Cross-border energy projects and multilateral cooperation in NEA

Dadi ZHOU, Director General of ERI

Shixian GAO, Director of
Center for Energy Economics and Development Strategy
Energy Research Institute,
National Development and Reform Commission, PR. China

For the Workshop on
"Towards Multilateral Energy Cooperation in NEA"
September 5, 2003
Seoul

Outline

1.The cooperation potential in Northeast Asia 1.1 Outlook of Energy Demand

1.2 Outlook of oil and natural for China, Japan and Korean

1.3 Export outlook of oil and natural for Russia

2. Cross-border energy projects

2.1 The key cooperation fields

2.2 The potential cooperation projects

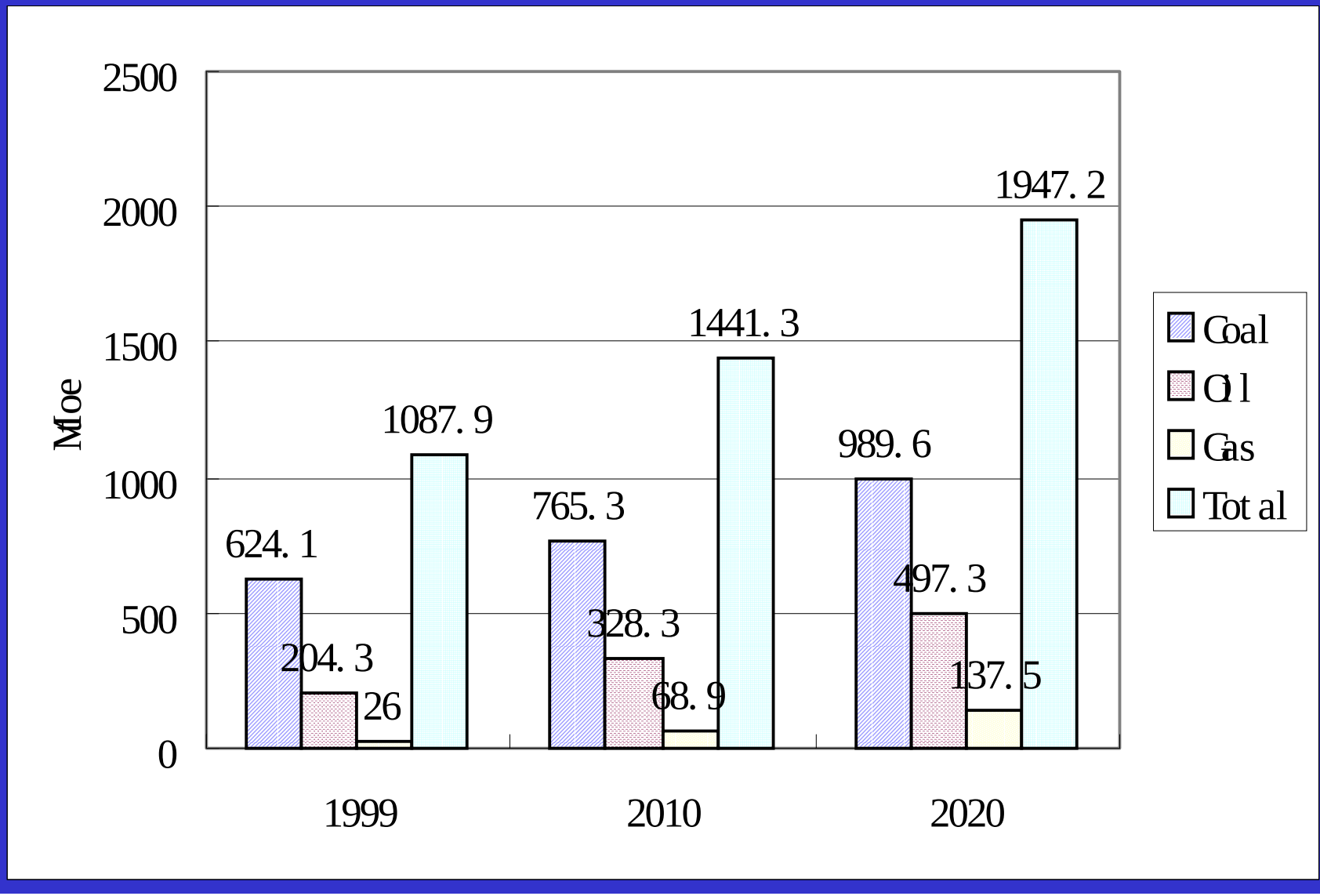
3. Multilateral cooperation in Northeast Asia

3.1 The dialogue at difference level

3.2 The dialogue at difference content

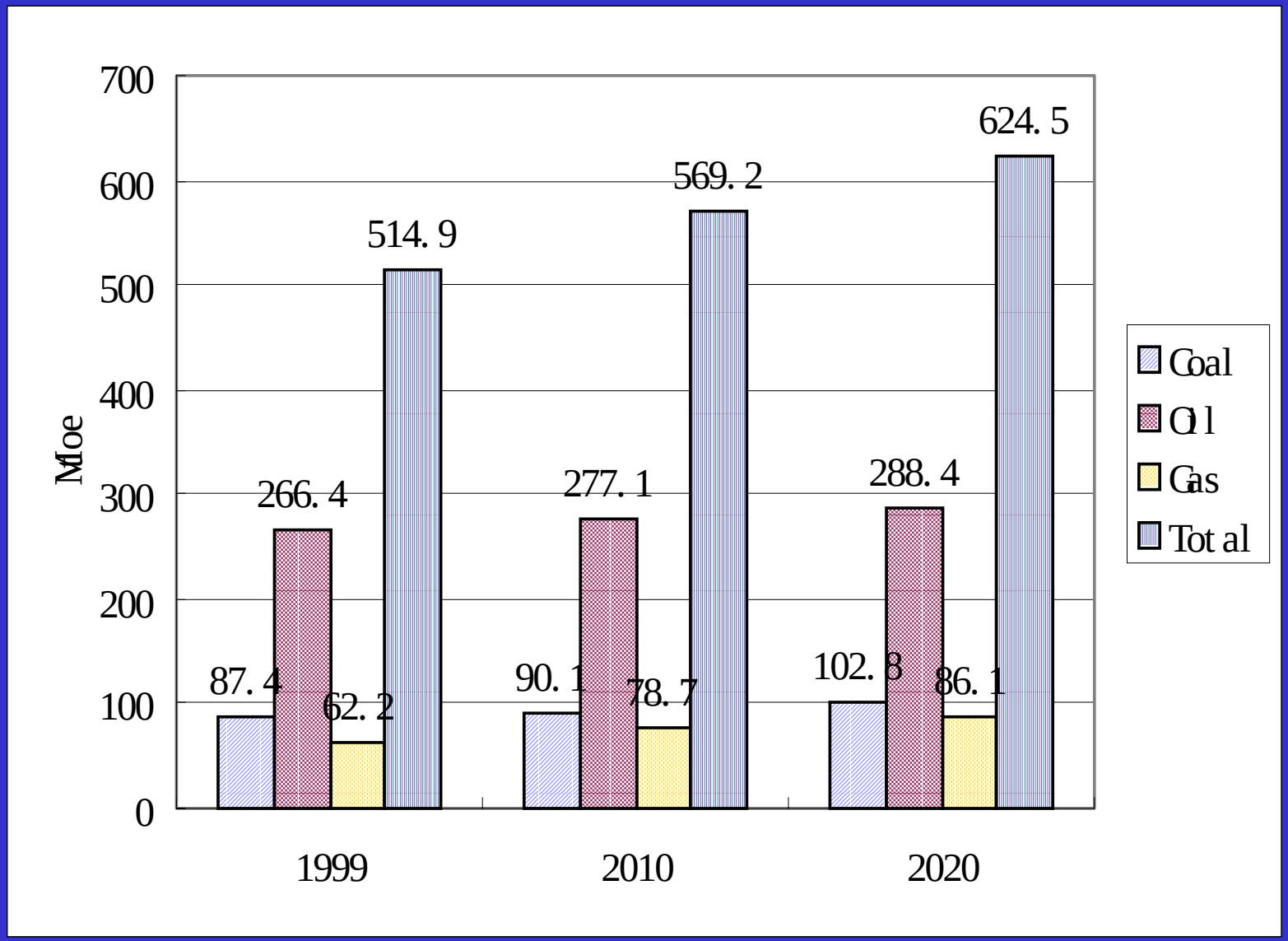
1. The cooperation potential in Northeast Asia

1.1 Outlook of Energy Demand-China



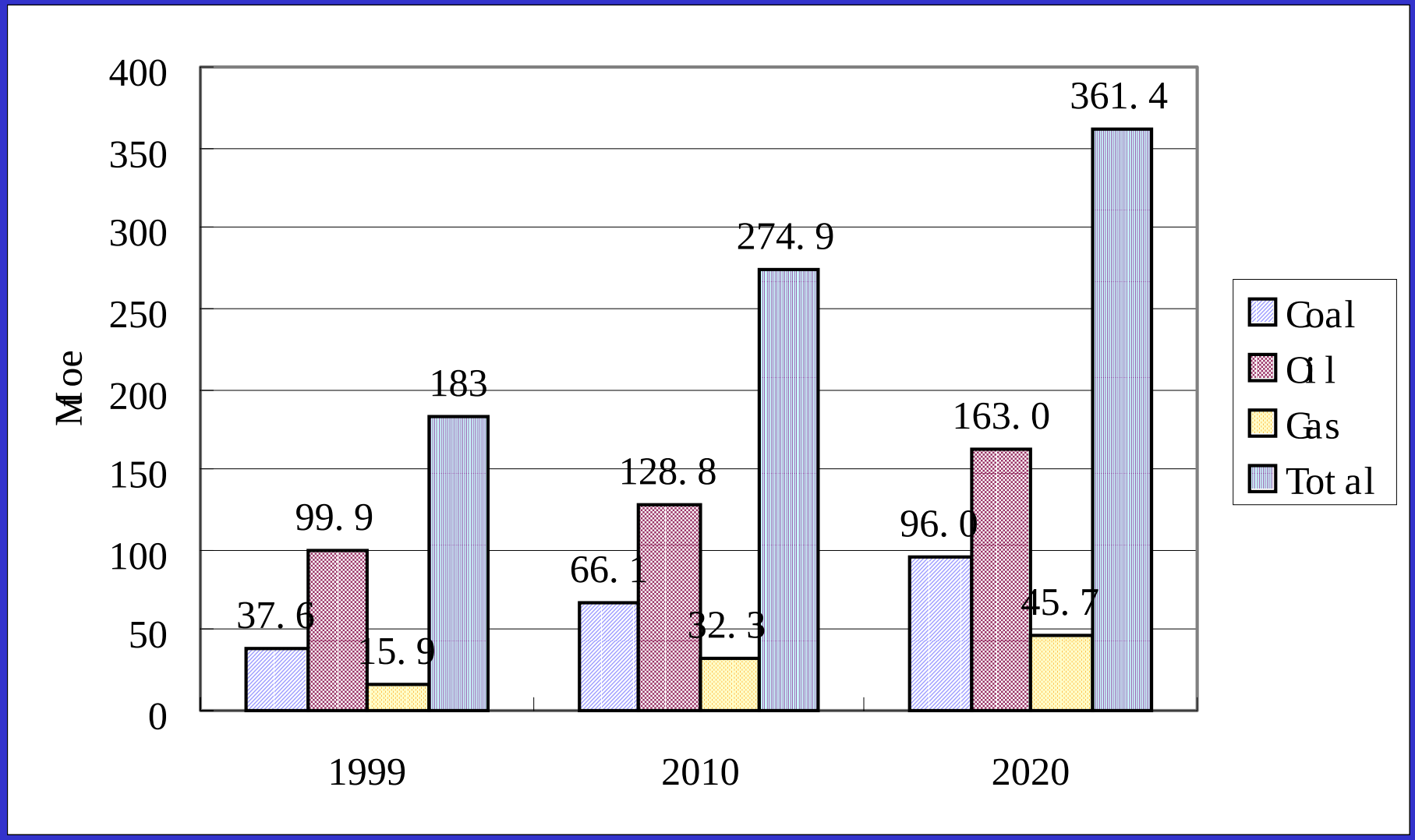
1. The cooperation potential in Northeast Asia

1.1 Outlook of Energy Demand-Japan



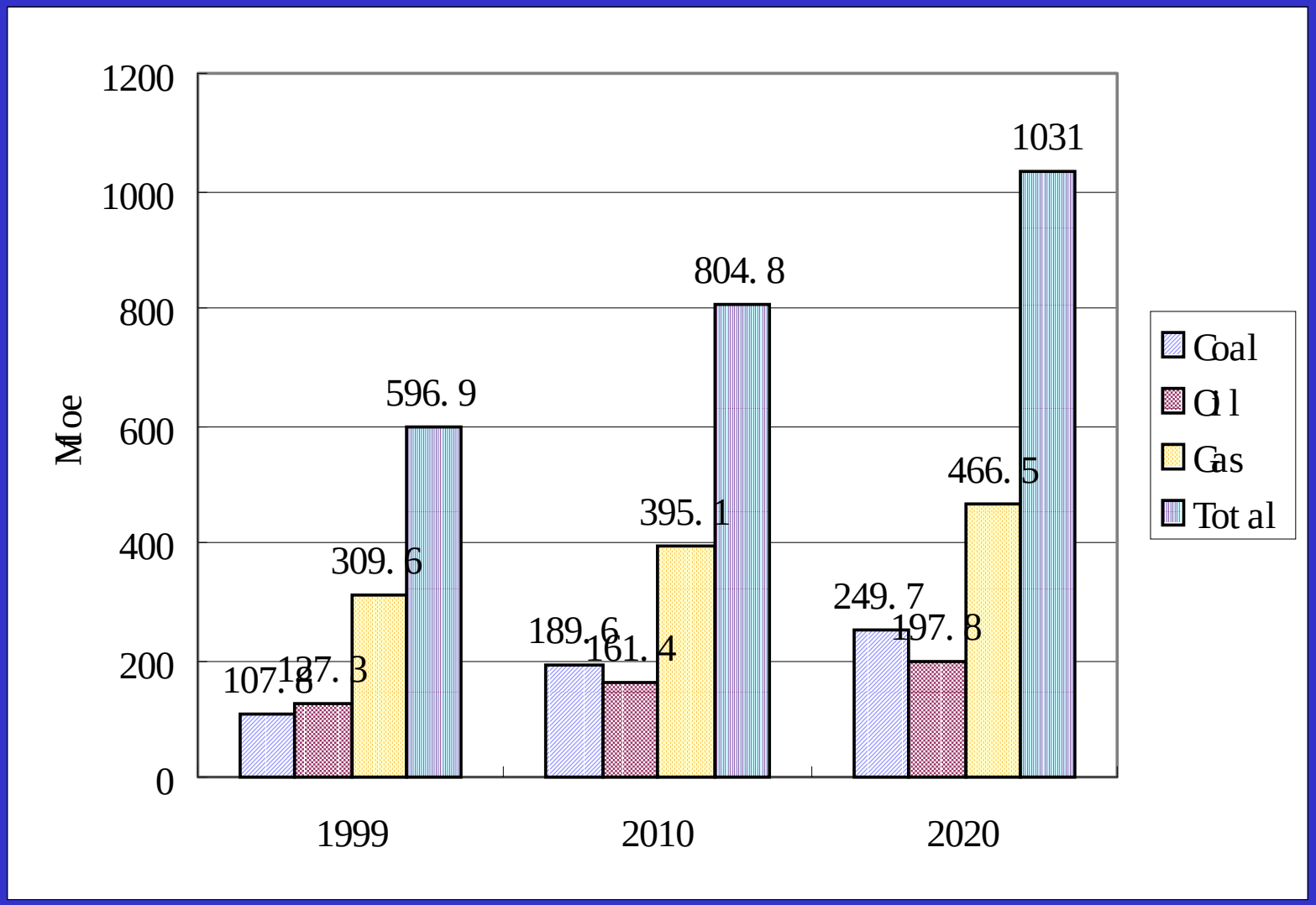
1. The cooperation potential in Northeast Asia

1.1 Outlook of Energy Demand-S. Korea



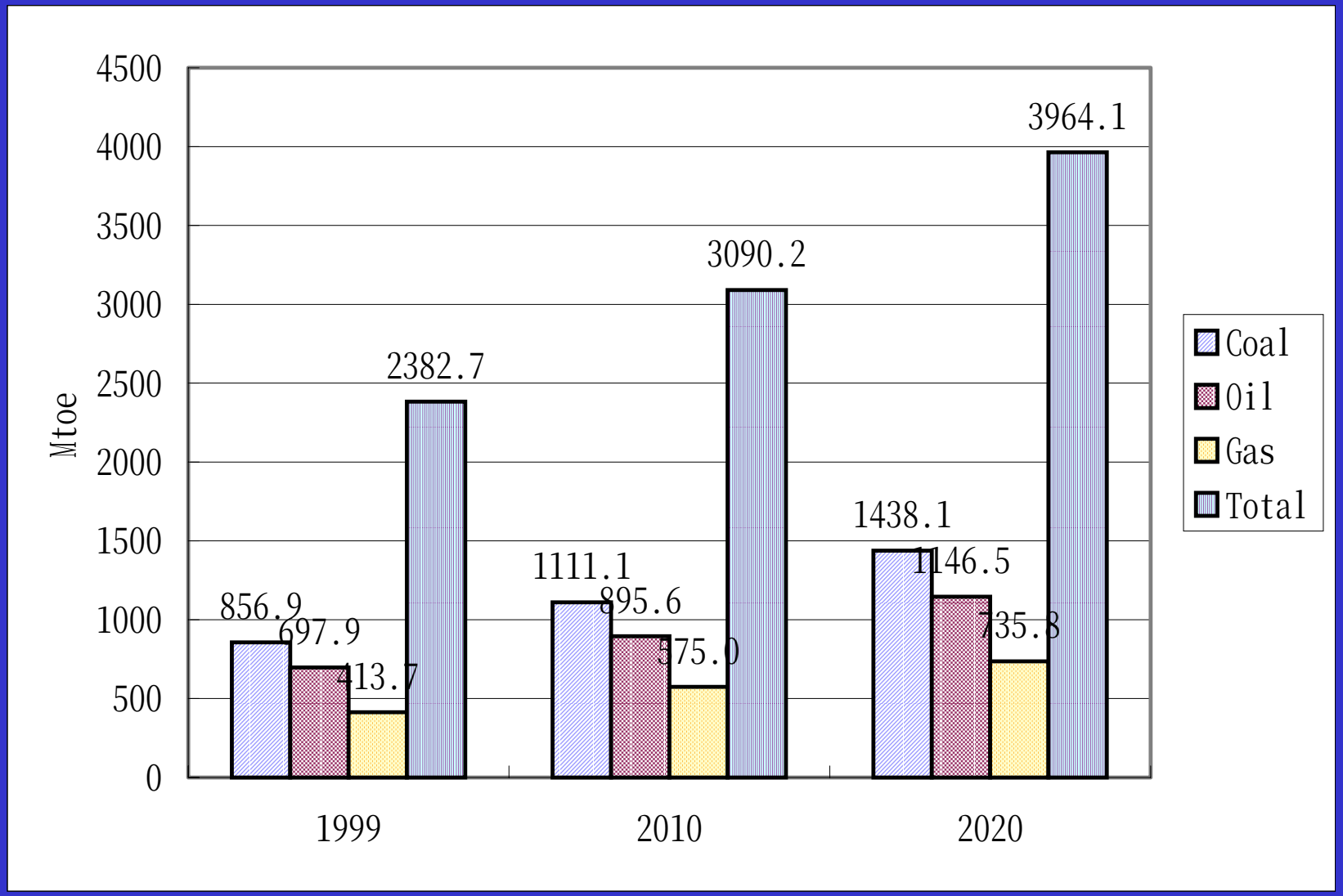
1. The cooperation potential in Northeast Asia

1.1 Outlook of Energy Demand- Russia



1. The cooperation potential in Northeast Asia

1.1 Outlook of Energy Demand- 4 countries



1. The cooperation potential in Northeast Asia

1.2 Outlook of Oil and N. G. Unit: Mtoe

- China +Japan+ Korea

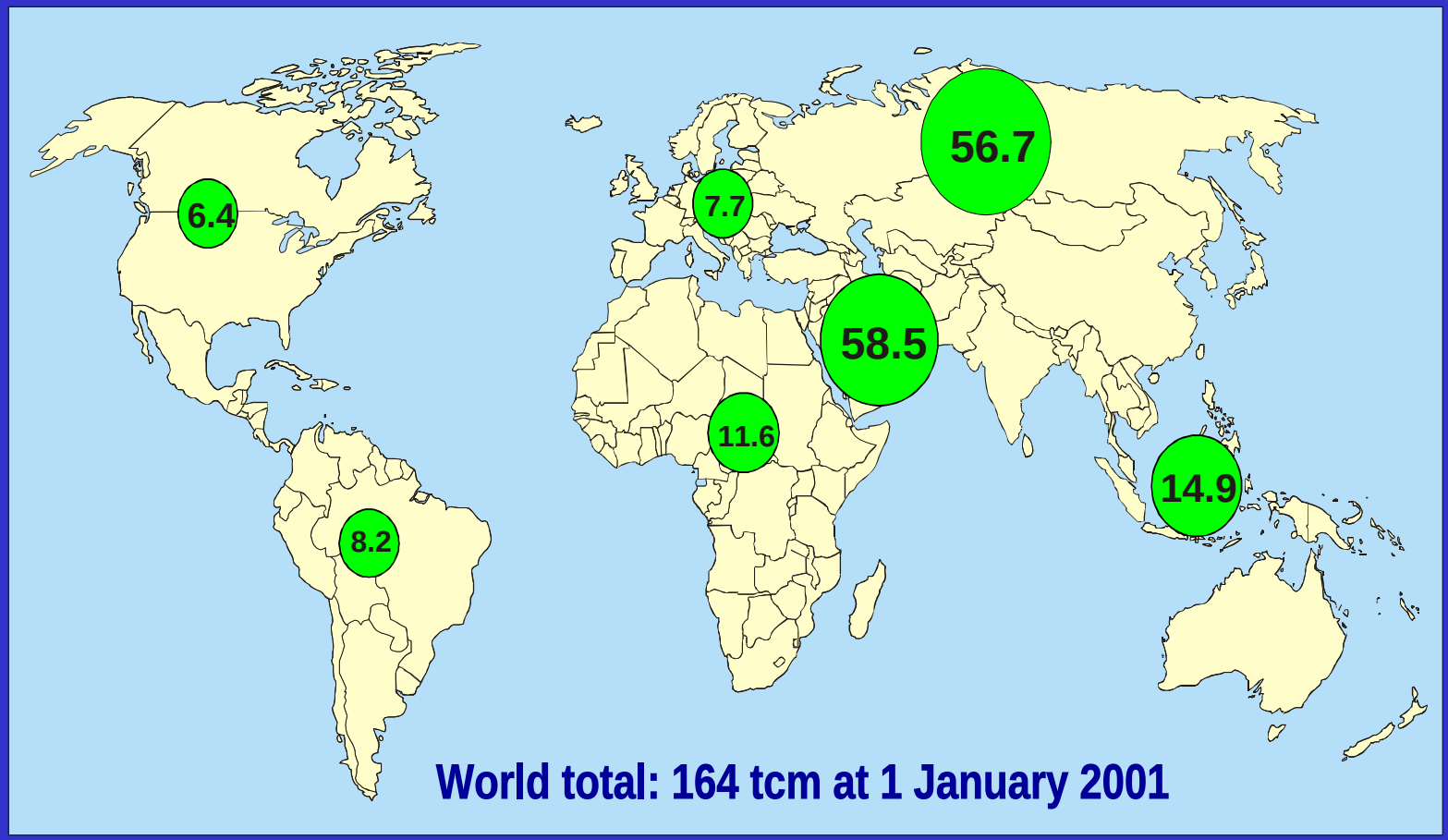
	Oil			Natural gas		
	Import	demand	Import dependence	Import	demand	Import dependence
1999	483.6	570.6	84.8%	76.2	104.1	73.2%
2010	652.9	734.2	88.9%	129.9	179.9	72.2%
2020	879.7	948.7	92.7%	201.8	269.3	74.9%

1. The cooperation potential in Northeast Asia

1.3 Export outlook of Oil and N. G. Unit: Mtoe - Russia

	Oil	Gas
1999	183.1	166.0
2010	203.1	236.3
2020	189.9	241.7

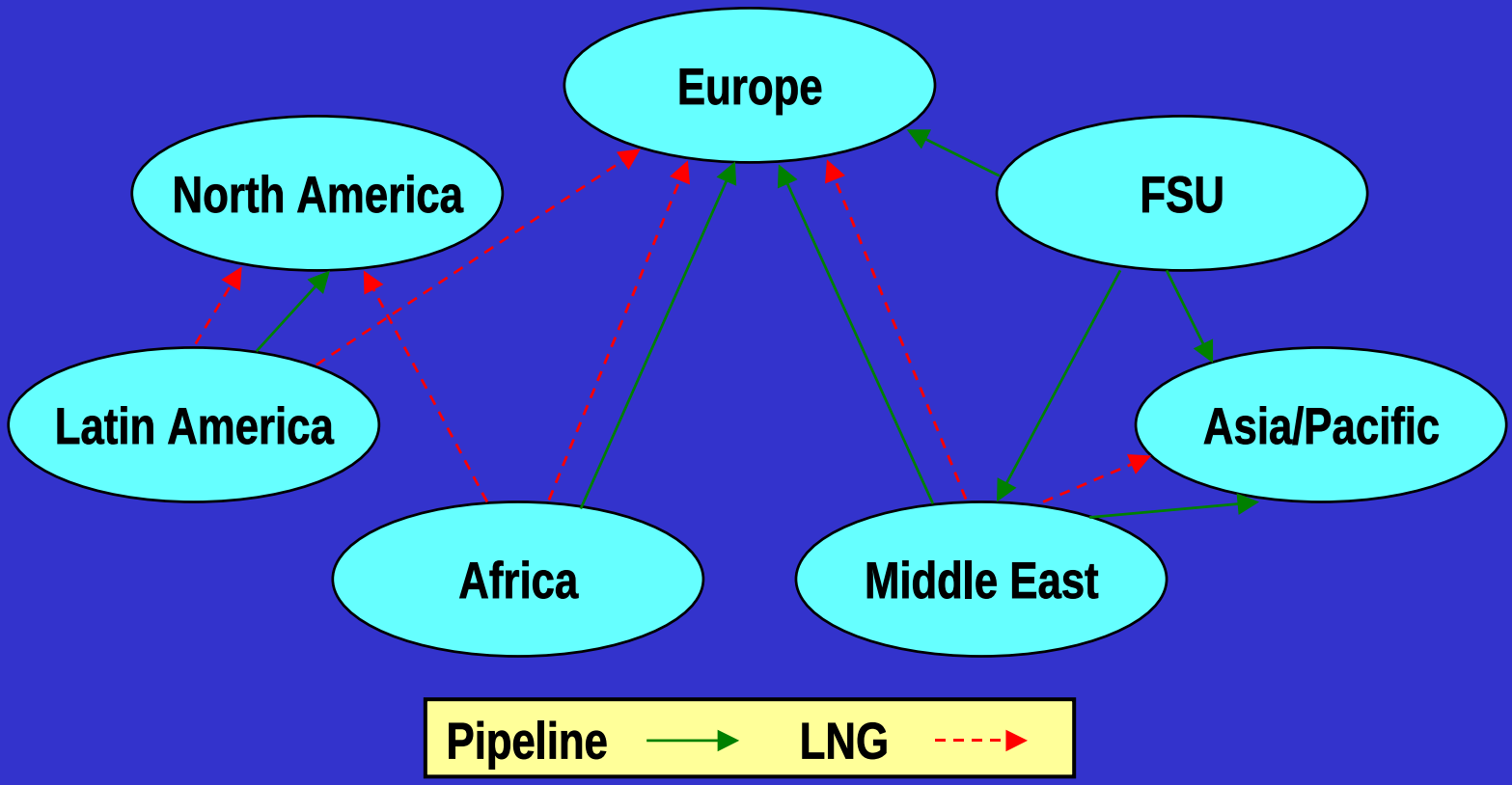
Proven Gas Reserves



Ultimate remaining resources (including proven reserves) are an estimated 453 - 527 tcm

A Global Gas Market?

Potential New Gas Supply Chains



Expanding pipeline networks and new LNG projects will promote regional & global gas market integration

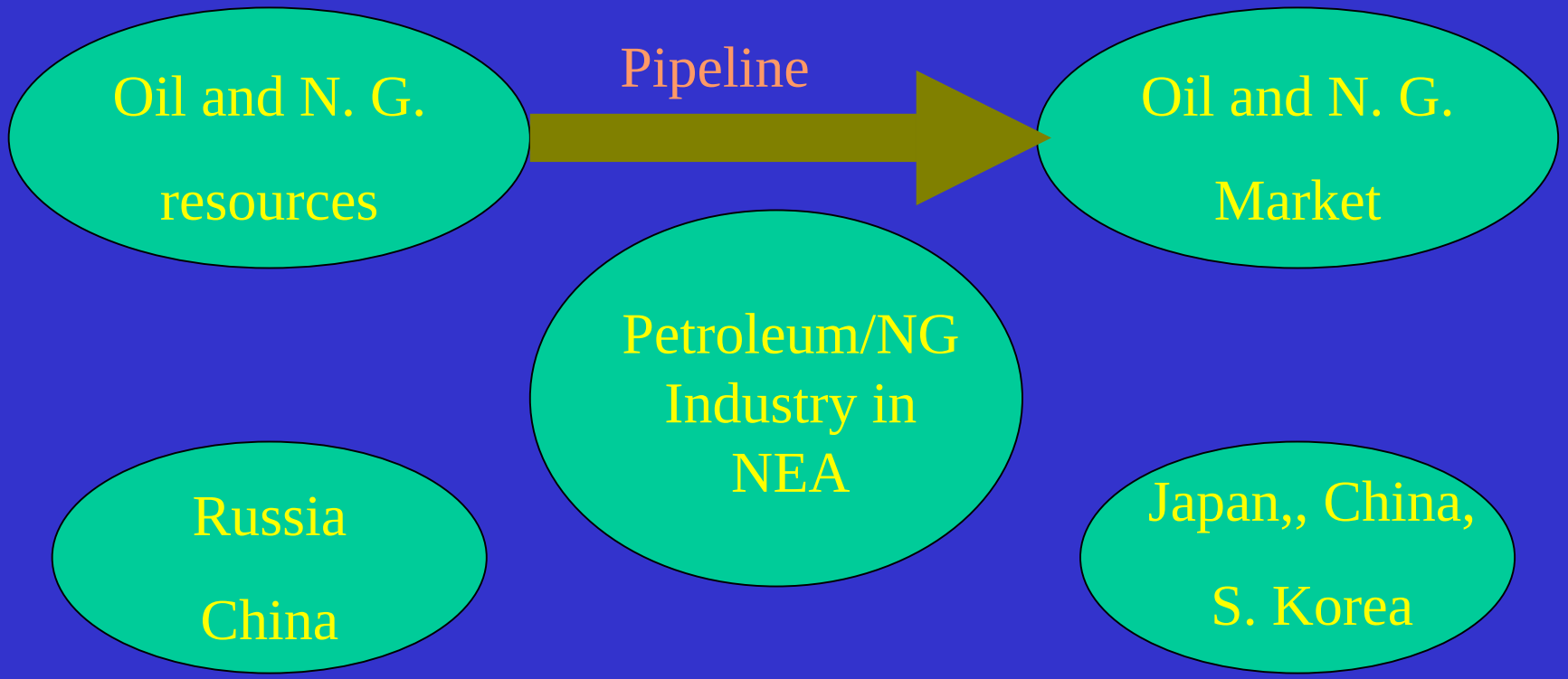
2. Cross-border energy projects

2.1 The key cooperation fields

- Petroleum: upstream, downstream, and pipeline
- Natural Gas: upstream, downstream, and pipeline
- Electricity: interconnection

2. Cross-border energy projects

2.1 The key cooperation fields



2. Cross-border energy projects

2.2 The potential cooperation projects

- **It is obvious that there are many as-yet-unresolved problems associated with the Northeast Asian pipeline projects.**

2. Cross-border energy projects

2.2 The potential cooperation projects

Russia: International Oil and Natural Gas Production Projects

Name	Ownership	Fields/Est. Reserves	Investment	Status
Caspian Oil Co.	Yukos, Lukoil, Gazprom	Russian sector of Caspian Sea, estimated 15-30 billion barrels of oil equivalent	--	Exploration in Russian sector of Caspian Sea
Chayandinovskoye Field	Sakhaneftegaz (Russia), China National Oil & Gas Development Corp.	Estimated 43 tcf of gas	--	Preliminary agreement signed; exploration
Rusia Petroleum	BP (U.K.), (31%, operator), Interros (Russia) (24%), Irkutsk Oblast Property Fund (14%), Vitra Holdings Co. (13%), Tyumen Oil (18%)	49 Tcf at Kovykta field (Eastern Siberia)	$200 million spent on exploration so far	President Putin put Kovykta field on a list eligible for PSA (Feb. 2001), but it still must be negotiated with the government
Sakhalin I?Chayvo, Odoptu, Arkutun-Dagi)	ExxonMobil (30%), SODECO (consortium of Japanese companies) (30%), Rosneft (20%), ONGC Videsh Ltd. (India) (20%)	17.1 Tcf at Chayvo, Odoptu, and Arkutun-Dagi fields	--	Drilling and appraisal continuing; first oil expected in 2003, predicted peak of 200,000 bbl/d

2. Cross-border energy projects

2.2 The potential cooperation projects

Russia: International Oil and Natural Gas Production Projects:con't

Name	Ownership	. Fields/Est. Reserves	Investment	Status
Sakhalin II?Sakhalin Energy Invesment Co. Ltd.)	Royal Dutch/Shell (62.5%, operator), Mitsui (25%), Mitsubishi (12.5%).	4 billion barrels of oil and more than 20 Tcf of gas at Piltun-Astokhskoye (PA) and Lunskoye fields	$1.1 billion for Phase I; $8.9 billion for Phase II	Producing approximately 90,000 bbl/d at PA; Phase II set to begin (construction of LNG facility, development of offshore fields)
Sakhalin III (Kirinsky)	ExxonMobil, Texaco, Rosneft-SMNG	Ayyash and Eastern Odoptu fields	$13.5 billion. Will need an estimated $2.6 billion to develop	PSA pending
Sakhalin V Sakhalin VI	BP, Rosneft will tender jointly	Estimated 4.4 billion barrels of oil and 21 Tcf of gas in the East Schmidtovsky blocks	--	--

2. Cross-border energy projects

2.2 The potential cooperation projects

Russia: International Oil and Gas Pipeline Projects

Name	Ownership	Route/Capacity	Investment	Status
Caspian Pipeline Consortium (CPC) (Oil)	Russia (24%), Kazakhstan (19%), Chevron (15%), LukArco (12.5%), Rosneft-Shell (7.5%), ExxonMobil (7.5%), Oman (7%), Agip (2%), BG (2%), Kazakh Pipelines (1.75%), Oryx (1.75%).	990-mile oil pipeline from Tengiz oil field in Kazakhstan to Novorossiisk; Phase I 565,000-bbl/d capacity, eventually rising to Phase II capacity of 1.34-million bbl/d (2015)	$2.5 billion for Phase 1; $4.2 billion total when completed	First tanker loaded in Novorossiisk (10/01); exports rising to 400,000 bbl/d by end-2002
China Natural Gas Pipeline	China National Petroleum Corp., Sakha (Russian Republic); Gazprom may act as operator	Approximately 1,700-mile pipeline, Chayandinovskoye gas field to Xinjiang, (about 550 miles southwest of Beijing in northern China); planned capacity of?423-706 Tcf per year	Estimated $6 billion to $10 billion	Preliminary agreement signed

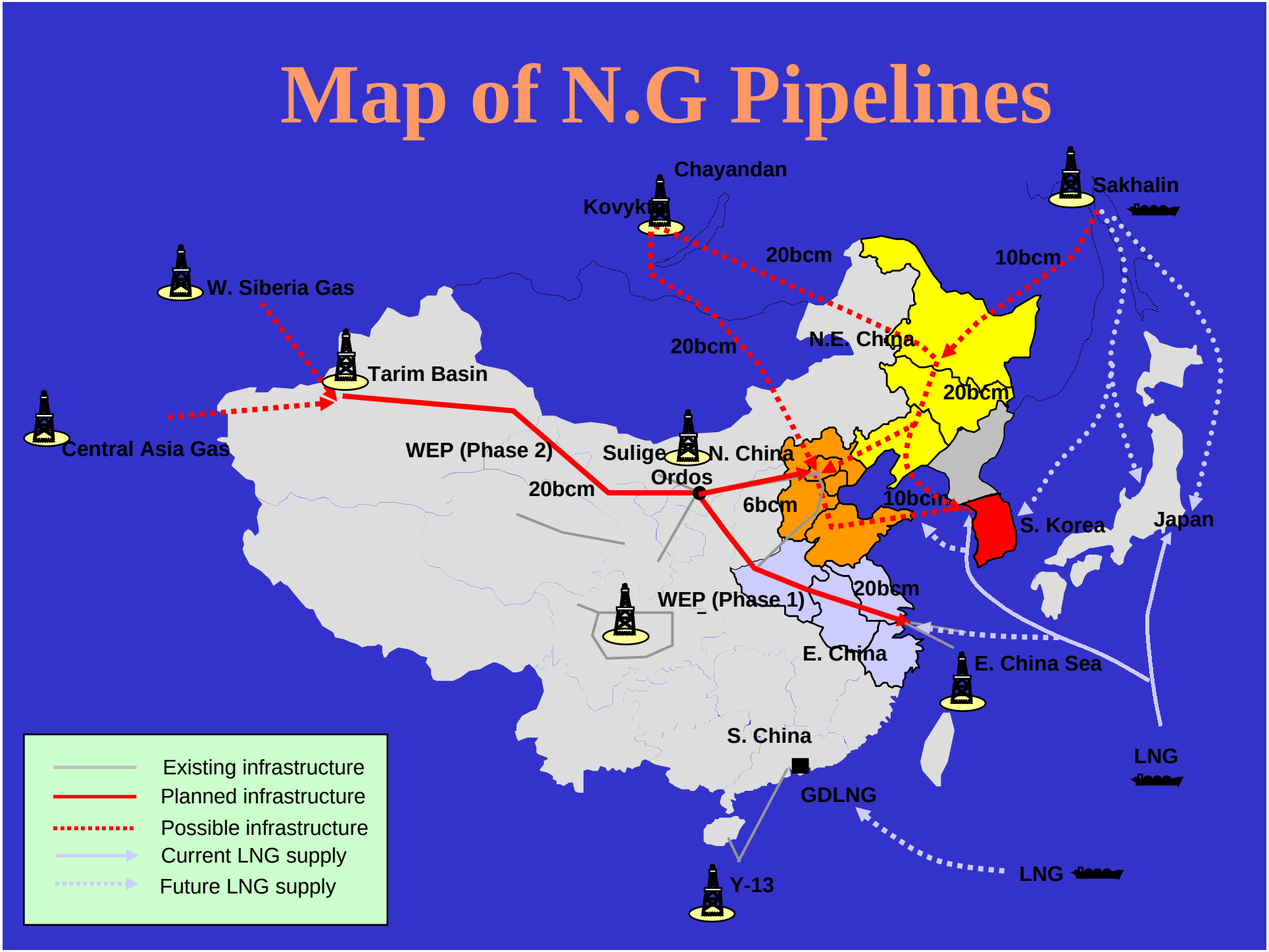
2. Cross-border energy projects

2.2 The potential cooperation projects

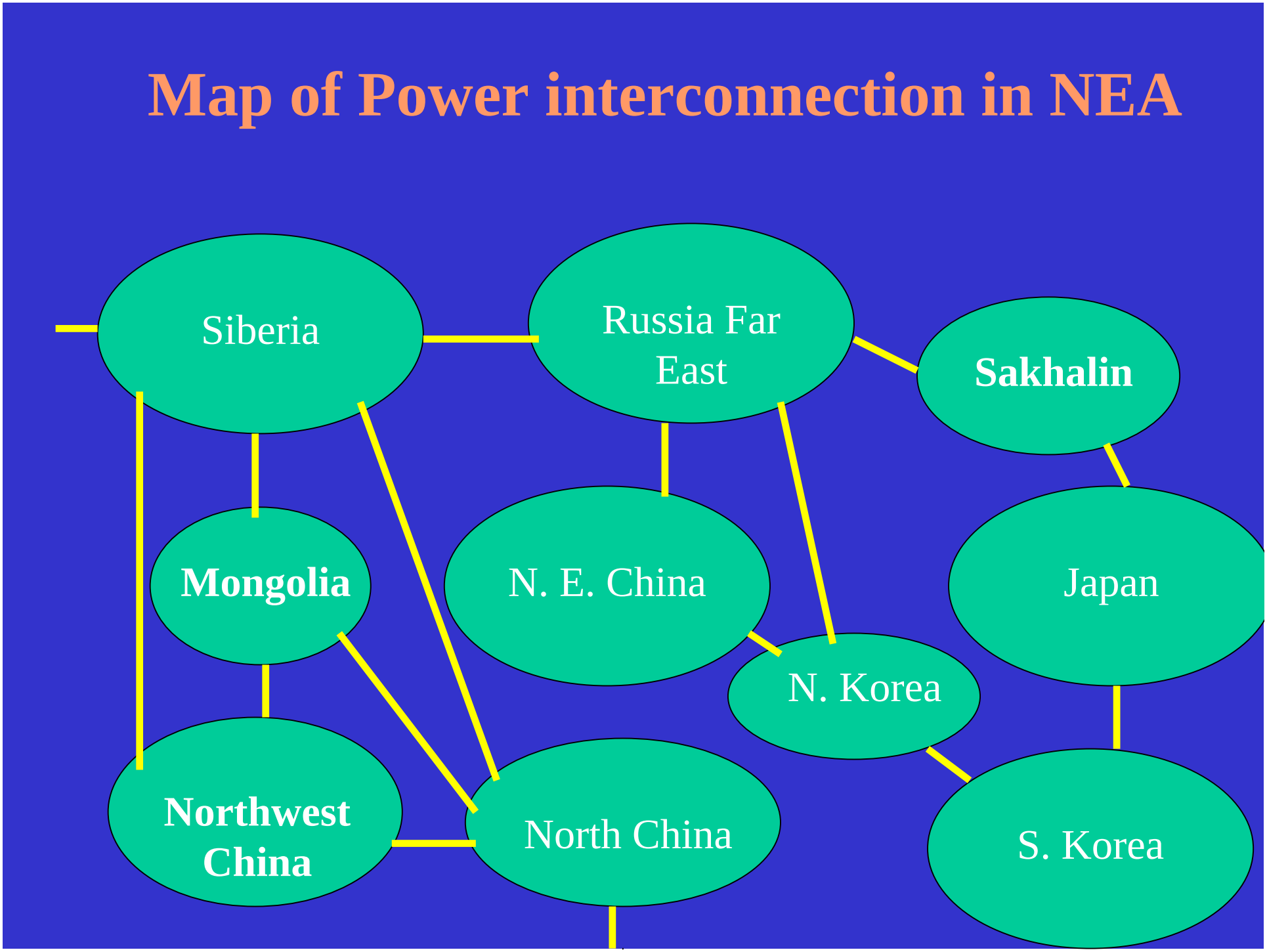
Russia: International Oil and Gas Pipeline Projects,con't

Name	Ownership	Route/Capacity	Investment	Status
China-South Korea Natural Gas Pipeline	BP (U.K.), Tyumen Oil (Russia)	2,000-2,700-mile pipeline from Kovykta gas field in Irkutsk to northeastern .China (possibly via Mongolia), terminating in South Korea via a sub-sea pipeline across the East China Sea	Estimated $6 billion to $10 billion	Preliminary agreement signed, several routes being discussed.
China Oil Pipeline	Yukos, Transneft, China National Oil Corp.	1,400 to 1,500-mile pipeline from Angarsk (East Siberia) to Beijing, potentially via Mongolia; Initial 400,000-bbl/d capacity, eventually rising to 600,000 bbl/d by 2010	Estimated $2.5 billion	Preliminary agreement signed; feasibility study due first half of 2003, several routes being discussed.
Japan Natural Gas Pipeline	ExxonMobil, SODECO (consortium of Japanese companies)	120-mile pipeline proposed from the Sakhalin I field to Sapporo, on Japan's northernmost island of Hokkaido; pipeline could be extended to Tokyo	--	Feasibility study being conducted

Map of N.G Pipelines



Map of Power interconnection in NEA



3. Multilateral cooperation in Northeast Asia

It is necessity of energy cooperation to cope with these challenges.

An effective regional agency needs to be organized to specifically promote cooperative activities among Northeast Asian countries.

To cooperate is better than to compete out of order

3. Multilateral cooperation in Northeast Asia

The principle of energy multilateral cooperation in Northeast Asia:

- **Promoted by enterprises;**
- **Government and business mixture type exchange and cooperation simultaneously;**
- **Do something from the easy to difficulty gradually;**
- **Win-win from the cooperative project.**

3. Multilateral cooperation in Northeast Asia

3.1 The dialogue at difference level

3.1.1 The dialogue among research institutions

- The common research;
- Exchange information;
- Energy, oil and natural gas forum. (Northeast Asia Petroleum Forum)

3. Multilateral cooperation in Northeast Asia

3.1 The dialogue at difference level

3.1.2 The dialogue among enterprises

- Joint technology development
- Technology exchange in various areas such as business technology, designing, construction, operation, logistics, marketing, as well as capacity building;
- Potential projects negotiation;
- Pre-feasibility study;
- Feasibility study.

3. Multilateral cooperation in Northeast Asia

3.1 The dialogue at difference level

3.1.3 The dialogue among governments(ASEN + 3)

- **Improved investment environment in the energy industry**
- **Regional quick information system and emergency response**
- **Identification of common policy objectives**
- **Cooperation mechanism**
- **Action plans**

3. Multilateral cooperation in Northeast Asia

3.1 The dialogue at difference level

3.1.4 The dialogue among all of participants

- Governments, companies, research organizations, banks, and others

3. Multilateral cooperation in Northeast Asia

3.2 The exchange of difference content

Country and area	Energy resources	Population	Energy market	Technology	Fund
Eastern Russia	+++	+	+	++	-
China	+	+++	++	++	+
S. Korea	-	+	++	++	++
Japan	-	++	+++	++	+++

Note: except Mongolia, N. Korea;

Source: Mitsubishi Research Institute

3. Multilateral cooperation in Northeast Asia

3.2 The exchange of difference content

- To share the information: energy security, like Y2K
- To transform technologies: in all of the energy fields