Urban Freight Development in Chinese Cities

SMART FREIGHT CENTRE

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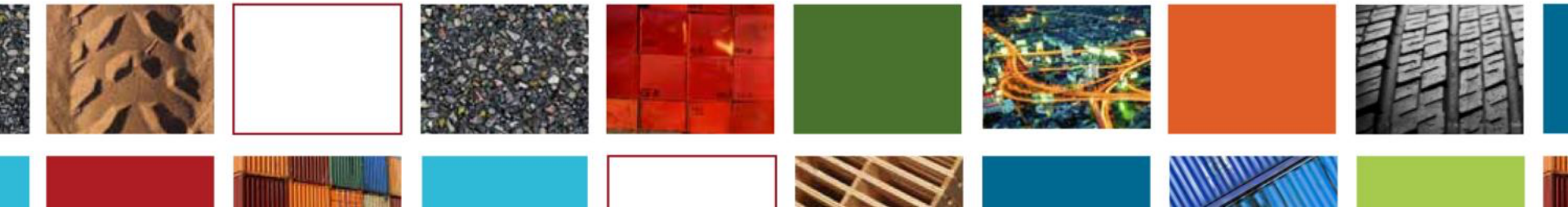
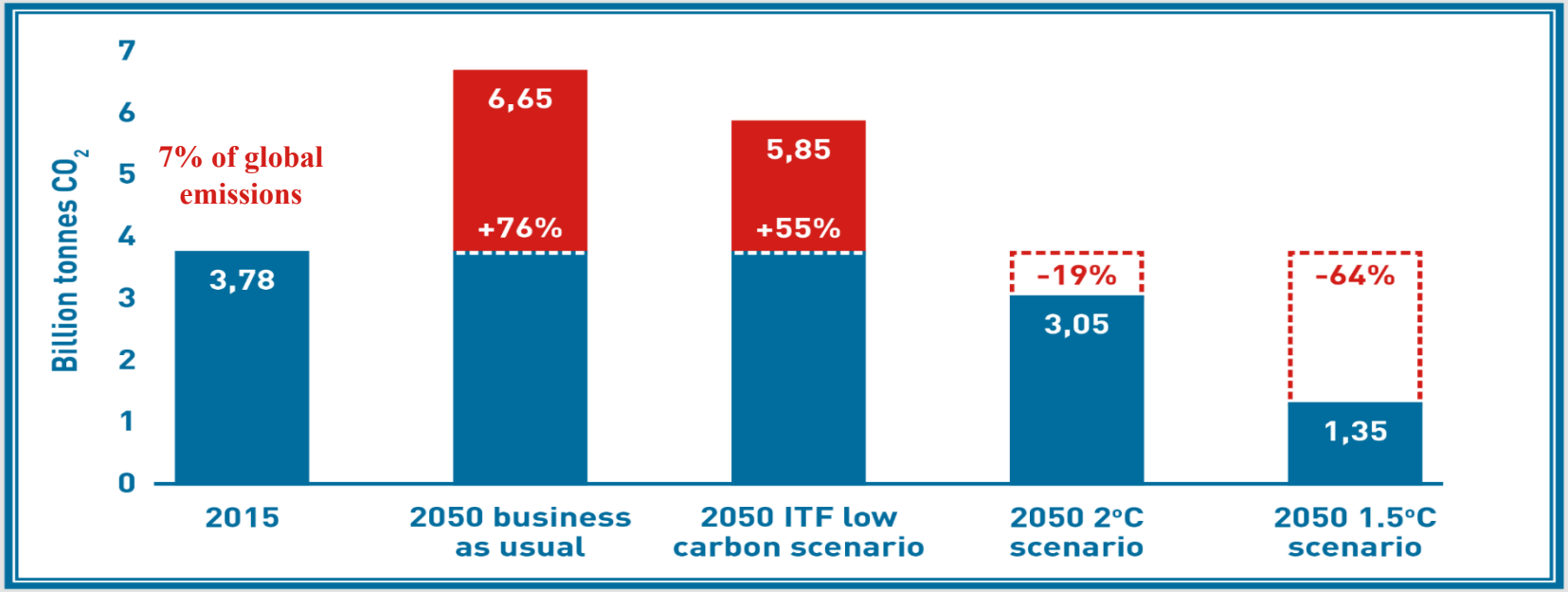


Topics

- Who we are: Smart Freight Centre
- China' freight sector, a snap shot
- Challenges for Chinese Cities
- Developing a Urban Freight Plan
- Elogistics and Sustainable Solutions
- Conclusions and suggestions


Smart Freight Centre

Significant emission reductions needed from freight and logistics



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

The business case is clear: competitive advantage from smarter freight

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BUSINESS VALUE
- Competitiveness
- Recognition
- Compliance & policy influence

SOCIETAL VALUE
- Climate, air pollution, environment
- Socio-economic benefits

<1.5-2°C
Carbon emission reductions

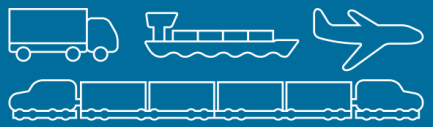
PARIS AGREEMENT

SUSTAINABLE DEVELOPMENT GOALS

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

Solutions are known

VEHICLES, VESSELS & FUELS



- Cleaner fuels
- Cleaner and efficient technologies
- Efficient vehicles/vessels
- Vehicle/vessels maintenance
- Fuel management

FREIGHT MOVEMENT

- Vehicle/vessel operation
- Load optimization
- Routing and timing
- Load consolidation and asset sharing
- Logistics centers and warehouse management

TRANSPORT SYSTEM

- Modal shift
- Multi-modal optimization
- Restructure supply chains

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

Smarter freight is rising on the agen

… but there is lack of

Capacity

Global standards to calculate emissions

Global coordination between key initiatives and players

Confidence in technologies performance

Leadership

Infrastructure

Supportive policies

Collaboration between businesses

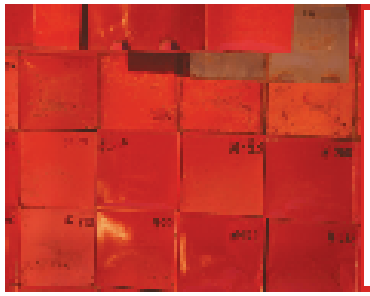
Access to financing

… and thus we do not see at scale adoption of solutions

Smart Freight Centre

A dedicated global NGO leading the way to a more efficient and environmentally sustainable freight and logistics sector

We help remove market barriers that businesses face collectively:

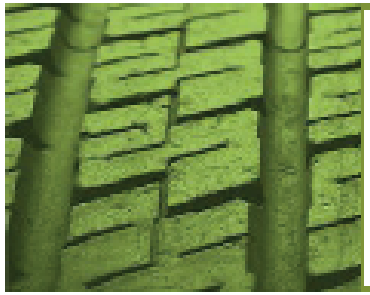


SMART FREIGHT LEADERSHIP

Define and drive business leadership and collaboration between the private sector, government and civil society

GLOBAL LOGISTICS EMISSIONS COUNCIL (GLEC)

Create and implement a universal way of calculating logistics emissions across the global supply chain



SMART TRUCKS PLATFORM

Catalyze the sector-wide adoption of proven and cost-effective technologies and solutions

Our team

Sophie Punte
Executive Director

Maarten Koets
Director
Programs and
Operations

Floor Bollee
Manager
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Colin Smith
GLEC Technical
Advisor

Sudhir Gota
Technical
Advisor Green

China's Freight Industry a snap shot

China's Road Freight Sector 2016

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Truck drivers
19.2 million

GDP
18%

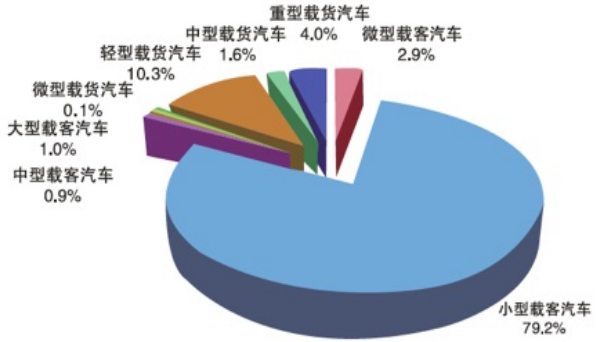
Trucks
13,51 million (3.3m HDV)

Freight volume
6470.5 billion tons

Small operators
1.7 vehicles

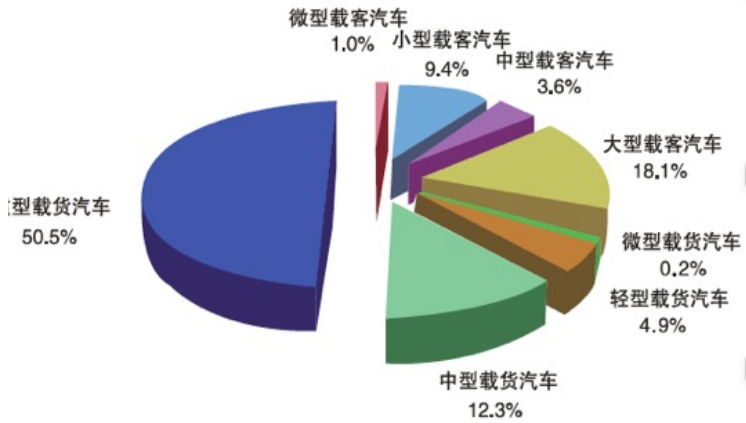
road length
4.69 million KM

Freight vehicle are the major transport emission source

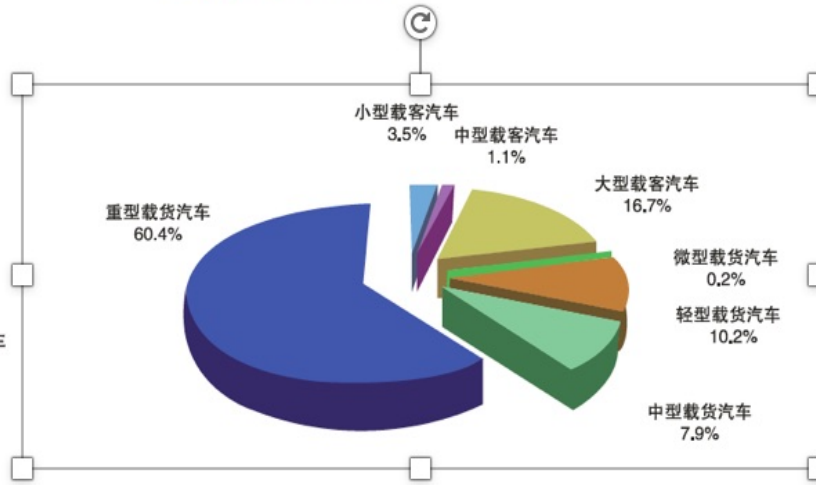


汽车保有量组成

- 货车占汽车保有量的16%，排放了68%的NOx和78%的颗粒物 freight vehicle takes up 16% of total fleet, but contribute 68% NoX, 78% of PM



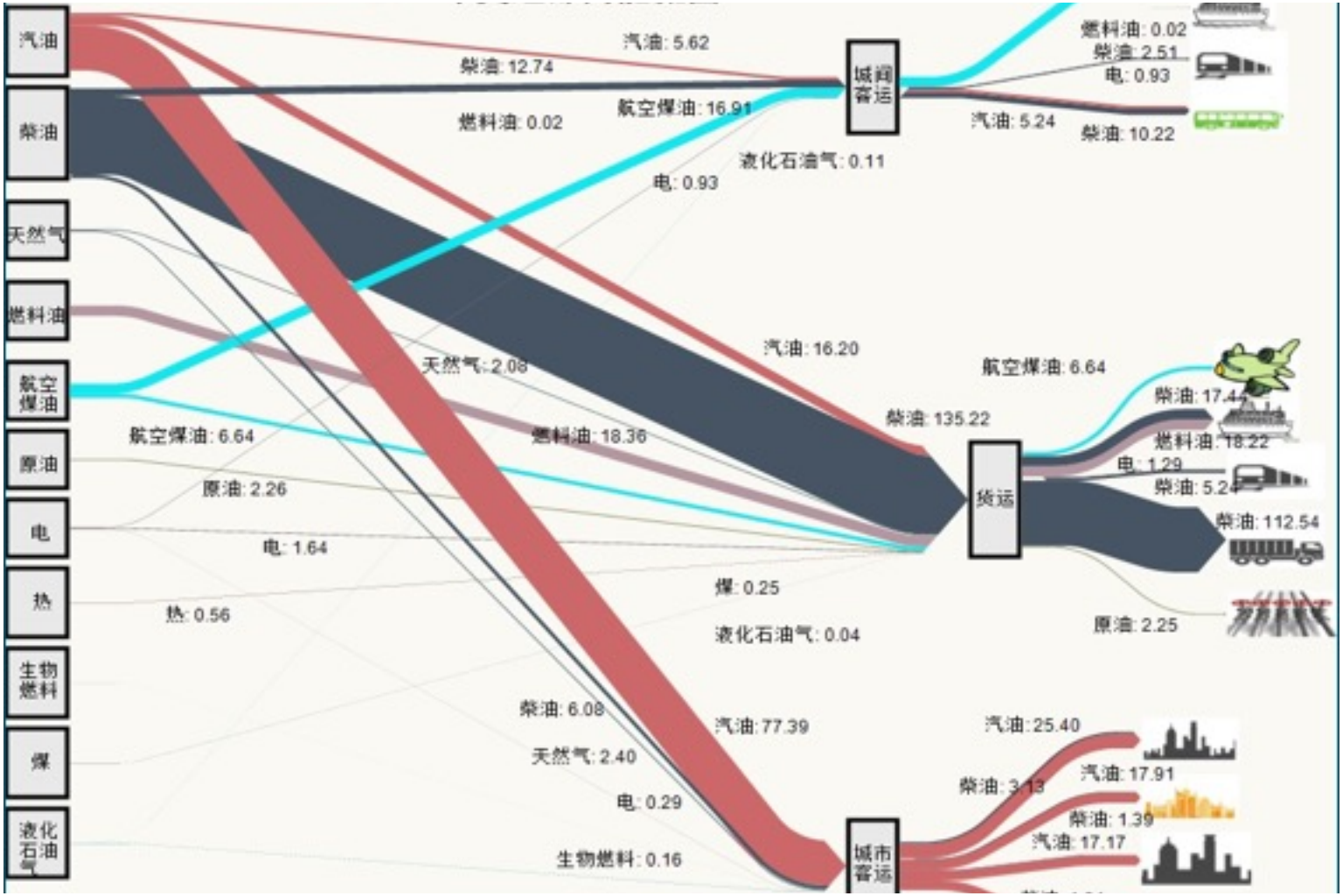
各类汽车NOx排放量分担率



各类汽车PM排放量分担率

Source, 中国机动车污染防治年报2014

Freight and Urban Passenger Transport Main Energy Source



Source: Energy Research Institute, NDRC

China's Freight Structure need to be improved

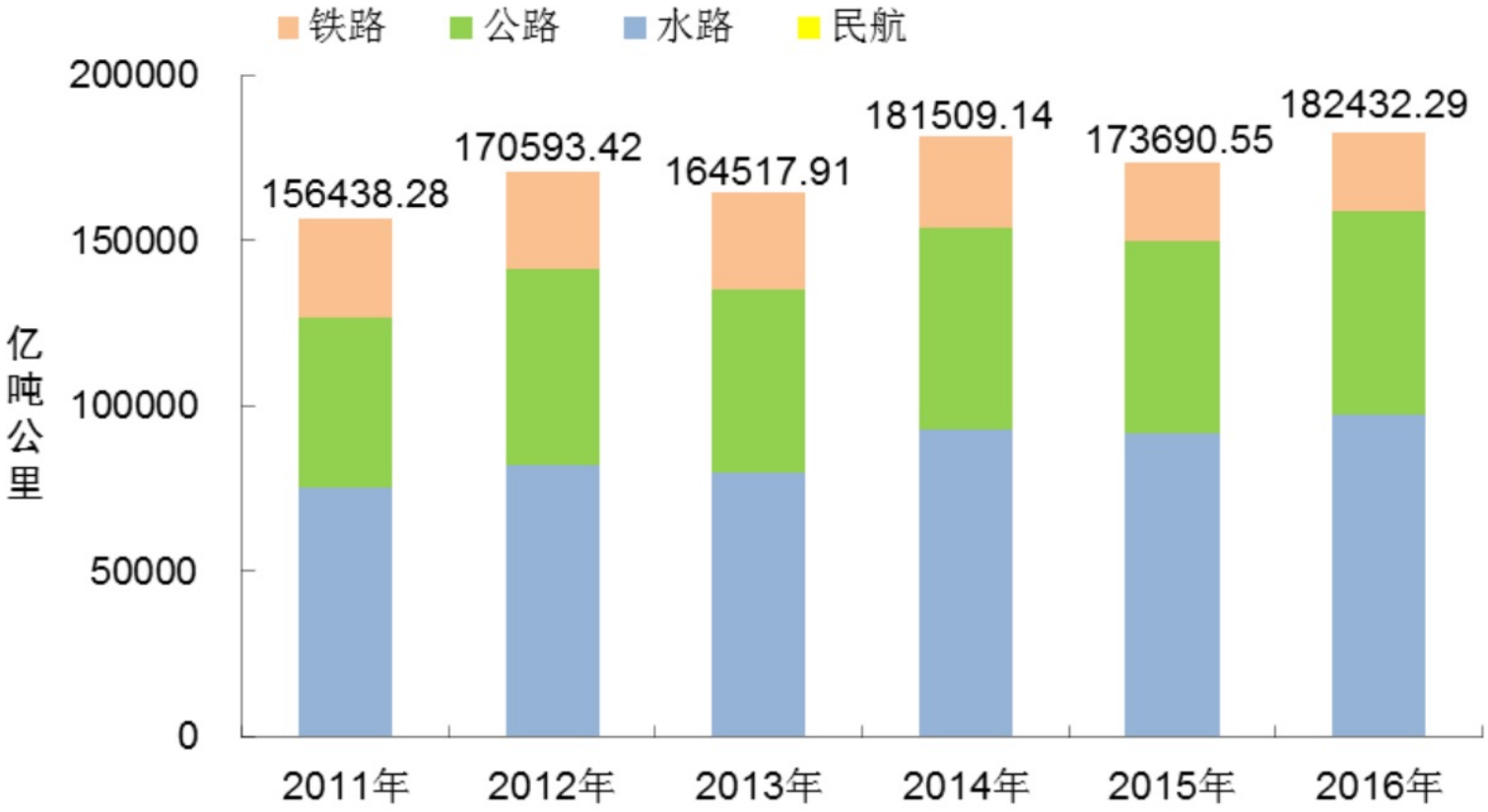


图11 2011—2016年全社会货物周转量

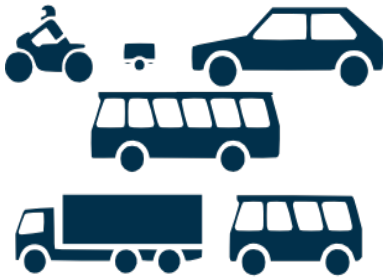
Source: MoT 2016 Annual Report

Challenges for Chinese Cities

Beijing developments 2014

Population
21.14 million

GDP
223% since 2004



Vehicles
5.58 million

Freight volume
254 million tons
16.5 billion tonne-km

Freight avg distance
65 km
(45 km in 2008)

Challenge of addressing freight impacts

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Freight delivery

Carriers

Inefficient

Fragmentation

Government agencies

Old trucks

Trucks from outside Beijing

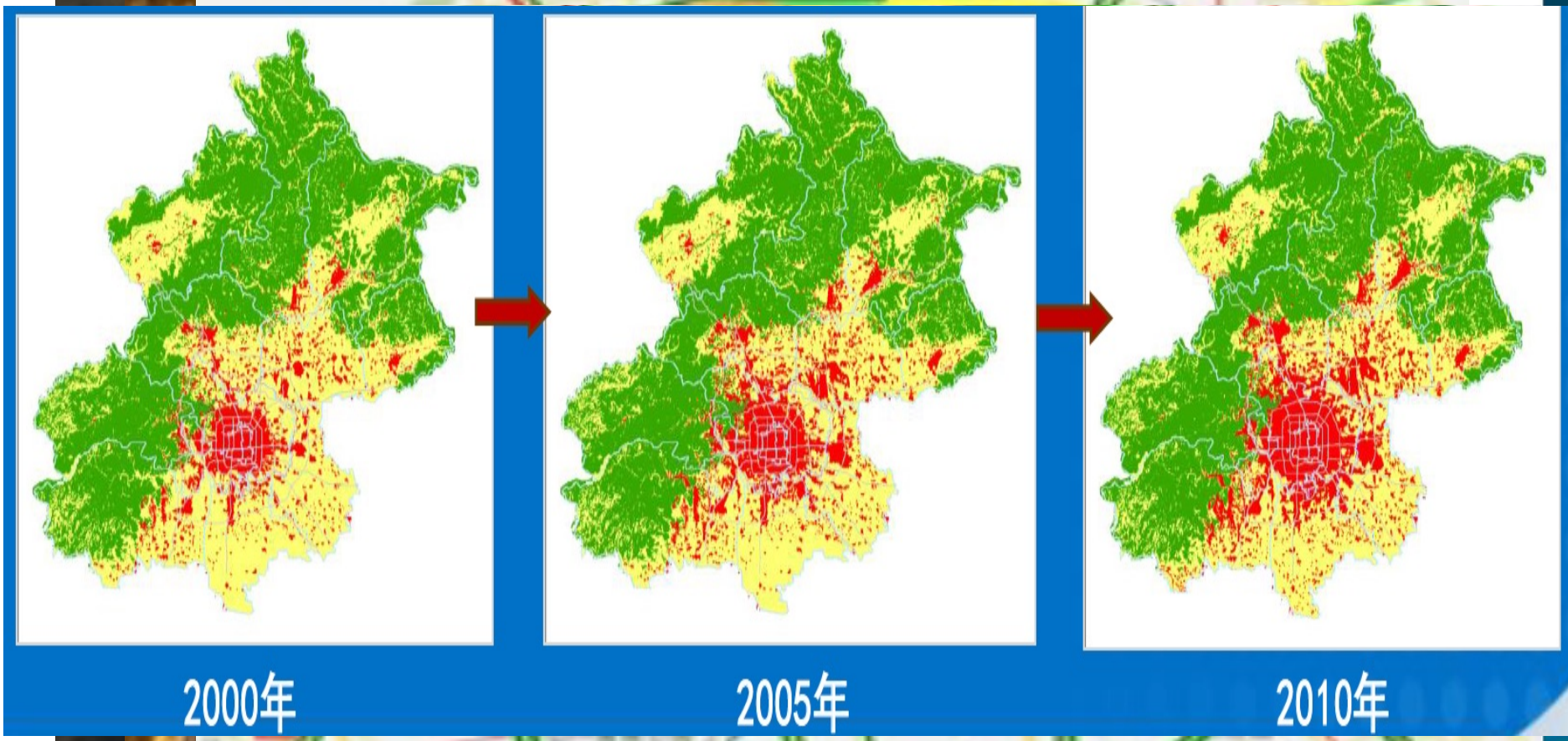
Few trucks meet N-IV emission standards

Diesel dependency

Lack of data

Poor planning logistics centers

Negative impact of growing transport



Urban Freight Plan

What is a city freight plan?

- A “city freight plan” is a plan with a long-term goal and measures oriented toward a safe, efficient and environmentally sustainable urban freight system and can align stakeholders’ views and actions towards a common goal.
- Reduce freight impacts especially air pollutions, CO2, fuel, congestions, land use
- Efficient, safe and sustainable freight movement is the lifeblood of cities
- Builds on and integrated existing and planned efforts
- Position a city a a champion and leader on green freight
- Urban freight management often overlooked

Example of city and region freight plan

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What is in a City Freight Plan: Content

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Where are we now

- Freight developments and impacts
- Challenges
- Existing efforts

Where are we going

- Vision
- Goals
- KPIs

How do we get there

- Actions/projects
- Institutional and policy framework
- Partnerships and stakeholder engagement
- Freight data system

What do we need

- Staffing
- Funding
- Communication plan

Where are we going?

If we do not know what green freight should look like, how do we plan, implement and measure progress towards that goal?"

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VISION

Defines the optimal desired future state of what you wants to achieve over time and provides guidance and inspiration

GOALS

States an ambitious commitment to address a single challenge in support of an overarching vision

KPIs

Measure progress toward defined goals and should be relevant, comprehensive, transparent, and feasible to measure


Sustainable Freight Solutions

How do we get there: Actions

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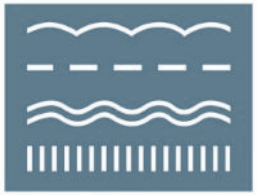
Vehicles & Fuels

- Cleaner fuels
- Cleaner and efficient technologies
- Cleaner and efficient vehicles
- Inspection and maintenance

Freight Movement

- GPS & ICT
- Driving behavior
- Fleet management
- Increase load factor
- Reduce empty runs
- Reduce trips
- Logistics centers and warehouse management
- Asset management and sharin
- Restructure supply chains

Transport System



- Multi-modal freight optimization
- Shift from trucks to trains, barges, motorbikes, cargo bikes
- Infrastructure transport, fuels, ICT

Many opportunities for improvement

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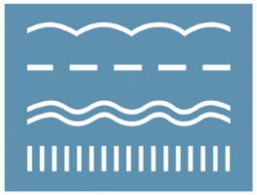
Vehicles & Fuels

Freight Movement

Transport System



PLANNING

INFRASTRUCTURE

LEGISLATION, REGULATIONS, STANDARDS

FINANCING AND INCENTIVES

STRATEGIC SUPPORT

Linking actions to policies

Vehicles and Fuels

ACTIONS

- Cleaner fuels/oils/lubricants
  - Low Sulfur diesel
  - Alternative fuels
  - Low viscosity lubricants
  - Oil by-pass filtration system
- Cleaner and efficient technologies
  - Tires
  - Aluminum wheels
  - Aerodynamics devices
  - Idling reduction technologies
- Cleaner and efficient vehicles
  - Truck replacement
  - Lighter weight trucks
  - Hybrid/Electric/LNG/CNG trucks
- Inspection and maintenance

GOVERNMENT INTERVENTIONS

- Standards
  - Vehicle emissions
  - Fuel economy
  - Fuel quality
  - Alternative fuels
- Legislation
  - Import restrictions
  - Technology mandates
- Programs
  - Inspection & maintenance
  - Technology verification
  - Emission labels
  - Truck replacement schemes
  - Driver / fleet manager training
- Economic instruments
  - Fines, faxes, fees, subsidies, rebates

Linking actions to policies
Freight Movement

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ACTION

- GPS and information systems
- Safe and efficient driving
- Fleet management systems
- Increase truck/trailer use
  - Articulated trucks ("Drop-and-Hook")
- Maximize load factor
  - Adjust truck size to load
  - Mixed weight/size of loads
- Reduce empty runs
  - Truck loading capacity match loads
  - Back-loading of trucks on return trips
  - Freight exchange platforms
- Reduce truck/trips
  - Routing
  - Timing of delivery
  - Collaboration/consortium
  - Freight consolidation centers

GOVERNMENT INTERVENTIONS

- Standards/legislation
  - Standards truck sizes
  - Enforcement anti-overloading
- Restrictions / preferences for city access and parking
  - Vehicle sizes
  - Vehicle types
  - Locally produced goods
- Driver /Fleet manager training
- Routing signage and driver information
- Night-time delivery programs
- Logistics centers creation
- Economic instruments
  - Parking fees
  - Tolls/road pricing

Linking actions to policies

Transport system

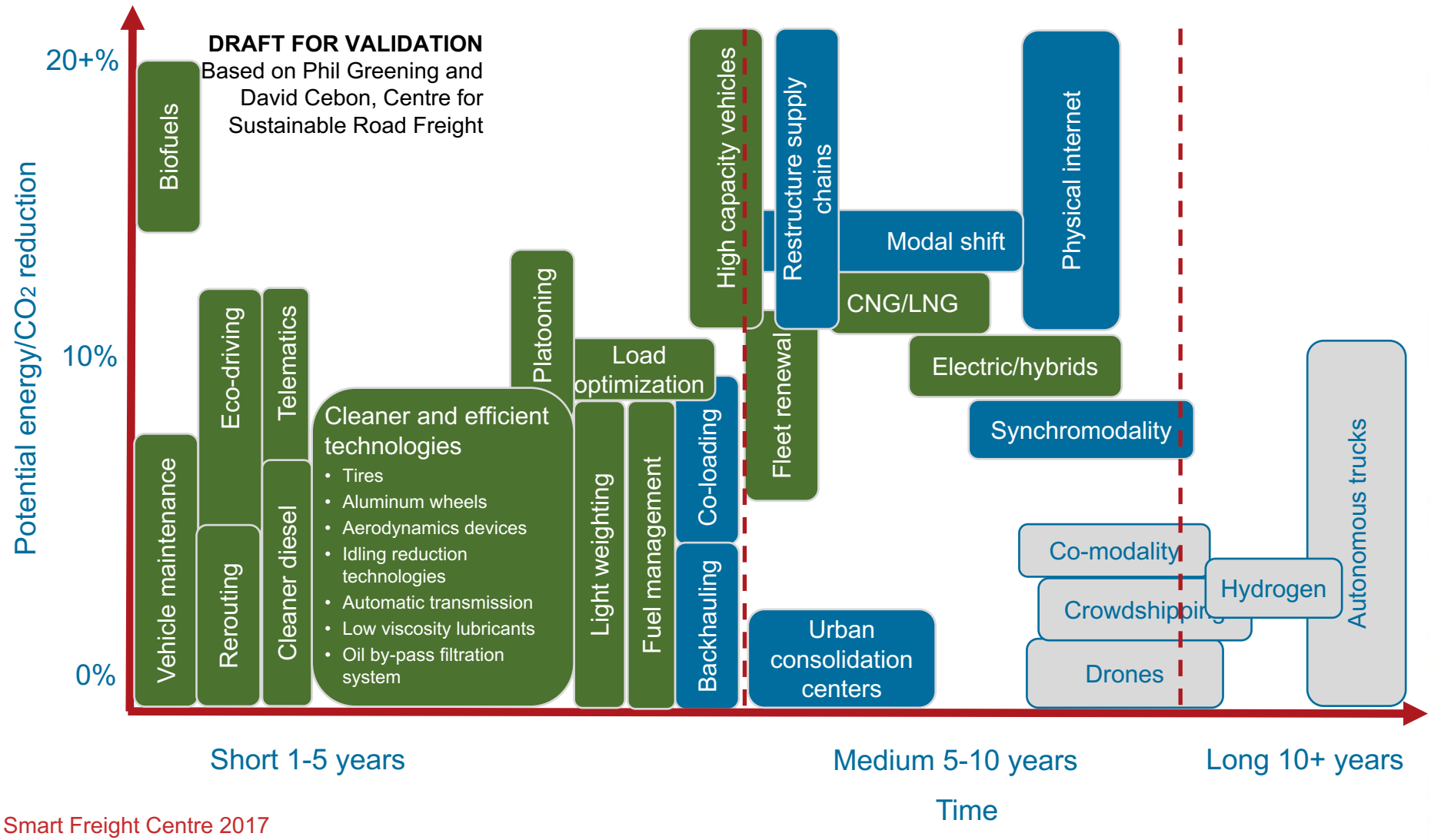
ACTIONS

- Multi-modal freight
- Shift from trucks to trains, barges, motorbikes, cargo bikes

GOVERNMENT INTERVENTIONS

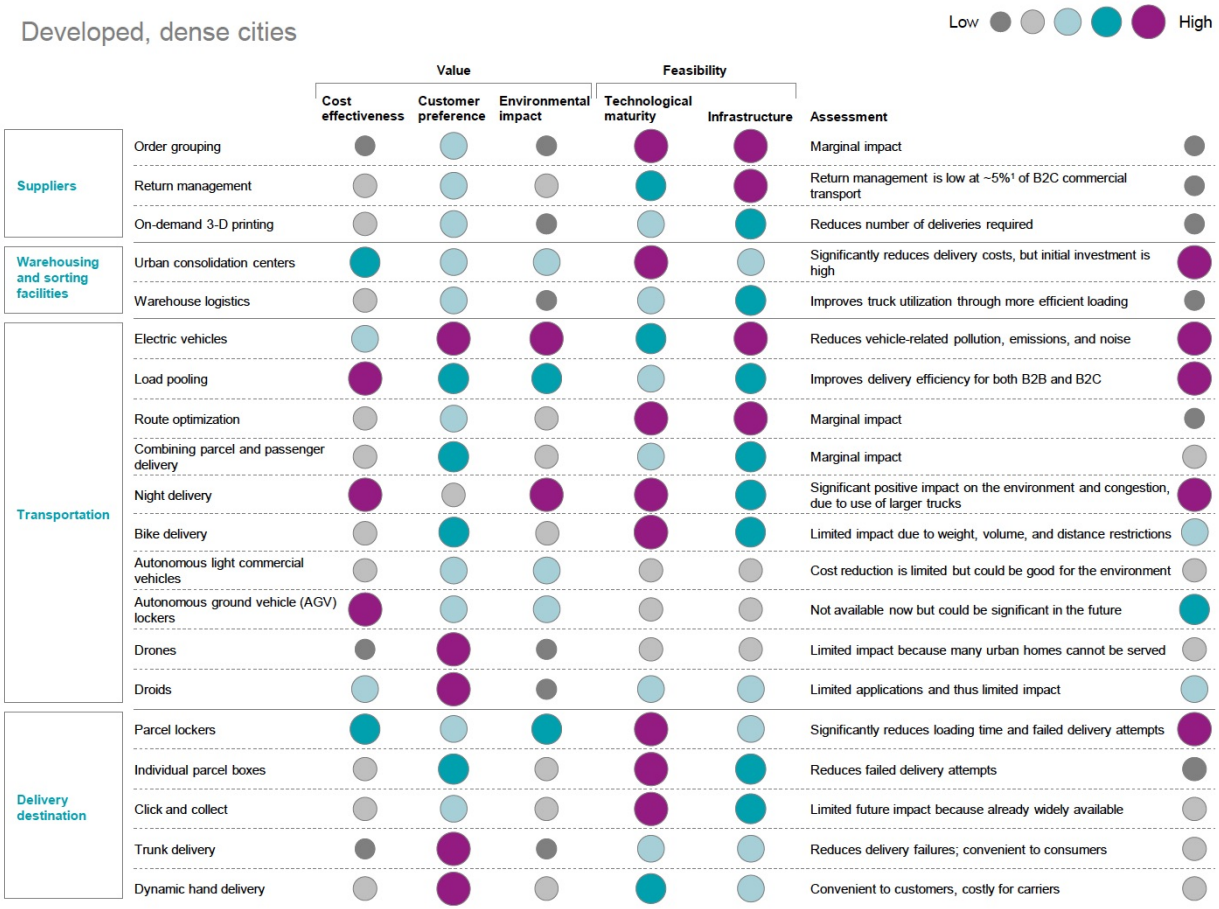
- Infrastructure cleaner trucks
  - Parking / delivery bays
  - Electricity charging points
  - Alternative fuels refilling stations
- Infrastructure alternative modes to road freight
  - (Motor)bike paths
  - Parking /delivery freight vehicles
  - Railways
  - Waterways
  - Transhipment centers
  - Intermodal connectivity
- Economic instruments to promote investments
- Public-private partnerships for infrastructure

Smart Freight Solutions Map - how industry can act NOW!



20 Solutions suggested by McKinsey

20 potential solutions addressing different parts of the delivery value chain.



1 Return management is mostly applicable to B2C apparel, where it is at ~15–20%; apparel is ~30% of commercial B2C delivery, hence ~5% of BC2 commercial transport.

Overview of different categories of political measures and examples from Europe

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Market access and regulations 市场准入及规则

- Access to railway network 铁路网络的准入
- Homologation requirements (emission standards) 同素化要求（排放标准）
- Harmonised rules on vehicle dimensions车辆尺寸的统一
- Abolishment of cabotage 取消航权限制

Regulatory measures 政策性措施

- CO_2 targets for vehicle 车辆减排目标
- Weekend/night lorry ban 周末/夜间的卡车限行
- Environmental zones 环保区域
- Speed limits 限速
- Obligatory in-job training (e.g. eco-driving) 必须的职业培训（如节能驾驶培训）
- Advantages for user of low emission vehicles 对低排放车辆的优惠政策

Economic measures 经济性措施

- Fuel and vehicle taxes 燃油及车辆税
- CO_2 taxes 碳税
- Road user charges or tolls (for roads or areas) 道路通行收费
- Train path prices 铁路轨道使用费
- Public private partnership (PPP) 公私合作伙伴
- Emission trading system 碳排放交易系统

Financing of extension or new infrastructure 基础设施扩建的融资

- Extension of railway network (and waterways) 铁、水路网络的扩建
- Building of new terminals for intermodal traffic 新建多式联运枢纽
- Extension of railway sidings 专线铁路的扩建
- Segregation of freight and passenger rail traffic 铁路货运、客运线路的分离

Integrated land use and transport planning 整合土地使用及交通规划

- Federal transport planning 联邦交通规划
- Strategic planning for freight distribution centres and intermodal terminals 货运分拨中心及多式联运站的战略规划
- Alignment of roads 道路联网
- Air pollution and noise protection plans 空气污染及噪音防护计划

Subsidy programmes 补贴项目

- Subsidies / low interest rate for advanced introduction of new emission standards or for purchase of new trucks 对引入新排放标准及购买符合该标准车辆的补贴/低利率贷款
- Funding of alternative fuelled vehicles 对使用替代燃油车辆的补贴 Subsidies schemes for scrapping old vehicles 报废旧车辆的补贴计划

Source: INFRAS

Approach considerations:
Include carrots and sticks in your strategy

Approach considerations: Develop “top down” with “bottom up” in parallel

Conclusions and Suggestions

Conclusions and suggestions (I)

- Keep it simple
- Building on existing efforts and balance quick gains and long term objectives
- Considering successful experience and practice
- Align key stakeholders in developing vision, intervention strategies and action plans
- Development KPI, monitoring and evaluation system and review

Conclusions and suggestions (II)

- avoiding transport by logistic optimization
- shifting transport to more environmental-friendly modes
- improve fuel efficiency and reducing environmental impacts by using vehicle technologies and operational measures
- using cleaner fuels
- Logistic optimization and improving fuel efficiencies
- comprehensive set of measures for green freight is available, but they must be localized to regions and nations based on analyses of barriers and bottlenecks; furthermore the measures must be combined in an optimal way (“packages”).
- Besides governmental measures actions form the logistic companies, shippers and logistic associations are needed to realize green logistic solutions.

SMART FREIGHT CENTRE

Smart Freight Centre, Dedicating to Smart Freight !

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