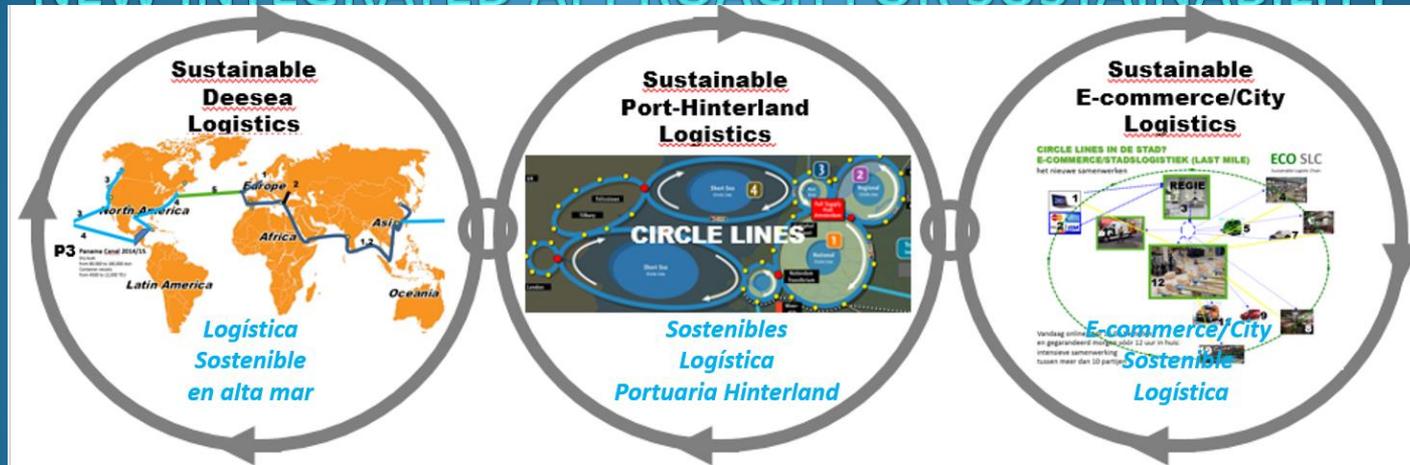


PORTS, TRANSPORT AND LOGISTICS: NEW INTEGRATED APPROACH FOR SUSTAINABILITY



HERMAN JOURNÉE

CHAIRMAN ECOSLC FOUNDATION

FORMER DIRECTOR STRATEGIC DEVELOPMENT, PORT OF AMSTERDAM

CONTENT

- 1. The World changes: new and sustainable ports and new logistics needed**
- 2. Proven practical Ports and Logistics solutions available**
- 3. Ecoports, a first step in Port Environmental Management and Certification**

Conclusions

CONTENT

- 1. The World changes: new and sustainable ports and new logistics needed**
 - 1. GROWTH**
- 2. Proven practical Ports and Logistics solutions available**
- 3. Ecoports, a first step in Port Environmental Management and Certification**

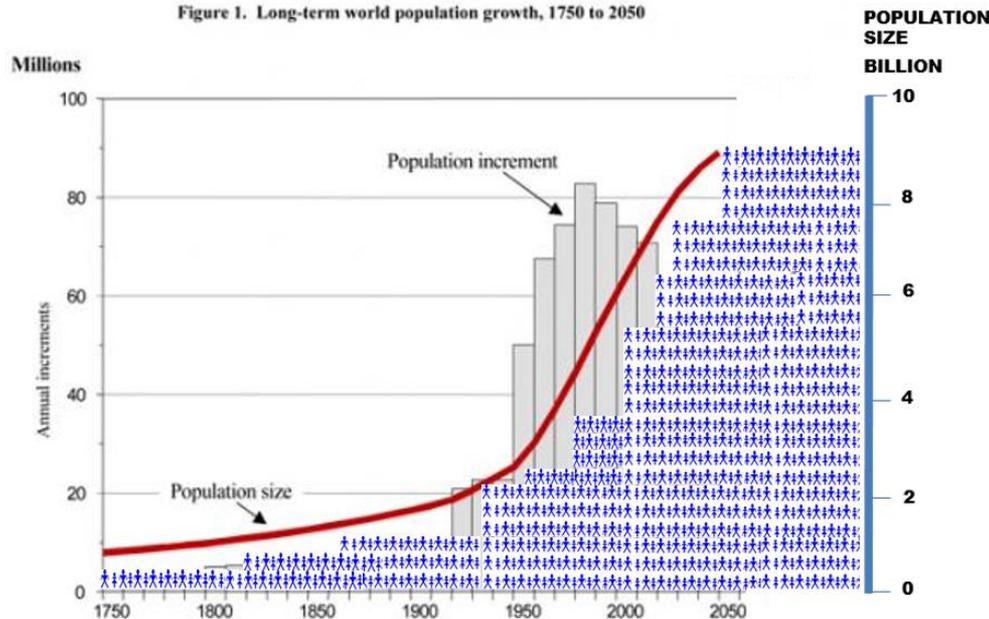
Conclusions

POPULATION: SUBSTANTIAL GROWTH

United Nations



Figure 1. Long-term world population growth, 1750 to 2050

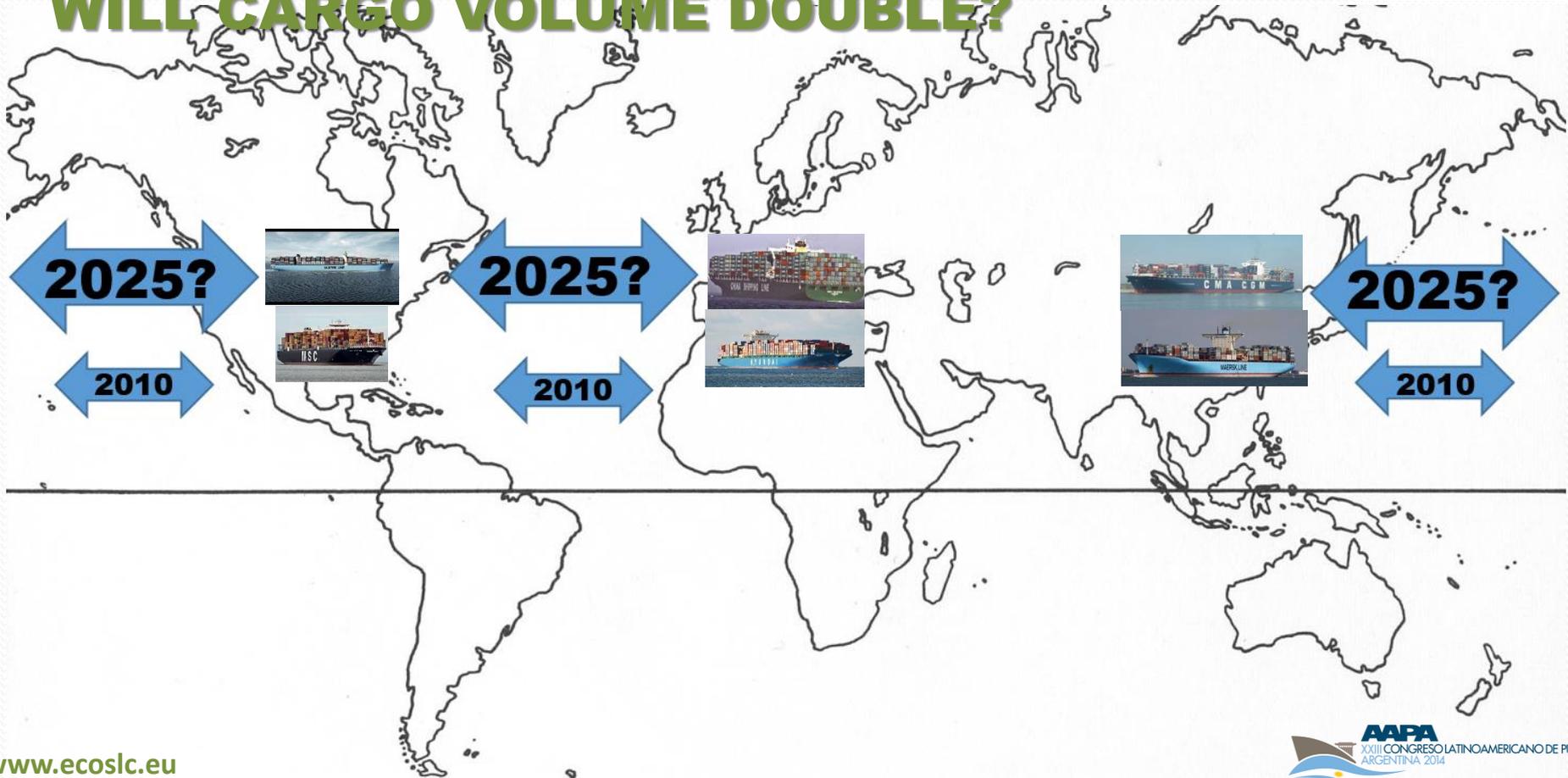


Source: United Nations Population Division.

CONSUMPTION INCREASES STRONGLY



WILL CARGO VOLUME DOUBLE?

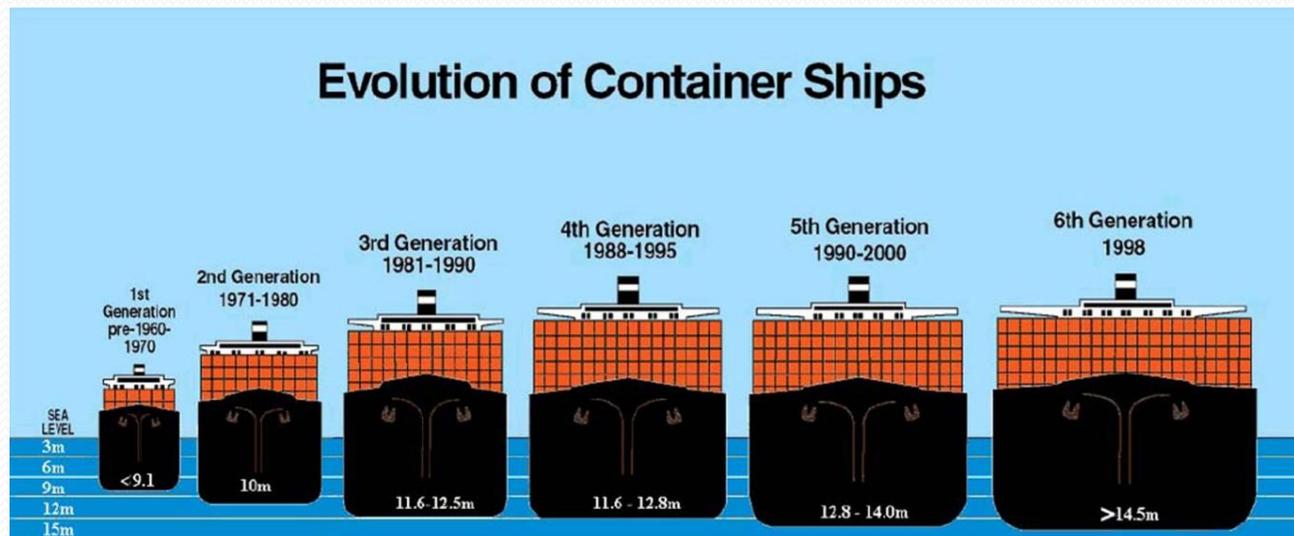


CONTENT

- 1. The World changes: new and sustainable ports and new logistics needed**
 - 1. GROWTH**
 - 2. SCALE**
- 2. Proven practical Ports and Logistics solutions available**
- 3. Ecoports, a first step in Port Environmental Management and Certification**

Conclusions

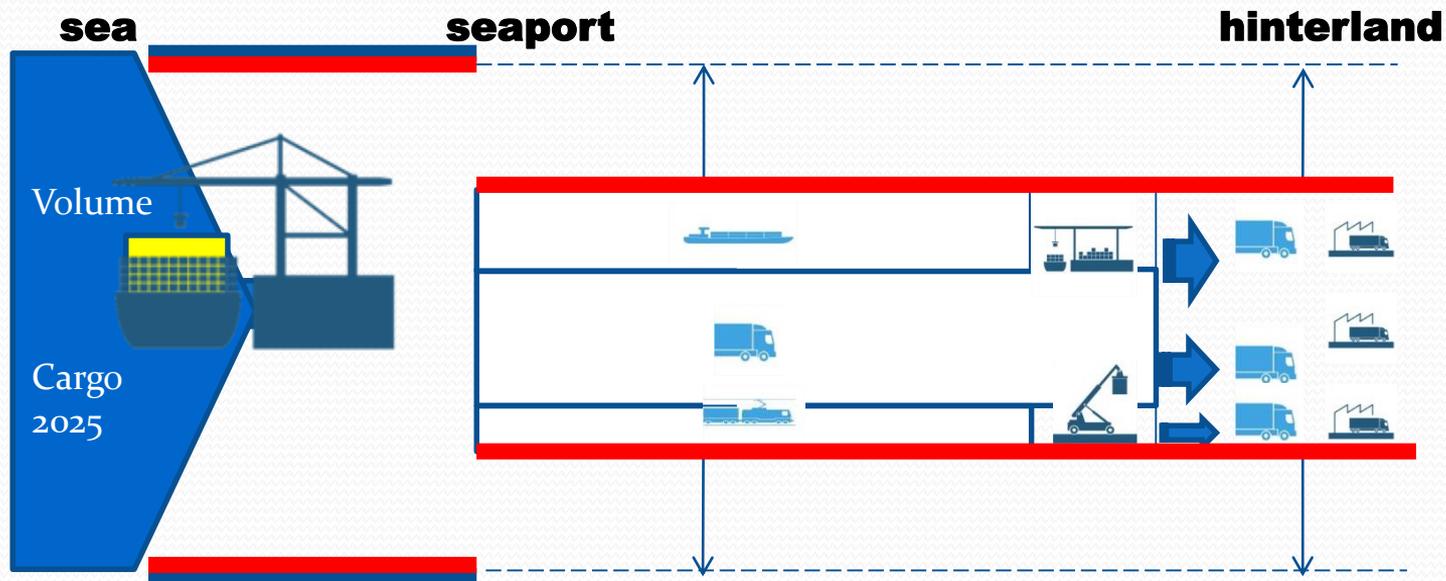
INCREASE OF SCALE ON THE DEEP SEA...



....AND IN THE PORTS

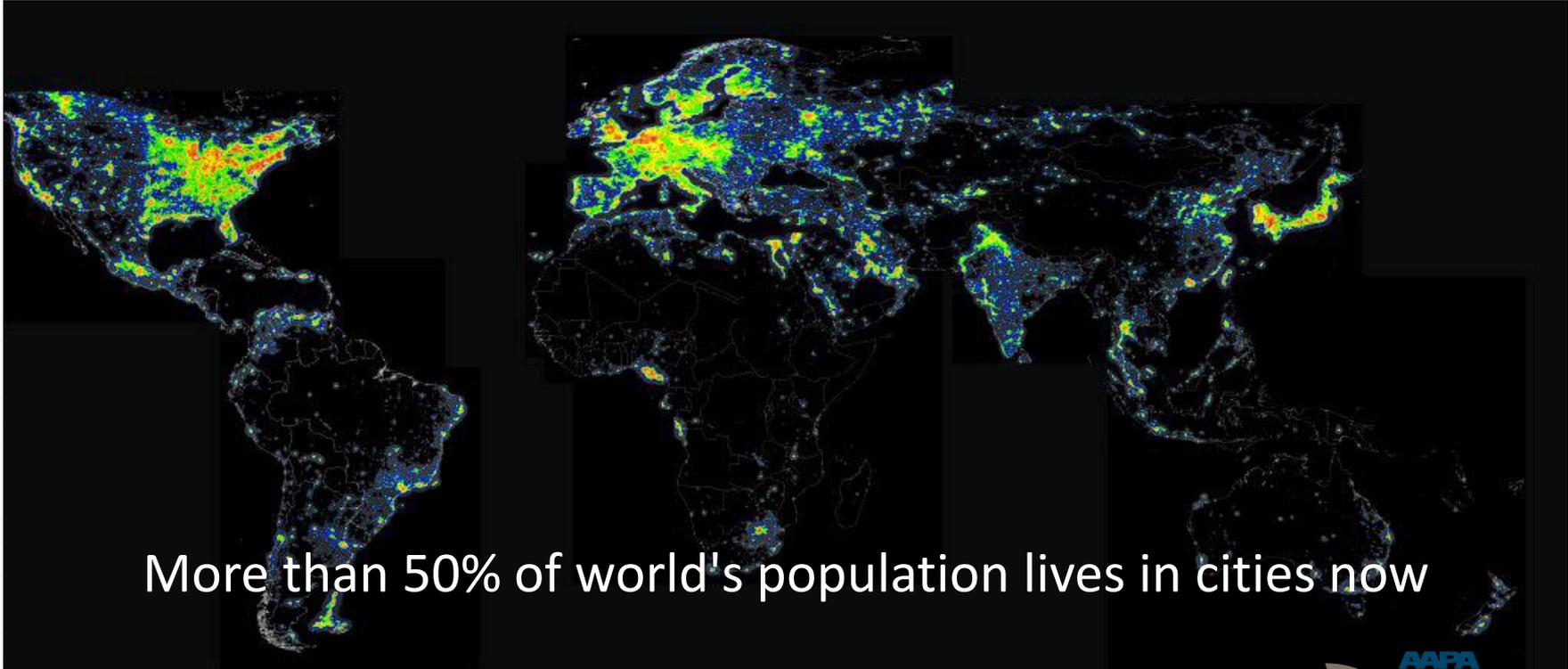


THE PORT HINTERLAND SYSTEM: A SCALE PROBLEM?



Expected: Cargo Transport in 10 – 20 years double today's size

POPULATION LIVING IN CITIES IS GROWING: CITY LOGISTICS: A NEW CHALLENGE



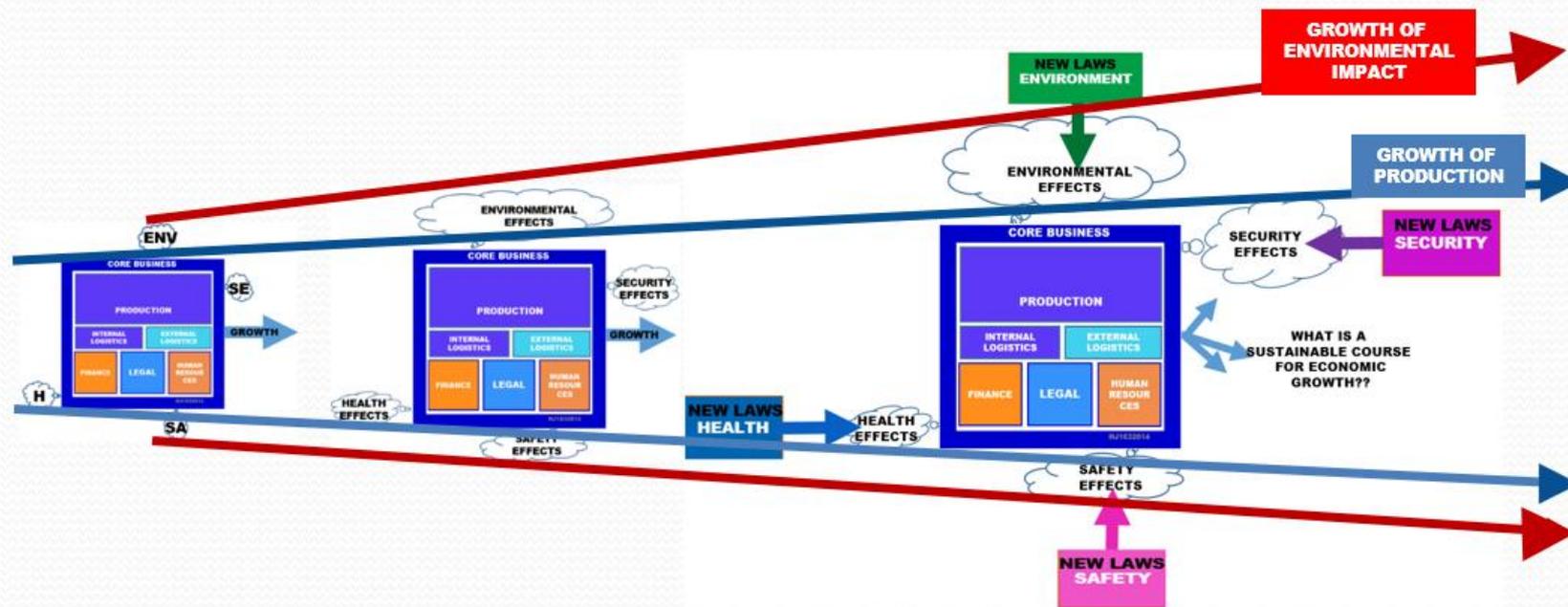
More than 50% of world's population lives in cities now

CONTENT

1. The World changes: new and sustainable ports and new logistics needed
2. **Proven practical Ports and Logistics solutions available**
 1. ENVIRONMENTAL EFFECTS
3. Ecoports, a first step in Port Environmental Management and Certification

Conclusions

MORE GROWTH, MORE ENVIRONMENTAL IMPACT



GROWTH OF ENVIRONMENTAL IMPACT

GROWTH OF PRODUCTION

NEW LAWS SECURITY

NEW LAWS HEALTH

NEW LAWS SAFETY

WHAT IS A SUSTAINABLE COURSE FOR ECONOMIC GROWTH??

1950

1960

1970

1980

1990

2000

2010

SEAPORT IS NOT LONGER SOLO BUT PART OF A LOGISTIC CHAIN



IS A LOGISTIC CHAIN SUSTAINABLE?



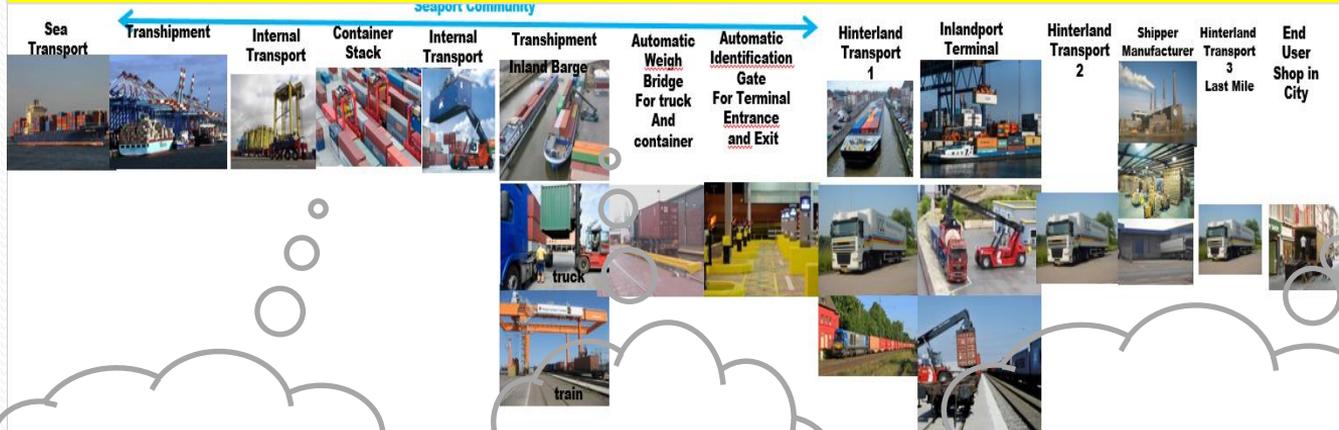
THE PARTNERS IN CARGO TRANSPORT



IS A LOGISTIC CHAIN SUSTAINABLE?



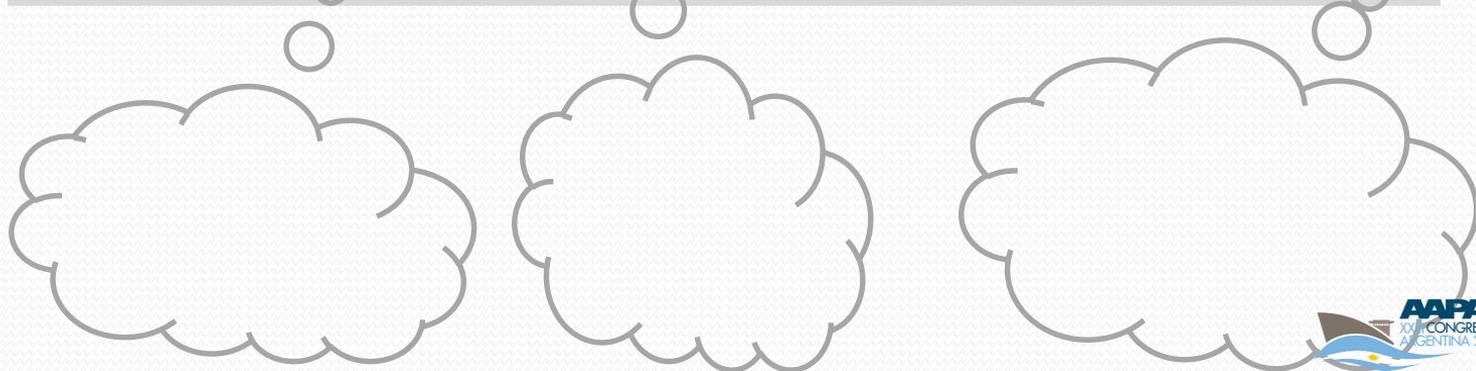
THE PARTNERS IN CARGO TRANSPORT



IS A LOGISTIC CHAIN SUSTAINABLE?



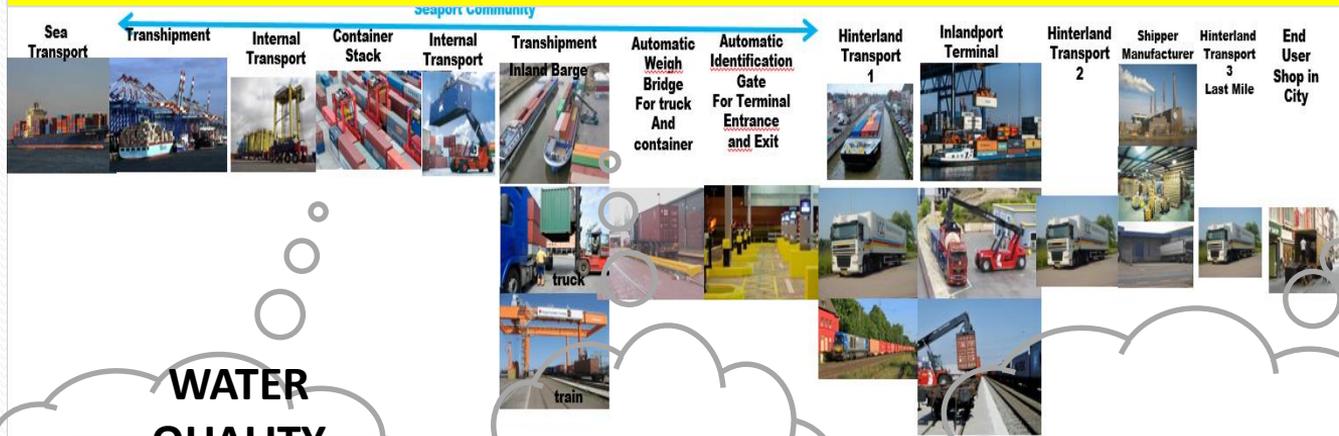
THE PARTNERS IN CARGO TRANSPORT



IS A LOGISTIC CHAIN SUSTAINABLE?



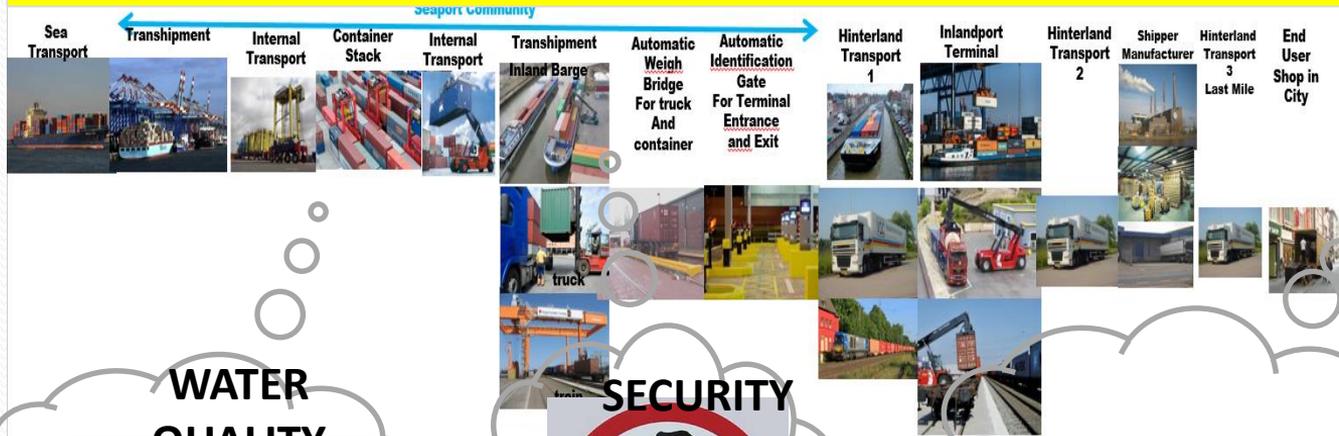
THE PARTNERS IN CARGO TRANSPORT



IS A LOGISTIC CHAIN SUSTAINABLE?



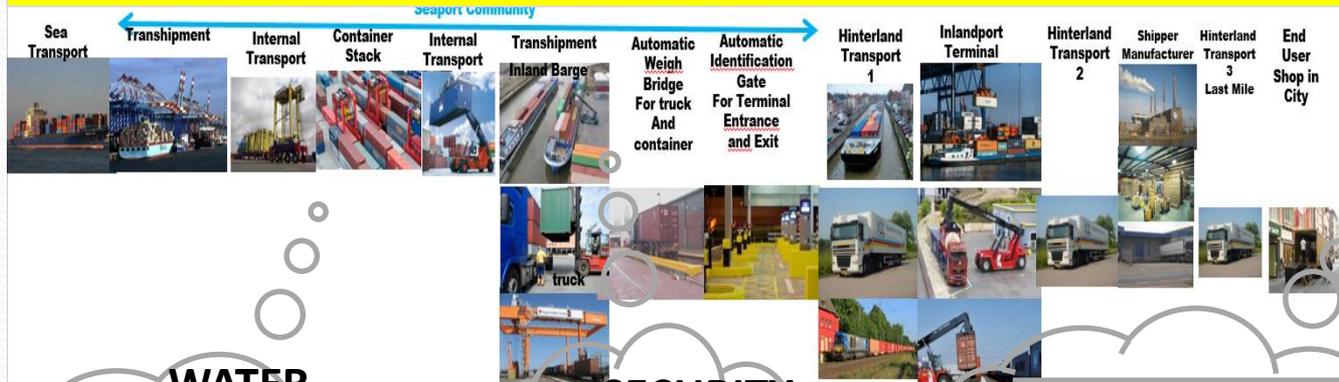
THE PARTNERS IN CARGO TRANSPORT



IS A LOGISTIC CHAIN SUSTAINABLE?



THE PARTNERS IN CARGO TRANSPORT



IS A LOGISTIC CHAIN SUSTAINABLE?

NO:

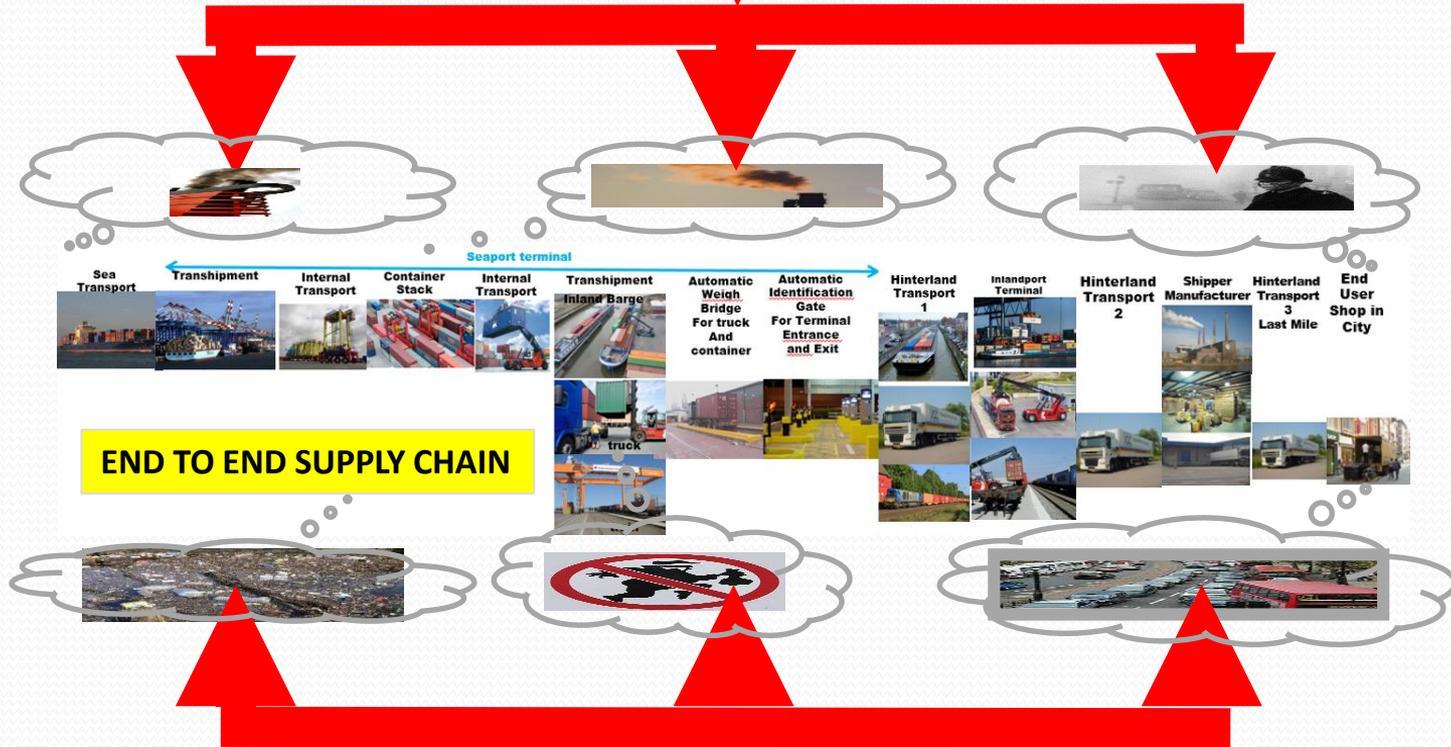
A SUSTAINABLE PORTS AND LOGISTICS STRATEGY IS NEEDED

CONTENT

1. The World changes: new and sustainable ports and new logistics needed
2. **Proven practical Ports and Logistics solutions available**
 1. ENVIRONMENTAL EFFECTS
 2. 3 “TOOLS” FOR REDUCTION
3. Ecoports, a first step in Port Environmental Management and Certification

Conclusions

TOOL 1 : POLICY AND LEGISLATION



END TO END SUPPLY CHAIN

POLICY AND LEGISLATION
REDUCE ENVIRONMENTAL IMPACT

TOOL 2: ENVIRONMENTAL MANAGEMENT SYSTEMS

ECOPORTS STARTS THE IMPROVEMENT PROCESS FOR PORTS IN 3 STEPS

ISO FOR EXTENDED APPROACH

examples:

- ISO 14001 environment
- ISO 22000 food safety management
- ISO 28000 logistics

Stakeholders

Increased sustainability thinking and acting



TOOL 3: STAKEHOLDER MANAGEMENT

Port Stakeholders Control the ports

PORT COMPANIES

- 1. Sea Shipping Line Carriers
- 2. Logistic Service Providers
- 3. Transshipment Terminals for
- 4. Cruise Terminals
- 5. Warehousing
- 6. Tug boat Company
- 7. ICT Port Community System



PERSONNEL

- 8. Employees
- 9. Labor Organisation

SOCIETY ASPECT GROUPS

- 10. Citizens
- 11. Tourists
- 12. NGO's
- 13. Environmentalists

GOVERNMENTAL ORGANISATIONS

- 14. Labour Inspection
- 15. Police
- 16. Fire Brigade
- 17. Food Inspection
- 18. Environment Inspection
- 19. Veterinary Inspection
- 20. City Planning
- 21. Port Authority
- 22. Coast Guard

PROVEN SOLUTIONS FOR SUSTAINABLE PORTS, TRANSPORT AND LOGISTICS ARE AVAILABLE

CONTENT

1. The World changes: new and sustainable ports and new logistics needed

2. Proven practical Ports and Logistics solutions available

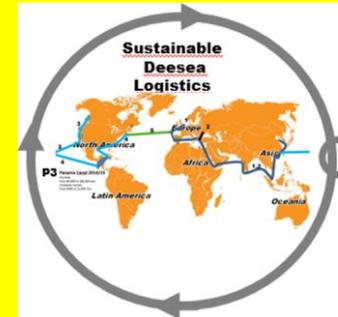
1. ENVIRONMENTAL EFFECTS

2. 3 "TOOLS" FOR REDUCTION

3. SUSTAINABLE PORTS AND LOGISTICS:SEA LOGISTICS

3. Ecoports, a first step in Port Environmental Management and Certification

Conclusions



THE MODEL: METRO LOGISTICS INTER-CONNECTED CIRCLE LINES

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Sustainable Logistic Chain



Hub and Spoke Logistics

On time

Secure

Reliable

Sustainable (electric)

1.000.000.000

Passengers per year

2010: Daily Maersk:

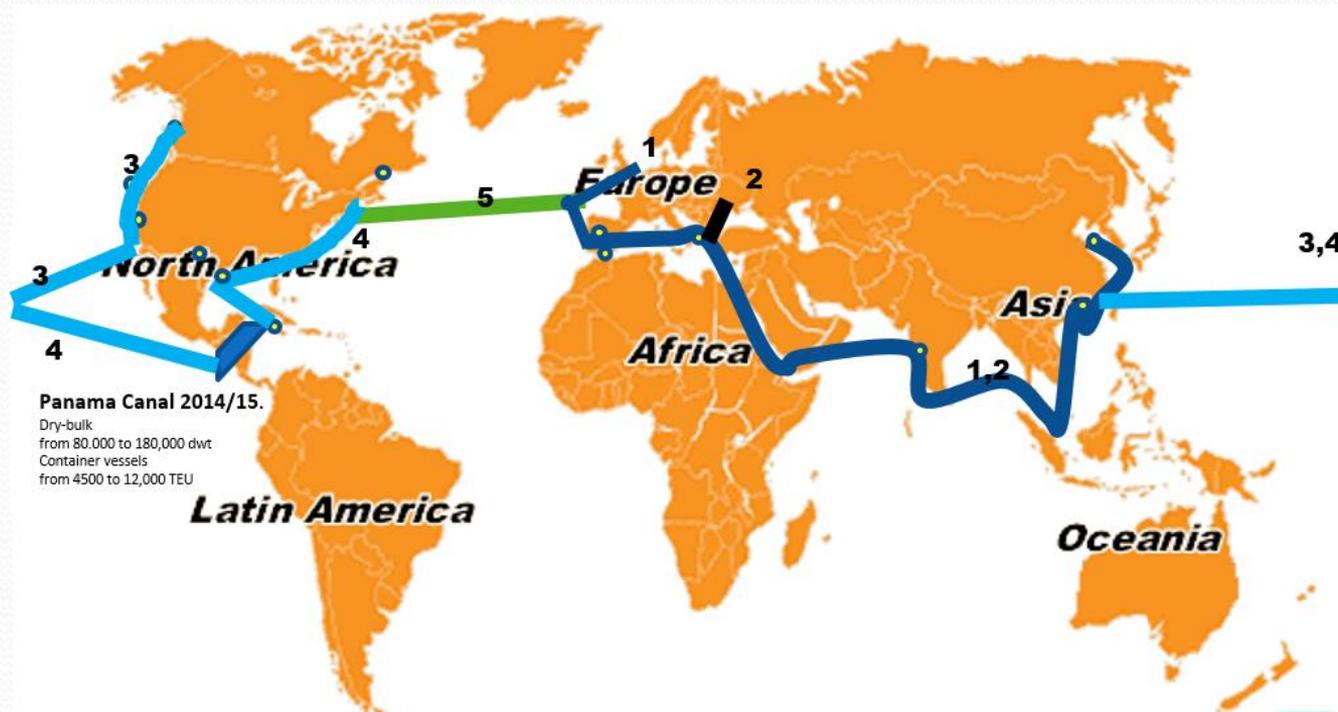
70 ships create a conveyor belt on deep seas: **CIRCLE LINES**

Approach on Deep Seas



Maersk, CMA-CGM, MSC

2013/14: P3: PLAN TO CONNECT THE WORLD'S PORTS WITH 5 CIRCLES



THE TRANSPORT TOOL: THE MEGA CONTAINERSHIP



FROM SEAPORT TO HINTERLAND: 70% of port hinterland transport by truck (Europe)

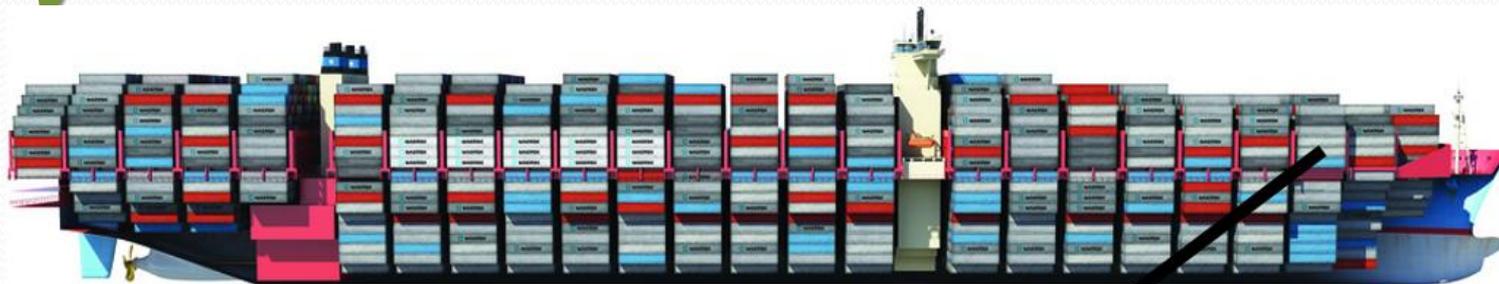


Truck needs 68.75 meter



Road Capacity

Many trucks needed



Mega container Ship: 18000 TEU
 = 18000 containers of 20 Feet = 9000 containers of 40 Feet



1 container of 40 Feet
 On one truck

1 ship = 9000 trucks with one 40Ft container
 9000 x one 40 Feet container = 9000 x 68.75 meter =

618 kilometer road in use

MORE road capacity needed?



1 mega ship: 618 km road in use

1 mega container ship: 618 km of trucks on the road



618 km

Atlantic Ocean

CONTENT

1. The World changes: new and sustainable ports and new logistics needed

2. Proven practical Ports and Logistics solutions available

1. ENVIRONMENTAL EFFECTS

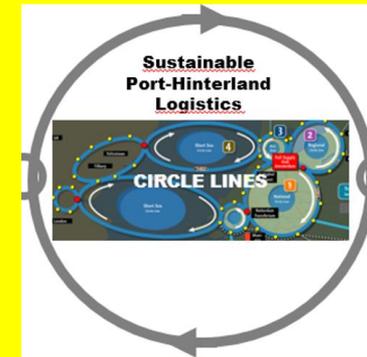
2. 3 "TOOLS" FOR REDUCTION

3. SUSTAINABLE PORTS AND LOGISTICS:

PORT-HINTERLAND LOGISTICS

3. Ecoports, a first step in Port Environmental Management and Certification

Conclusions



THE DAILY PORT HINTERLAND TRANSPORT “SYSTEM”: CAPACITY PROBLEM?

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Sustainable Logistic Chain



SUFFICIENT CAPACITY AVAILABLE !

just organize it

World Economic Forum study Europe 2009:

Almost 60% of trucks, trains, ships in use between ports and country are empty

WAITING?
So enough capacity available



EMPTY SAILING OR DRIVING?
So enough capacity available



EMPTY CONTAINER TRANSPORT?
So enough capacity available

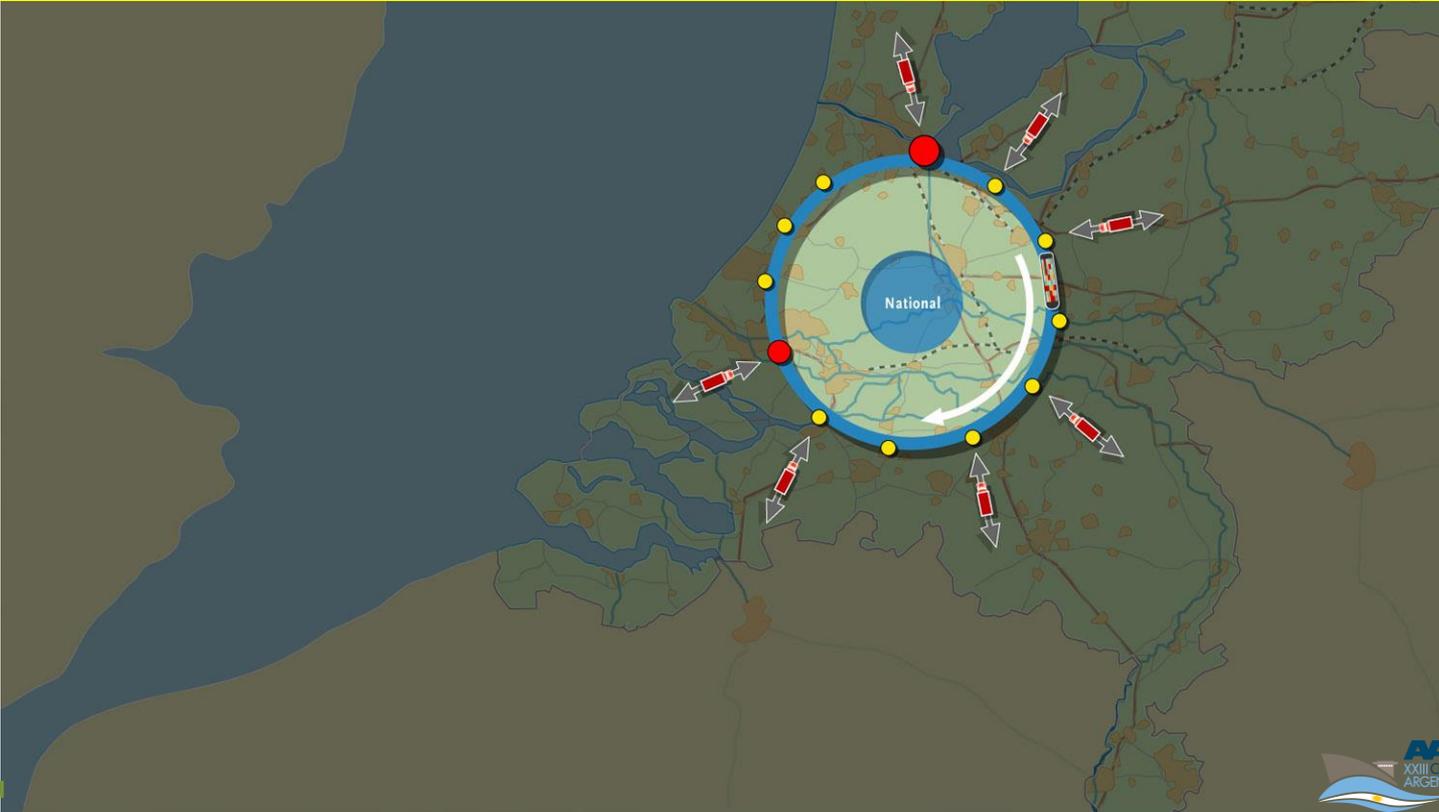


CIRCLE LINES:

SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

Management of empty capacity by new type of organization:

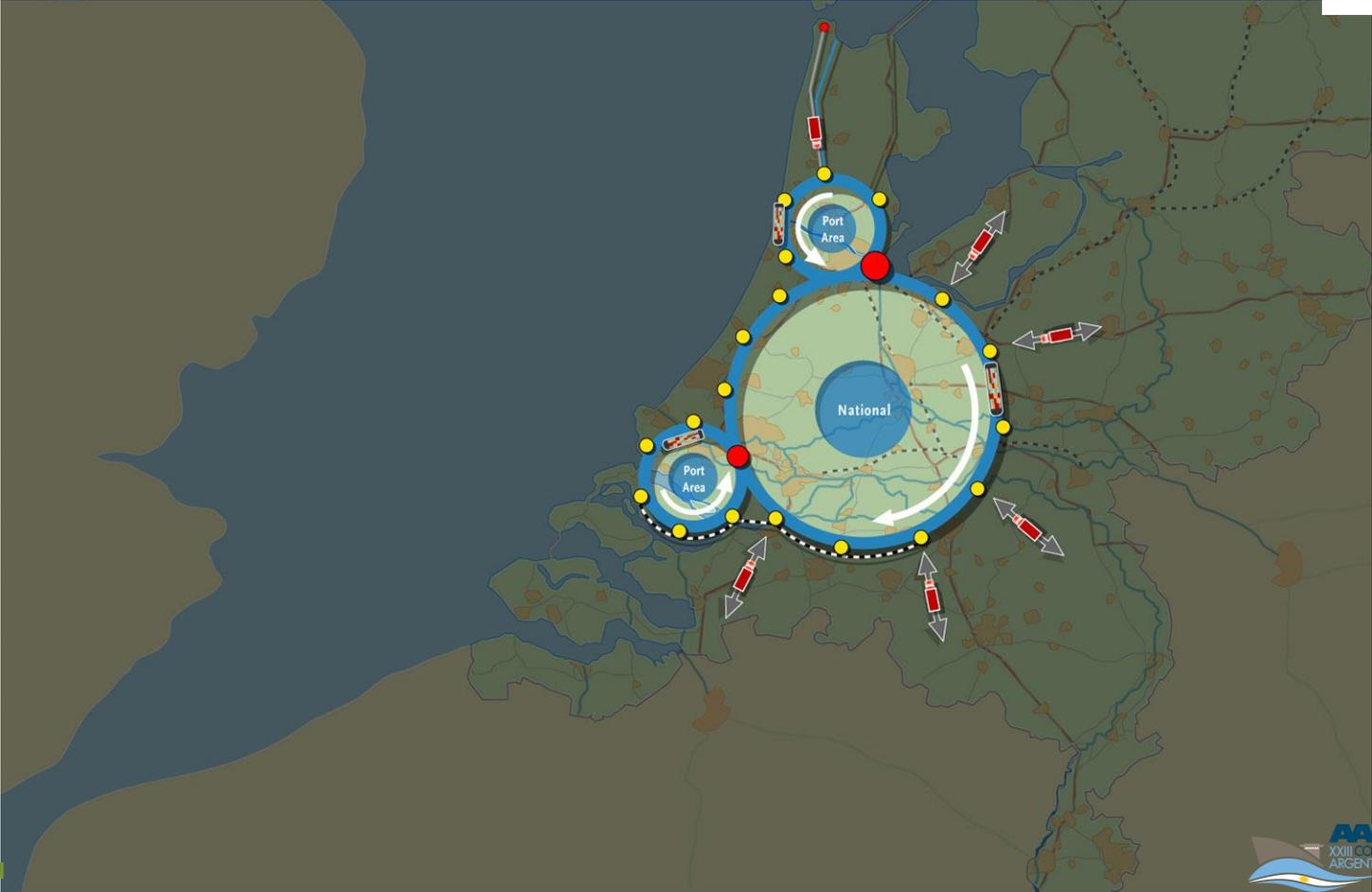
CIRCLE LINE: a cooperative of all chain partners



CIRCLE LINES: SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

ECO SLC

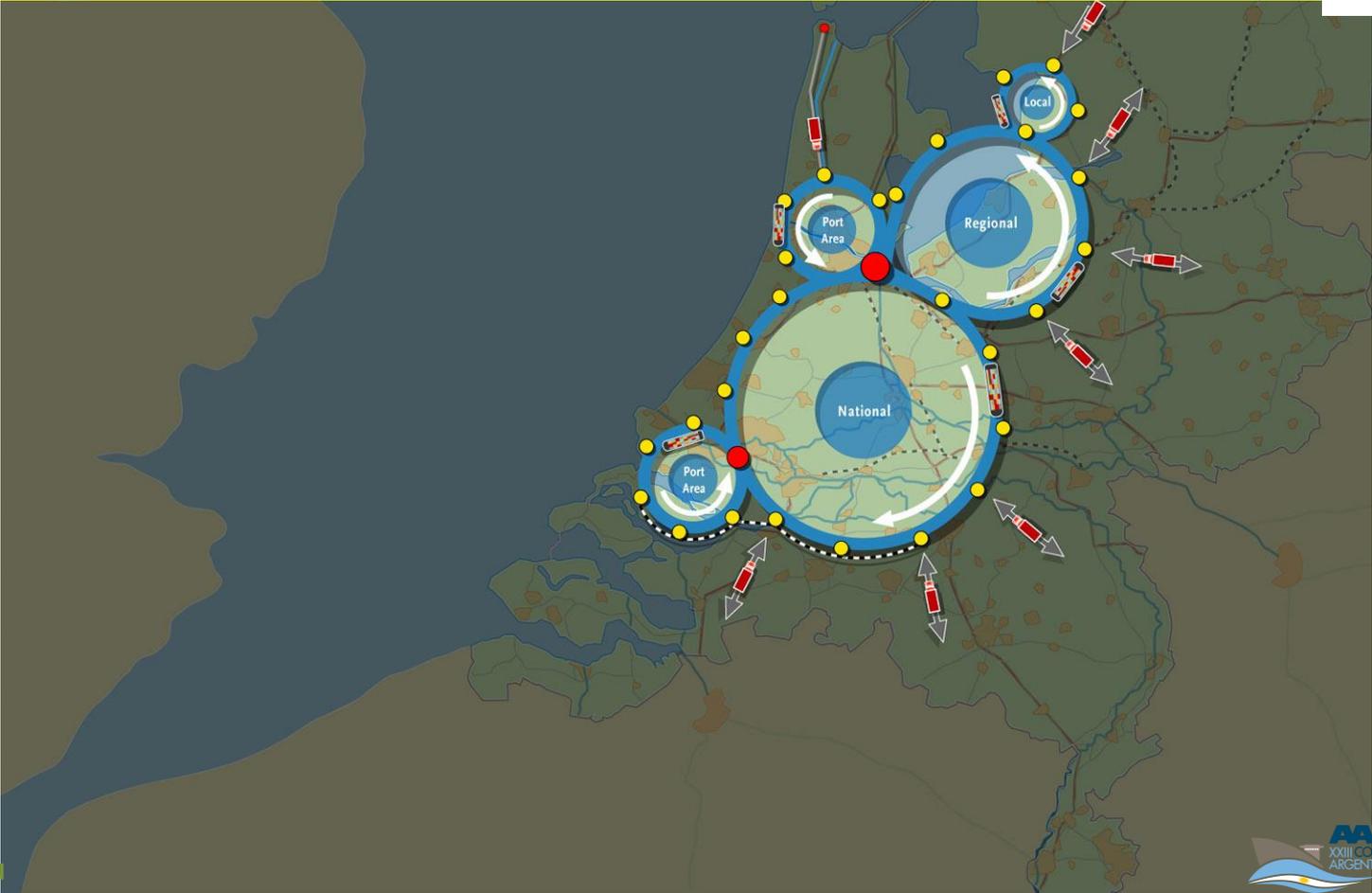
Sustainable Logistic Chain



CIRCLE LINES: SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

ECO SLC

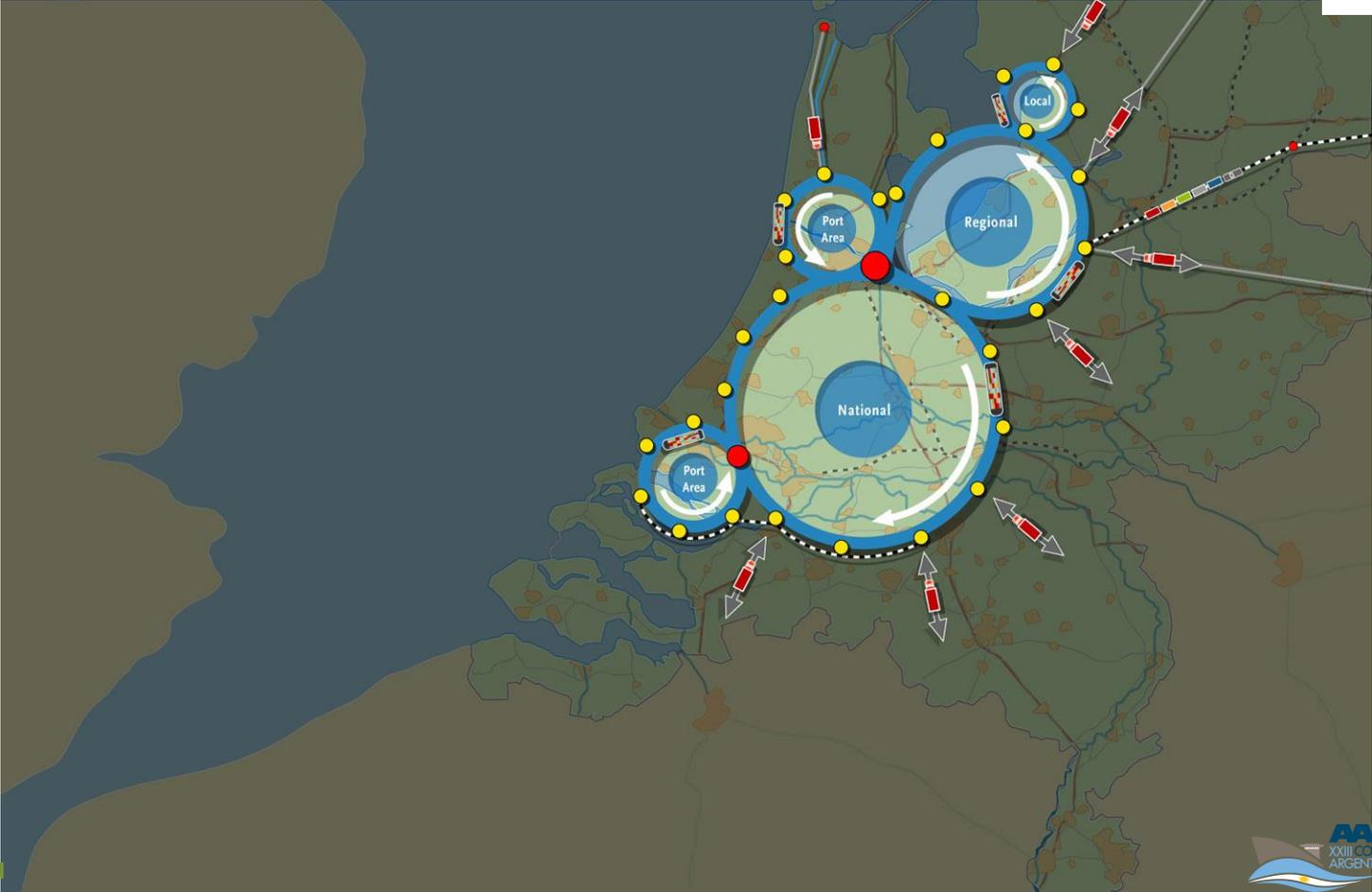
Sustainable Logistic Chain



CIRCLE LINES: SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

ECO SLC

Sustainable Logistic Chain



CIRCLE LINES: SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

ECO SLC

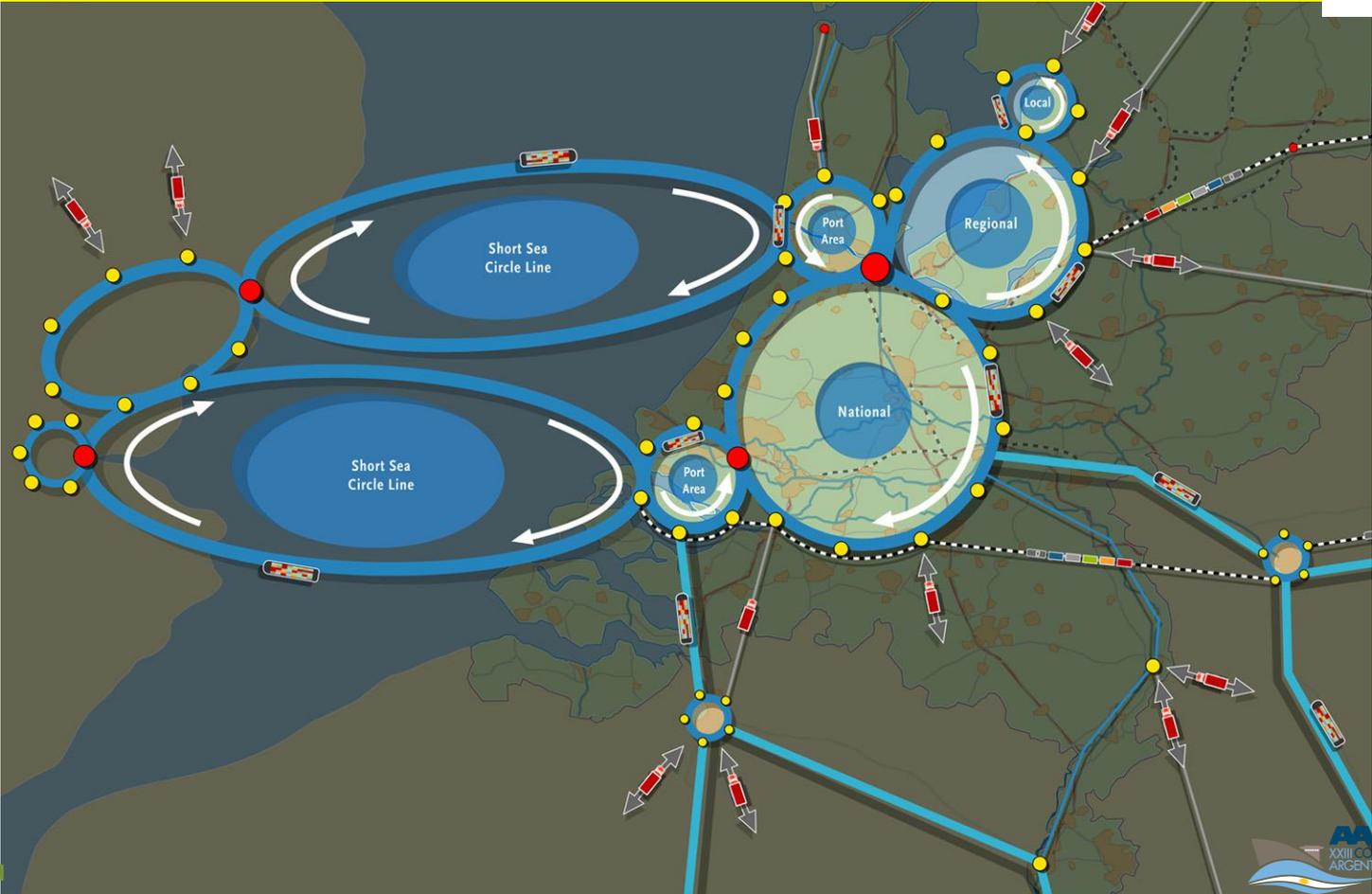
Sustainable Logistic Chain



CIRCLE LINES: SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

ECO SLC

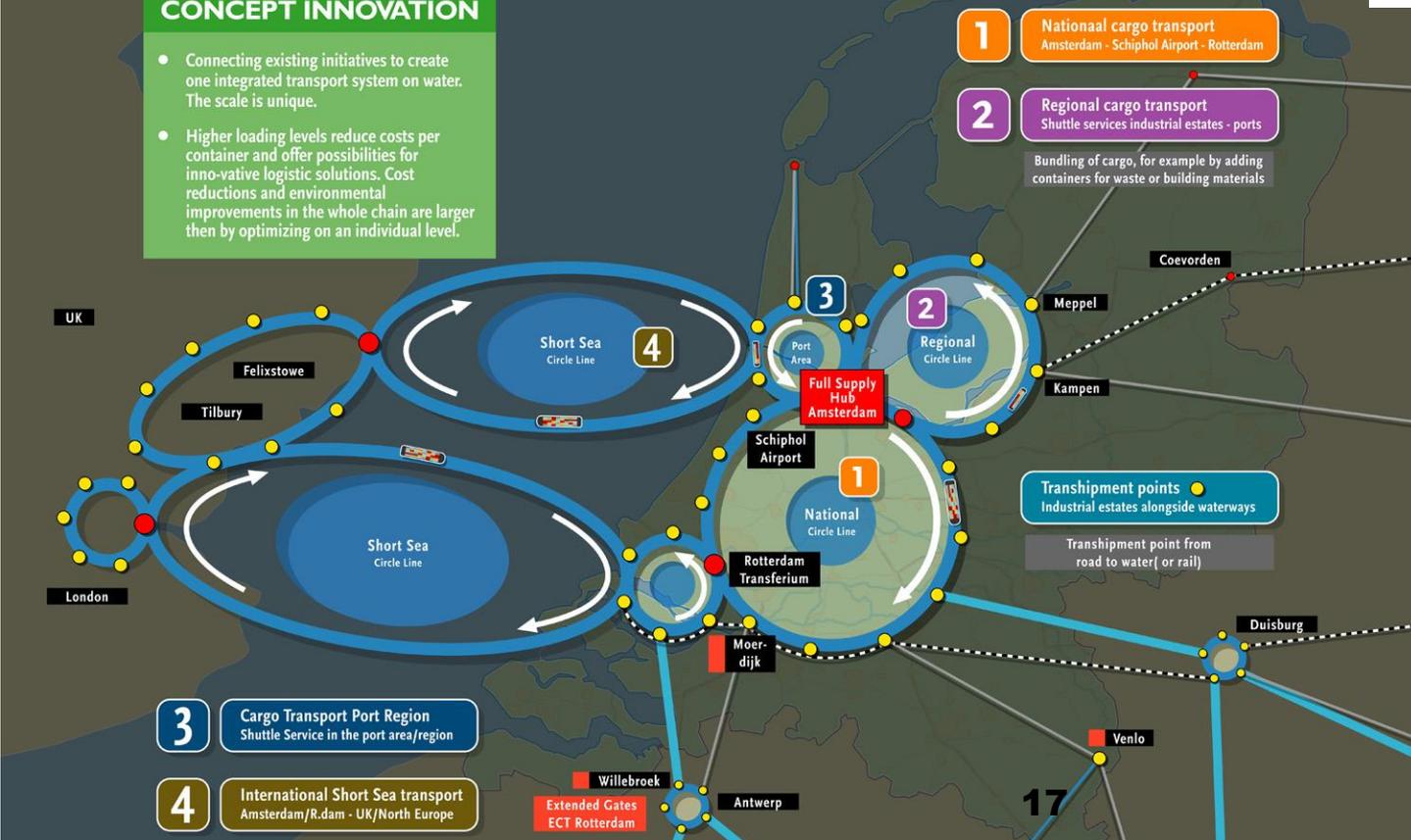
Sustainable Logistic Chain



CIRCLE LINES: SUSTAINABLE PORT HINTERLAND OPERATING SYSTEM

CONCEPT INNOVATION

- Connecting existing initiatives to create one integrated transport system on water. The scale is unique.
- Higher loading levels reduce costs per container and offer possibilities for innovative logistic solutions. Cost reductions and environmental improvements in the whole chain are larger than by optimizing on an individual level.



2008-2010 developed, 2010: tested, from October 2011 operational

CONTENT

1. The World changes: new and sustainable ports and new logistics needed

2. Proven practical Ports and Logistics solutions available

1. ENVIRONMENTAL EFFECTS

2. 3 "TOOLS" FOR REDUCTION

3. SUSTAINABLE PORTS AND LOGISTICS: CITY LOGISTICS

3. Ecoports, a first step in Port Environmental Management and Certification

Conclusions





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E-commerce revolutionizes chain logistics and City Logistics



MAPA
CONGRESO LATINOAMERICANO DE PUERTOS
ARGENTINA 2014

RESULT: A WORLDWIDE SUSTAINABLE PORTS AND LOGISTICS SYSTEM



| | Reliability Guaranteed on time delivery | Cost Reductions per container | Environmental Improvement per container/package |
|--|---|---|---|
| | X | 30% Compared to standard ship | X |
| | X | 5—50% Including new income from new added value activities | 5-80% |
| | X | X Including new income from new added value activities | X |



HOW TO MANAGE PORTS SUSTAINABLE

CONTENT

1. The World changes: new and sustainable ports and new logistics needed
2. Proven practical Ports and Logistics solutions available
3. **Ecoports, a first step in Port Environmental Management and Certification**

Conclusions

CONTENT

1. The world of Ports and Logistics changes
2. Environment and sustainability in practice in ports, transport and logistics
- 3. Ecoports, a first step in Port Environmental Management and Certification**
 - 1. SUPPORTED BY THE EUROPEAN SEAPORTS ASSOCIATION AND AAPA**

Conclusions



ENVIRONMENTAL MANAGEMENT SYSTEM FOR PORTS

AAPA-ESPO Collaborate through ECOSLC



EUROPEAN SEA PORTS ORGANISATION ASBL / VZW
ORGANISATION DES PORTS MARITIMES EUROPEENS ASBL / VZW

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IN SEAPORTS: 200 ENVIRONMENTAL LAWS AND REGULATIONS: MORE TO COME



Sulphur Content of Marine Fuels Pollution from Ships

Port Reception Facilities Water Framework Directive

Greenhouse Gas Emissions White paper - Road map to a Single European Transport Area



Regulation on Shipment of Waste Waste Framework Directive Marine Strategy Framework

Ambient Air Quality Maritime Spatial Planning

Supplementary Directive of Priority Substances

National Emissions Ceilings Environmental Noise Soil Framework Directive

Birds and Habitats Directive, Natura 2000

POLICY AND LEGISLATION REDUCE ENVIRONMENTAL IMPACT

Ports and Environment: top 10*

| | 1996 | 2004 | 2009 | 2013 |
|----|----------------------------|-------------------------|-----------------------------------|-----------------------------------|
| 1 | Port Development (water) | Garbage / Port waste | Noise | Air quality |
| 2 | Water quality | Dredging: operations | Air quality | Garbage/ Port waste |
| 3 | Dredging disposal | Dredging disposal | Garbage / Port waste | Energy Consumption |
| 4 | Dredging: operations | Dust | Dredging: operations | Noise |
| 5 | Dust | Noise | Dredging: disposal | Ship waste |
| 6 | Port Development (land) | Air quality | Relationship with local community | Relationship with local community |
| 7 | Contaminated land | Hazardous cargo | Energy consumption | Dredging: operations |
| 8 | Habitat loss / degradation | Bunkering | Dust | Dust |
| 9 | Traffic volume | Port Development (land) | Port Development (water) | Port development (land) |
| 10 | Industrial effluent | Ship discharge (bilge) | Port Development (land) | Water quality |

*surveys
ESPO-
ECOPORTS

CONTENT

1. The world of Ports and Logistics changes
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3. **Ecoports, a first step in Port Environmental Management and Certification**
 1. SUPPORTED BY THE EUROPEAN SEAPORTS ASSOCIATION AND AAPA
 2. **ECOPORTS CERTIFICATION IN 3 STEPS**

Conclusions

ECO PORTS: environmental management for ports

- Professional structure: developed by ports for ports
- The only port specific environmental management system and standard

Some specific Port issues:

- Environment issues from companies in the port area
- Port City Relations

- Certification possible after review by independent auditor Lloyd's Register
- International Recognition
- Ecoports starts the process of improvement and cost reduction

ECOPORTS: certification in 3 steps

Step 1: Introduction: ECOPORTS Tools and Methodologies Workshop

Step 2: Environmental Self Diagnosis Method: SDM

Formal Recognition:



Step 3: Port Environmental Review System: PERS

Formal Recognition:

After review by independent collaborating partner: Lloyd's Register



ECOPORTS certificate: international recognition



ECOPORTS Port Environmental Management System **ECO SLC**

Sustainable Logistic Chain

implementation starts improvement

5. Other ISO Systems
Health, Safety,
Security, Logistics

4. Environmental Performance
ISO 14001 Certification

3. Port Environmental Review System PERS
ECOPORTS PERS Certification

2. Port Environmental Self Diagnosis SDM
Risk/Gap Analysis / Benchmarking

1. Awareness, Understanding, Interest Creation

Introduction

Time

PREPARATION

IMPLEMENTATION

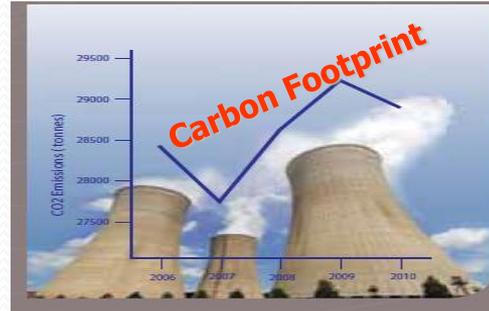
IMPROVEMENT

ECOPORTS: environmental Self Diagnosis Method: SDM



| Gap Analysis: | | PERS 60.71% | ISO 48.68% | Answers | SWOT | ANS(%) | YES(%) | NO(%) |
|---------------|--|----------------|---------------|---------|------|--------|--------|-------|
| A.1 | Does the Port have an Environmental Policy? | 60.71% | 48.68% | | S1 | 100,0% | 87,8% | 12,2% |
| A.2 | IF YES,Is the Policy signed by Chief Executive / Senior Management? | | | | S2 | 89,8% | 90,9% | 9,1% |
| A.3 | IF YES,Is the Policy communicated to all relevant stakeholders? | | | | S3 | 89,8% | 88,6% | 11,4% |
| A.4 | IF YES,Is the policy communicated to all employees? | | | | O1 | 89,8% | 84,1% | 15,9% |
| A.5 | IF YES,Is the policy publicly available on the Port's Website? | | | | O2 | | | |
| A.6 | Does the Policy include reference to:Major objectives? | 60.71% | 48.68% | | S4 | 89,8% | 90,9% | 9,1% |
| A.7 | Does the Policy include reference to:Publication of an Environmental Report? | | | | O3 | 87,8% | 65,1% | 34,9% |
| A.8 | Does the Policy include reference to:The identification and control of the port's Significant Environmental Aspects? | | | | S5 | | | |
| A.9 | Does the Policy include reference to:Continual improvement? | | | | S6 | 89,8% | 93,2% | 6,8% |
| A.10 | Does the Policy include reference to:Prevention of pollution? | | | | S7 | 73,5% | 86,1% | 13,9% |
| A.11 | Does the Policy include reference to:Training employees in environmental issues? | | | | O4 | 89,8% | 75,0% | 25,0% |

ESPO Environmental Monitoring Dashboard: Environmental Trends of the Port Sector



ECOPORTS: Port Environmental Review System: PERS

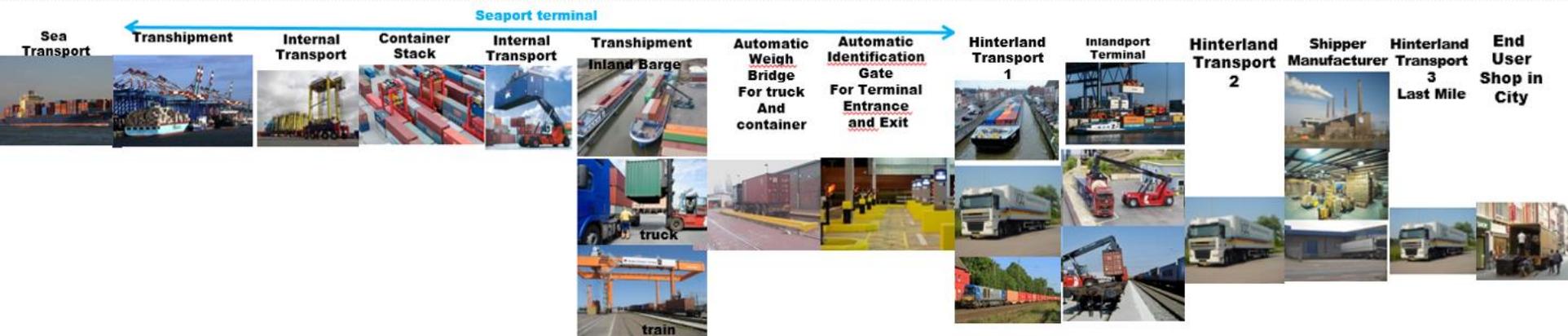
- **Port profile**
- **Environmental policy statement**
- **Registers of Environmental Aspects & Legislation**
- **Documented responsibilities**
- **Conformity review**
- **Environment report**
- **Examples of best practice**

PERS: Register of Environmental Aspects and Legislation

WHO IS RESPONSIBLE FOR WHAT LAW? on management level and operational level, in port authority and port companies

PERS: Register of Environmental Aspects and Legislation

WHO IS RESPONSIBLE FOR WHAT LAW? on management level and operational level, in port authority and port companies



PERS: Register of Environmental Aspects and Legislation

WHO IS RESPONSIBLE FOR WHAT LAW? on management level and operational level, in port authority and port companies



PERS: Register of Environmental Aspects and Legislation

WHO IS RESPONSIBLE FOR WHAT LAW? on management level and operational level, in port authority and port companies



Air Quality



Water Quality



Industrial Noise



Energy Use



Waste recycling



Renewable Energy



Air Quality

CONTENT

1. The world of Ports and Logistics changes
2. Environment and sustainability in practice in ports, transport and logistics
3. **Ecoports, a first step in Port Environmental Management and Certification**
 1. SUPPORTED BY THE EUROPEAN SEAPORTS ASSOCIATION AND AAPA
 2. ECOPORTS CERTIFICATION IN 3 STEPS
 3. RESULTS

Conclusions

ECOPORTS RESULTS OF BENCHMARKING



| Indicator | 1996 | 2004 | 2009 | 2012 | 2013 | % change 2004-2013 |
|-------------------------------------|------|------|------|------|------|--------------------|
| Environmental Policy? | 45 | 58 | 72 | 91 | 86 | +28 |
| Policy available to public? | - | 59 | 62 | 85 | 82 | +23 |
| Policy aimed at compliance+? | 32 | 49 | 58 | 73 | 68 | +19 |
| Publishes Environmental Report? | - | 31 | 43 | 62 | 64 | +33 |
| Designated Environmental personnel? | 55 | 67 | 69 | 95 | 94 | +27 |
| Recognized EMS? | - | 21 | 48 | 62 | 64 | +43 |
| Environmental monitoring programme? | 53 | 65 | 77 | 80 | 79 | +14 |
| Performance indicators identified? | - | 48 | 60 | 71 | 64 | +16 |

THE INTEGRATED QUALITY MANAGEMENT SYSTEM: EXAMPLE FROM PRACTICE EFFICIENCY IMPROVEMENT IN PORT INSPECTIONS BY AUTHORITIES

BEFORE

AFTER

ECO SLC

Sustainable Logistic Chain

THE INTEGRATED QUALITY MANAGEMENT SYSTEM: EXAMPLE FROM PRACTICE

EFFICIENCY IMPROVEMENT IN PORT INSPECTIONS BY AUTHORITIES

BEFORE

TRADITIONALLY:

21 SEPARATE INSPECTION AUTHORITIES
TO CONTROL PORT ACTIVITIES



SEAPORT



THE INTEGRATED QUALITY MANAGEMENT SYSTEM: EXAMPLE FROM PRACTICE

EFFICIENCY IMPROVEMENT IN PORT INSPECTIONS BY AUTHORITIES

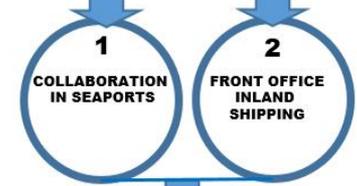
ECO SLC
Sustainable Logistic Chain

BEFORE
TRADITIONALLY:
21 SEPARATE INSPECTION AUTHORITIES
TO CONTROL PORT ACTIVITIES



SEAPORT

AFTER
RENEWED
SUPERVISION AND CONTROL
IN SEAPORTS NETHERLANDS: 2 INSPECTION ORGANISATIONS



SEAPORT



AAPA
XXIII CONGRESO LATINOAMERICANO DE PUERTOS
ARGENTINA 2014

ENVIRONMENTAL MANAGEMENT: INVESTMENT AND RESULTS*

| | INVESTMENT in ISO 14001 certification | POTENTIAL RESULTS (in dollars) |
|--|--|-----------------------------------|
| 1. Very small Organization | UP TO 40.000 | UP TO 13.000 |
|  2. Small Organization | 51.000 | 53.000 |
|  3. Medium Organization | 53.000 | 134.000 |
|  4. Large Organization | 89.000 | 534.000 |

ECOPOINTS certification starts the process for first results

*Estimates for Europe in EC study

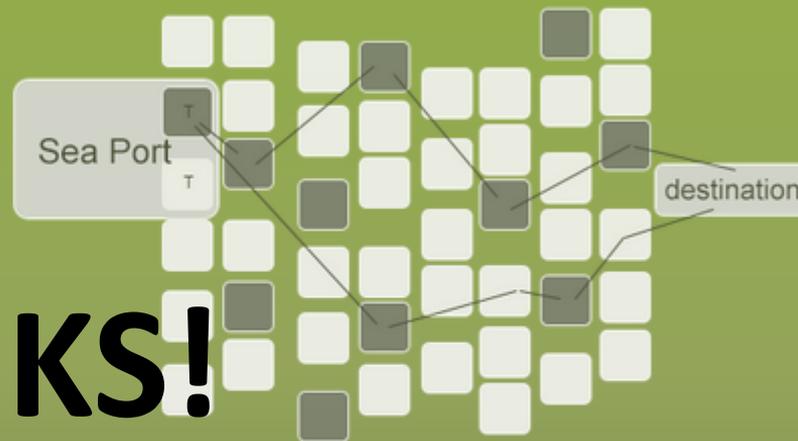
CONTENT

1. The World changes: new and sustainable ports and new logistics needed
2. Proven practical Ports and Logistics solutions available
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Conclusions

CONCLUSIONS

- Ports and logistics collaboration delivers participation in worldwide new and sustainable ports and logistics systems
- Environmental improvement can be combined with cost reductions: ECOPORTS certification starts the process.



THANKS!

EcoPorts Environmental Management Tools & Services

- » Self Diagnosis Method (SDM)
- » Port Environmental Review System (PERS)

ECOSLC Logistics Tools & Services

- » Sustainable Port Strategy within the chain
- » Sustainable Logistic Chain SDM
- » Introduction and training workshops