Smart Freight Leadership to drive the transformation of the logistics sector

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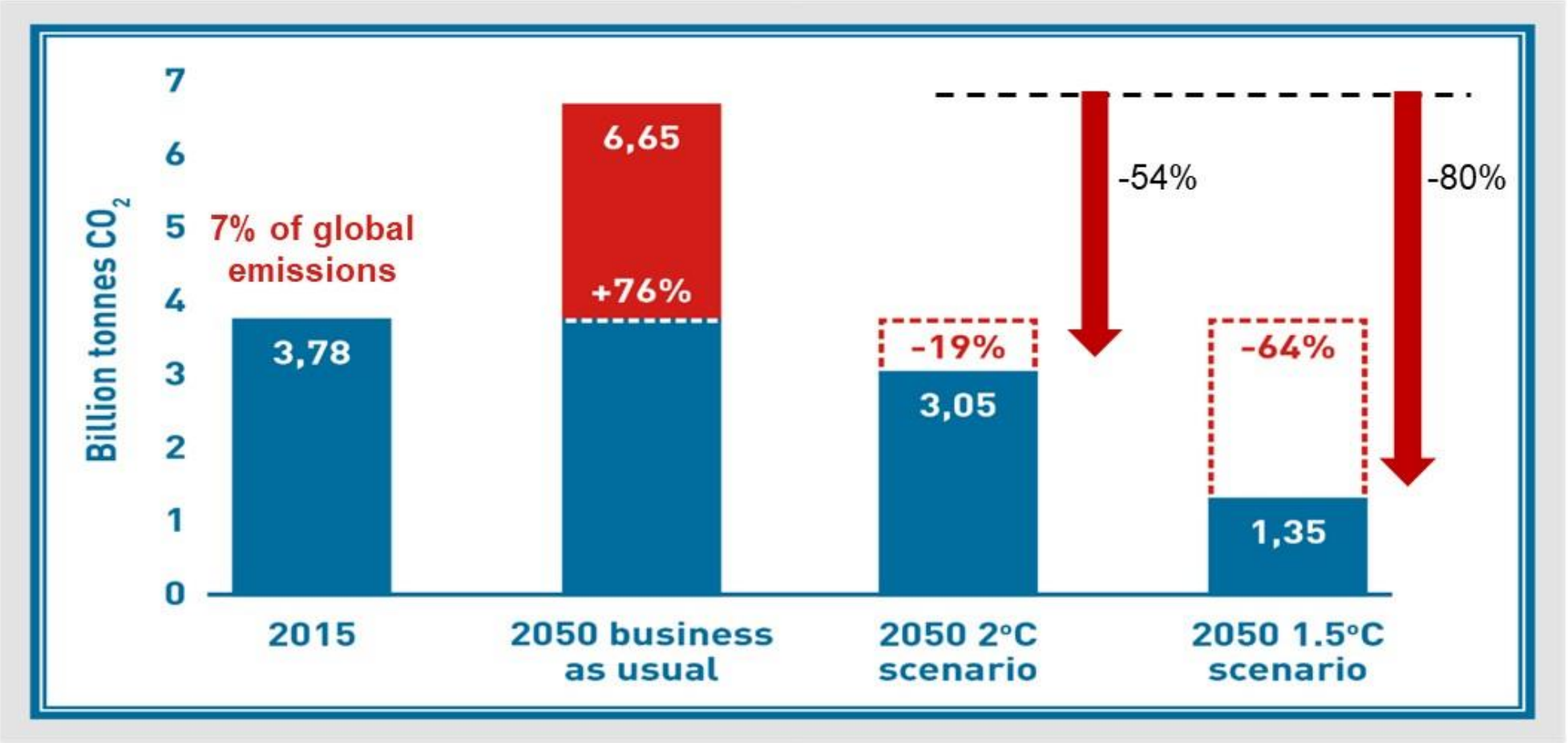
Chair Sustainability Working Group, ALICE-ETP

Coordinator EC-project LEARN

IPIC 2018: 5th International Physical Internet Conference

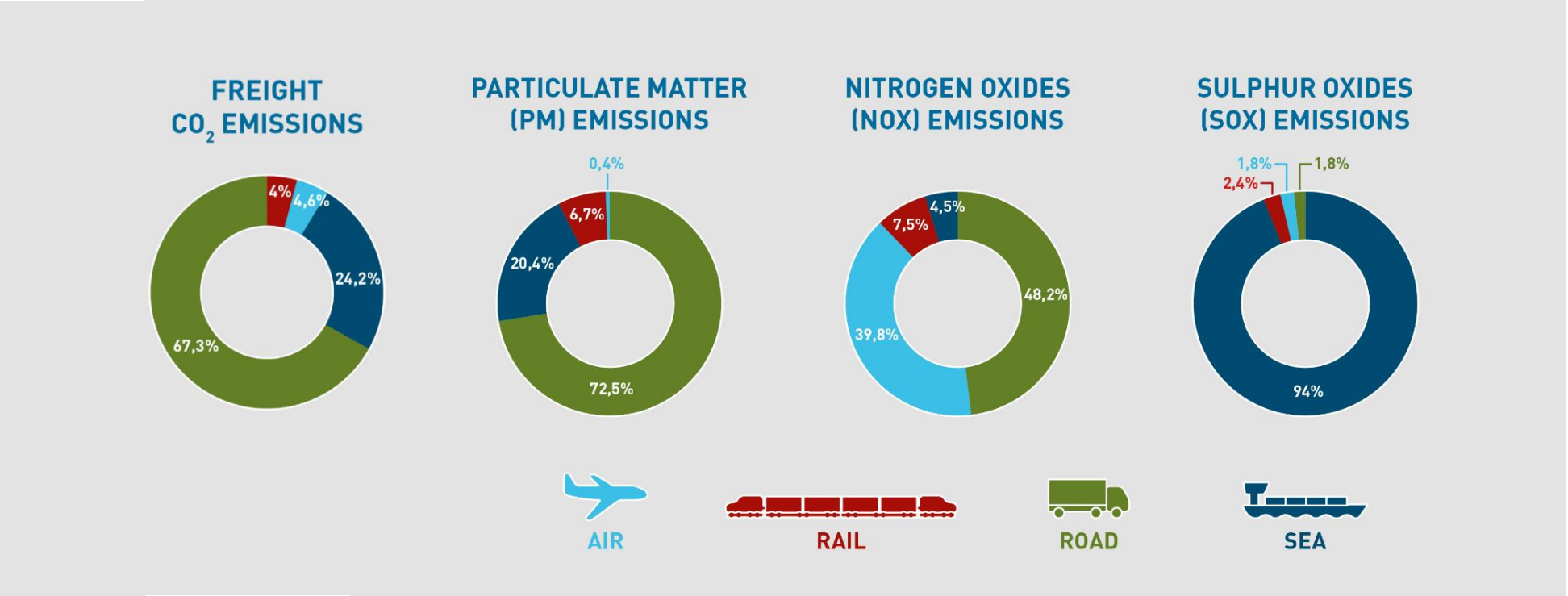
Groningen, Netherlands, 21 June 2018

Logistics emissions on the rise but must come down



Smart Freight Centre (2017). Smart Freight Leadership, based on data from ITF Transport Outlook 2017 and SLoCaT 2016

Freight is a significant source of air pollution

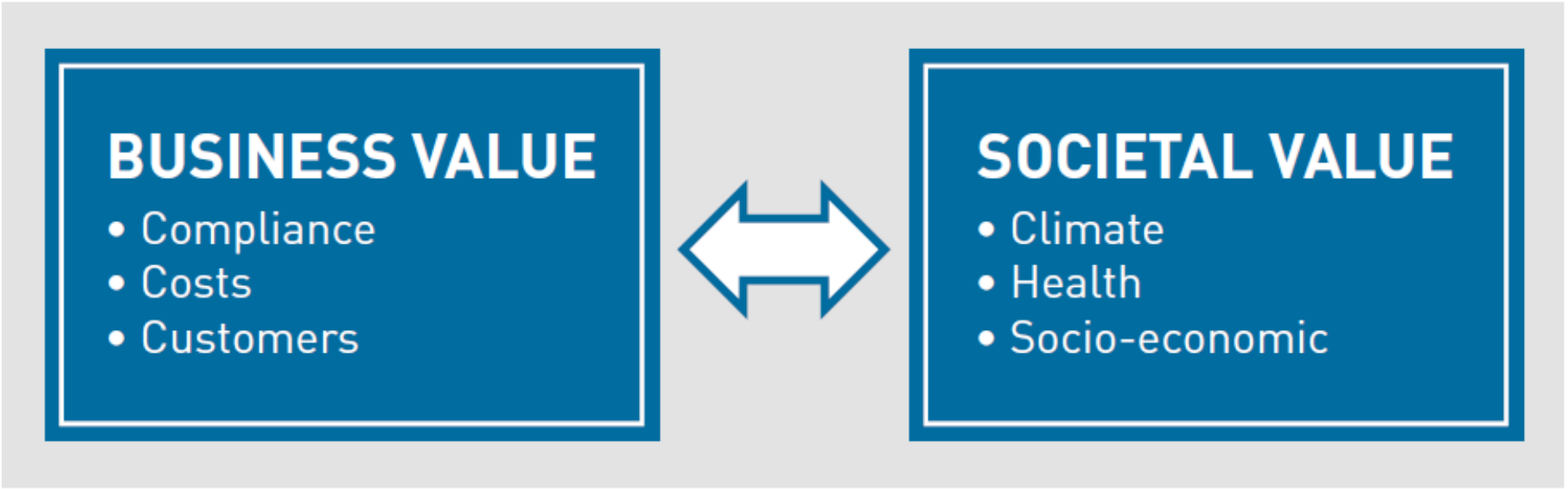


Smart Freight Centre, *Smart Freight Leadership (2017)*

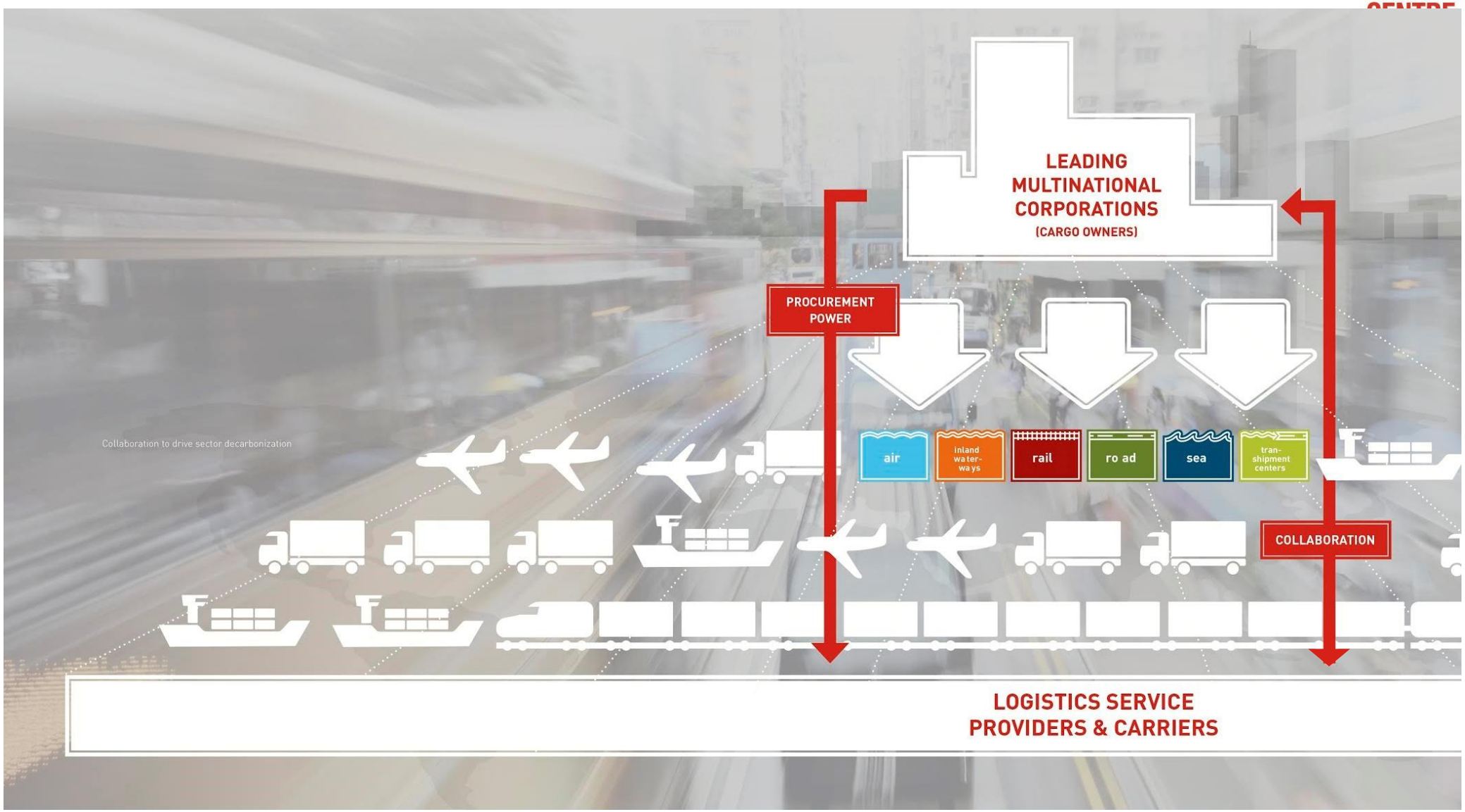




Logistics higher on corporate and government agenda



The key to emission reduction lies with business



Smart Freight Leadership

1. Calculate and report

Global Logistics Emissions Council: industry-led and backed by experts

SMART FREIGHT CENTRE

GLEC GLOBAL LOGISTICS EMISSIONS COUNCIL

LED BY SMART FREIGHT CENTRE

GLEC Members

Companies

DAMCO stay ahead · DB SCHENKER · DHL · efl · GES · GEODIS · Hapag-Lloyd · hp · Hewlett Packard Enterprise · KUEHNE + NAGEL · MAERSK · RCS LOGISTICS · SNCF · STEF · VOLKSWAGEN KONZERNLOGISTIK

Programs

BSR · Clean Cargo · GREEN FREIGHT ASIA · LEAN & GREEN · NTM

Associations

CLECAT · ebu · ESC · FEPORT · FTA · IATA · IRU · UPU UNIVERSAL POSTAL UNION

GLEC Consultees

Companies

BNSF RAILWAY · ERG · H&M · KOTAHI · Dearman · HEINEKEN · ups · INTERPORTO BOLOGNA · Unilever

Programs

ADEME · Arola · EcoTransIT · ITENE · ivl · RIGHTSHIP · TK'BLUE · Via Green

Associations

ACEEE · cefic · Centro de Logística & Sustentabilidad Argentina · Clean Transport Action · ECTA · IAPH · ICHCA INTERNATIONAL · OTIF

Organizations

energy saving trust · Fraunhofer IML · icct · STC-NESTRA · WORLD RESOURCES INSTITUTE · SCOPE · ADVANTIKA

GLEC Experts

Experts

Buddy Polovick (US SmartWay), Colin Smith (EST), Jens Froese (Jacobs University), Kerstin Dobers (Fraunhofer IML), Marc Cottignies (ADEME)

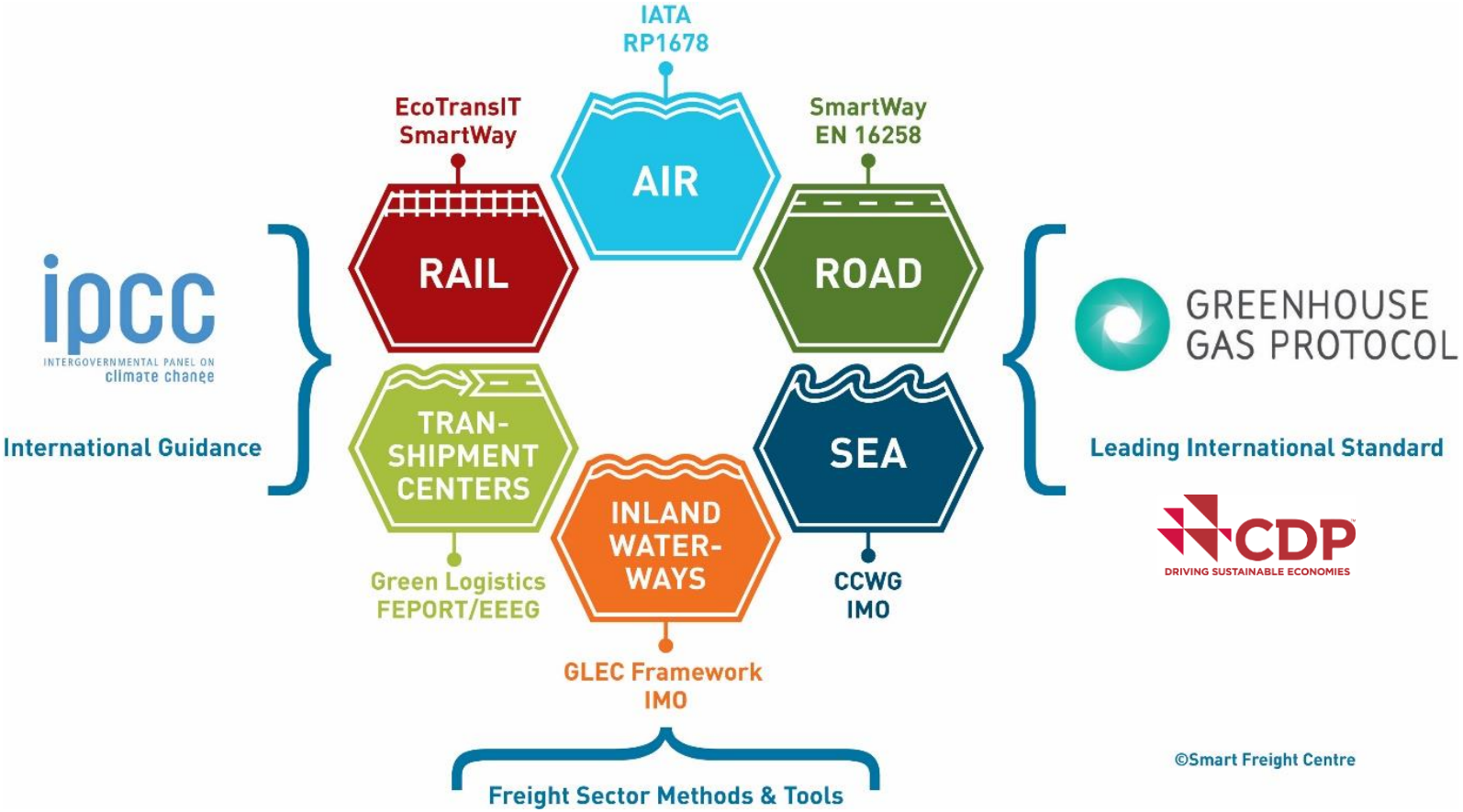
1. Calculate and report

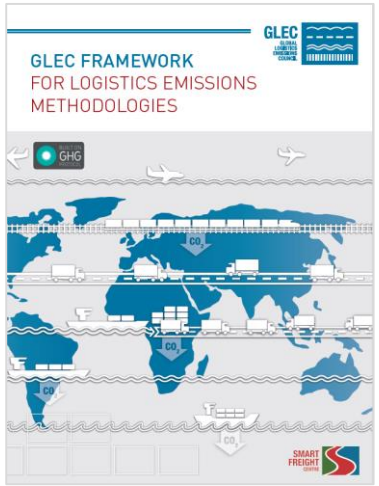
GLEC Framework: universal method for logistics emissions accounting

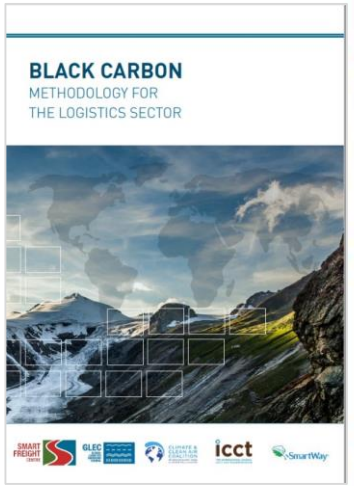
SMART FREIGHT CENTRE

GLEC GLOBAL LOGISTICS EMISSIONS COUNCIL

LED BY SMART FREIGHT CENTRE







Watch our animation video and download the GLEC Framework

www.smartfreightcentre.org/glec/what-is-glec

1. Calculate and report

LEARN Project: implement GLEC Framework

LEARN
Logistics Emissions Accounting & Reduction Network

SMART FREIGHT CENTRE

Mobilize businesses through improved emissions calculation, assurance and reporting

- Guidelines
- GLEC data declaration
- ISO standard
- Training for carriers
- Company case studies

- Research agenda
- Policy agenda
- 'Network of Networks'
- Annual workshop
- Link with ICT

LEARN partners

SMART FREIGHT CENTRE
Connekt
CLECAT
DLR
energy saving trust
ESC
Fraunhofer IML
IRU PROJECTS
ivl
NTM
TNO innovation for life
UNTRR
ZLC
MIT GLOBAL SCALE NETWORK

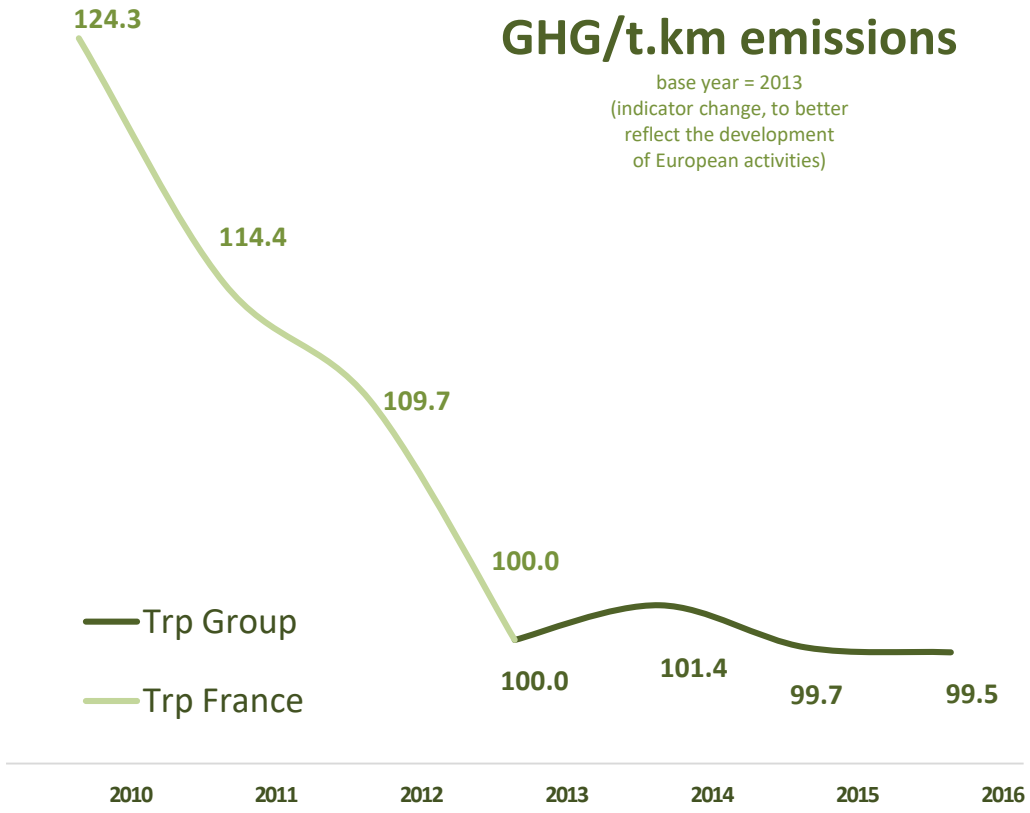
www.learnproject.net

1. Calculate and report

Example: Better data by STEF (European specialist in cool chain logistics)

- Transport GHG Calculator built on GLEC Framework principles

- Track impact of actions:
  - Training of STEF's 3000 drivers
  - Vehicle renewal to Euro 5 and 6
  - Transport scheme to optimize vehicle use
  - Increased monitoring of filling rate and empty mileage
  - Integration of fuel in ISO 50001 certification French sites
  - Purchasing criteria: fuel use control equipment & fleet composition



1. Calculate and report

Example: Transparency in calculation methodology by Volkswagen

	GLEC	AIR	INLAND WATERWAYS	RAIL	ROAD	SEA	TRANSSHIPMENT CENTERS
P1: EMISSIONS ACCOUNTING	Annually	Monthly					No Emissions Factors available
P2: CHOICE OF EMISSION FACTOR	WtW	WtW					
	CO2e	CO2e					
	Source	GLEC	GaBI			CSI	
P3: UNIT OF ALLOCATION	ton-km	ton-km					
P4: LOAD FACTOR & EMPTY RUNNING	Empty running include	Load Factor / Empty running included in Factor	Load Factor Calculated for each Leg of a Vehicles Trip, Empty running included			Load Factor / Empty running included in Factor	
P5: DATA ACCURACY	Primary Data	Not available				Intermediaries	
R1: TRANSPORT SERVICE CATEGORY	Differentiated by transport services	Calculation is based on Vehicle Tours / Transport Legs Statistics are aggregated after calculation for Transport Services / Transport Processes					
R2: DISTANCE MEASUREMENT	Depends	GCD+95km	EcoTransIT		PTV Map&Guide	Actual Route including Stop-Over Ports SFD between Ports + 5%	

Calculation is based on emissions factors (gCO2e/ton-km)

Fuel Consumption is considered when calculating emissions factors, but not saved

1. Calculate and report

Example: Breakdown in logistics emissions reporting by LVMH

30% of corporate emissions from upstream and downstream transportation

BREAKDOWN OF THE GREENHOUSE GAS EMISSIONS GENERATED BY UPSTREAM TRANSPORTATION IN 2017 (in CO_2 equivalent metric tons)

	Road	Air	Sea	TOTAL
Wines & Spirits	9,811	849	1,022	11,682
Fashion & Leather Goods	486	7,679	6	8,171
Perfumes & Cosmetics	10,106	27,086	443	37,635
Watches & Jewelry	3	1,834	4	1,841
Selective Retailing	-	-	-	-
TOTAL	20,406	37,448	1,475	59,329

BREAKDOWN OF THE GREENHOUSE GAS EMISSIONS GENERATED BY DOWNSTREAM TRANSPORTATION IN 2016 (in CO_2 equivalent metric tons)

	Road	Rail	Air	Sea	River barge	Electric vehicle	TOTAL
Wines & Spirits	22,590	762	45,998	18,678	180	5	88,213
Fashion & Leather Goods	2,205	11	162,387	119	1	-	164,723
Perfumes & Cosmetics	2,590	-	206,640	1,646	-	-	210,876
Watches & Jewelry	338	-	31,552	82	-	-	31,972
Selective Retailing	3,190	-	20,879	251	-	88	24,408
TOTAL	30,913	773	467,456	20,766	181	93	520,192

Source: LVMH 2017 Report: https://r.lvmh-static.com/uploads/2014/11/lvmh_environment_2017en.pdf (Page 38)

2. Set targets and KPIs

Corporations

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Governments & industry bodies

- Paris Agreement: keep average global temperature 'well below' 2°C above pre-industrial times and 'endeavor to limit' it to 1.5°C
- EU White Paper: 60% reduction Europe freight emissions by 2050 compared to 1990
- IMO: 50% reduction maritime shipping emissions by 2050 compared to 2008
- IATA: 50% reduction airline emissions by 2050 compared to 2005

2. Set targets and KPIs

Examples of corporations

- DHL

- Procter & Gamble

Achieved more than 25% reduction since 2010

- Heineken

SCIENCE BASED TARGETS

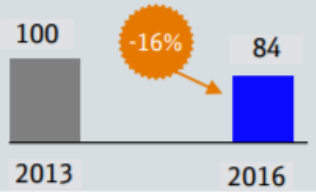
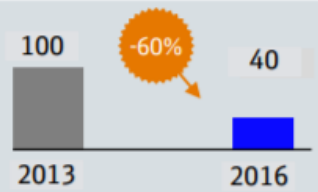
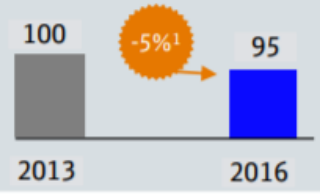
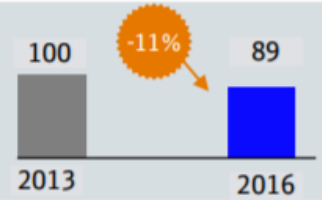
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

including logistics emissions!!!

2. Set targets and KPIs

Example: DB Schenker linking targets to actions

DB Schenker Logistics specific carbon targets and development (CO_2 in g/tkm) 2006 to 2020

Transport Mode	Targets per transport mode 2006-2020 (g/tkm)	Achievements 2006 – 2016
1 Land 	**Reduction spec. CO_2 emissions (-20%)** ▪ Fleet modernization ▪ Eco Driving	
2 Ocean 	**Reduction spec. CO_2 emissions (-52%)** ▪ Vessel size ▪ Fuel optimization, de-rating ▪ Telematics & aerodynamics (route optimization)	
3 Air 	**Reduction spec. CO_2 emissions (-10%)** ▪ Fleet modernization ▪ ATM, pilot training, etc. (operational)	
4 Stationary 	**Reduction energy consumption (-18%)** ▪ Electricity consumption *per sqm* ▪ Heating energy *per sqm*	

1) Only aircraft based development since 2014 because of lack of consistent airline data

https://www.dbschenker.com/resource/blob/524016/d34751ff48a67c260d0f738823cd3292/dbsl-carbon-footprint-data.pdf

3. Business decisions & actions

SMART FREIGHT CENTRE

REDUCE FREIGHT TRANSPORT DEMAND

- Supply chain restructuring
- Standardized modules/boxes
- 3D printing
- Dematerialization
- Consumer behavior

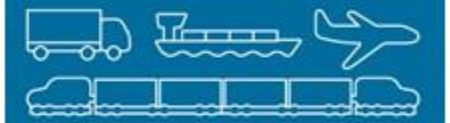
OPTIMIZE FREIGHT TRANSPORT MODES

- Modal shift
- Multi-modal optimization
- Synchromodality

INCREASE ASSET UTILIZATION

- Load optimization
- Load consolidation and asset sharing
- Logistics centers and warehouse management

IMPROVE FLEET ENERGY EFFICIENCY



- Cleaner and efficient technologies
- Efficient vehicles and vessels
- Driving behavior
- Fleet operation
- Fleet maintenance

REDUCE CARBON CONTENT OF ENERGY

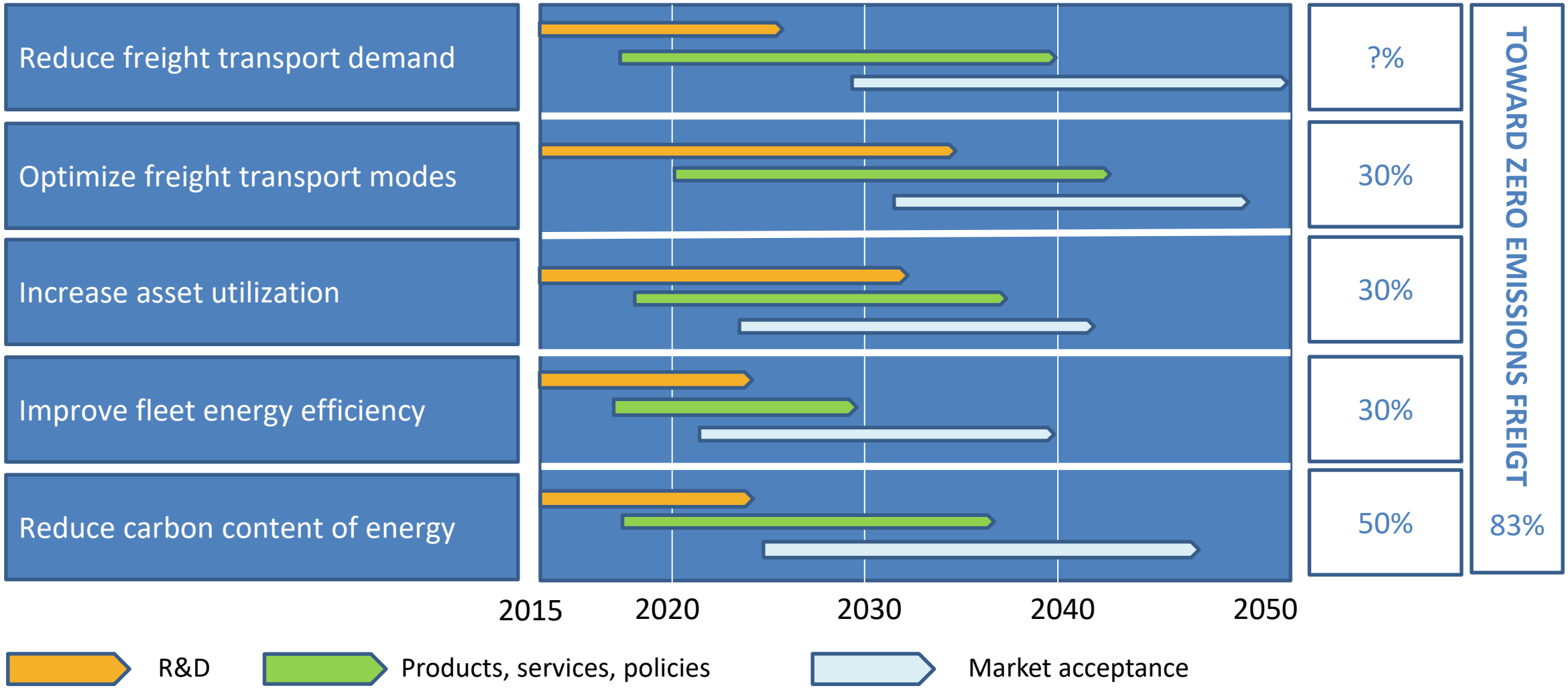
- Cleaner and lower-carbon fuels
- Electrification
- Fuel management

Smart Freight Centre; categories based on A. McKinnon 2018

3. Business decisions & actions:

Roadmap toward zero logistics emissions

alice | Alliance for Logistics Innovation through Collaboration in Europe



3. Business decisions & actions:

Example: Heineken's actions across the spectrum

REDUCE FREIGHT TRANSPORT DEMAND

- Warehouse locations
- Packaging Optimization

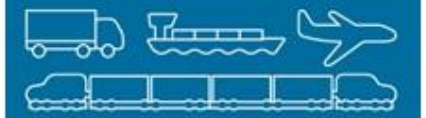
OPTIMIZE FREIGHT TRANSPORT MODES

- Shift to inland waterways
- Shift to near-shore shipping
- Green corridor to port

INCREASE ASSET UTILIZATION

- Minimum order and order combinations

IMPROVE FLEET ENERGY EFFICIENCY



- Upgrading of trucks

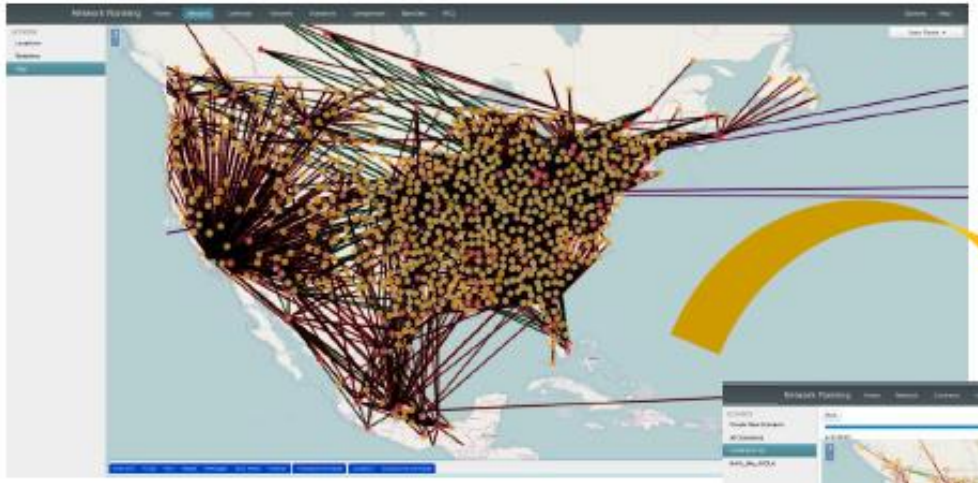
REDUCE CARBON CONTENT OF ENERGY

- Electrification of delivery vehicles
- Biofuels in barge shipping

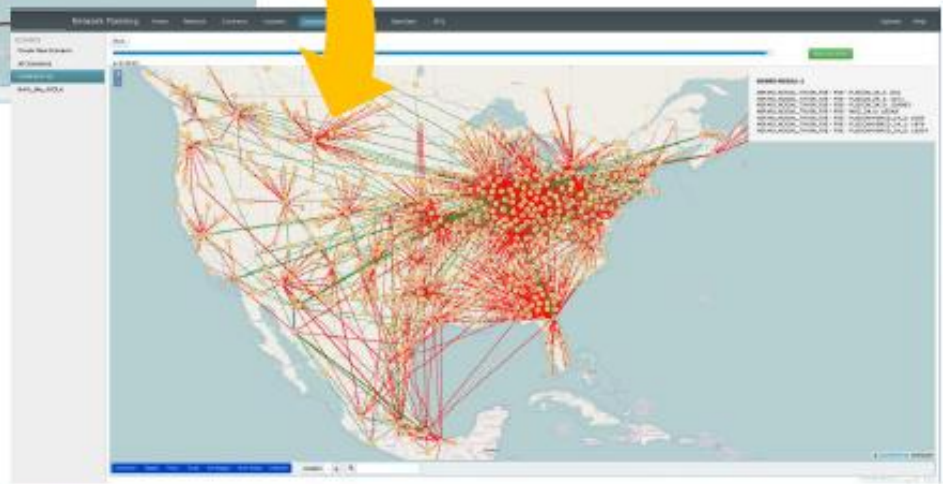
3. Business decisions & actions:

Physical internet example: redesigning logistics supply chains

Input: All possible locations, connections + rates from RFQ portal



…throw this at the optimizer…



TOYOTA

Ford

Output: Least cost routing

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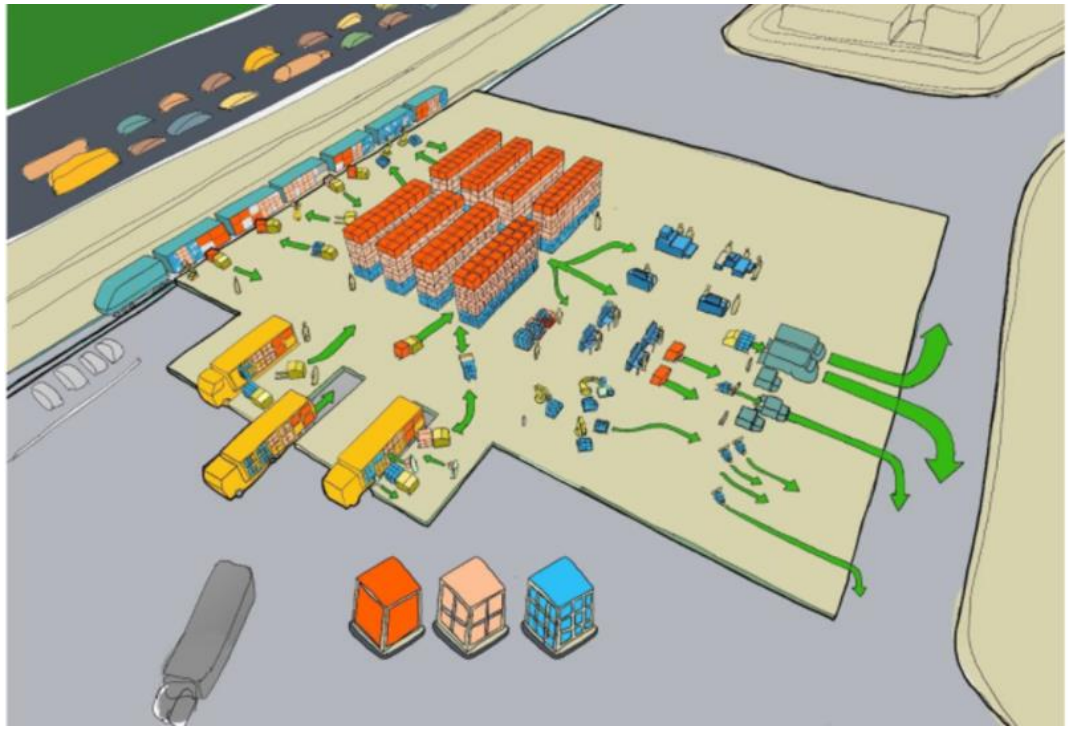
3. Business decisions & actions:

Physical internet example: modular design



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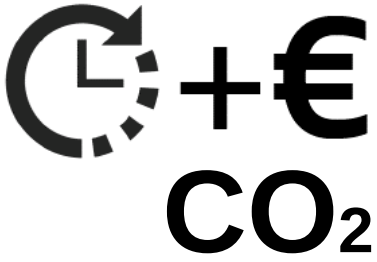
https://hal-mines-paristech.archives-ouvertes.fr/hal-01487239/document

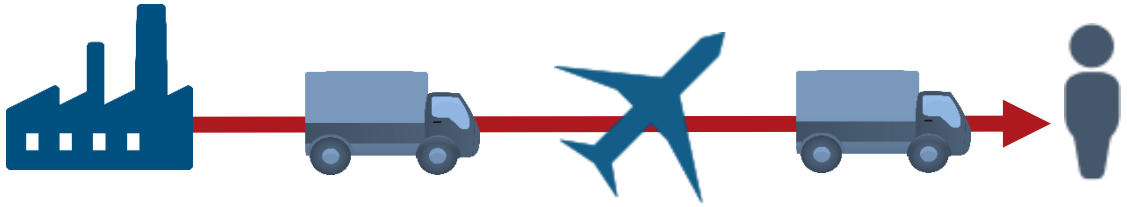
3. Business decisions & actions:

Physical internet example: 3D printing of (spare) parts

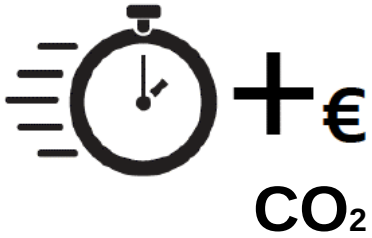
Audi DAIMLER Volkswagen

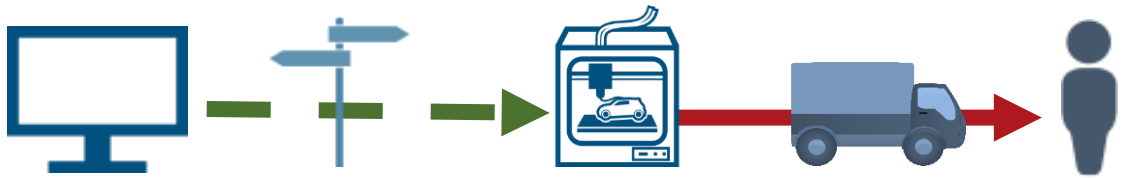
Conventional





3-D printing





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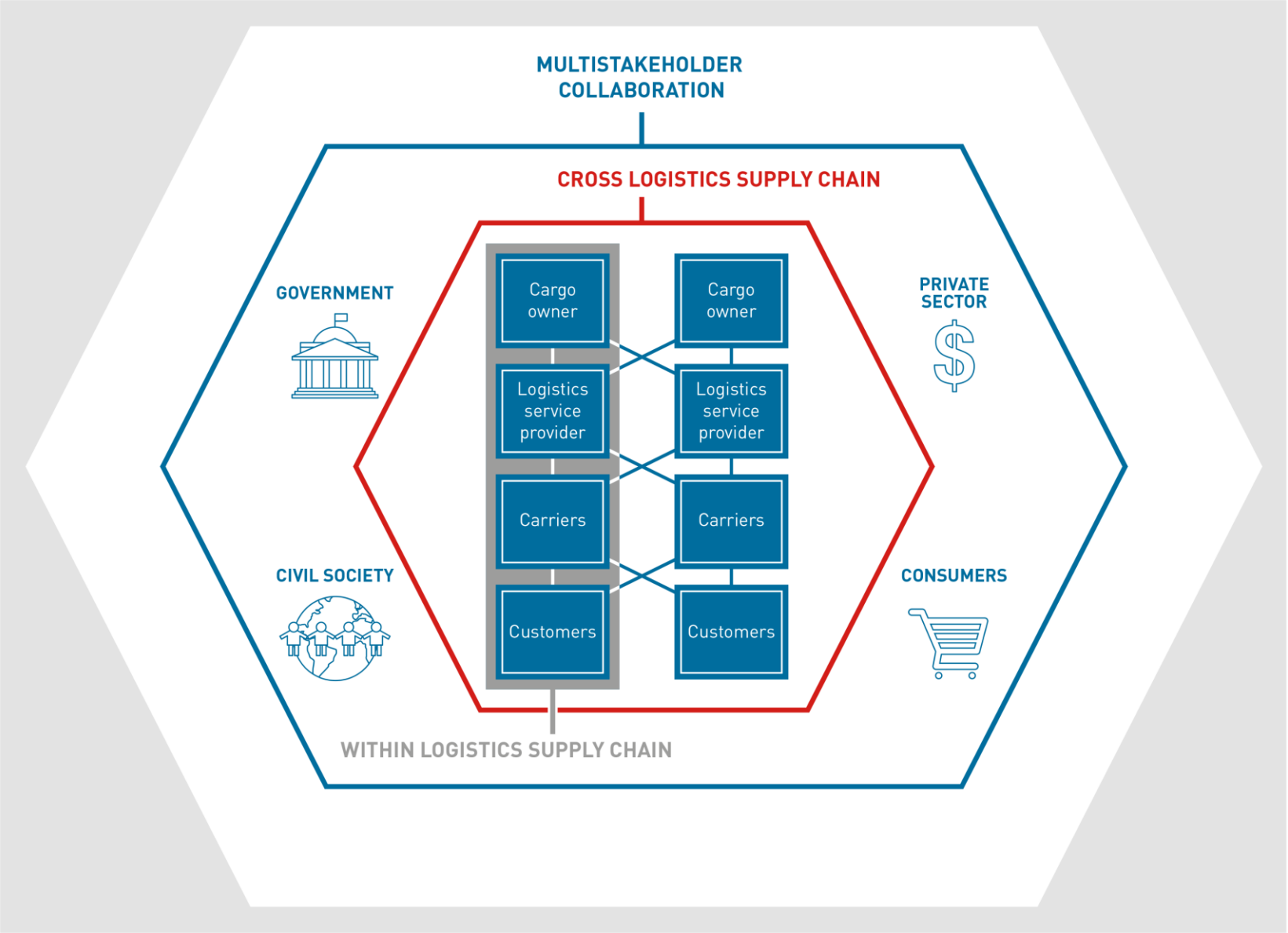
Adapted from: Audi AG I/VK-4 Potenzial des 3D-Drucks in der Automobil-Industrie
https://www.digitaltrends.com/cars/daimler-3d-printed-truck-parts/
https://www.automobil-industrie.vogel.de/index.cfm?pid=7516&pk=563331&fk=1119034&type=article#2 /

4. Collaborate across the supply chain



4. Collaborate across the supply chain

Programs & initiatives

4. Collaborate across the supply chain

Example: HP Inc. building bridges across the sector

SMART FREIGHT CENTRE

Reporting/disclosure initiatives

CDP
DRIVING SUSTAINABLE ECONOMIES

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

GLEC
GLOBAL LOGISTICS EMISSIONS COUNCIL
LED BY SMART FREIGHT CENTRE

LEARN
Logistics Emissions Accounting & Reduction Network

Green Freight Programs

SmartWay

BSR

clean CARGO
Sustainable Transportation

GREEN FREIGHT ASIA

PLVB
PROGRAMA DE LOGÍSTICA VERDE BRASIL

CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

globalgreenfreight.org

Sustainability initiatives

25 Gartner Supply Chain Top 25

SUSTAINABLE PURCHASING LEADERSHIP COUNCIL

epeat

4. Collaborate across the supply chain

Example: Sustainable purchasing that includes logistics

- IKEA I-Way: Environmental Performance Survey
- Unilever Responsible Sourcing Policy
- H&M: tier 1 and 2 suppliers climate neutral by 2030
- Scania: All logistics suppliers must meet 3% annual CO_2 reductions
- BMW: Supplier Performance Reviews top-100 suppliers
- FCA: Contractual clauses: No trucks < Euro III standard + 50% of supplier fleet >Euro V compliant

IKEA IWAY Standard
Minimum Requirements for Environment and Social & Working Conditions when Purchasing Products, Materials and Services.

5. Advocacy for a long term strategy & public policy

Business strategy

- Sector strategy / roadmap
- Corporate strategy / roadmap

Proactive public policy input

- Nationally Determined Contributions
- National policy and roadmaps
- City freight plans

Only 21 (13%) of 158 NDCs mention freight www.slocat.net

5. Advocacy for a long term strategy & public policy

Example: Long term transport decarbonization strategy Port of Rotterdam

https://www.portofrotterdam.com/en/news-and-press-releases/transports-role-in-reducing-co2-emissions

5. Advocacy for a long term strategy & public policy

Example: Call for ambitious truck standards in the EU

SMART FREIGHT CENTRE

FINANCIAL TIMES

Business asks Brussels to set exacting CO2 targets for trucks

Companies combine to push for innovation in low-emission vehicles

Ttransport has been described as 'Europe's biggest climate problem' © Bloomberg

Rochelle Toplensky in Brussels APRIL 18, 2018 6

IKEA
Kingfisher
COLRUYTGROUP
GFEI
Nestlé Good Food, Good Life
The Prince of Wales's Corporate Leaders Group
2°C
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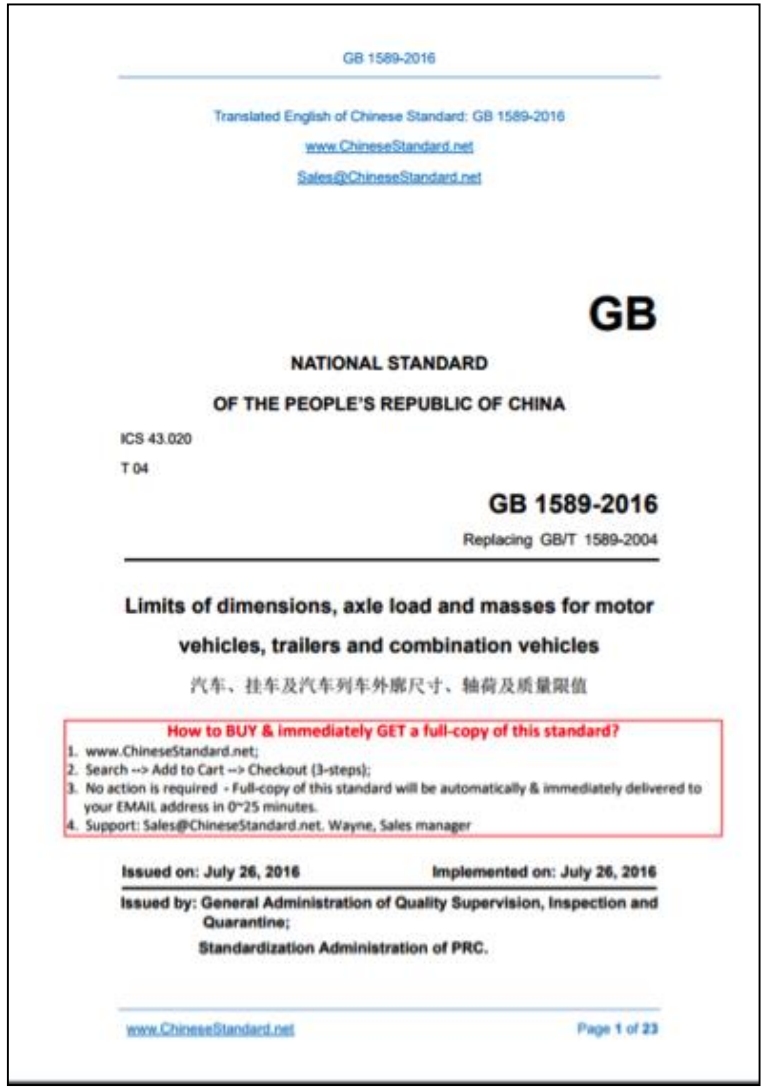
DB SCHENKER
antram
TIP Trailer Services TRAILERMADE SOLUTIONS
Koalicja Klimatyczna
PHILIPS
Heathrow Making every journey better
INSPRO
UNIFEEDER
MERCADONA SUPERMERCADOS DE CONFIANZA
FONDAZIONE PER LO SVILUPPO SOSTENIBILE Sustainable Development Foundation
ecodes tiempo de actuar
Deutsche Post DHL Group
Quercus
TRANSPORT & ENVIRONMENT

https://www.transportenvironment.org/publications/letter-its-time-fuel-economy-standards-trucks

5. Advocacy for long term strategy & public policy

Example: Scania's role in trucking standards in China

- Truck size, dimensions & weight
- Consideration of energy efficient technologies



GB 1589-2016

Translated English of Chinese Standard: GB 1589-2016

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NATIONAL STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 43.020

T 04

GB 1589-2016

Replacing GB/T 1589-2004

Limits of dimensions, axle load and masses for motor vehicles, trailers and combination vehicles

汽车、挂车及汽车列车外廓尺寸、轴荷及质量限值

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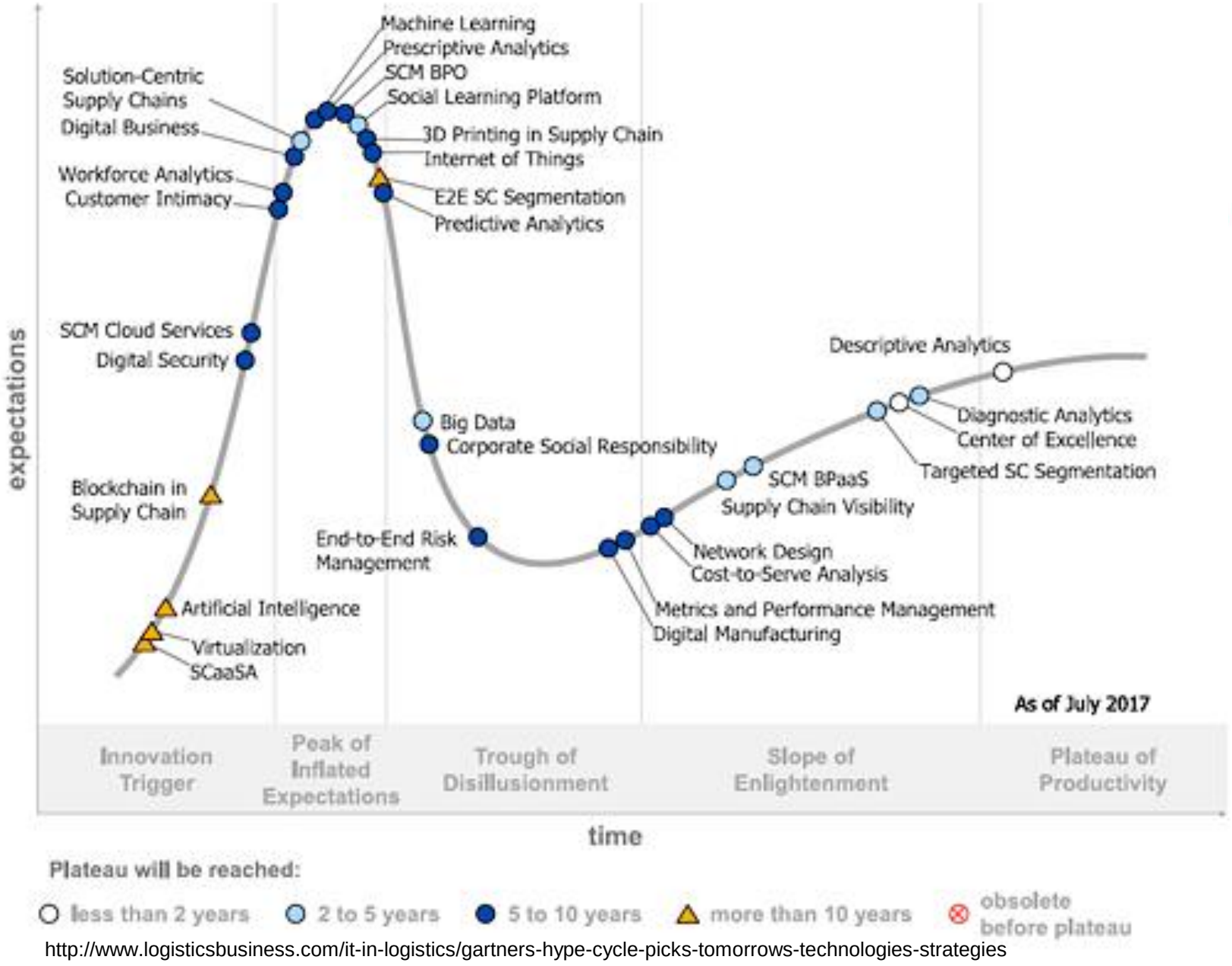
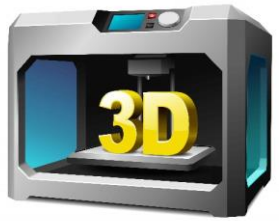
Final thought: ride the wave of sector transformation



http://www.logisticsbusiness.com/it-in-logistics/gartners-hype-cycle-picks-tomorrows-technologies-strategies

SMART FREIGHT CENTRE

Technological Innovation

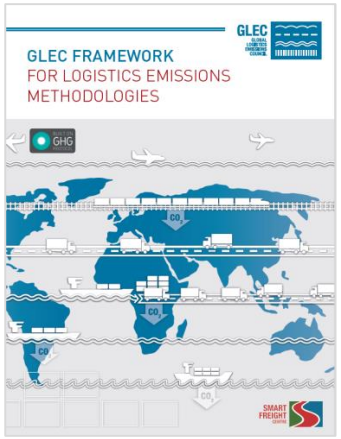


Corporate Social Responsibility

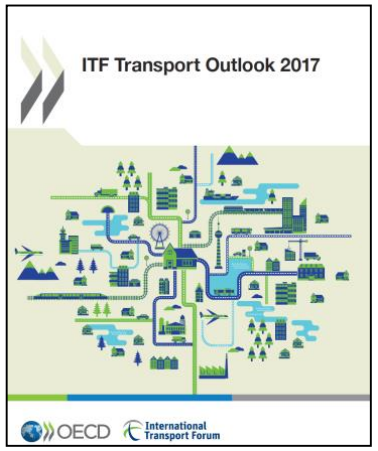
Further reading

SFC
Smart Freight Leadership

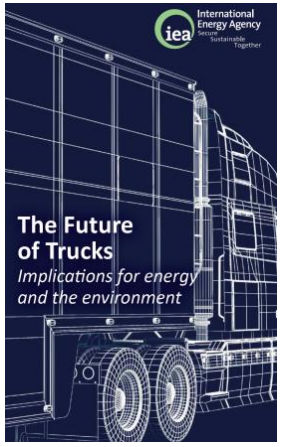
SFC
GLEC Framework 1.0



ITF
Transport Outlook 2017

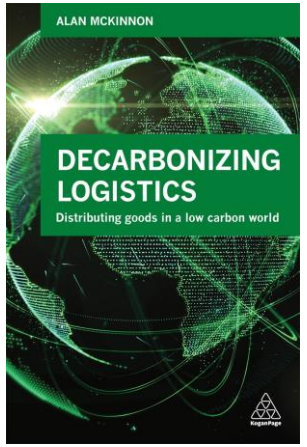


IEA
The Future of Trucks



ITF - Decarbonising Maritime Transport

McKinnon
Decarbonizing Logistics



- **Global Green Freight Action Plan –** www.globalgreenfreight.org
- **Transport and Environment** – www.transportenvironment.org
- **Centre for Sustainable Road Freight** www.csrf.ac.uk
- **LEARN** www.learnproject.net
- **ALICE –** www.etp-logistics.eu
- **Global Fuel Economy Initiative**: Targeting Heavy Duty Vehicle Economy (link)

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