Development Possibilities for Intermodal Logistics in Japan

国際比較に基づく日本のインターモーダル・ロジスティックスの発展可能性

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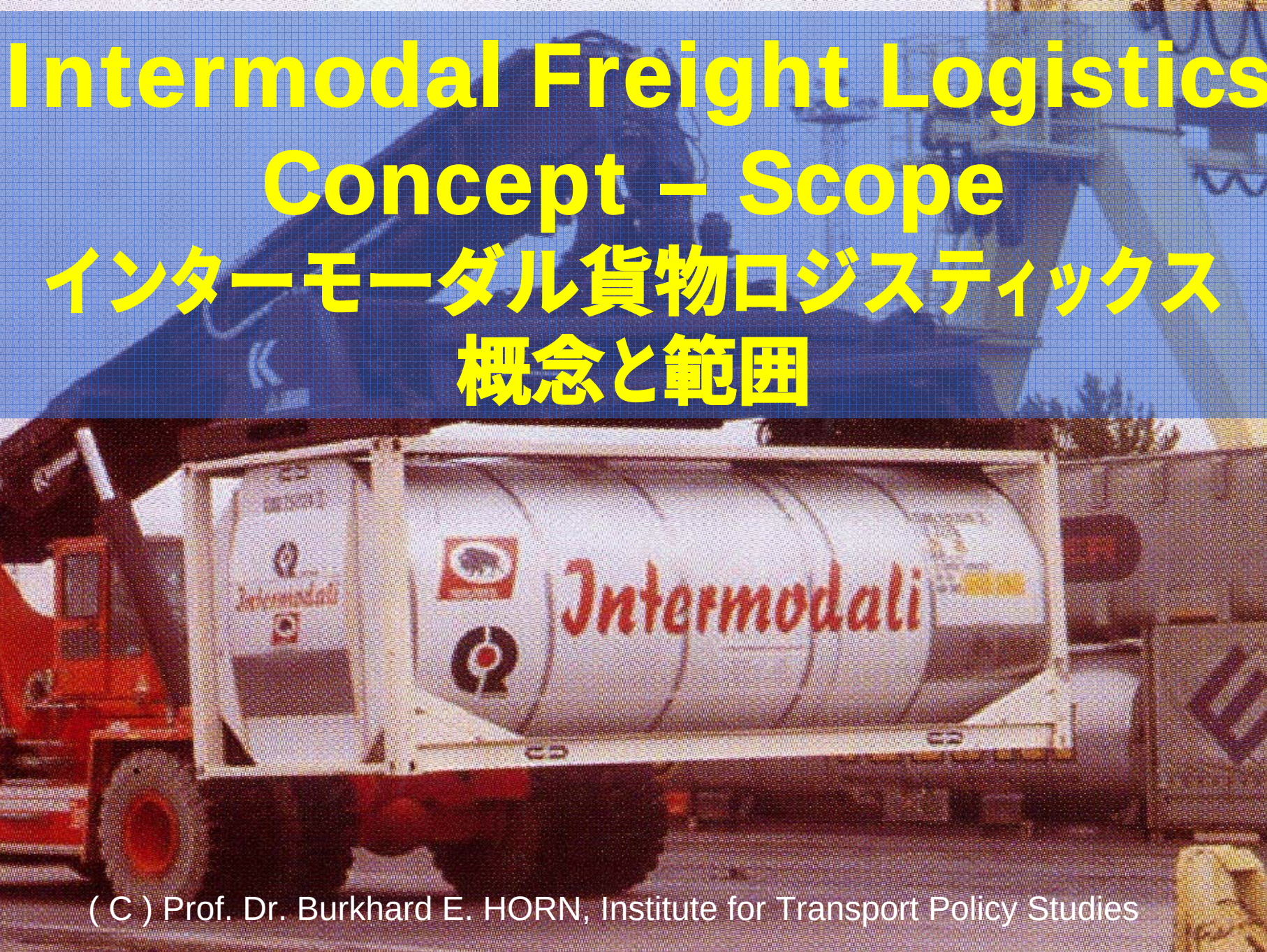
Background : Three Broad Goals of Japan's Logistics Policy
背景：日本のロジスティックス政策の3つの目標

- To assure **logistics services at reasonable costs** for industry and businesses
  妥当な費用でのロジスティックスサービス
- To attenuate related **environmental and social effects**
  自然・社会環境への影響軽減
- To strengthen international **competitiveness** promoting integrated logistics especially in the **Asian-Pacific** region
  アジア太平洋地域での競争力強化

Range of Interests in Intermodal Logistics in Japan

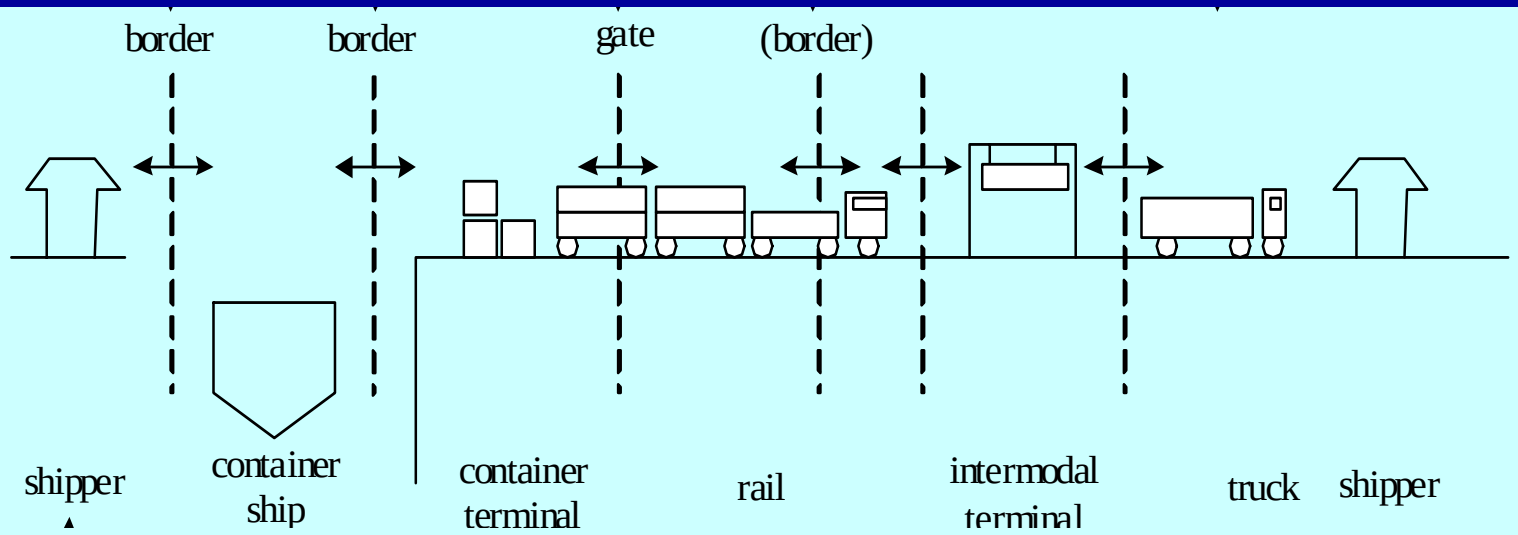
インターモーダルロジスティックスへの関心の範囲

Intermodal Freight Logistics
Concept – Scope
インターモーダル貨物ロジスティックス
概念と範囲



Intermodal Transport Chain
インターモーダル輸送チェーン

Truck - Ship – Rail - Truck



According to Nemoto, T.,2003

Intermodal Supply Chain

インターモーダル・サプライチェーン

International definition (ECE):

国際の定義 (欧州経済委員会)

- **door to door** transport
  ドアツードア輸送
- **seamless**, integrated operations
  シームレス、統合されたオペレーション
- **two or more transport modes**
  2つ以上の交通モードの接続
- **use of containers, swap bodies, piggy-back**
  コンテナ、スワップボディ、トラックと鉄道の共同輸送

Prime Aim
主要な目的

➡ **efficient supply chain management**

with push logistics shifting to demand oriented pull logistics

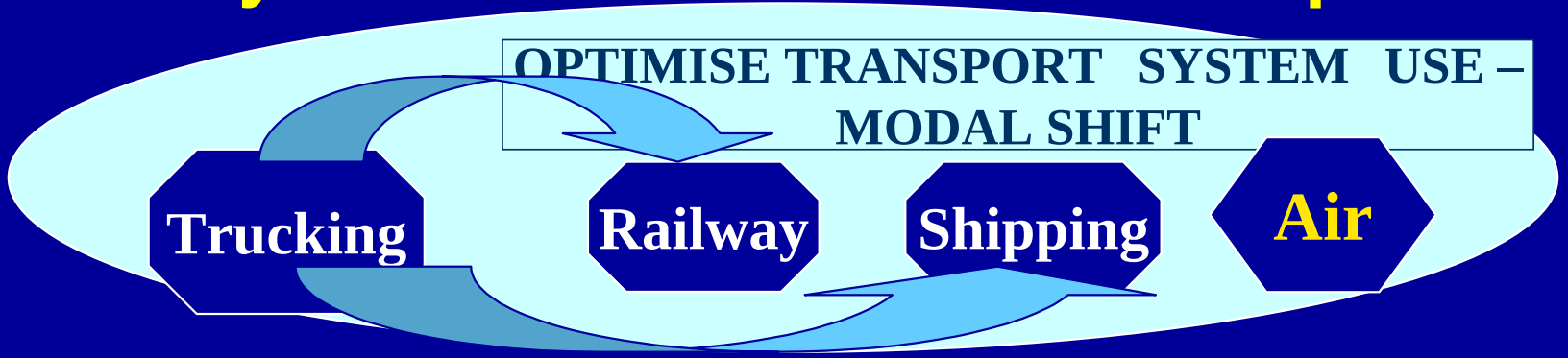
➡ **効率的なサプライチェーンマネジメント**

– **「プッシュ・ロジスティックス」を需要志向型の「プル・ロジスティックス」へシフトさせる**

Dual System View
二元的なシステムの見方

- **System view – Supply chain management**

- **System view – Intermodal transport**



Trends in Policy Directions
EU – U.S. – Japan
政策の方向性の比較
EU－米国－日本

Modal Split (%, t-km)
交通機関の分担率 (%, t-km)

Mode	EU-15	JAPAN	U.S.
Road	45.0	53.8	28
Rail	7.8	3.8	39.8
Inland waterways	4.0		9
Coastal sea	40.4	42.0	7.6
Pipelines	2.8		15.3

Sources U.S.-BTS, EU, MLIT

Policy Motivations
政策の動機

- **EU's main concern** is the environmental issue, highway congestion, and technology improvements and innovations,
- **U.S.** stress global connectivity and trade, leading role of industry, market treatment of modes, and energy problem
- **Japan's policy** aims at competitiveness, increasingly in the Asia-Pacific market , and environmental and societal needs.

Environment
Innovation
環境問題と
技術革新

Connectivity
Trade
取引の連結性

Competitiveness
Social needs
国と産業の
競争力

Goals and Policy Measures
政策目標と手段

	Goals	Policy Measures
EU	-Shift the balance between transport modes -12 billion t-km off the road annually	-Focus on operations & services -Incentives through subsidies -Trans-European Networks -R&D, technology
US	- International efficient supply chain - Developing intermodal facilities - hubs & connectors	- Infrastructure oriented projects - Co-funding approach and partnerships - Security & technology applications
Japan	- 50 % share for rail and coastal shipping targeted - Accessibility targets - Asia Pacific trade and logistics	-Comprehensive, multi-modal package -Regulatory reform measures -Technology applications and standardization

Intermodal Domestic Freight Shares
インターモーダル貨物輸送のシェア

Region / Country	% of total	% by water / sea	% by rail
EU-15 in t-km	**8.6**	**15.6**	**25.9**
-Germany in t			>10.0
-Netherlands in t	8.0	24.0	24.0
-UK in t	20.0	22.0	13.0
U.S. in t-km			**19.0 – 30.0**

EU：Overview of Policy Elements

ＥＵ：政策の構成要素の概観

➡ **To optimize interdependent & complementary modes**

Infrastructure	Operations	Technology, R & D	Rules, Standards
Design of intermodal transfer points	Common charging and pricing	Interoperable systems & equipment	Transport standards (esp. load units)
Intermodal design of trans-european networks (TEN)	Freight routes in intermodal, inter-operable system	IT system, EDI ITS	Intermodal liability Work regulations
Missing links Intermodal priority projects	Value-added log. services E-com	Satellite based communication system	Intermodal competition rules

EU's Estimation of Intermodal Cost Savings

インターモーダル輸送の費用削減（ＥＵ試算）

- Intermodal freight transport: **60-80 % lower for accidents** and **40-50 % lower in CO2** emissions than road transport
- Overall **social cost savings 33 – 72 %** compared to road transport
- **1 Euro external cost saving by 85 tkm shifted from road to rail**, with 52 tkm to inland waterway, with 50 tkm to coastal shipping

PACT Program - Example: Intermodal Rail Service (Brenner corridor) Ger-Austria-Ita

例：鉄道によるインターモーダルサービス（ドイツーオーストリアーイタリア）

Modal shift : 584 million ton-km shifted off the road

- 50 000 truck trips avoided in 2 years
- private rail company
- 2–4 block trains per day and direction
- use of 3 national networks
- quality management
- high punctuality
- profitable, growing

Regular Direct RORO Shipping Service, Cross Mediterranean Sea Italy – Spain

ＲＯＲＯ船によるインターモーダルサービス イタリアースペイン

Modal shift : 716 million ton-km shifted off the road

- **26 000 truck trips avoided in 2 years**
- **private shipping line**
- **Italian ports - Valencia**
- **shuttle service**
- **traffic reduction along congested coastal routes**
- **profitable, growing**

EU Special: Marco Polo Program

ＥＵ独自の「マルコポーロ計画」

Operations based - Services oriented - Industry Involvement

To keep at 1998 modal shift (Kyoto goals)

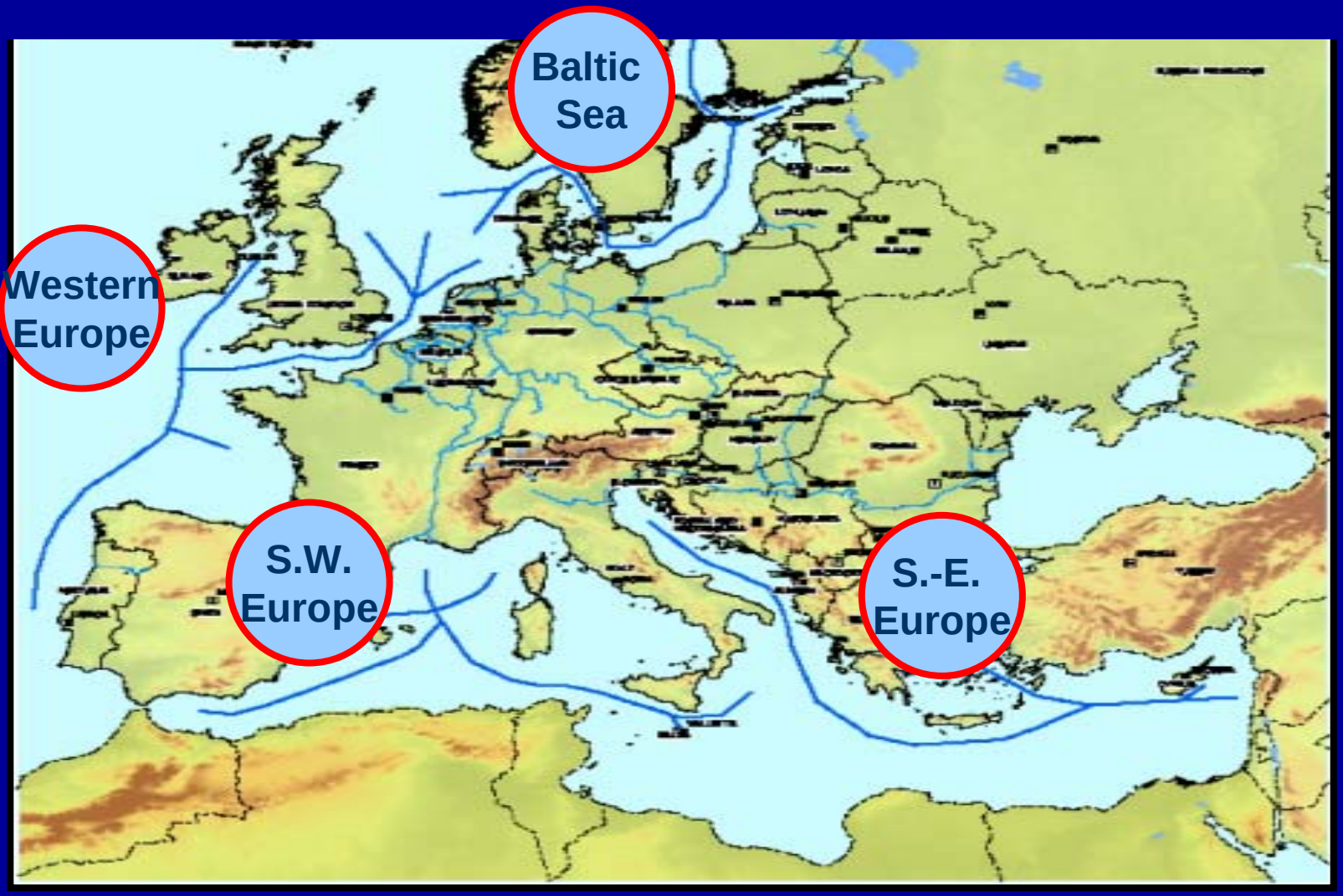
Modal Shift -concrete projects & operations	Catalyst - break-through solutions	Common learning - better knowledge & methods
• aid to start-up services - 1Euro subsidy per 500 t-km shifted •Min subsidy 0.5 Mio •Subsidy up to 30% •Ancillary infrast. 20% •Subsidy up to 3 years •Viable after subsidy	•Overcome structural barriers – innovative •Min subsidy 1.5 Mio •Subsidy up tp 35% •Ancillary infrast. 20% •Subsidy up to 4 years •Viable after subsidy •Dissemination	•Co-operation, sharing of know-how, mutual training •Min subsidy 0.25 Mio •Subsidy up to 50% •Subsidy up to 2 years •Dissemination

Impacts – Effectiveness – Efficiency
影響－効果－効率性

Program	Actions	Projects	EU Budget M Euro	Effectiveness Shift off the road	Efficiency Shift off the road
PACT 1996 - 2001	Innovative mode shift	92	35	11 billion tonne-km in 5 years	367 t-km shifted per Euro
Marco Polo I 2003-2006	Mode shift Catalyst action Common learning	13 in 2003	15 in 2003 -115 in total	48 billion tonne-km in 4 years (estimated)	914 t-km shifted per Euro or with 50% success rate 457 t-km/Euro
Marco Polo II 2007-2013	…and Motorways/sea Rail synergy Traffic voidance	N.A.	820 in total	144 billion tonne-km	

Marco Polo II will include infrastructure funding

EU Special: Motorways of the Sea
ＥＵ独自の「海の高速道路」



EU's Motorways of the Sea – An Example for Building East Asian Linkages?
海の高速道路：東アジア連携への一例

Fixing of Network - Linkages
Baltic – Western – South West - South East

Part of **TEN Programme with Funding**
- reducing highway congestion
-service to EU heartlands
- connection with inland corridors
- accessibility of island states

2005 — **2010**

Enhanced maritime infrastructure & navigation

Frequent
Reliable
Fast

SCM

Commitment & co-operation by Industry

...and in the U.S.?

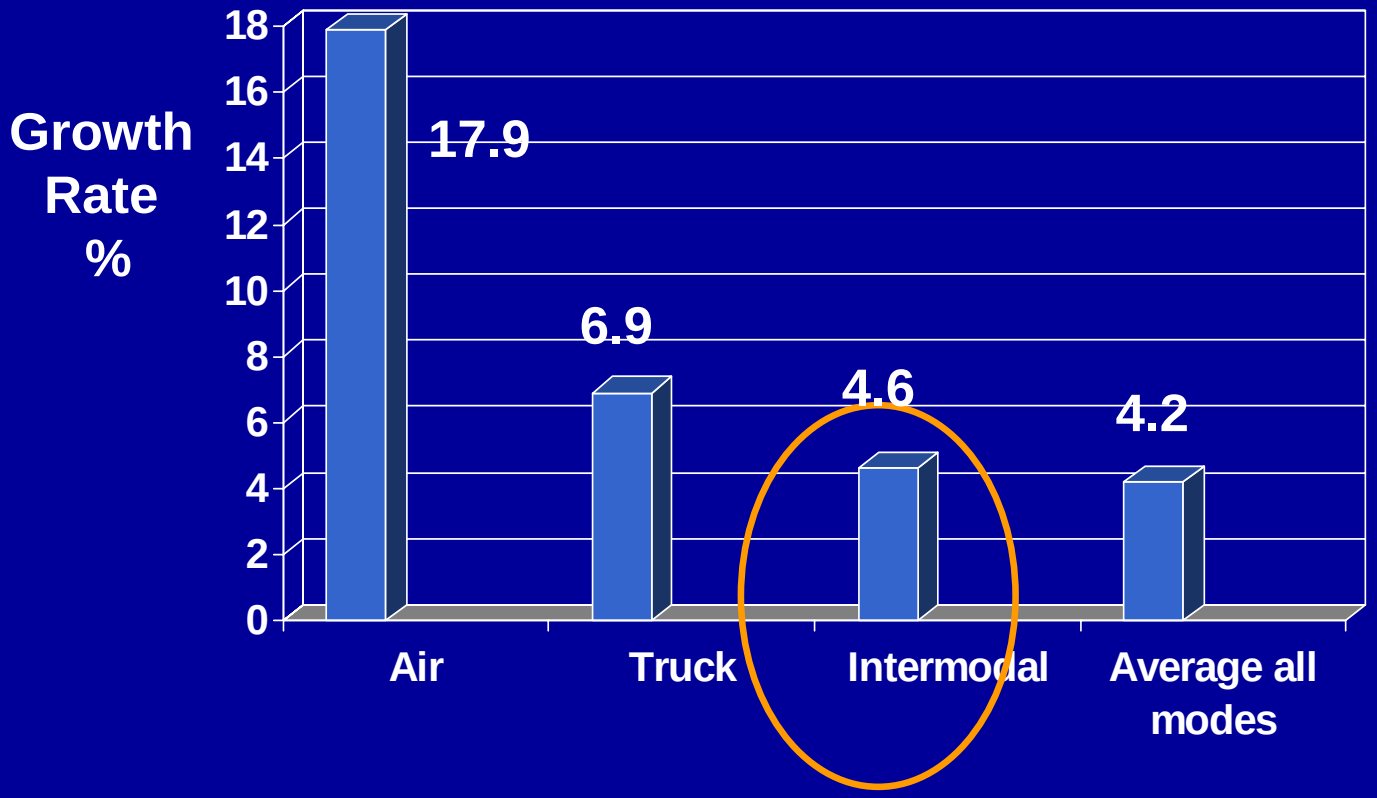
U.S.: Overview of Policy Elements
米国：政策の構成要素の概観

Basic philosophy : Intermodal is industry driven
Therefore only few governmental initiatives

Strategy	Infrastructure	Technology
▪Freight facilitation strategy ▪Freight partnerships ▪Intermodal freight capacity ▪SSS Short Sea Shipping ▪Freight analysis decision framework ▪R&D, education,	▪National corridor development ▪Co-ordinated border infrastructure program ▪NHS Intermodal Connectors ▪Intermodal hub areas - Chicago	▪ITS/Intermodal Freight Program ▪Intermodal border clearance - wizards ▪Standards “Size & Weight”, containers

U.S. Annual Intermodal Rail Growth –
鉄道によるインターモーダルサービスの増加
Market pushed higher quality intermodal services

Since deregulation in the 80's, rail productivity has greatly increased
Intermodal is one of the fastest growing rail services

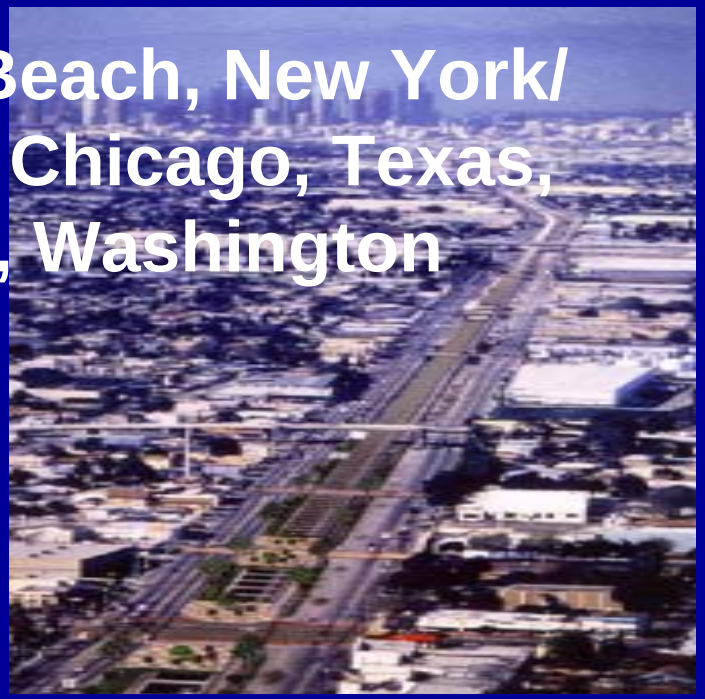


U.S. : Improving Land Access to Intermodal Cargo Hubs

インターモーダル貨物ハブへの陸上アクセスの改善

Priority on supply chain logistics – Connectivity and alleviating congestion

Hubs in L.A. Long Beach, New York/ New Jersey, CACH Chicago, Texas, Florida, Oregon, Washington



U.S. Special: Intermodal Freight Connectors

米国：インターモーダル貨物結節点としての要件

- **Funding of connecting infrastructure projects** between the National Highway System (NHS) and major intermodal facilities – **economic and strategic goals**
- **Connectors to 517 freight terminals and 99 freight airports** = 1222 miles
- Funding up to 2001/2 about 1.5 bn $ through federal, State, local and private sources – **from 2004 : 3 billion funding foreseen in new legislation**

U.S. Special: Eligibility as Intermodal Freight Connectors

日本：政策の構成要素の概観－総合物流施策大綱

Key Selection Criteria

Airports	100 trucks/day in each direction or 100,000 tons/year arriving or departing
Ports	> 50,000 TEU's/year or 500,000 tons bulk /year 100 trucks/day in each direction
Truck/Rail	> 50,000 TEU's/year or 100 trucks/day in each direction
Pipelines	100 trucks/day in each direction

...and in Japan?

Japan: Overview of Policy Elements – Comprehensive Logistics Policy (1997,2001)

日本：政策の構成要素の概観－総合物流施策大綱

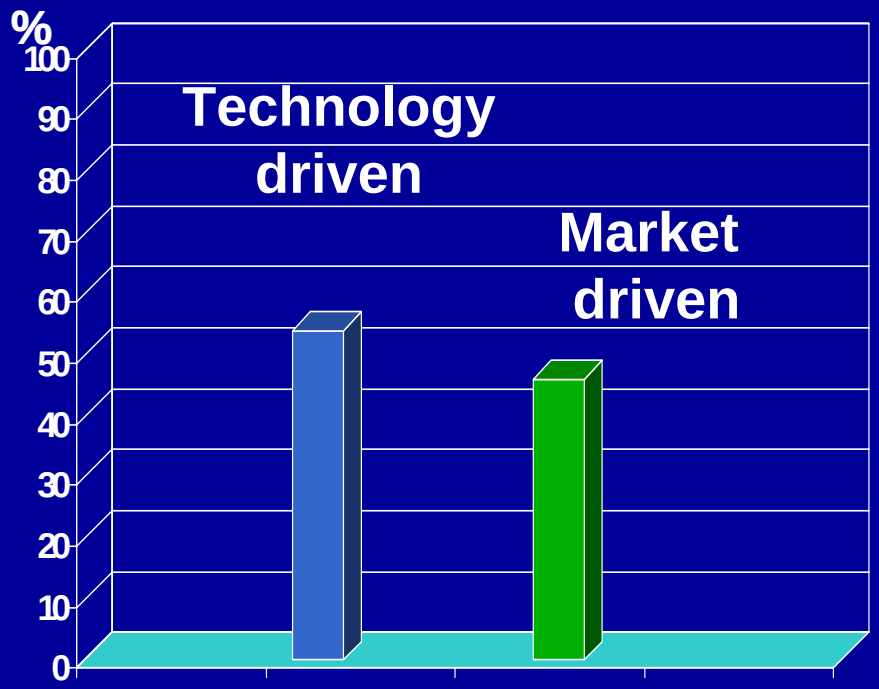
City logistics – Regional logistics – International logistics

Infrastructure	Deregulation	Technology + Commercial practices	
• Co-operation between modes •Elimination of bottlenecks •Dev. of inter-national hubs •Dev.of intermodal terminals - ports, harbors, airports •Strategic logistics outlay	•Less government interventions •Simplifying regulations •Facilitation to enter logistics market •Abolishment of demand/ supply regulation	• IT applications computerization • Standards, EDI, codes, pallets containers •GPS •ITS •New transport technologies	•Better use of work resources •Logistics management •Pricing mechanism •SCM •CRM •E-com

Technology vs Market Mechanism in New Logistics Schemes

新しいロジスティックス手法に関する技術と市場メカニズム

Technology is considered a somewhat more important driver than **market demand.**



But:

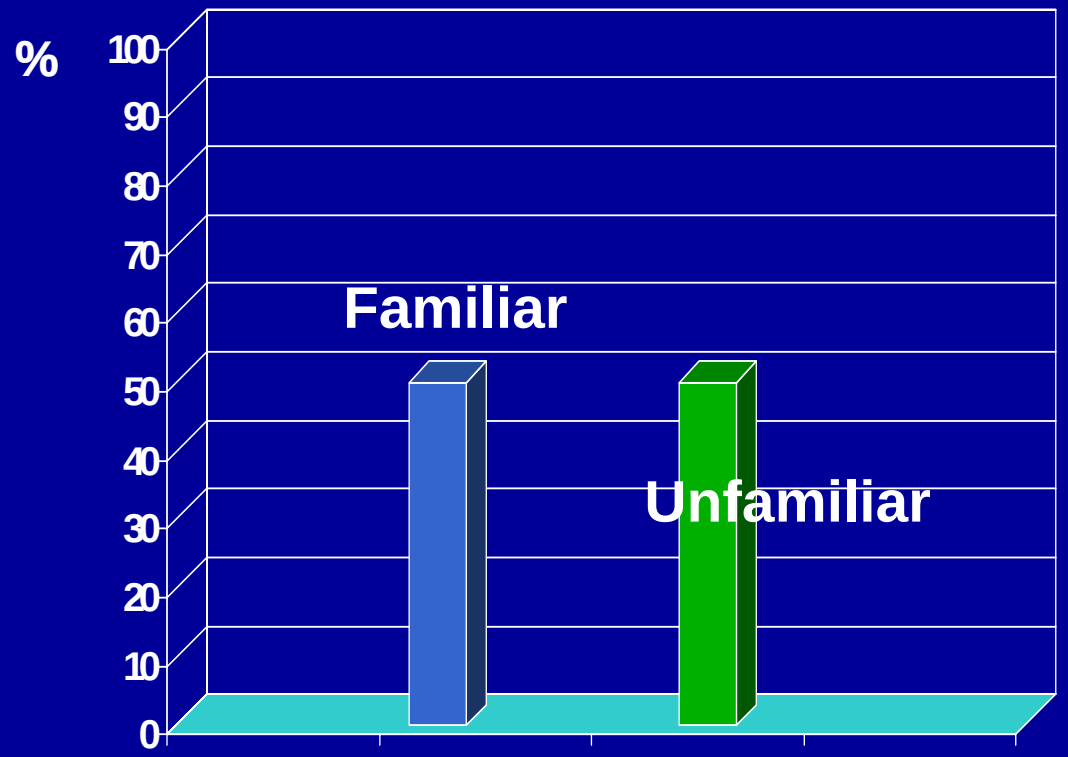
Environmental goals are an increasing factor in new logistics solutions.

Japan: Targets and Actual Results
日本：目標と実際の結果

Target indicator	Aim	Year	Result so far
長距離雑貨輸送分野のモーダルシフト化率の向上	50%	2010	2000 : 39.6% 2001 : 38.6%
輸入コンテナの滞留時間	2 days	2005	1998: 3.6 days 2002: 3 or 4 days
貨物のパレット化率	90%	2005	2002 : 77%
ICから10分以内で到着可能な主要空港・港湾比率	90%	2015	56(46)%airports 39 (33)% ports in 2003(2000)

However: Awareness about Government's Comprehensive Logistics Policy (2001)

政府の新総合物流施策大綱についての認識



Half of logistics professionals surveyed in Japan were not familiar with the Government's logistics policy

Japan: Modal Shift Action Program (2002/4)

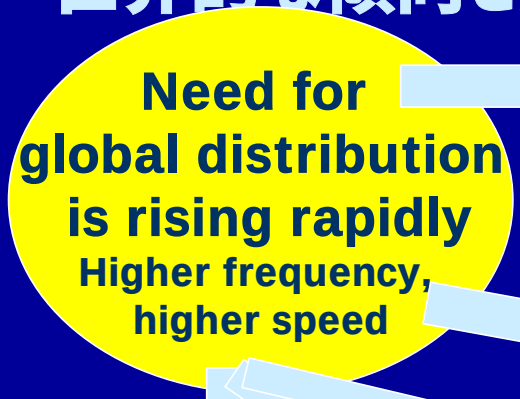
Aim: To reduce CO_2 emissions of trucking – shift to rail and coastal shipping

Share (%) of Rail & Coastal Shipping > 500 km

-altogether 74 projects carried out by 246 man enterprises
- subsidies for one third of costs

What are the Key Issues in Global Trends and Perspectives ?

世界的な傾向と展望における重要な問題は何か？



Building and further developing SCM
-taking account of differing business approaches
- challenge door-to-door intermodal, esp. J -China

Forecasts of global & Asian logistics demands
are required: Japan - Asia, China, ASEAN
Japan - U.S. and (East) Europe, South America

Global Intermodal Standards -
RFID seals
Containers
Inspection

Risk mang't
Safety
Security
Environment
Social dev.

New Technologies
Transshipment,
New types of cargo ships

Conceiving East Asian Intermodal Linkages
-Asian hubs,
-domestic regional hubs & feeder system
-Inland China

Personnel, staff
-avoiding high turnover, driver shortage

Regional logistics service providers

SUMMARY & SUGGESTIONS
まとめと提言

1. The government's logistics policy and action program should be more widely publicised. Shippers and industry must be made aware of the potential of intermodal logistics.

   政府のロジスティックス政策の浸透不足

2. Consistent performance checks of logistics schemes in Japan are necessary to prioritize intermodal improvements.

   ロジスティックス効果の継続的モニタリングの必要性

SUMMARY & SUGGESTIONS

3. In advancing intermodal logistics, top priority should be on **transshipment equipment and container management incl. RFID usage**. But there is lack of investment for transshipment technologies both by industry and government.

   積み替え荷役機械とコンテナ管理（無線ICタグを利用した）

4. **Accessibility** to ports/airports) is essential. The main problem is the connection ports – suburban. **Intermodal connector** projects should be expanded.

   港湾までのアクセスビリティの向上プロジェクトの拡大

SUMMARY & SUGGESTIONS

5.Forecasts of global and Asian logistics demand are required, especially J –Asia, China, ASEAN.

世界とアジアのロジスティックス需要予測

6.Top priority is now on conceiving East Asian intermodal linkages and networks, incl. Asian and domestic regional hubs, Japanese feeder system and small ports, connection Inland China.

東アジアでのインターモーダルと日本のフィーダーネットワークの結合が最重要課題

Thank you