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„Intermodal Freight Terminals: Challenges and Good Practices”

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Presentation Outline

- Introduction
- Freight Terminals in Intermodal Transport Chains
- Challenges regarding freight Terminals
- Good Practice Examples
- Conclusions and Recommendations



1. INTRODUCTION

Starting Point

- Intermodal terminals – seaport and inland terminals – play a crucial role in intermodal transport chains
- Problems and challenges which affect the capacity, quality and efficiency of terminal operation and the whole intermodal chain
- Strategic Plan 2008-2011 → analysis of design and operation of intermodal terminals, case studies, good practices and recommendations

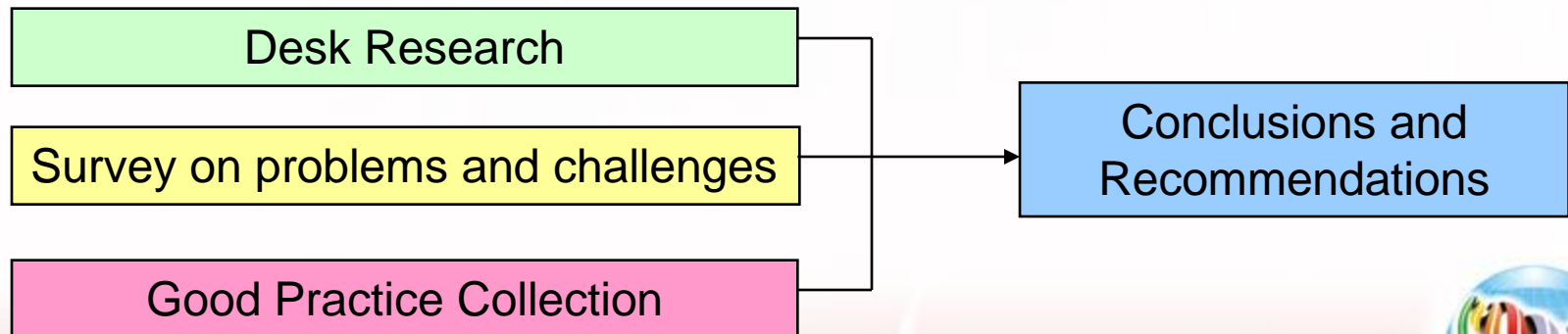


Objectives and Methodology

- **Objectives**

- Identify and verify the problems and challenges
- Collect, analyze, and evaluate existing case studies/current practices relating to intermodal freight terminals
- Derive good practices / recommendations and report on the main results

- **Methodology**



Scope

- Terminal Infrastructure and Design
- Terminal Operation and Management
- Land Use, Environment and Community Involvement
- Institutional and Financial Issues
- Health, Safety and Labour Rules



Report

«Intermodal Freight Terminals: Challenges and Good Practices»

Summary

Introduction

1. Freight Terminals in Intermodal Transport Chains
2. Problems and Challenges
3. Good Practices
4. Conclusions and Recommendations
5. Bibliography

Glossary

Appendices (incl. 20 Good Practice Cases)

Approx. 150 Pages

**Report will be
available in english,
french and spanish!**



2. FREIGHT TERMINALS IN INTERMODAL TRANSPORT CHAINS

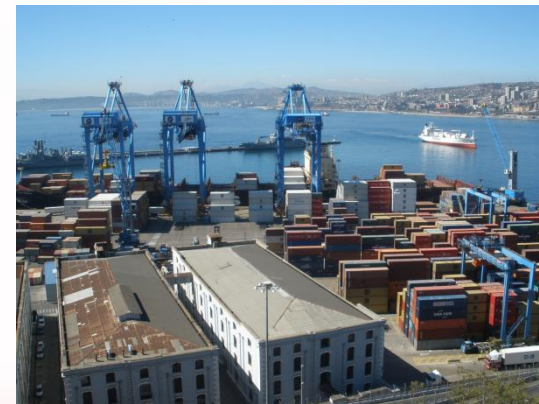
Terminal Services

- **Transshipment Services** (Loading/unloading of ships, barges, trains and trucks)
- **Loading Unit Services** (storage, repair, maintenance, cleaning, selling/leasing/renting, damage control, etc.)
- **Forwarding Services** (pre- and end-haulage, customs, transshipment at the client side, etc.)
- **Distribution Services** (Transport, Tracking & Tracing, etc.)
- **Goods Services** (stuffing / stripping, unloading/loading, reloading, reefer handling, dangerous goods handling, security control etc.)
- **Administrative services** (reporting, invoicing etc.).



2. FREIGHT TERMINALS IN INTERMODAL TRANSPORT CHAINS

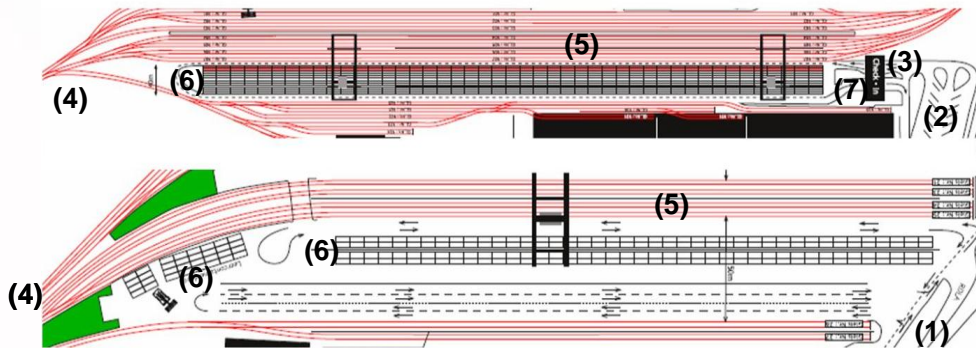
Terminal Layout and Elements – Seaport Terminal



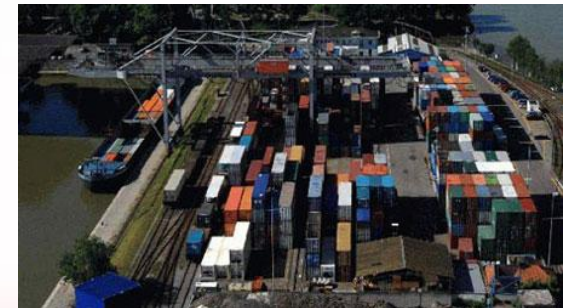
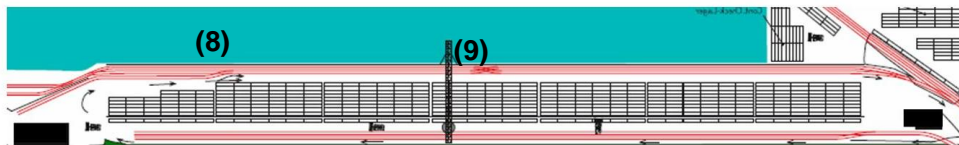
2. FREIGHT TERMINALS IN INTERMODAL TRANSPORT CHAINS

Terminal Layout and Elements – Inland Terminals

Inland Rail Road Terminal

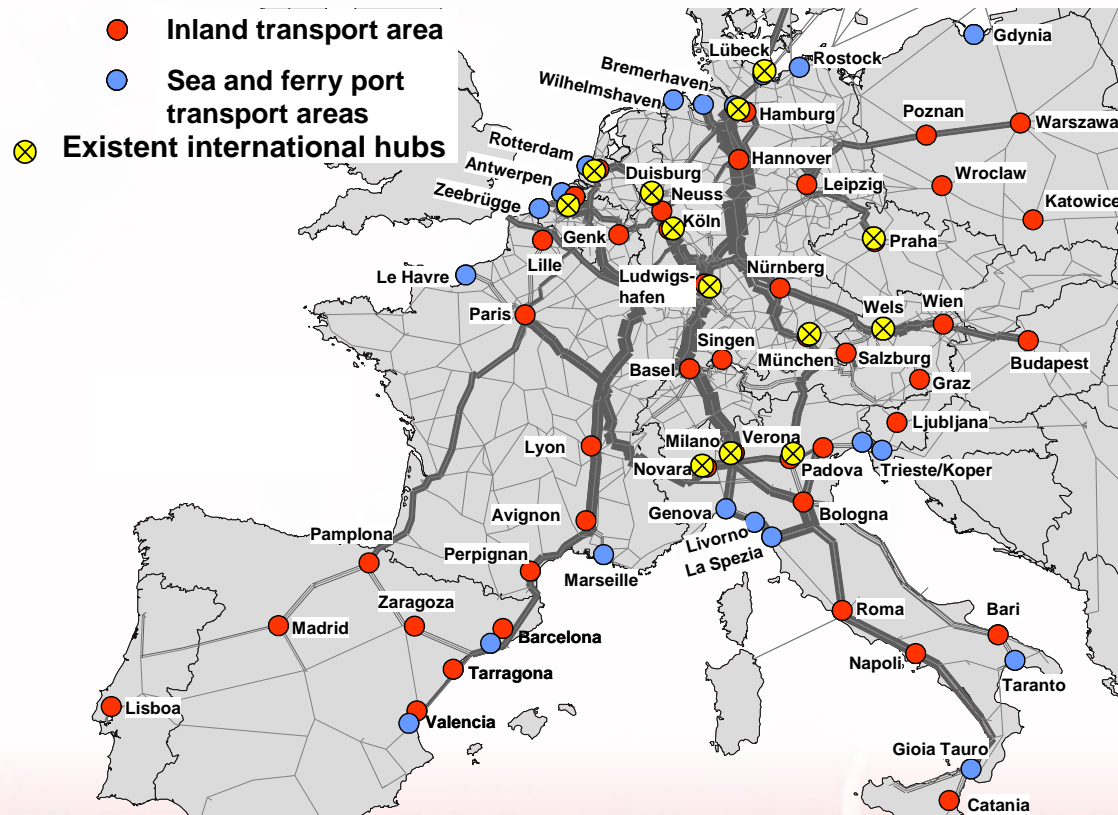


Inland Port Terminal



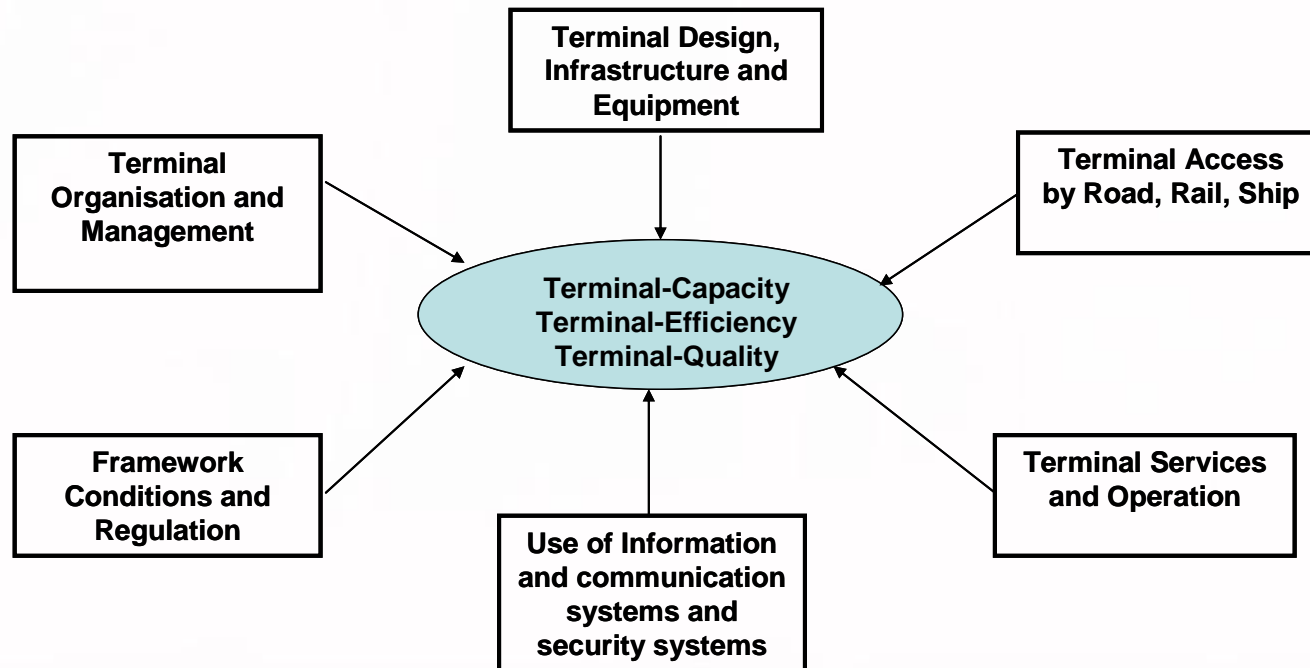
2. FREIGHT TERMINALS IN INTERMODAL TRANSPORT CHAINS

Terminal Networks – Example Europe



2. FREIGHT TERMINALS IN INTERMODAL TRANSPORT CHAINS

Factors Influencing Capacity, Efficiency and Quality of Intermodal Terminals



3. PROBLEMS AND CHALLENGES

Top 5 Problems by Problem Area

Infrastructure and Equipment	Operation and Management	Land use, environment, com. acceptance	Institutional and financing issues
Traffic jams on terminal access roads	Lack of cooperation	Missing extension possibilities	Missing intermodal terminal location policy
Terminal does not any more fit today's requirements	Communication problems	Pollution from incom./outgoing traffic	Missing efficiency/quality req. for funding
Missing extension options	Low influence on ship/train arrival	Missing space for new terminals	Missing intermodal terminal network policy
Insufficient rail access	Not satisfying information in case of delays	Noise emissions on road access/terminal	Missing coordination of terminal development on a corridor
Only one sided access from main track	Inefficient rail operation	Conflicts with other land use purposes	Missing benchmarking of quality and efficiency



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Compact Terminal Design Basel/Weil

Situation / Problem

- Additional terminal capacity needed
- Limited land availability
- Lot available on previous shunting yard

Measure/Solution

- Compact inland rail/road terminal
- Good access for rail (from both sides) and road (from Germany and Switzerland)
- Module approach (2 modules)
- A modern terminal management system



Terminal Basel/Weil



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Effects/Experiences/Benefits

- High productivity and efficiency of transshipment processes
- Low impact on residents and environment
- Bearable investment cost of the modules (which follows the demand)
- Safe working conditions

Transferability

- To other situations where land availability is limited and land prices are high



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Dry Port Concept

Situation / Problem

- Limited transshipment capacity and limited port extension options
- Limitations in hinterland road network
- Pollution from road truck traffic from/to seaport in the port and city area
- Port interest to increase the catchment area and to control the hinterland services



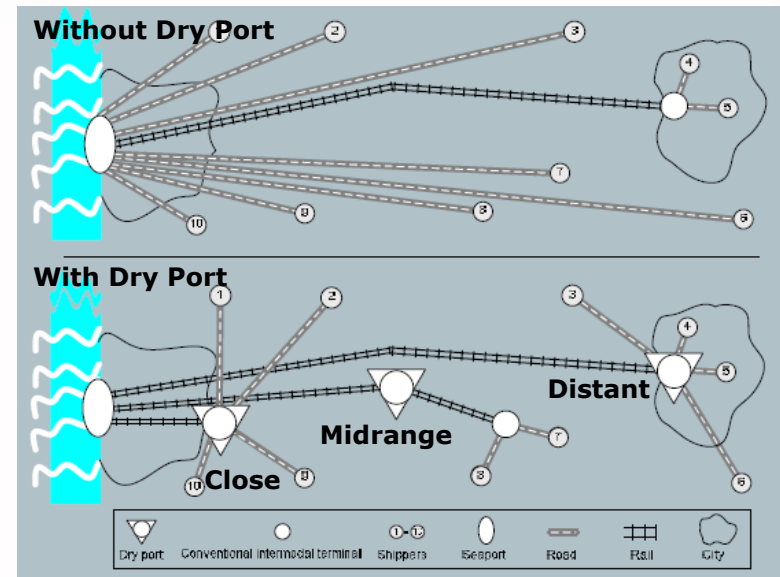
4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

- **Dry Port Concept:** A dry port is an intermodal terminal directly connected to sea-ports with high capacity transport means where customers can leave/pick up their standardised units as if directly to a seaport

- **Differences to conventional hinterland terminal:**

- Customs clearance
- Security control
- Storage for seaport terminals
- Other services for seaport terminals

- **Examples:** Isaka (Tanzania), Virginia Inland Port (US), Auckland Wiri (NZ), ..



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Assessment / Benefits

- Improved services for shippers
- Increasing hinterland market / catchment area for the port
- Increasing productivity of seaport terminals
- Increasing business for railways
- Less congestions on roads
- Modal Shift / Less pollution

Transferability

- Situations with congested port hinterland roads
- Willingness for cooperation



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Freight Villages

Situation / Problem

- Trend to outsource logistics and transport activities
- Need for space for logistics and distribution platforms
- Land use and environmental conflicts with current logistics/transport activities
- Limited accessibility of logistics and distribution platforms

Measure/Solution

- Concept of Freight Villages was developed in the 1970's and 1980's in Germany and implemented up to now



INTERPORTO BOLOGNA



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

- **Freight village:** “A specific area where **all the activities relating to transport, logistics and goods distribution – both for national and international transit – are carried out by various operators.**”

In order to encourage intermodal transport for goods handling, a logistics centre should preferably be **served by a variety of transport modes** (road, rail, sea, inland waterway, air)”.
(Europlatforms)



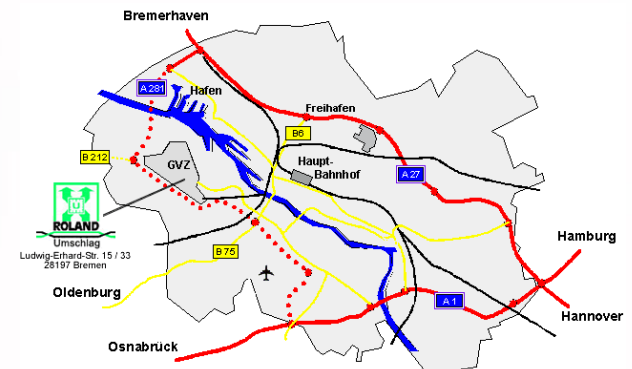
Freight Village Nürnberg, Germany



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

GVZ Bremen (Germany)

- One of the most successful examples in Europe
- Size: 495 hectares
- 150 companies with around 8'000 employees
- Integrated Intermodal freight terminal and port access
- Close to airport
- City Logistics Platform with joint delivery to the city
- Freight Village Development company



Freight Village Bremen



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Assessment / Benefits

- Sufficient land size for logistics-intensive purposes with excellent transport access
- Synergies between logistics and transport service providers
- Interface between long distance and regional/local transport and between different modes
- Concentration of freight and logistics activities which are accessible by different Modes



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

PIER PASS (USA)

Situation / Problem

- Overlapping traffic peaks: passenger car transport and truck transport from/to seaport
- Congested roads from/to seaport through the city
- Air quality concerns because of pollution by trucks
- Negative impact on port surrounding communities



4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Measure/Solution

- **Off-peak hours concept** with extended seaport terminal hours with off-peak shifts
- Imposition of a traffic mitigation fee on all cargo imported/exported through the port during peak hours
- Launched in 2005 with the support of state, local communities and shippers.
- Incentive for truckers to use off peak hours
- PierPASS operates the system



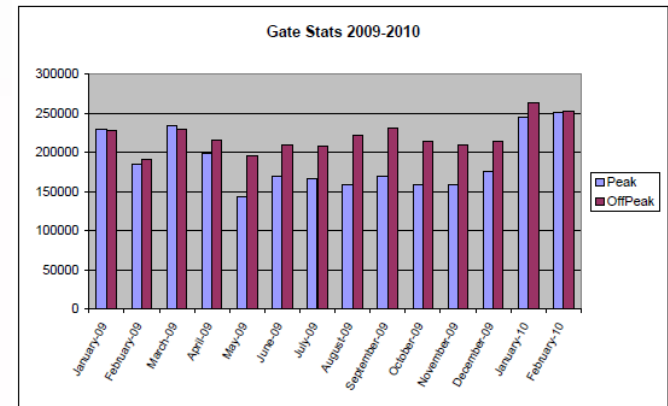
4. GOOD PRACTICE EXAMPLES - TERMINAL INFRASTRUCTURE PLANNING AND DESIGN

Effects / Benefits

- Spread of existing truck traffic across more hours.
- better use of valuable port assets
- Reduction of turn times → more efficient truck transport
- Reduction of truck traffic during commute hours
- Reduction air pollution

Transferability

- Transferable to other seaports with similar problems
- Cooperation between port operators, shippers and authorities



4. GOOD PRACTICE EXAMPLES – LAND USE, ENVIRONMENT AND COMMUNITY INVOLVEMENT

Land Use Planning

- A land use plan serves as a guiding document for the development and expansion of intermodal facilities
- Key objectives:
 - Illustrate the facility's ability to accommodate future growth
 - Use policy directions to link optimal land utilization with future growth opportunities
 - Identify the significance of regional and national transportation networks



Examples:

- North America – Potential destruction and fragmentation of land mostly due to urban sprawl and competing land uses
- United Kingdom – Need to create a balance between needs of freight industry and those of local residents



4. GOOD PRACTICE EXAMPLES – LAND USE, ENVIRONMENT AND COMMUNITY INVOLVEMENT

Environmental Aspects

- The environmental impacts include but not limited to:
 - Air quality and pollutants emissions
 - Water quality
 - Vegetation and wetland
 - Animal and wildlife
 - Aquatic environment
 - Noise and vibration
 - Historical and archeological resources
- Many nations have developed regulations/laws to ensure environment protection
- Environmental Assessments – ensures mitigation and examines key environmental concerns for each project



4. GOOD PRACTICE EXAMPLES – LAND USE, ENVIRONMENT AND COMMUNITY INVOLVEMENT

Environmental Aspects – Examples

- **Canada:**

- Port North Fraser:

- Protection of fish habitat through Habitat Classification and Coding system
- Habitat compensation banking

- Reducing waiting time for idling trucks
- Canada Shipping Act (2001)

- **United States:** New technologies

- Shore Power (“Cold Ironing”)
- Reduced Pick-up and Drop-off Idling for Trucks
- Improving Port Operation Strategies

- **United Kingdom:**

- Limits on CO emissions, Hydrocarbons (HC) and NOx for Heavy Good Vehicles
- Obligating manufacturers to use new technologies



4. GOOD PRACTICE EXAMPLES – LAND USE, ENVIRONMENT AND COMMUNITY INVOLVEMENT

Community Involvement

- Crucial to have public consultation and engagement for planning, design and implementation of freight terminals.
- The main objective is to obtain public feedback on analysis, alternatives and/or decisions
- To achieve the goal of the consultation process the following steps/principles must be adhered to:
 - Continuity
 - Targeting
 - Consultation Method
 - Timeliness
 - Evaluation and review



4. GOOD PRACTICE EXAMPLES – INSTITUTIONAL AND FINANCIAL ISSUES

Intermodal Freight Policy

- Intermodal policy ensures the entire freight distribution network is used as efficiently and effectively as possible
- Key issues:
 - Developing a coherent network of modes and interconnections
 - Improve accessibility by various modes
 - Improving the interoperability
 - Developing and increasing the use of Information and Communication Technologies (ICT)



4. GOOD PRACTICE EXAMPLES – INSTITUTIONAL AND FINANCIAL ISSUES

Examples – European Union Countries

Measures to support the development of intermodal transport



- Co-financing of Infrastructure
- Identifying principles for infrastructure charging
- Introducing reform policies to revitalize the railway industry
- Setting out policies for the harmonization of technical standards
- Co-financing R&D



4. GOOD PRACTICE EXAMPLES – INSTITUTIONAL AND FINANCIAL ISSUES

Intermodal Financing and Funding

- The economic health of any country is directly tied to its national transportation infrastructure system.
- Most industrialized countries have general policy instruments to support and develop intermodal transportation. These include:
 - Legislation/Regulations as framework for allocation of project funding
 - Governmental subsidies to stimulate the development of terminals and transfer points
 - Research and development programs to enhance knowledge

Examples:

- United States - Funding and Financing Programs
- Canada - Federal Funding Programs
- France – various funding measures
- Marco Polo I & II programme by EU



4. GOOD PRACTICE EXAMPLES – HEALTH, SAFETY AND LABOR RULES AND REGULATIONS

Health, Safety and Labor Rules and Regulations

- In most countries health and safety regulations are set by the government bodies in accordance with their respective Health and Safety Acts/Regulations.
- In many jurisdictions (e.g., UK, Canada) containers must be in good state of repair and efficient working order.
- Labour rules also vary from one country to another, often times even from one region to another within the same country.



5. CONCLUSIONS AND RECOMMENDATIONS

Selected Conclusions

- Many good practices available which address the challenges at freight terminals
- Local framework conditions important for transferability
- Main benefits: increasing efficiency, improved accessibility, increasing quality, mitigation of environmental impact and land use conflicts
- The results support authorities (and private actors) to provide efficient and high quality terminals



5. CONCLUSIONS AND RECOMMENDATIONS

Selected Recommendations regarding Terminal Infrastructure and Design

- An **integrated planning and design process** is needed
- Limit the usually high investment costs by using a **modular terminal design**
- Provide a **high standard road connection**
- Appropriate design of **railway access to the transshipment area**
- **Technical standards for planning and design** of terminals should be developed at international level
- **Coordination of terminal infrastructure planning and extension** needed on freight corridors
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5. CONCLUSIONS AND RECOMMENDATIONS

Selected Recommendations regarding Terminal Operation and Management

- Use **IT-based terminal capacity management systems and Automation**
- **Extend terminal operation times to weekends and nights** to make better use of existing infrastructure
- **Create economical incentives to avoid traffic peak hours** on access roads
- **Implement benchmarking and quality certification for terminal processes** to increase efficiency and quality of terminal operations.
- Implement **bonus/malus schemes for storage space** to make better use of storage capacity
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5. CONCLUSIONS AND RECOMMENDATIONS

Selected Recommendations regarding Land Use, Environment and Community Involvement

- Promote integrated land use and transport planning and encourage greater proportionate use of rail
- Support “lean” and “compact” terminals
- Support integration of terminals in freight villages
- Secure land at strategic locations for intermodal terminals
- Undertake consultation process with stakeholders
- Undertake appropriate environmental assessment studies
- Develop best management practices, protocols, specific measures, etc. for handling dangerous goods and hazardous incidents including pollution prevention plans
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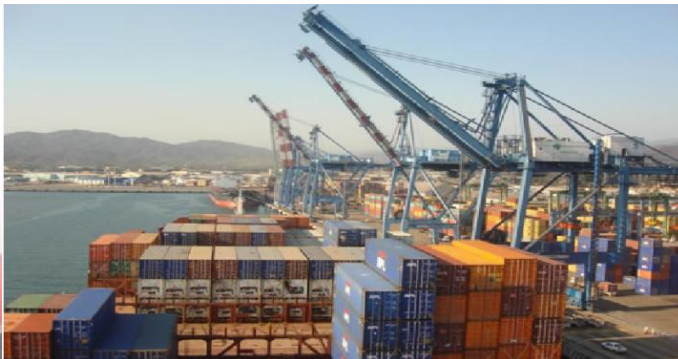
5. CONCLUSIONS AND RECOMMENDATIONS

Selected Recommendations regarding Institutional and financial issues

- Develop an intermodal terminal transport network strategy / policy
- Develop/enhance international agreements between countries on a freight corridor
- Develop suitable co-funding schemes

Create steady, predictable, and continuous government funding/financing programs

- Encourage the use of P3's in funding intermodal terminals where market conditions are right
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