Growing Consolidation and Electric Vehicle Solutions in Urban Logistics

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Conference: Energy systems for smart mobility
European Sustainable Energy Week
POLIS, Brussels
22 June 2017
Objectives of London CITYLAB trials

• To grow the business of electric freight, and to monitor it thoroughly, in order to better understand the business case.

• To evaluate the impacts on:
  – Total distance driven in London and in delivery area
  – Road space occupancy during parking while making deliveries
  – Energy use, air pollutants and greenhouse gas emissions
  – Costs

• To coordinate the trial with the London Freight policies and networks, within the London Living Lab

• Learning from good examples → Transferability → Upscaling
Sustainable Energy & Urban Logistics

- **Objective** of the CITYLAB London implementation is to verify/falsify the hypothesis that it is possible to support sustainable urban logistics growth and answer the **question**:
  - what could be the business case for future growth of electric urban logistics, considering an overall improvement in clean energy, traffic conditions and freight efficiency in urban area?
Building blocks of developing, testing & evaluating solutions in urban logistics

Theoretical framework
- Freight optimisation & efficiency
- Climate change mitigation
- Internalise external costs
- Maximise profit
- Minimise risks
- Customer oriented

Conceptual and mathematical framework
- Conceptual and mathematical model for sustainable urban freight deliveries

Implementation Actions & Living Labs
- Case Studies on consolidation & e-vans
- Living Lab cooperation

Calculations & validation
- Impact assessment, data monitoring and reporting
- Legacy & future scenario

Criteria for selection of initiatives and ‘good examples’

- Recognition in the expert community: high
- Replication in different cities: more than 2 cities
- Applicability and feasibility: easy to difficult
- High impact on km driven: total trucks-km, vans-km
- Lowering emissions: PM, NOx, total CO₂, CO₂ intensity per delivery unit
- Relatively low costs per km avoided
- Lowering noise: dB(A) reduction
- Existing quantified evaluation: yes-no
- Before-after data: yes-no
- Transferability to other cities: easy to implement?
Case Study: London Business Gnewt Cargo

A last-mile logistic provider using a 100% ELECTRIC fleet and a centrally located urban logistics consolidation centre.
Logistics Model of Gnewt Cargo: multi-carrier multi-depots consolidation of deliveries

BEFORE starting using Gnewtcargo

AFTER starting using Gnewtcargo

Limits of the system of data collection

Diesel trucks and vans, peak traffic

Electric van, peak traffic

Diesel trucks off-peak
BEFORE: Standard 3.5t diesel van:
Capacity of 1270 kg and 15 m$^3$
AFTER: new electric vehicles and cycles
Metres per parcel delivered

Gnewt Cargo trials, London, 1st July 2015 – 30 June 2016 (n = 13,358)

one point = average distance in metres per parcel for one delivery route, one driver, one day

Potential for future efficiency improvements
Provisional impacts data of Citylab London implementation

% change BEFORE-AFTER
September 2015 to September 2016

• 0% in total number of trips
• - 67% in miles/parcel delivered
• - 100% in CO$_2$/parcel
• - 100% in NOx/parcel at the tailpipe
• - 100% in tailpipe emission reduction for particles/parcel
• - 75% in oil equivalent per parcel
• - 93% of the last mile empty distance driven by all vehicles
Are these good examples going to be growing?

- Transfer, replicate, growth?
  - Electric van market is slow

New registrations of Battery Electric Light Commercial Vehicles 2011-2015 in UK
TfL drives forward £18 million electric vehicle scheme

26 April 2017

Rapid charge points that power vehicles in 30 minutes to be installed in coming months
Competition and cooperation: private actors in London

- The Centrica Consortium
- ESB (Irland Energy provider)
- Chargemaster Plc
- Bluepointlondon & Source London
- Fastned
Grid and electricity supply on the go?

As of: 20 June 2017
Specific problems/barriers → potential solutions

• *We don’t know* the best business model to grow and scale up sustainable urban logistics solutions
  → CITYLAB started working on scaling up

• Biggest problem is that none of the Gnewt Cargo *depots* in Central London are accessible by a big truck
  → Setting up of a new depot, suitable for growth
  → Help from TfL, London Boroughs, CRP

• Growth implies a shift in business from one subcontractor to another → contractual change?

• *Shared use* of depots and vehicle and customer data
  → businesses accept the idea that subcontractors could share depots, vehicles & data?
Potential supportive policy actions beyond grid infrastructure

• Specific access rules for electric vehicles for certain urban areas such as pedestrian zones and other restricted areas?

• Access authorisation to restricted parking and permit bays and for loading bays in all central areas

• Continuity for electric vehicle parking and stopping areas across all boroughs

• Help in finding logistics depots that are reasonably priced, but centrally located

• In the case of absence of any suitable depots, develop a land-use policy with dedicated areas reserved for sustainable logistics, and investments in new, suitable inner city depots

• Help develop and test different types of suitable technology with research funding

• Having a regular contact with local businesses and helping to coordinate the activities around new sustainable freight and new solutions for different clients, big and small