Vision of Korea-China Undersea Tunnel
A New Way Connecting Korea & Japan to the Eurasian Continent

19 June, 2008

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I Necessity of Korea-China Undersea Tunnel

1. Changes in the world economy

Expanding and accelerating the global railway network

After reunification of East and West Germany and the end of the Cold War Era the Physical Networking on the Eurasian Continent Makes Steady Progress.

With the reduced significance of national borders the competitiveness of railway is strengthened : Construction of new railway corridors and restor ation of missing links.

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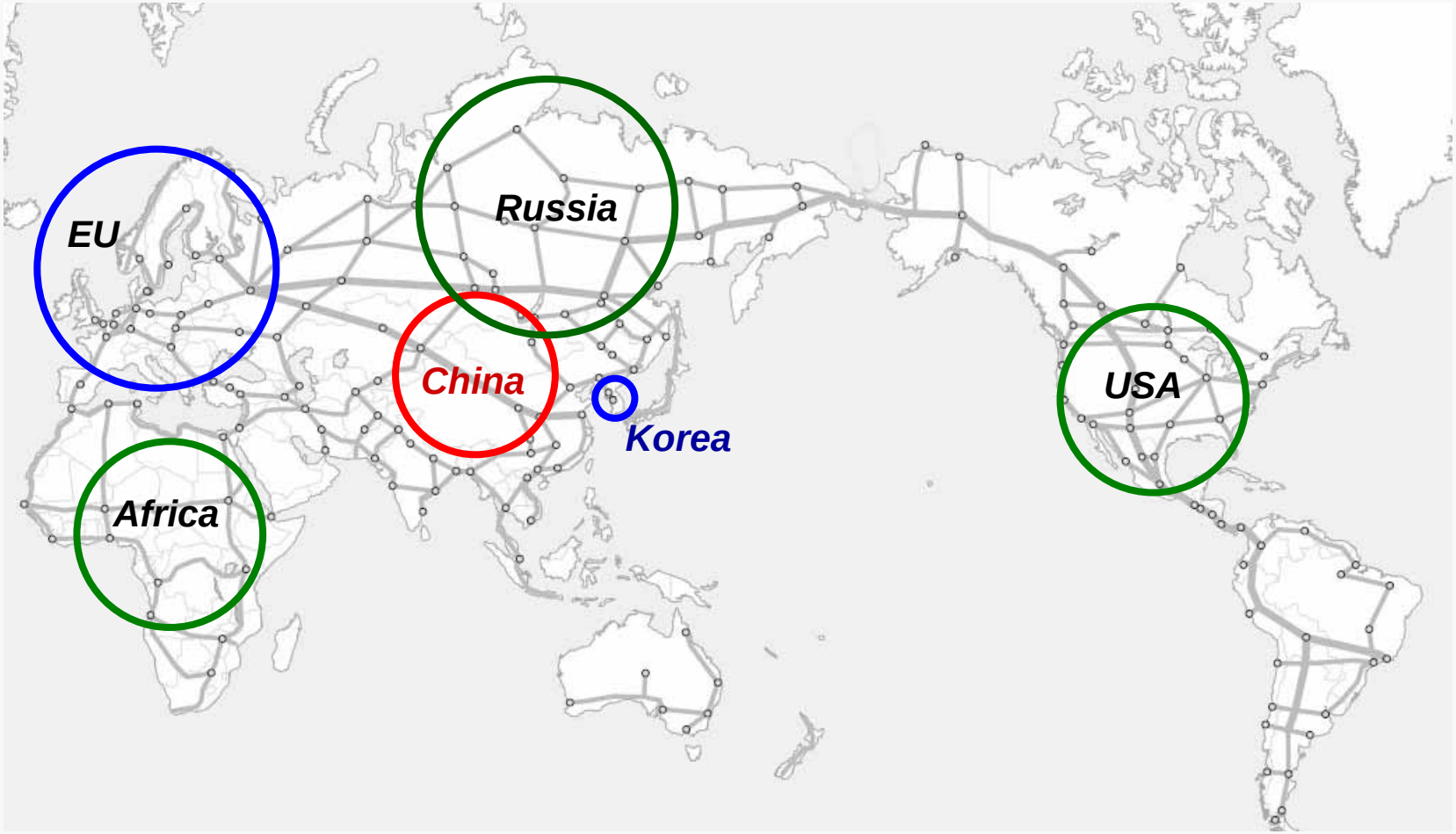
Connection to Trans-Continental Railway



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Power Shift of World Economy

Increasing Importance of Far East Asian Region

「Triad Power」 (1985) by Ohmae Kenichi

The Three Centers of World Economy → USA, Europe and Japan

Economic Growth of China

With the rise of China, the importance of Asia and especially that of the East Asian region, is increasing.

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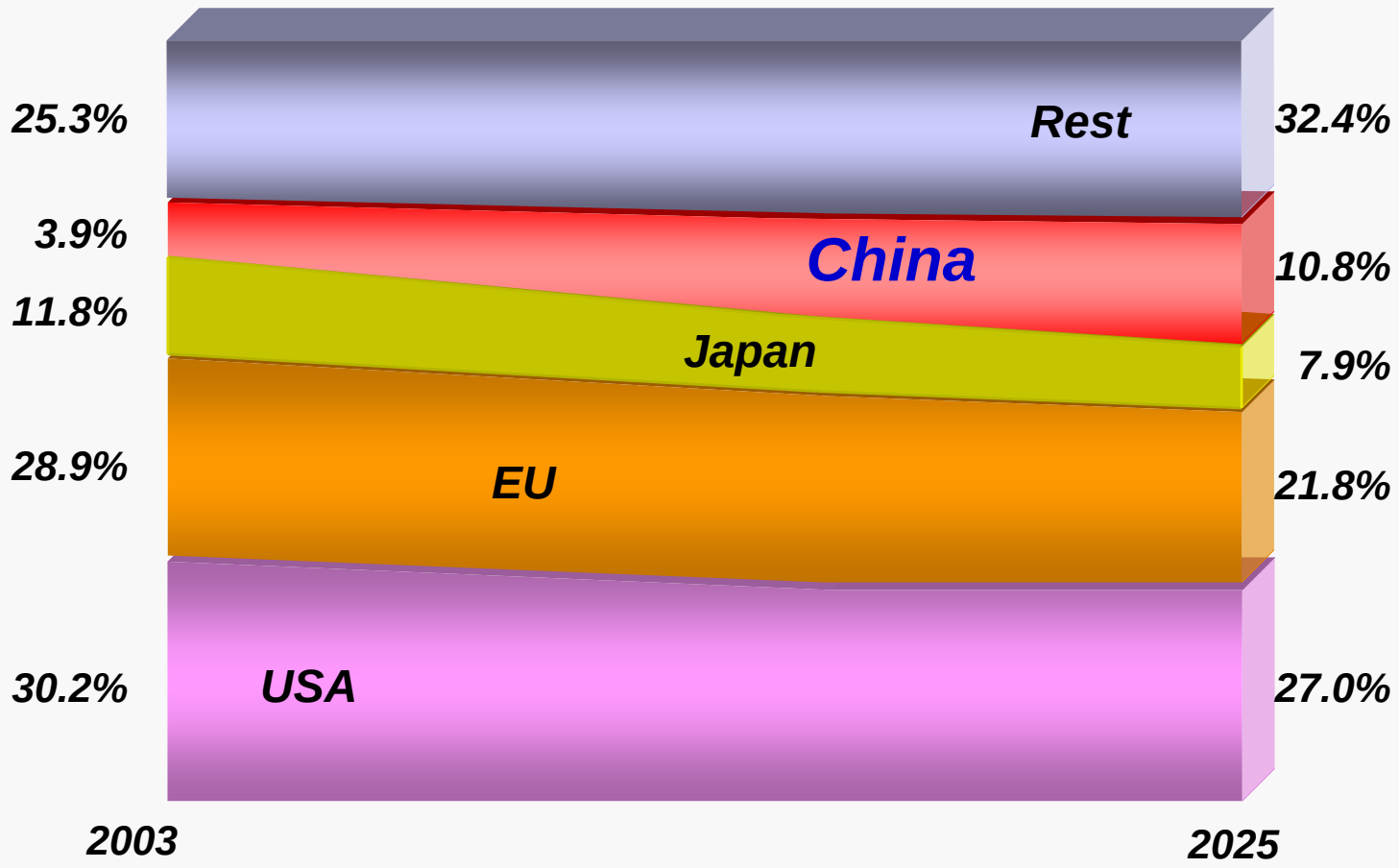
GDP Forecasting of Major Economic Center



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Geopolitical Role of Korea in the East Asian Region

- Starting and terminal point of Eurasian Global Railway Network.

  → Role of logistical hub

- The last divided country on Earth.

  The TKR (Trans Korea Railway) remains still a missing link.

- Positioning between China and Japan.

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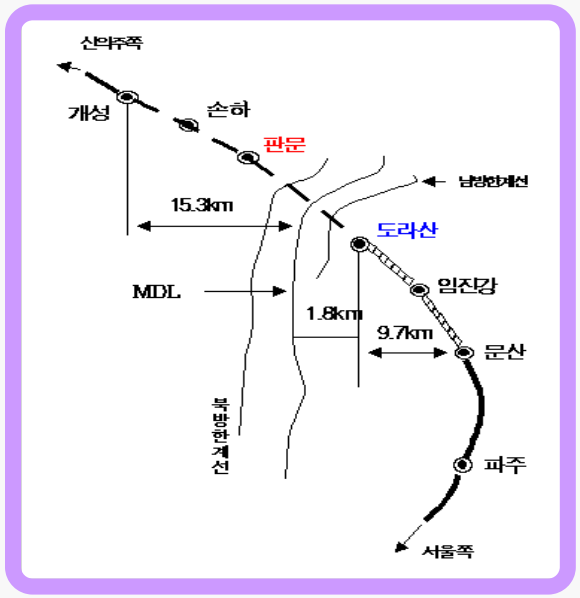
2. Alternative ways from Korea to the Eurasian Continent

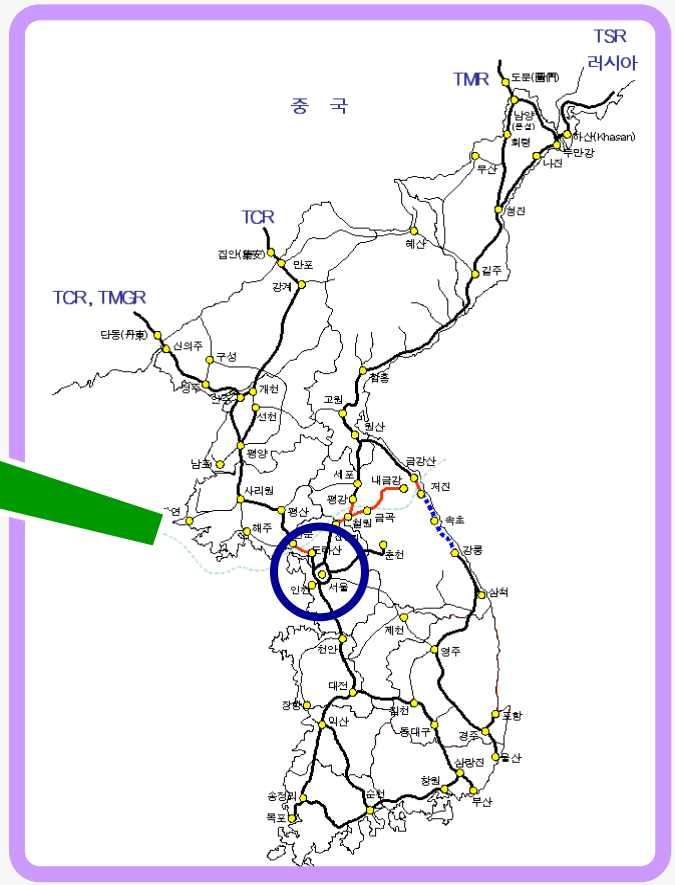
- TKR (Trans Korea Railway)

- Rail-Ferry

- Overbridge

TKR - Gyeongui Line





Munsan ~Gaesung Line Completed (26.8Km)

-South : C.I.Q under Construction

-North : Panmun · Sonha Station Completed

(The end of 2005)

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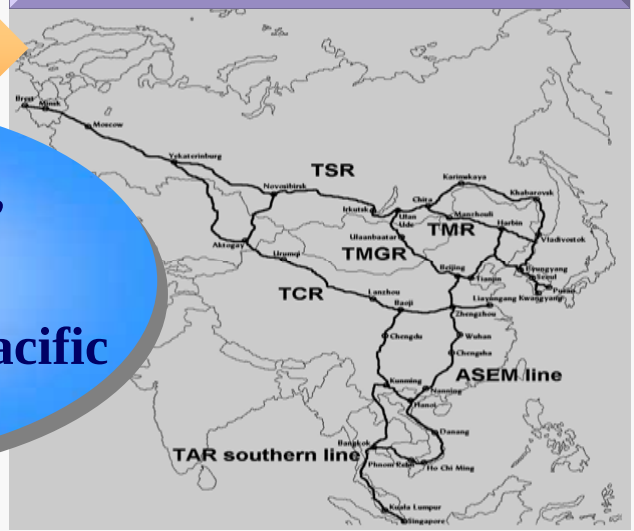
Trans-Continental Railway Routes

Restoration of Trans-Korea Railway

Connection to Trans-Continental Railway



'Iron Silk Road' Connecting Europe, Asia and Pacific

Towards Peaceful and Prosperous Northeast Asia

※ Northeast Asia : 25% of World Population, 20% of World GNP,
One of the three biggest corridors in growth

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3. Expected Effects of Korea-China Undersea Tunnel from a macro Perspective

Continentalization of Korea & Japan

✓ **Economic View**

- Expansion of Cooperation both in Quantitative and Qualitative Senses
- Opening and exploiting new markets
- Access to New Resources

✓ **Political View**

✓ **Technological View**

I Necessity of Korea-China Undersea Tunnel

Volume of Visitor Exchange between Korea and China

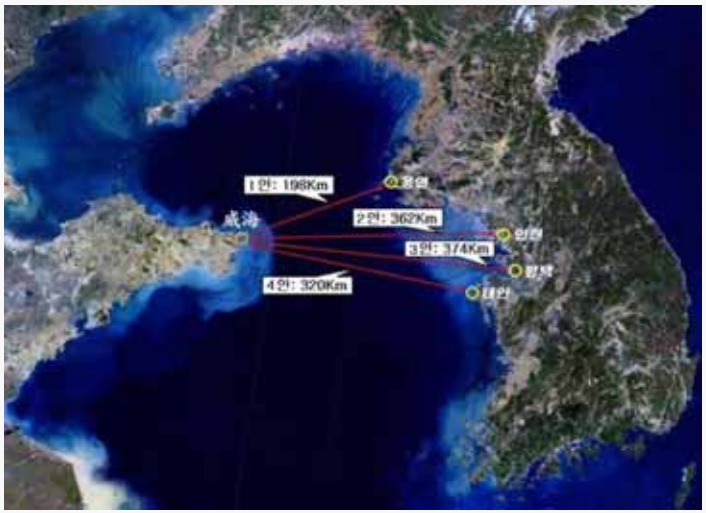
No. of Visitors						
	China→Korea			Korea →China		
	Total	Fright	Marine	Total	Fright	Marine
2001	337,210	303,974	33,236	682,942	682,942	-
2005	565,569	486,402	99,167	2,948,302	2518,608	215,095
Per. Annum increase	about 20%			about 50%		

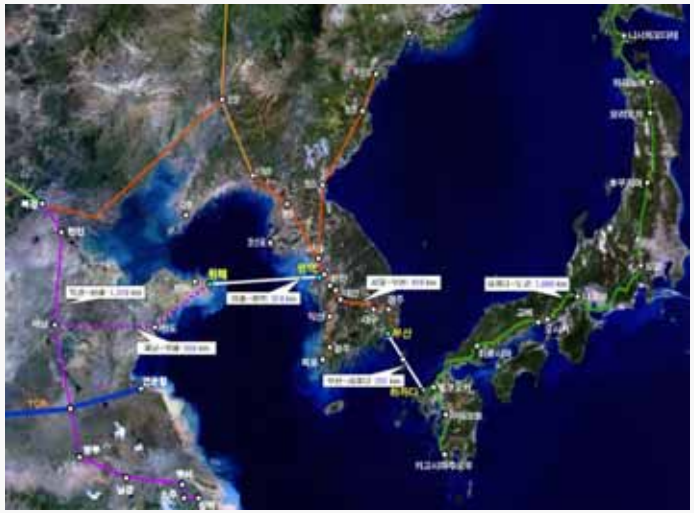
Volume of Visitor Exchange between Korea and China

Volume of Freight						
	China→Korea					
	Total		Freight		Marine	
	US$(Mil.)	Tons	US$(Mil.)	Tons	US$(Mil.)	Tons
2001	12,964	33,511,896	2,165	26,165	10,799	33,485,721
2005	38,238	49,625,451	8,918	60,868	29,320	49,564,583
2007	62,930	61,463,445	14,324	80,978	48,606	61,382,467
Per. annual increase	about 30% (in Value)					
	Korea →China					
	Total		Freight		Marine	
	US$(Mil.)	Tons	US$(Mil.)	Tons	US$(Mil.)	Tons
2001	18,178	25,288,840	1,439	24,565	16,739	25,264,275
2005	61,898	31,326,565	17,767	90,415	44,131	31,236,150
2007	81,933	33,224,546	22,547	86,792	59,386	33,137,754
Per. annual increase	about 20% (in Value)					

II Concept of a Korea-China Undersea Tunnel

Proposal of Gyeonggi Province, Korea





	Terminals	Reach	Connection to existing High-speed Railways
Plan 1	Yongeon ~ Weihai	198	Would require building railways of about 90km between Sariwon(Gyeongeui Railway) and Yongyeon
Plan 2	Incheon ~ Weihai	362	No additional railway construction required when the Incheon Airport Railway is used
Plan 3	Pyeongtaek ~ Weihai	374	No additional railway construction required when the Pyeongtaek Railway is used
Plan 4	Taean ~ Weihai	320	Would require building railways of about 90km between Cheonan and Taean

III Examples of Undersea Tunnels

Undersea Tunnels under Operation

Name	Nation	Length Undersea(km)	Construction Year	Cost	Excavation Method
Seikan	Japan	53 23	1964 ~ 88	7Bil. US$	Shield TBM
Akua Line (Tokyo Gulf)	Japan	15.1 9.5	1985 ~ 97	150Mil.US$	
Lincoln Line	USA	2.3~2.5 (3 Tunnels)	1930 ~ 57	75Mil.US$	-
Euro Channel	GB-France	50.45 38	1987 ~ 94	15.8Bil.US$	TBM
Eastern Harbor	Hongkong	2.2	1986 ~ 89	2.2Bil.HK$	Sunken Tube
Western Harbor	Hongkong	2 1.36	1993 ~ 97	5.7Bil.HK$	
Holland	USA	2.5, 2.6 (2 Tunnels)	1920 ~ 27	-	-

III Examples of Undersea Tunnels

Undersea Tunnels under Contemplation

Name	Nation	Length (km)	Notes
Korea-Japan	Korea Japan	230	Cost: 77 Bil. US$ (est.) Cons.duration: 15-20 Y. (est.)
Sakhalin	Japan Russia	-	-
Tokyo Harbor	Japan	1.4	Sunken Tube Method
Africa-Europe Strait Gibraltar	Spain-Morocco	39	Undersea Section: 28 Km
Bering Strait	Russia USA	96	Cost: 40 Bil. US$ (est.) Cons.duration: 20 Y. (est.)

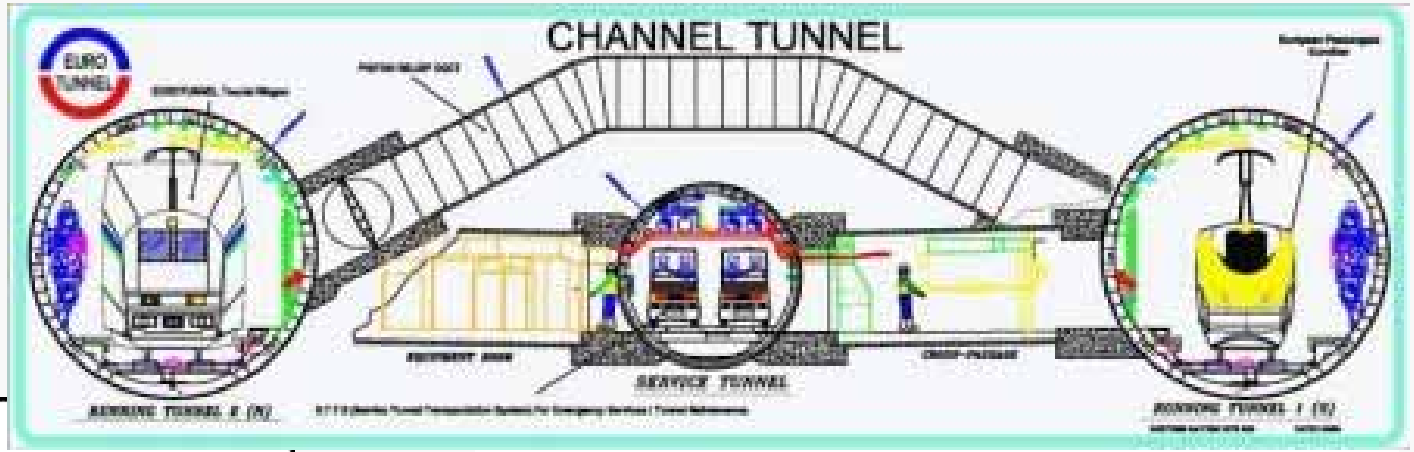
III Examples of Undersea Tunnels

Case 1 : Channel Tunnel

1. Route : Folkestone (GB) - Calais (France)
2. Opening Day : 6 May 1994
3. Construction Duration : 7 Years (Dec. 1987 ~ Jun. 1994)
4. Total Length (Undersea Section) : 49.94 Km (38 Km)
5. Construction Cost : 15.8 Bil. US$
6. Funding : Private Capital, Bank Loan
7. Average Depth : 45 m
8. Technology : TBM (Tunnel Boring Machine)
9. Transit Time : 45 Min. instead of 2 Hours by Ship

III Examples of Undersea Tunnels

Channel Tunnel



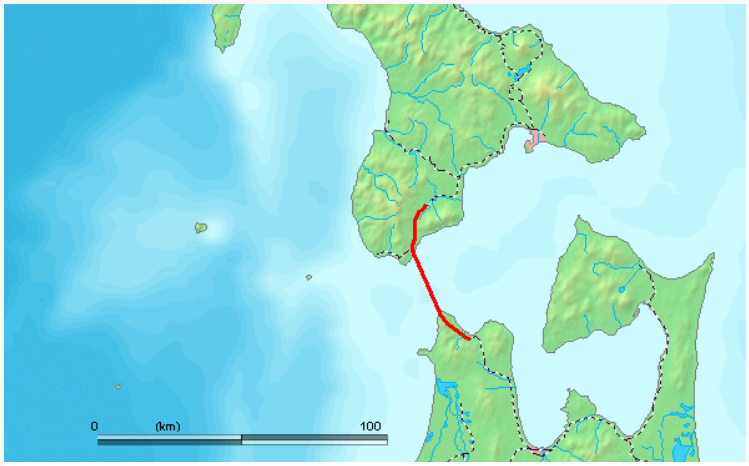
III Examples of Undersea Tunnels

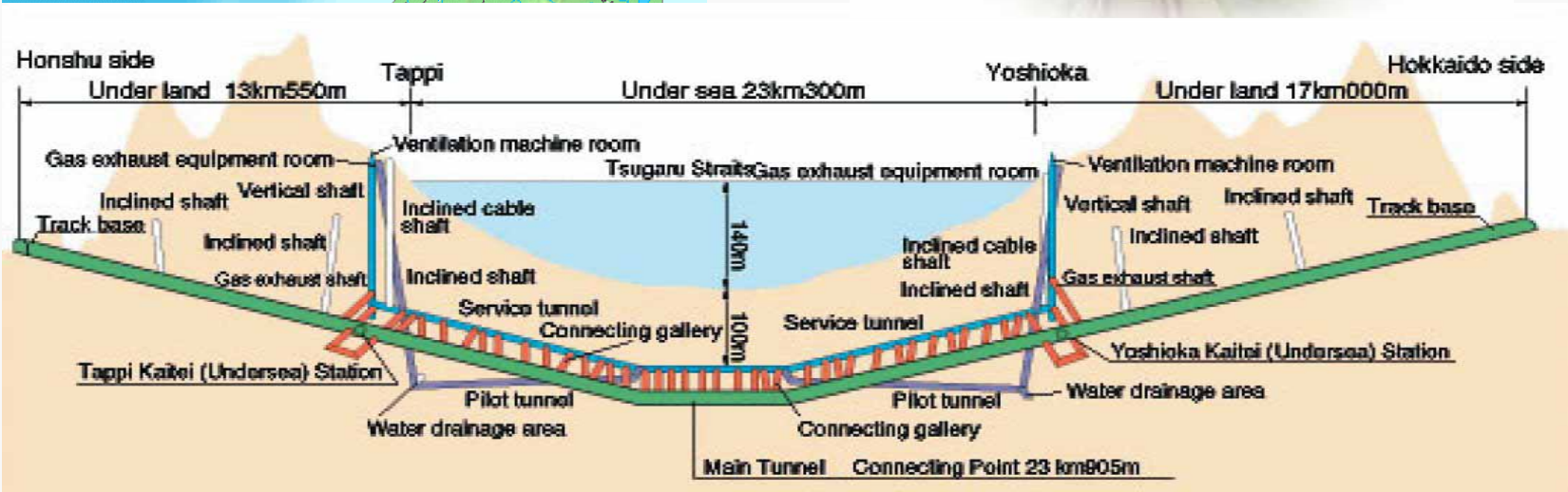
Case 2 : Seikan Tunnel

1. Route : Aomori Honshu ~ Hakodate Hokkaido
2. Opening Day : 13 March 1988
3. Construction Duration : 24 Years (1964 ~ 1988)
4. Total Length (Undersea Section) : 53.85 Km (23.3 Km) : The Longest Undersea Tunnel
5. Construction Cost : 538.4 Bil. Yen (3.6 Bil. US$)
6. Funding :
7. Max. Depth : 140 m
8. Technology : TBM (Tunnel Boring Machine)
9. Passing Time : 2 Hours instead of 3 Hours 50 Min. by Ship

III Examples of Undersea Tunnels

Seikan Tunnel





III Examples of Undersea Tunnels

Case 3 : Korea-Japan Undersea Tunnel

- 1917 : First suggested by Kuniaki Koiso, later a Prime Minister of Japan.

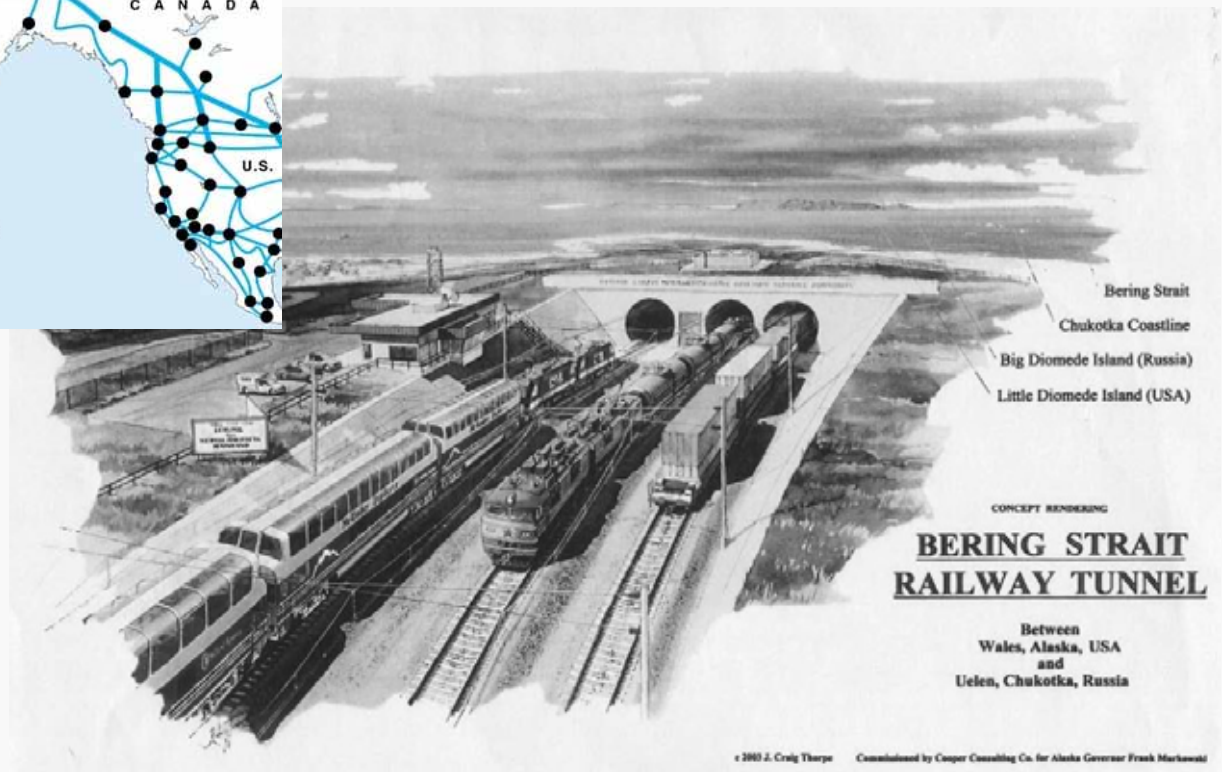
- May 1983 : 「Japan-Korea Tunnel Research Institute」 Established by an initiative of a group of Japan's Liberal Democratic Party lawmakers

- In Korea, three former South Korean Presidents, Roh Tae-woo, Kim Dae-jung and Roh Moo-hyun, openly spoke for the building of an undersea tunnel.

III Examples of Undersea Tunnels

Alternative tunnel route suggested by Japanese experts

Case 4 : Bering Strait Tunnel



IV Vision of Korea-China Undersea Tunnel

1. Subjects to be considered

- ✓ *Economic Feasibility*
- ✓ *Technological Feasibility*

2. Conclusions

- ✓ *Longterm Task*
- ✓ *International Task*