

FUTURE DEVELOPMENTS IN CITY LOGISTICS AND THE ROLE OF PROCUREMENT



Hans Quak
June 20, 2018

5th International Physical Internet Conference - Groningen

Agenda

- 1 city logistics: introduction
- 2 challenges
- 3 annual outlook city logistics
- 4 trends and developments
- 5 procurement in city logistics
- 6 conclusion

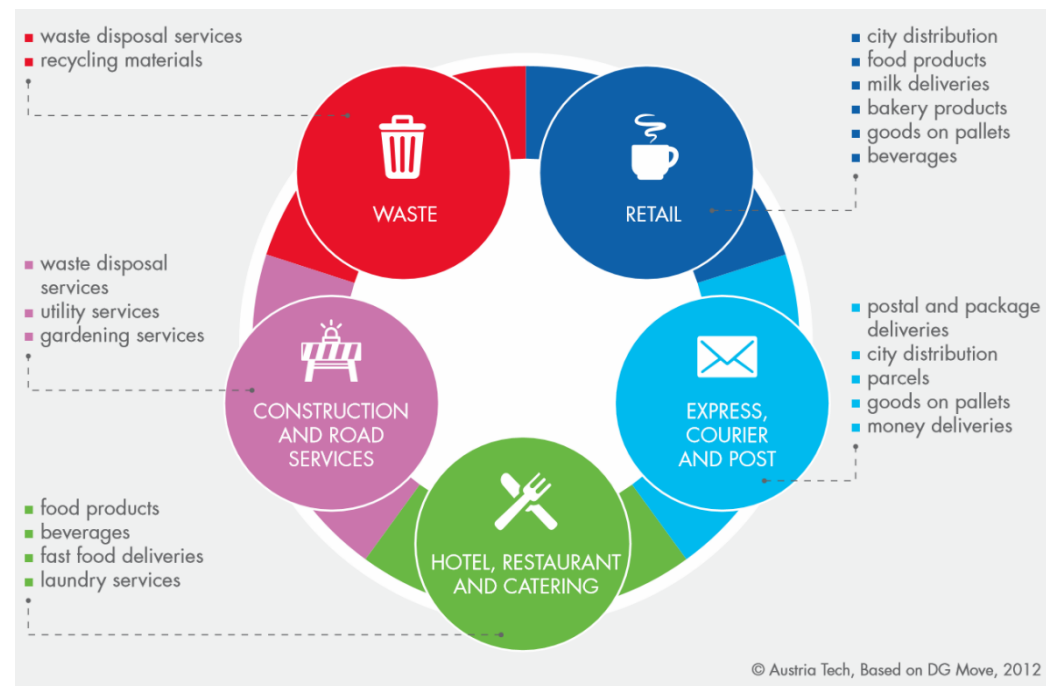


1. City logistics: introduction

Scope

Urban freight transport, defined as all movements of goods into, out of, through or within the urban area, made by light or heavy vehicles, including:

- Delivery of goods (business and home);
- Service transport and construction- and demolition traffic;
- Shopping trips made by private households;
- Reverse logistics for waste removal and for returns management;
- Service vans for maintenance, supply and removal of parts.



Reasons for managing city logistics the contribution to:

- › Emissions
- › Safety and liveability
- › Congestion
- › Local economy

necessary for a city to function as such

QUAE VIAE IN URBANI ROMANI SUNT ERUNT INTRA EA LOCA, UNI CONTINENTI HABITABITUR, NE QUIS IN IEIS VIEIS POST K. INANUR. PIRMAS PLOSTRUM INTERDIU POST SOLEM ORTUM, NEVE ANTE HORAM X DIEI DUCITO AGITO, NISI QUOD AUDIUM SACRARUM DEORUM IMMORTALIUM CAUSSA AEDIFICANDARUM, OPERISVE PUBLICE FACIUMDEI CAUSSA, ADVEHEI PORTARI OPORTEBIT, AUT QUOD EX URBE EX VE IEIS LOCIS EARUM RERUM, QUAE PUBLICE DEMOLIENDAE LOCATAE ERUNT, PUBLICE EX PORTAREI OPORTEBIT, ET QUARUM RERUM CAUSSA PLOSTRA H.L. CERTEIS HOMINIBUS CERTEIS DE CAUSIS AGERE DUCERE LICIBIT.

"On the roads which are in the city of Rome or will be within the area where will be lived joined tightly, no one is allowed after next January 1st to drive or lead a carriage during the day after sunrise and before the tenth hour of the day, except if something will have to be supplied or transported for building temples of the immortal gods or for the implementation of a work for the authorities, or as from the city or from those areas something of those things of which the demolition will be put out to tender by the authorities, will have to be removed on behalves of the authorities, and except for those cases in which it will be according to this law permitted to certain persons for certain reasons to drive or lead a carriage".

Example from ancient Rome (Lex Iulia Municipalis, 45BC)

City logistics is not a NEW phenomena, but changes over time

Changing context >> provides new opportunities, as well as new (ways to solve) problems

1. City logistics: introduction

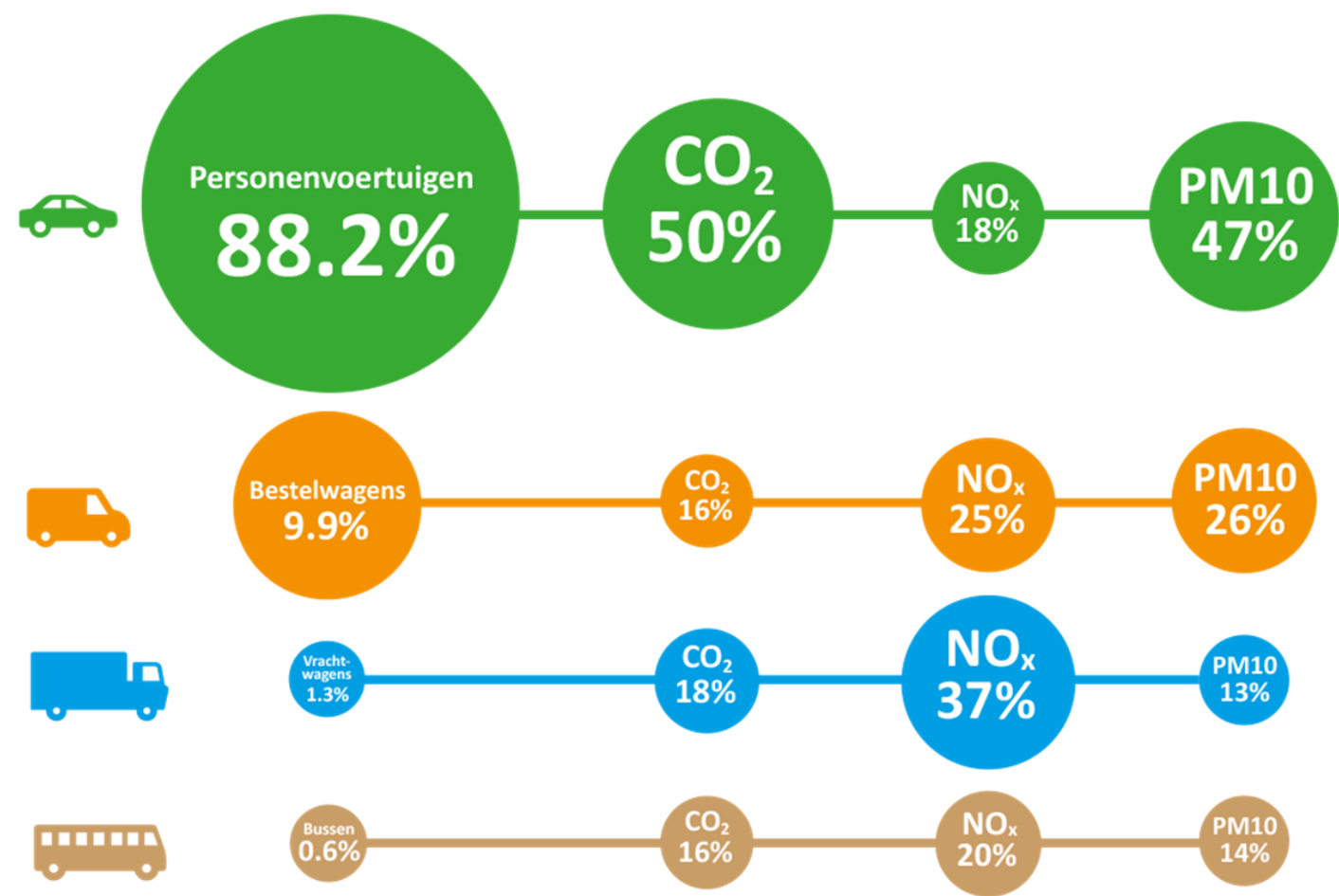
Characteristics

- Urban freight as an important *traffic component* in cities (10 to 15% of vehicle equivalent miles);
- *Low load factors* for delivery vehicles in cities (e.g. 38% for vans in London);
- Urban freight service companies are generally *very small* (85% of short distance truck companies have fewer than five employees);
- Urban freight accounts for a significant part of ambient *noise*;
- Estimated 70 - 75% of first-time deliveries are successful for business-to-consumer in the urban environment

Source: ALICE / ERTRAC Urban mobility WG - Urban Freight research roadmap (2015)

1. City logistics: introduction

Characteristics: contribution to emissions



1. City logistics: introduction

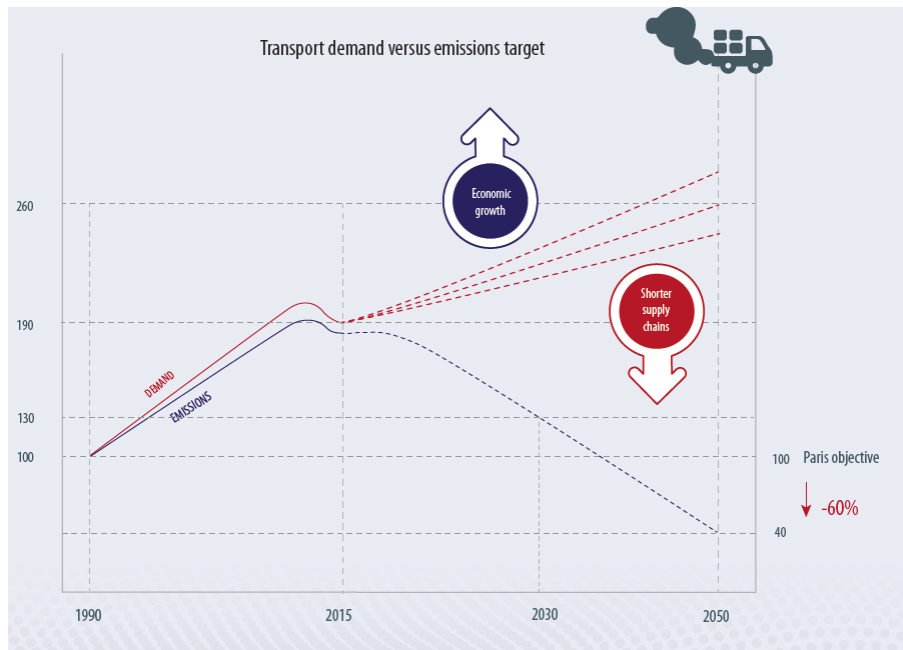
(Urban freight) transport is a derived demand

- › Someone ordering goods or services is at the start of (all) city logistics, e.g.:
 - › e-commerce
 - › (public) procurement
- › Transport operators are good at providing a transport solution

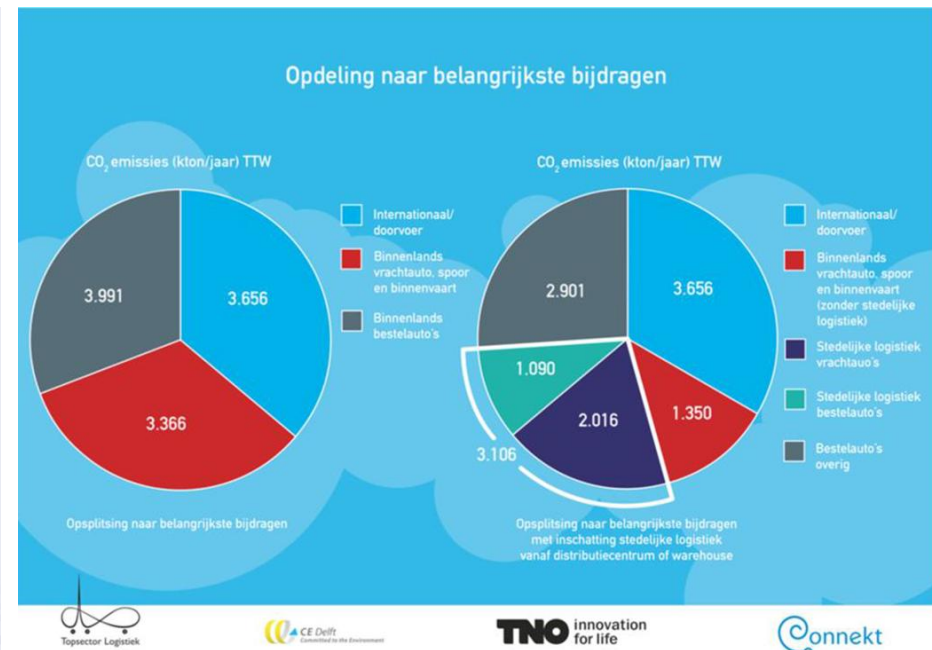
2. City logistics: challenges

GHG emission reduction target

- ▶ The city logistics system faces serious challenges for the near future
 - *Serious share in transport's GHG emissions (3.6Mton ~ 1/3rd of freight transport's footprint in the Netherlands)*
 - *The carbon productivity challenge*



Annual Outlook City Logistics, 2017



2. City logistics: challenges

Zero emission logistics in city centers

- › The city logistics system faces serious challenges for the near future
Major contributor to local emissions (and GHG emissions) in city centres
- › No easy (technical) solution available on large scale



2. City logistics: challenges

Diversity and inertia

- › The city logistics system faces serious challenges for the near future
 - *No single solution / no silver bullet*
 - *System is very divers and difficult to change*

For solutions (or better making changes in the system) -> think about:

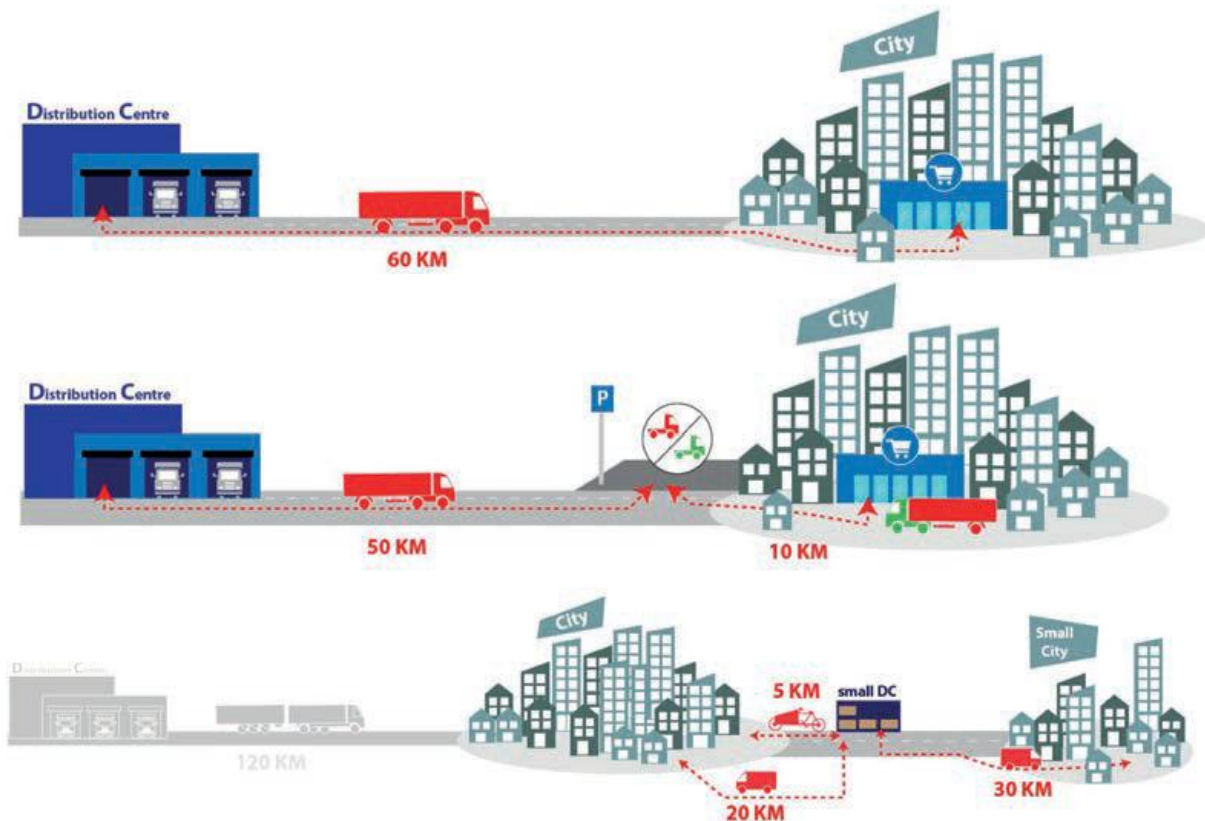
- *drivers for change (developments)*
- *directions to reduce negative impacts*



2. City logistics: challenges

GHG emission reduction target

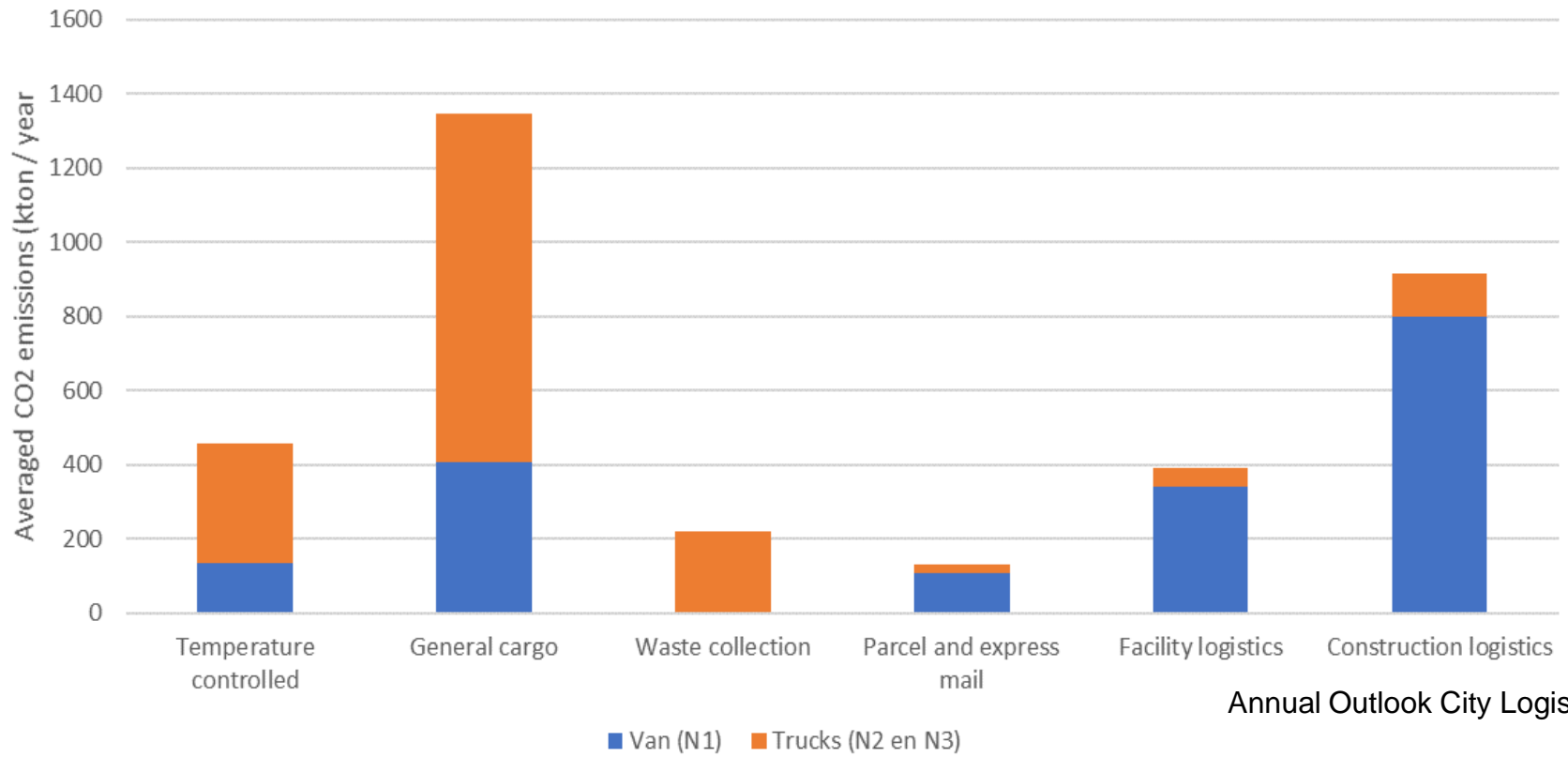
- › City Logistics is defined as follows: *'the last leg in a supply chain to a customer location in a city, or the first leg from a customer location in a city back into the supply chain'*



2. City logistics: challenges

CO₂ footprint per city logistics segment

Estimated CO₂ emissions city logistics per segment in the Netherlands



Annual Outlook City Logistics, 2017

3. Annual Outlook City Logistics

- › develops a set of feasible paths (reference view) to decarbonize specific city logistics segments
- › *not* a prediction of the future, nor a prescription of actions and tasks
- › goal is to provide a baseline which can be shared and debated and improved, to structure discussions among stakeholders
- › backcasting from GHG target
- › following existing primary external drivers



www.topsectorlogistiek.nl/download-nu-outlook-city-logistics/

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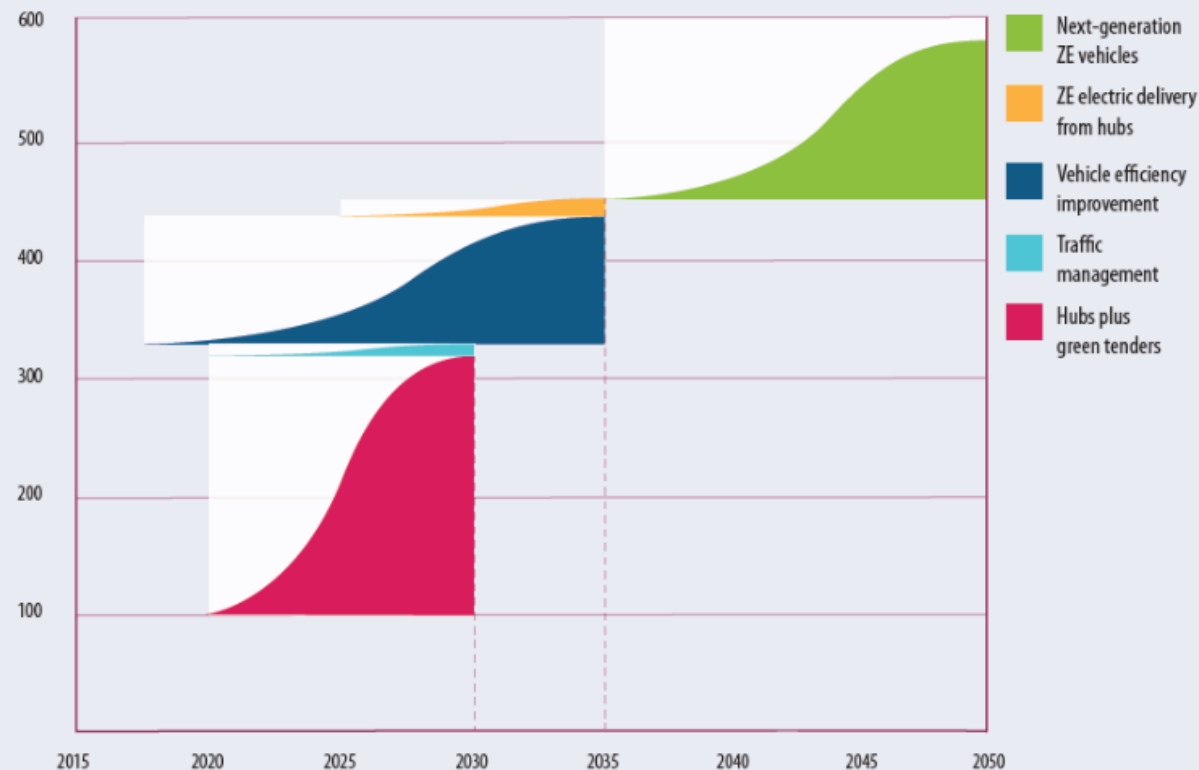
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3. Annual Outlook City Logistics: example

- › Decarbonizing is possible
- › Simply replacing diesel vehicles by electric vehicles is very costly: other solution directions are required

Example: decarbonization path for construction logistics

*Figure 18
Towards zero-emissions
logistics in construction:
large companies*



4. Trends and developments

External drivers

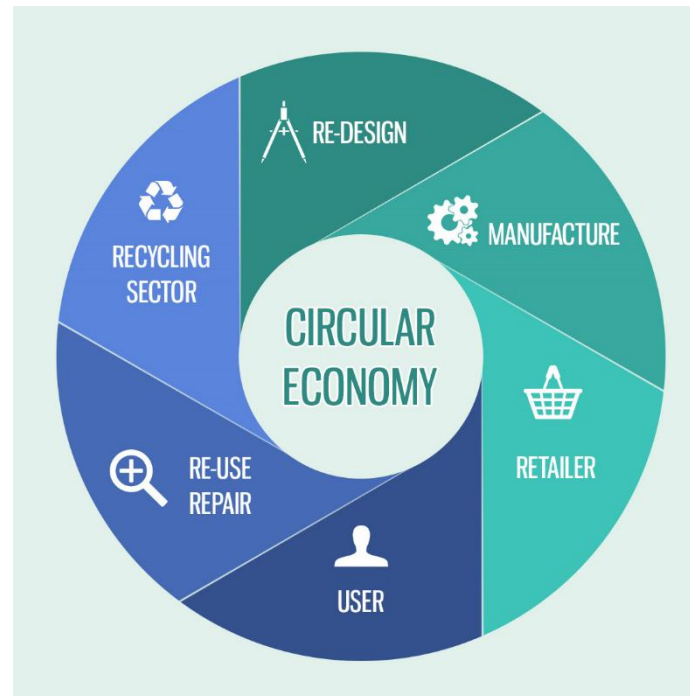
- › Long list of trends and developments
 - › DESTEP (demographic, economic, social, technological, ecological and political developments)
 - › Desk research, expert interviews, expert sessions and round table sessions

- › Main external drivers (trends and developments) changing the city logistics system:
 - › More demanding customers
 - › Increasing pressure for reduction of GHG emissions
 - › Increased pressure for liveability of cities
 - › Circular economy
 - › Connecting the physical world
 - › Physical internet and universal labelling
 - › Robotization and automation
 - › Vehicle drivetrain technology
 - › Performance based regulation

4. Trends and developments

Societal and political pressure

- › Increasing pressure for reduction of GHG emissions
- › Increased pressure for liveability of cities
- › Circular economy



4. Trends and developments

Changes due to information technology

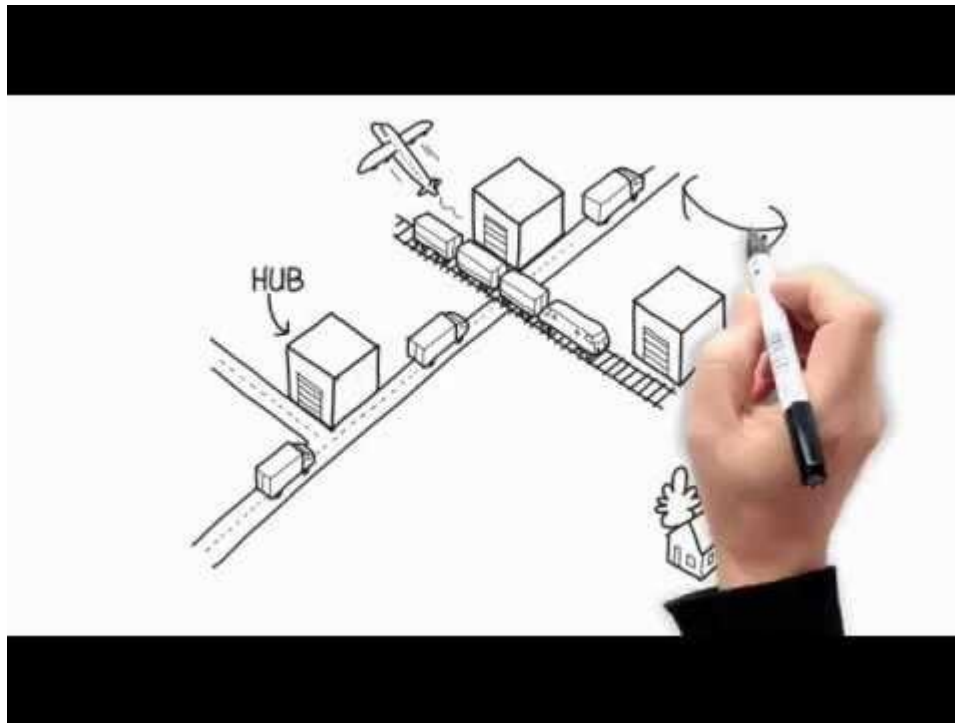
- › More demanding customer
recent mobile IT developments allow for more customer intimacy
- › Connecting the physical world
IoT applications, transparency and vehicle-connections



4. Trends and developments

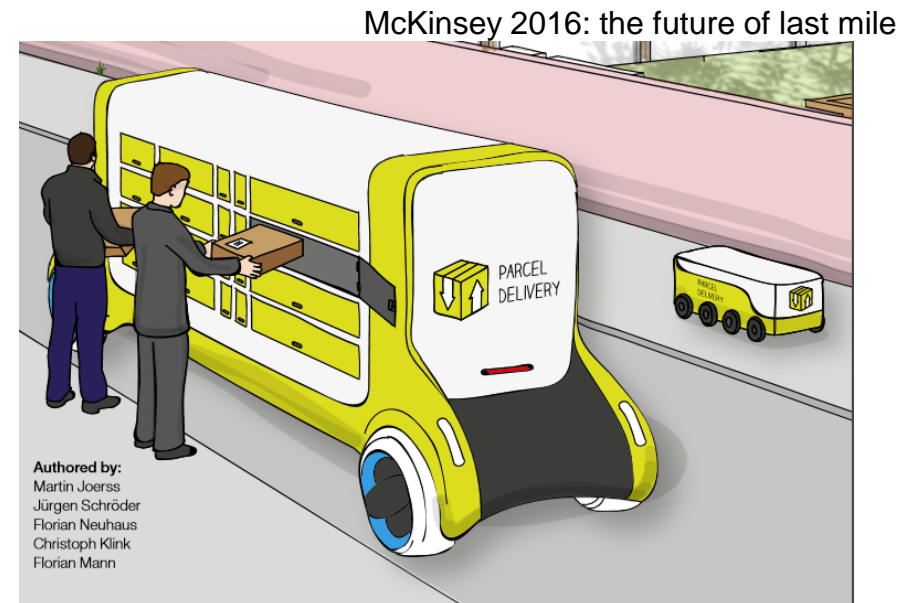
Changes due to information technology

- › Physical Internet and universal labelling
easier connections between networks



4. Trends and developments *Changes due to technology*

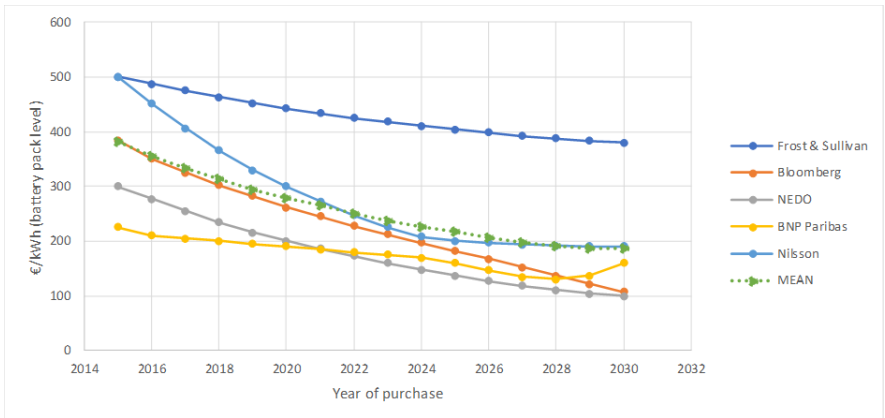
- › Robotization and automation
 - › Autonomous vehicle technology
 - › Automated warehouse



4. Trends and developments

Changes due to technology

- › Vehicle drivetrain technology
 - › Improve ICEVs
 - › Electric vehicles
 - › BEV / PHEVs



Updated battery pack price projections

Feasible business case at this moment?

< 3.5 ton OEM: Nissan eNV200, Renault Kangoo ZE	3.5 ton – 12 ton: small manufacturers (retrofit, e.g. Innamo e-Ducato)	> 12 ton: Small manufacturers (retrofit e.g. EMOSS, Ginaf)
		
		

Figures and analyses: TNO in FREVUE

4. Trends and developments

Required policy developments

- › Towards performance based regulation
 - › Flexible and customizable regulation
 - › Differentiating for logistics activities and environmental performance
 - › Standard regimes, but local application of zones



5. Procurement in city logistics

Trends and developments only enabling change...

- › Trends and developments show directions for changes in city logistics system
- › Keep in mind the motive for (urban freight) transport: someone is ordering the goods or services
- › Real changes start at procurement: the customer sets the conditions
- › Deployment of solutions / new directions depend on the question if someone is serviced 'better'

5. Procurement in city logistics

E-commerce and home deliveries

- › Awareness raising at customers
- › Currently no real incentive (or option) for customers to choose for a sustainable option
- › New services required, scale is an issue

Kies bewust voor duurzame bezorging!

Online shoppen en je pakketje direct thuis ontvangen: makkelijk en vaak beter voor het milieu dan zelf de auto pakken. Wist je dat je daar nog een 'duurzaam schepje' bovenop kunt doen? Vul de test in en ontdek hoe de CO₂-uitstoot van je pakketje verandert op basis van je keuzes.

[doe de test >](#)



5. Procurement in city logistics

Public procurement

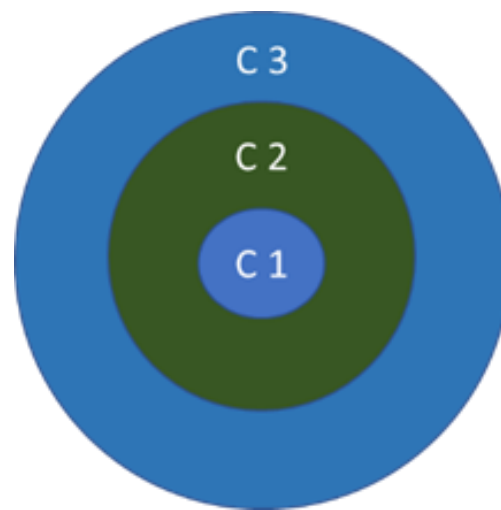
- › Cities (local authorities) can do a lot to reduce negative impacts:
 - › Regulate
 - › Coordinate
 - › Stimulate
 - › Facilitate
 - › Experiment
- › Authorities usually have a big role as '*freight attractor*' in cities (including construction orders and permissions)
- › Public procurement typically represents 10-20% of GDP within EU member states, and the public sector is therefore a *major market actor*
- › Procurement can be used as a *strategic instrument* for helping to meet specific policy goals of the organisation through its influence on supply chains, and not simply as an administrative function

5. Procurement in city logistics

Gap between policy objectives and procurement

Procurement as a strategic instrument and not as an administrative function, *but:*

- No (easy) insights in transport footprinting
 - Transport is indirect procured
- Procurers have 'other' incentives
- Procurement is not always centrally
- Transport movement (people and goods)
as part of the procured service



C 1 – own transport fleet

C 2 – purchased transport service

C 3 – delivery of goods, works, services

5. Procurement in city logistics

What volume? Mapping the current state

There is no easy way to find the exact procured transport

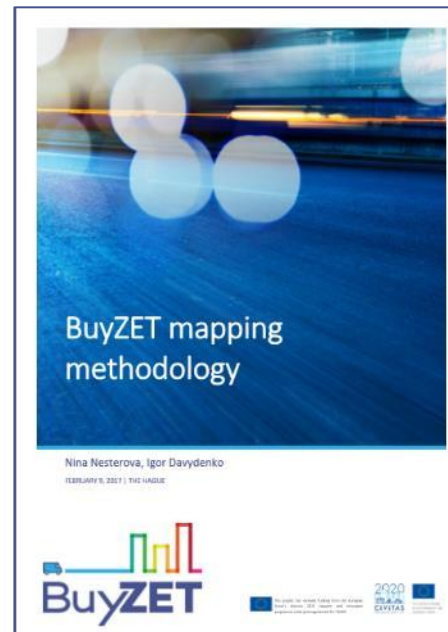
- Spent based (invoices)
- Delivery Service Plans (DSP)

Internal procurement:

- System errors
- Dependent on category managers
- Procurer targets

External suppliers:

- Difficulty to reach critical group
- Key suppliers: talking; regular data supply
- Supplier surveys



Supplier Survey	
How do you rank your relationship with your supplier?	
How do you rank the team of members who helps you in your project analysis and support?	
How well does it communicate all its plans and goals?	
Analysis of the team member who is your source of contact to your supplier:	
Does he responds on time, is he regular in the meetings, and productive?	
Is he able to take decisions, create innovative solutions, and is capable to tackle any situations?	

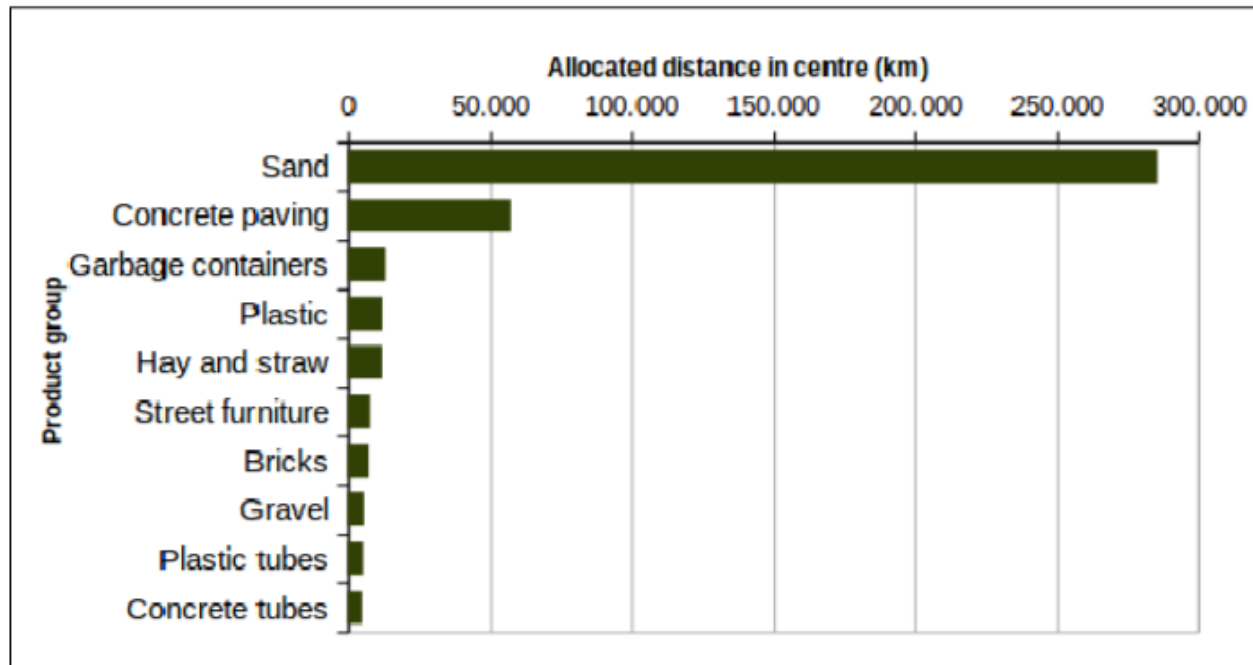
sampleforms.org



5. Procurement in city logistics

What volume? Mapping the current state

- › Example: primary results Rotterdam (Population: 638,221)



PROCUREMENT OF INNOVATIVE
SOLUTIONS FOR ZERO EMISSION
URBAN DELIVERY OF GOODS
AND SERVICES

5. Procurement in city logistics

A Hub for The Hague

The 'Logistical Hub The Hague' project will carry out a research and pilot project to organize the logistics within the government more efficiently and sustainably.

It is a trial - in collaboration with the municipality of The Hague - where government buildings in The Hague are supplied with their materials from a central distribution center. The goal is to reduce CO₂ emissions, a better accessible city center and a cost saving by organizing the logistics processes more efficiently.



Uitvoeringsorganisatie
Bedrijfsvoering Rijk
*Ministerie van Binnenlandse Zaken en
Koninkrijksrelaties*

Innovatieagenda

Logistieke Hub Den Haag

Uitvoeringsorganisatie Bedrijfsvoering Rijk (UBR) innoveert en werkt voortdurend aan de kwaliteit van haar dienstverlening. Met de Innovatieagenda Bedrijfsvoering Rijk versterken we onze innovatiekracht. Deze sluit aan op rijksbrede prioriteiten en bestaat uit verkenningen en pilots. Hiermee spelen we in op maatschappelijke trends en politiek-bestuurlijke ontwikkelingen. UBR|Ontwikkelbedrijf is verantwoordelijk voor de uitvoering. Het project Logistieke Hub Den Haag is een onderdeel van de Innovatieagenda.

Aanleiding en/of probleem
De Nederlandse overheid heeft eind 2015 het VN Klimaatakkoord van Parijs ondertekend. In dit akkoord, dat in 2020 van kracht gaat, wordt sterk ingezet op beperking van het gebruik van fossiele brandstoffen en de uitstoot van CO₂. Daarnaast nemen zowel de Rijksoverheid als gemeente Den Haag deel in de Green Deal Zero Emissie Stadslogistiek. De aangesloten partijen hebben als doel: een emissievrije binnenstad in 2025. Een logistieke Hub lijkt een geschikt middel om bij te dragen aan deze en andere (duurzaamheids) doelstellingen.

Projectdoel

De voordelen van distributie via een Hub zijn:

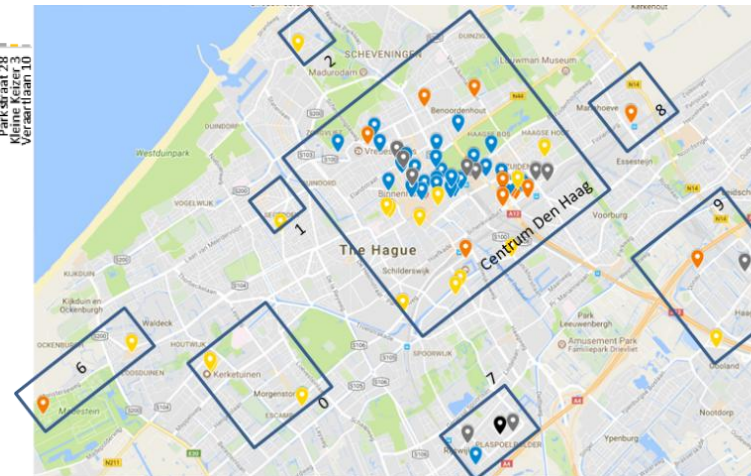
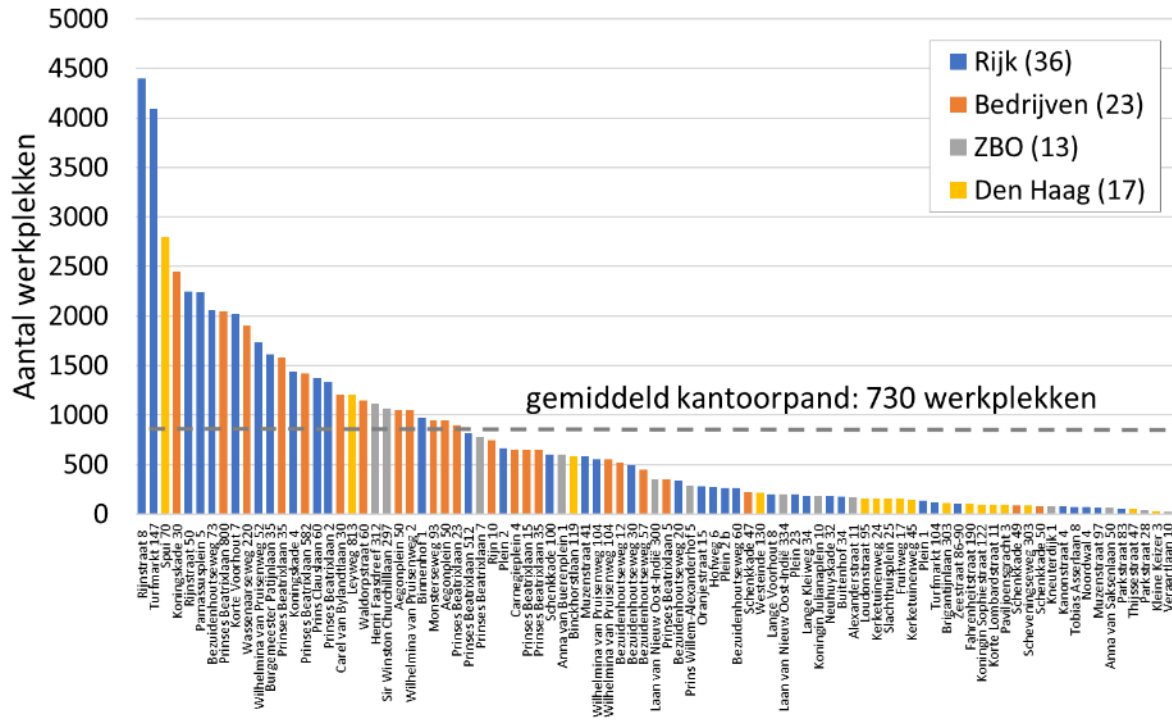
- Een daling van het aantal dagelijkse en gereden kilometers in de binnenstad door het bundelen van vervoersstromen.
- Minder CO₂-uitstoot, óók door de inzet van schonere en stillere voertuigen (elektrisch, aardgas-, biogas-, waterstof- of fietsentransport).
- De afname van fijnstof in de lucht zorgt voor een verbeterde luchtkwaliteit.
- Minder ongelukken en opstoppingen in de binnenstad.
- Minder belasting van het wegdek.



Daarnaast biedt de Hub een goede mogelijkheid tot het vergroten van de inzet van medewerkers met een afstand tot de arbeidsmarkt. Zowel voor de leveran-

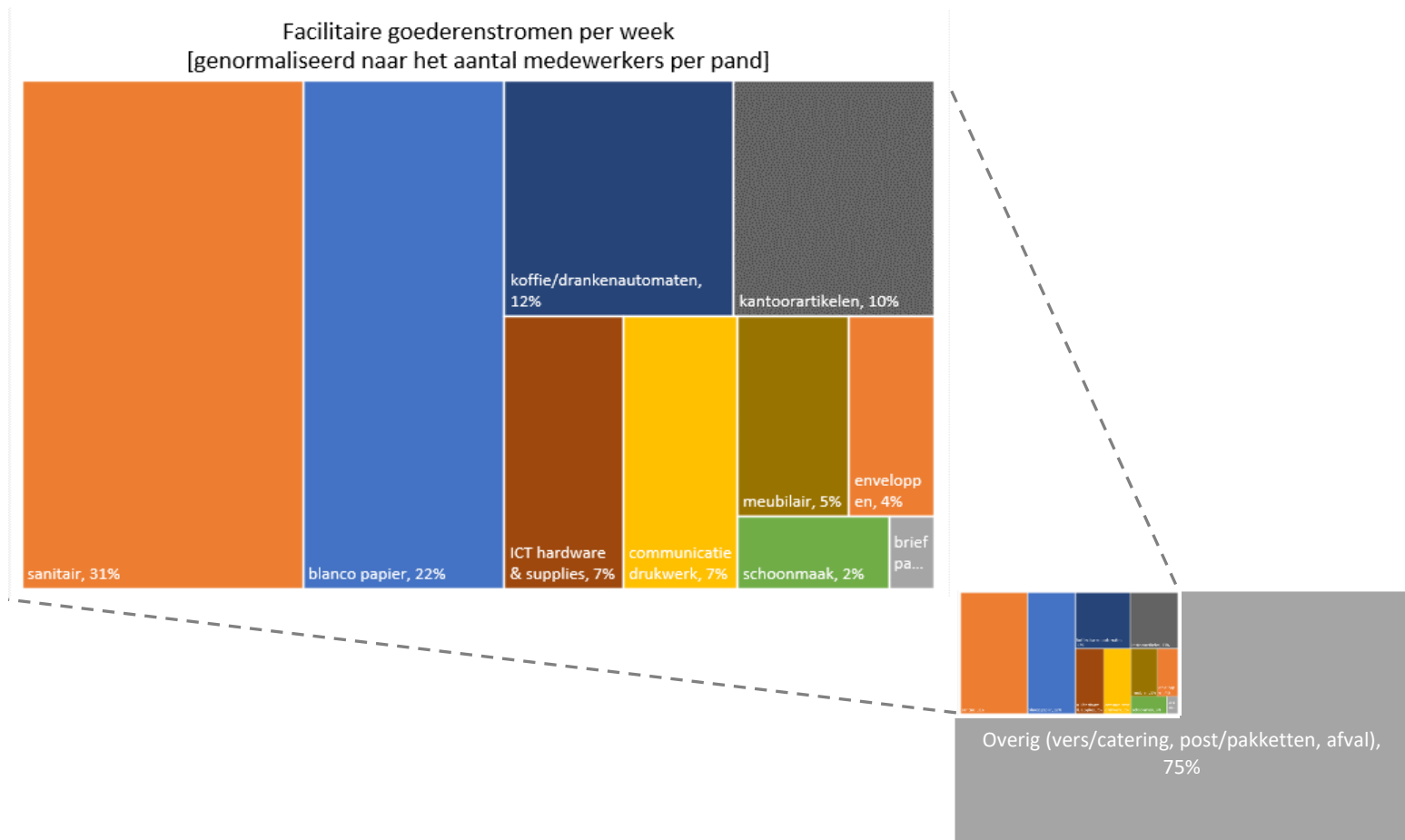
5. Procurement in city logistics *A Hub for The Hague*

Overzicht van kantoorpanden en aantal werkplekken



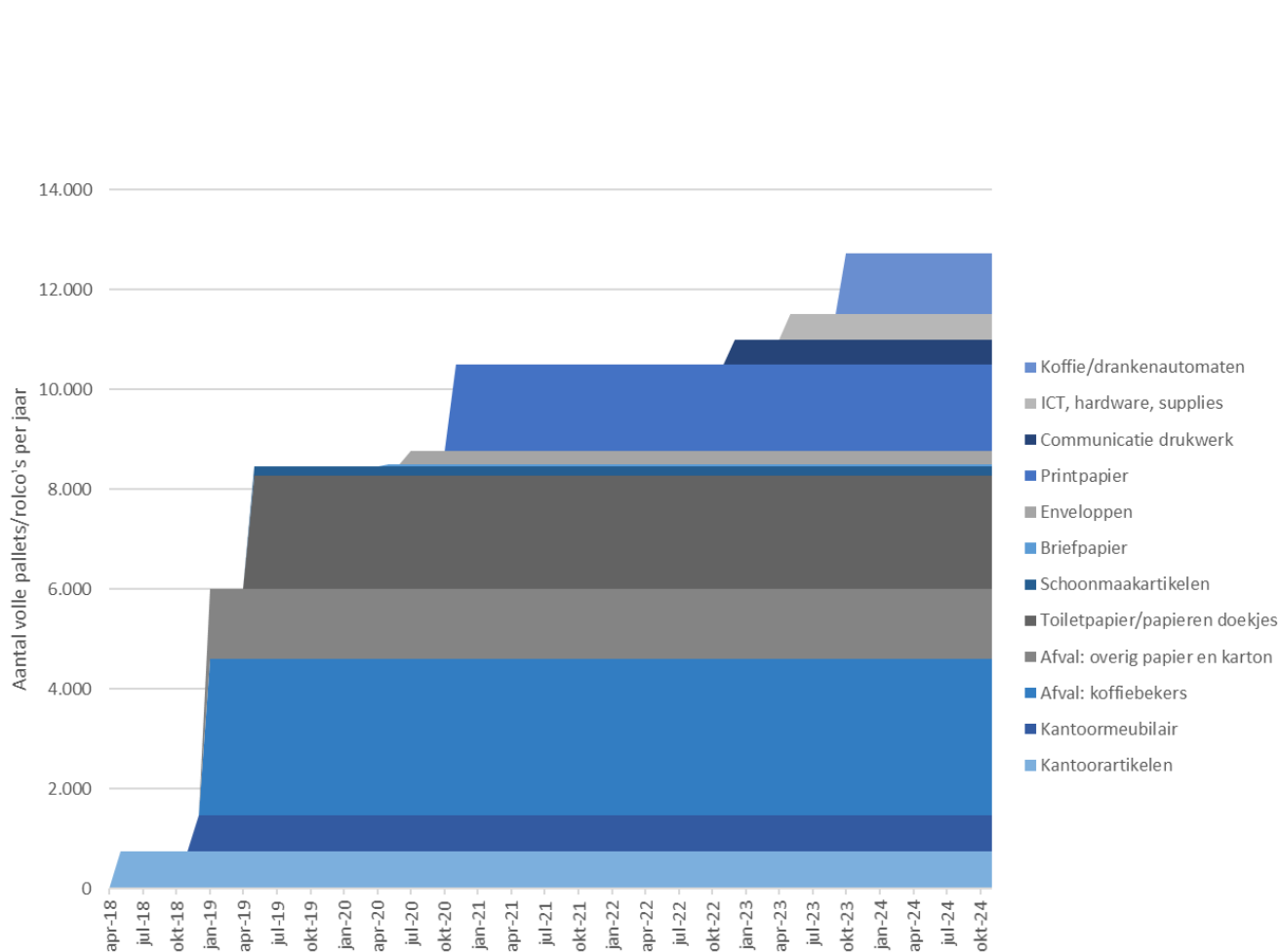
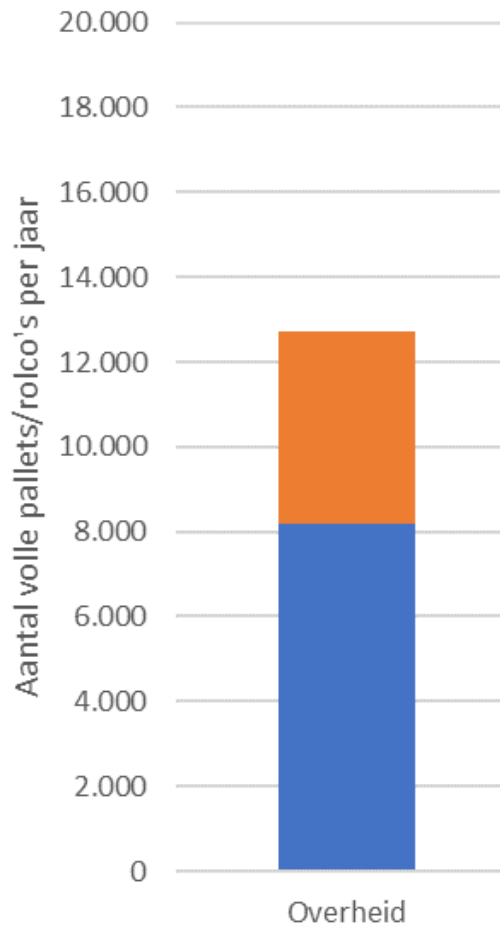
5. Procurement in city logistics

*A Hub for The Hague: facility flows per week
(normalized to number of employees per building)*



5. Procurement in city logistics

A Hub for The Hague: estimates volume



- Koffie/drankenautomaten
- ICT, hardware, supplies
- Communicatie drukwerk
- Printpapier
- Enveloppen
- Briefpapier
- Schoonmaakartikelen
- Toilet papier/papieren doekjes
- Afval: overig papier en karton
- Afval: koffiebekers
- Kantoormeubilair
- Kantoorartikelen

Conclusion

- › City logistics faces serious challenges,
but there are also opportunities to deal with these challenges
- › Existing trends and developments could lead to more sustainable city logistics organisation, however this does not occur automatically
- › Sustainable procurement could contribute to changing the system to become more sustainable (more in the direction of the Physical Internet vision)
(as could strict spatial and environmental regulations)

THANKS FOR YOUR ATTENTION

Dr. Hans Quak

Senior Scientist Sustainable Transport & Logistics

TNO innovation
for life

Anna van Buerenplein 1
2595 DA Den Haag
T +316 31792851
hans.quak@tno.nl
www.linkedin.com/in/hquak



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for life

For more information:

- *Outlook City Logistics 2017* download via www.topsectorlogistiek.nl/download-nu-outlook-city-logistics/
- Quak, Kok and Den Boer 2018 *The future of city logistics*. City Logistics 1 (Taniguchi and Thomsson), p.125-146
- FREVUE Deliverable 3.2 *Economics of EVs for City Logistics - Report* download via www.frevue.eu/reports (on transition towards zero emission city logistics, TCO analyses and requirements for wide scale electrification)