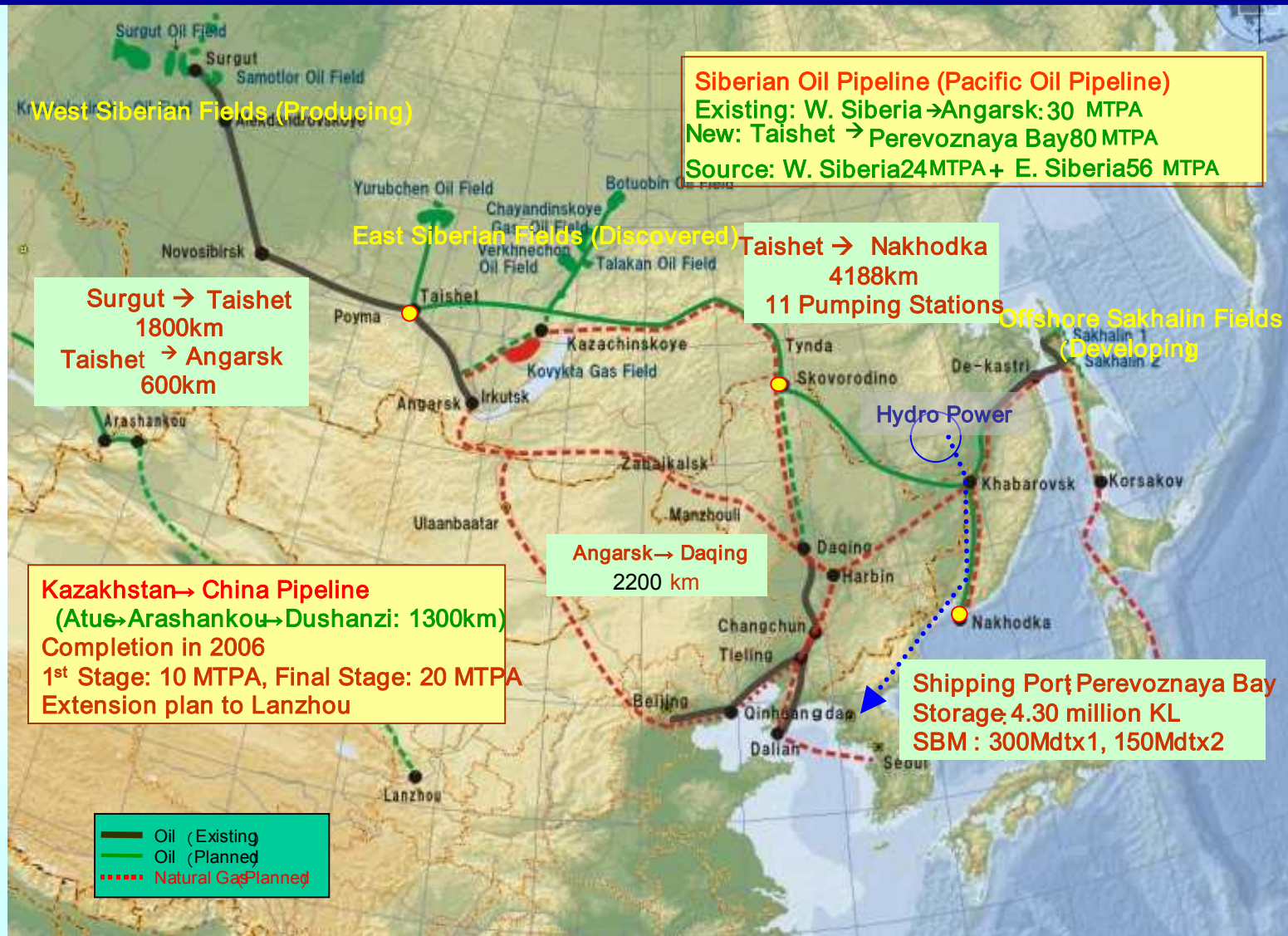
1	Russia	9.23MMBD
2	Saudi	8.75MMBD
3	USA	7.68MMBD
4	Iran	3.93MMBD
5	Mexico	3.83MMBD
6	China	3.49MMBD
7	Canada	3.09MMBD
8	UAE	2.35MMBD
OPEC		33.01MMBD
World		83.00MMBD

2.3 Russia and Northeast Asia

1. From west Siberia, Europe and Asia are in the same distance
2. East Siberia is substantially closer to Northeast Asia



2.4 Potential Energy Flow from Eastern Russia



2.5 Energy Projects of Eastern Russia

1. Under Construction

	Oil	Natural Gas (LNG equiv.)
Sakhalin-1	250 MBD (2005)	6.0 MTPA
Sakhalin-2	150 MBD (1998 EP)	9.6 MTPA (2007)

2. Final Stage of Negotiation

Siberian Oil Pipeline **Oil 1,600 MBD**

x December 31, 2004, Russian government announced its construction to the Pacific coast

x Russia and Japan are negotiating for provision of institutional finance

x Branch line for China is also being discussed

3. Conceptual Stage

Northeast Asia Natural Gas Pipeline 34 billion cubic meters (20 MTPA)

x ExxonMobil offering Sakhalin-1 natural gas to China

x Domestic use of Kovykta gas is under study for early development

3.1 Siberian Oil Pipeline Plan

Destination (To Taishet)	Distance 1800km from West Siberia)	Annual Capacity	Construction Cost
Perevoznaya Bay (→Export)	From Taishet 4188km	Export: 50 MTPA Local: 10 MTPA	\$ 10-14 billion
China (Daqing further to Dalian)	From Skovorodino 900km (Dalian + 1000km)	20-30 MTPA	\$ 1-2 billion

On December 31, 2004, Russian government announced official decision to construct the Pacific Pipeline. Ministry of Energy and Industry finalize the business plan by May 1, 2005.

Phase I (Completion 2006)

- x From Taishet to Skovorodino (1220mm diameter)
- x From Skovorodino crude oil will be rail transported to Perevoznaya
- x Branch line from Skovorodino to China (Daqing) is planned by Chinese
- x Perevoznaya shipping terminal: Storage capacity 4.3 MMt,
shipping by SBM: 300 Mdwt x 1, 150 Mdwt x 2

Phase II (Completion 2008)

- x From Skovorodino to Perevoznaya Bay

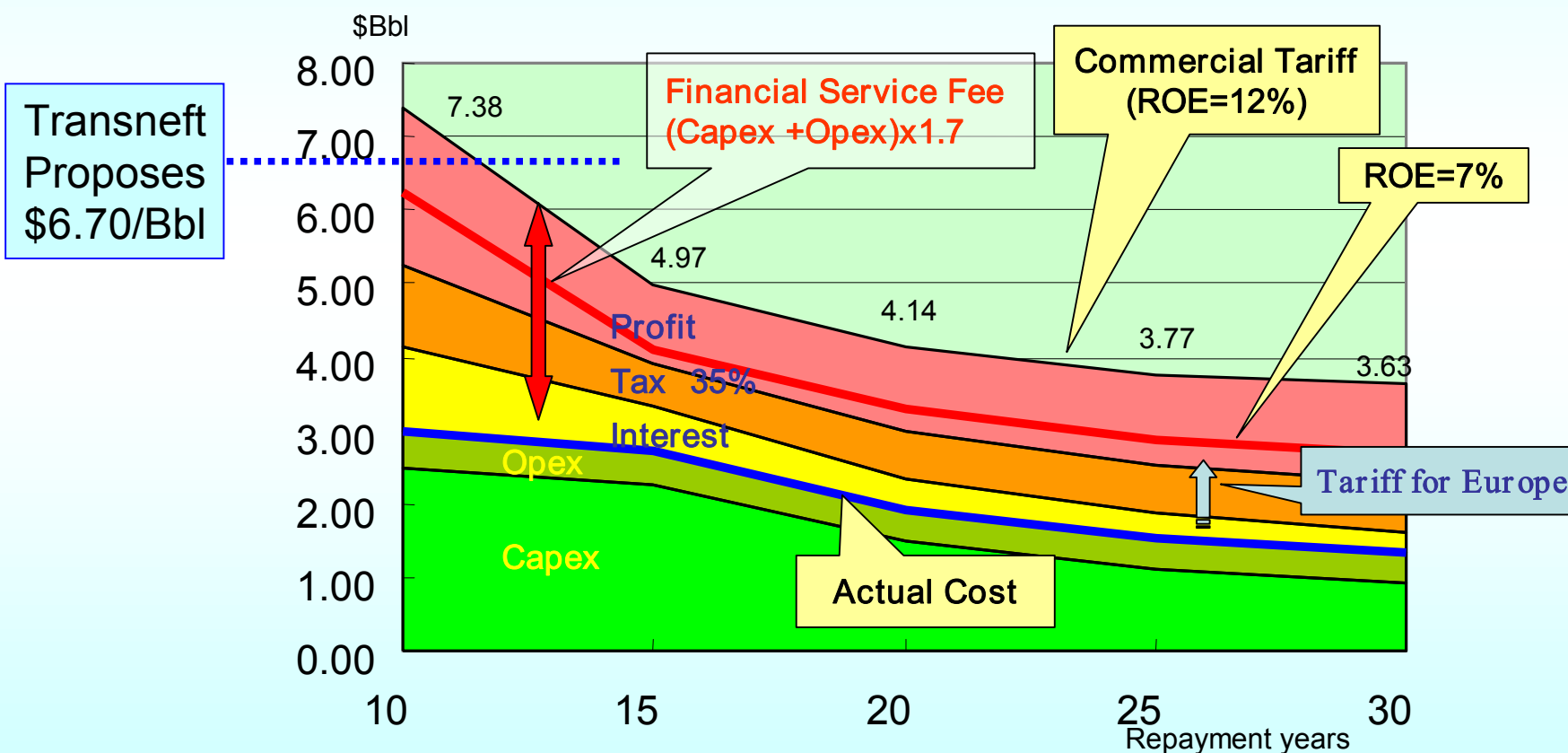
3.2 Petroleum Resources of Eastern Russia

	Probable	Possible	Total
Oil	Billion Barrels	Billion Barrels	Billion Barrels
East Siberia	6.1	15.3	21.4
Krasnoyarsk & Irkutsk	4.1	14.8	18.9
Sakha Republic	2.0	0.5	2.5
Sakhalin	4.3	5.6	9.9
Eastern Russia	10.4	20.9	31.3
Natural Gas	Tcm	Tcm	Tcm
East Siberia	3.007	2.595	5.602
Krasnoyarsk Krai	.629	.652	1.281
Irkutsk Oblast	1.161	.879	2.041
Sakha Republic	1.216	1.064	2.280
Sakhalin	.599	.239	.837
Eastern Russia	3.606	2.834	6.440

Source: IEEJ World Bank Report "Northeast Asia Natural Gas Trade"

3.3 Economics of Pipeline

1. Pipeline economics heavily depends on loan repayment period
2. Government can provide long term credit, tax exemption, and/or subsidy to lower pipeline tariff



\$12 billion Investment on oil pipeline for 1.6MMBD capacity

3.4 Oil Pipeline and Gas Pipeline

Length : 4000km
Investment : \$12B



Project Period	Pipeline Tariff ROE=12% (A)	Actual Cost (B)	Market Price (C)	B/A	A/C	B/C
Oil (1.6MMBD)	\$/Bbl	\$/Bbl	\$/Bbl	%	%	%
15 years	4.97	2.70	CIF 50.0	54	10	5
25 years	3.77	1.55		41	8	3
Natural Gas (30 Bcm/y)	\$/MMBTU	\$/MMBTU	\$/MMBTU	%	%	%
15years	2.37	1.20	At City Gate 6.00	51	40	20
25 years	1.79	0.69		39	30	12

Oil Pipeline

- x Commercial Tariff is about 10% of the market price OK
- x Substantially lower than rail transport (about \$10/bbl) OK
- x Crude oil contract term is shorter and flexible with sufficient market OK
- x Project size is too large for the private sector ?

Natural Gas Pipeline

- x Commercial Tariff is 40 to 50% of the market price ?
- x Existing market of LNG is tightly guarded by long term contracts ?
- x PNG is inferior to LNG in market development ?
- x Project size is too large for the private sector ?

4.1 Implication of Russian Resources for Northeast Asia

Expected benefits of introducing Russian resources will be huge.

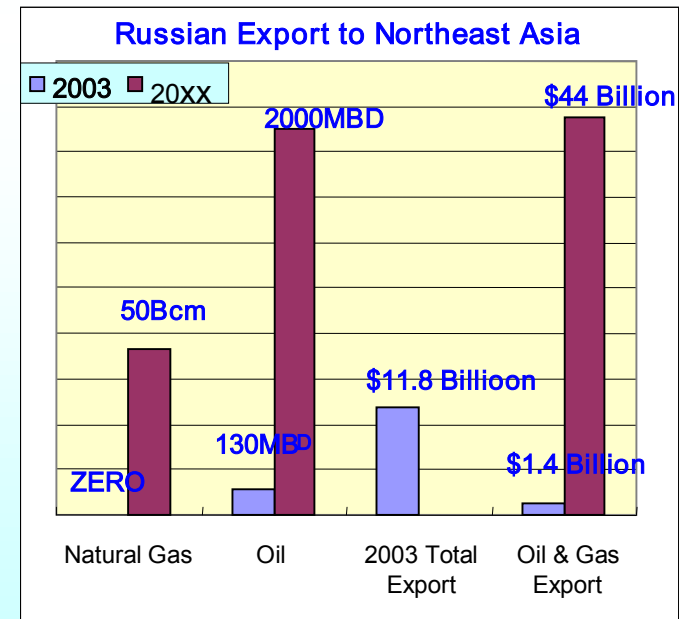
1. Improving energy security of Northeast Asia

- a. Diversifying oil import source
- b. Creating new Asian Marker crude
 Mitigating Asian Premium
 + Stabilizing oil market
- d. Improving environment by
 introduction of natural gas

Russian Oil Export			
Siberia	1.6MMBD		
Sakhalin	0.4		
Total	2.0	(12.5%)	
NEA Oil Import		↑	
(2020):	16MMBD		

2. Improving regional security through economic development

- a. Developing eastern Russia
- b. Substantially increasing trade among Northeast Asian countries
- c. Activating mutual investment



4.2 Conclusion and Recommendation

Challenges

- a. Oil: Pipeline economics is not an issue
Issues are reserves and huge funds
Once pipeline is built, E&P will be accelerated, but not vice versa.
- b. Natural gas: Reserves are not an issue
Issues are pipeline economics and market development
Government initiative is essential to overcome these issues.

Recommendations

1. Siberian oil pipeline should be built to the Pacific coast
 soonest possible with government initiative
2. Natural gas pipeline may be considered as Phase II
3. Northeast Asia Energy Partnership for Sustainable Development

Thank you for your kind attention