

Green Technologies & Solutions

Deutsche Post DHL

Challenges and Opportunities with e-mobility for Deutsche Post DHL



Environmental protection
with Deutsche Post DHL

Rio + 20

Rio de Janeiro, Brazil, June 2012

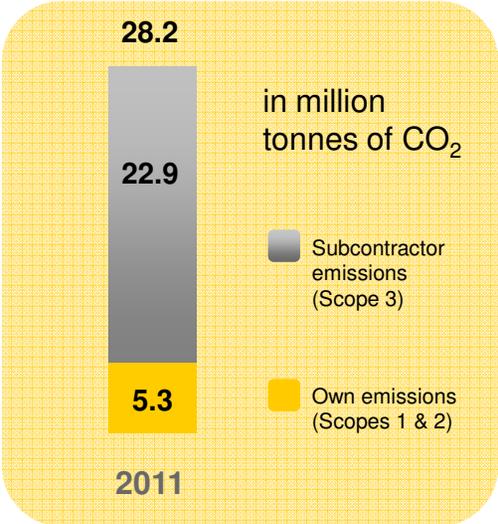


Climate Protection – A Special Responsibility



Deutsche Post DHL's carbon footprint

- As a global logistics company, we move goods and information worldwide.
- With transport at the core of our business, we produce CO₂, the main cause of climate change.
- We initiated the GoGreen environmental protection program to accept responsibility for the environment by reducing our impact.



Source: Corporate Responsibility Report 2011, Deutsche Post DHL

Reaching Goals through Efficiency

Deutsche Post DHL was the first globally operating logistics company to set itself a concrete CO₂ efficiency target

DPDHL CO₂ Efficiency Target

– DPDHL CO₂ Index –



We aim to improve our CO₂ efficiency including subcontractors by 30% by the year 2020, compared to our 2007 baseline.



DPDHL CO₂ efficiency¹⁾

CO₂ from energy consumption

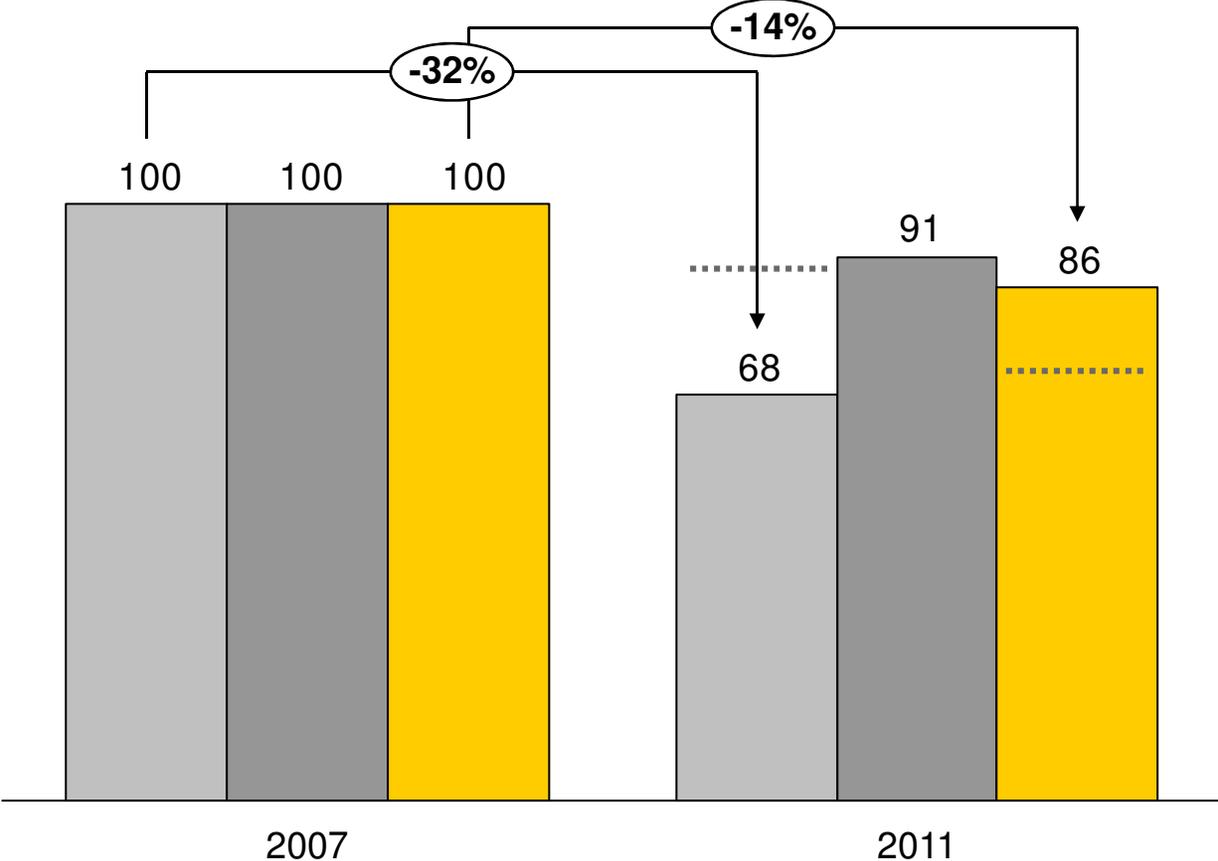
Service delivered

Source: GoGreen, Deutsche Post DHL, Green Strategy 1) Direct and indirect emissions Scope 1, 2 and 3

Carbon Efficiency – Status Quo 2011

Deutsche Post DHL further improved its carbon efficiency index¹⁾ in 2011 and reached 2012 target level for direct emissions

- Scopes 1 and 2
- Scope 3
- Scopes 1 - 3
- Target levels



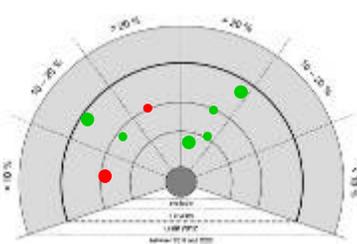
Source: Corporate Responsibility Report 2011 1) Carbon Efficiency Index on group level for all scopes. 2007: 100; 2008: 97; 2009: 93; 2010: 88; 2011: 86

Increase CO₂ Efficiency Inside DPDHL

Different abatement levers are being analyzed to detect reduction potentials

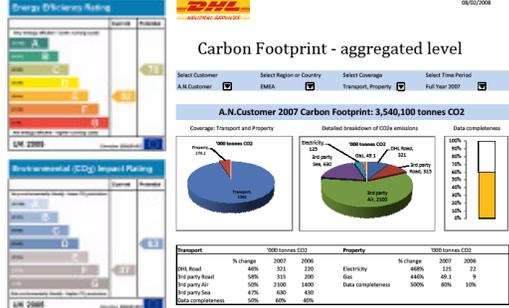
Vehicles

- **Electric vehicles**
- Biogas-/Biodiesel/ Fossil gas/Vegetable Oil vehicles
- Hybrid Trucks
- Refleeting aviation
- Teardrop trailer
- Environmental friendly company cars




Real Estate

- Innovative energy concept
- Efficient lighting and heating systems
- Photovoltaic, solar panels, hange of energy mix, etc.

Carbon Footprint - aggregated level

Select Customer: A.N.Customer | Select Region or Country: EMEA | Select Coverage: Transport, Property | Select Time Period: Full Year 2007

A.N.Customer 2007 Carbon Footprint: 3,540,100 tonnes CO₂

Transport	1000 tonnes CO ₂		Property	1000 tonnes CO ₂	
	% change	2007		% change	2007
DHL Road	40%	321	Electricity	48%	114
3rd party Road	58%	315	Gas	44%	45.1
3rd party Air	50%	2100	Data completeness	200%	60%
3rd party Sea	47%	636			
Data completeness	200%	62%			

Network

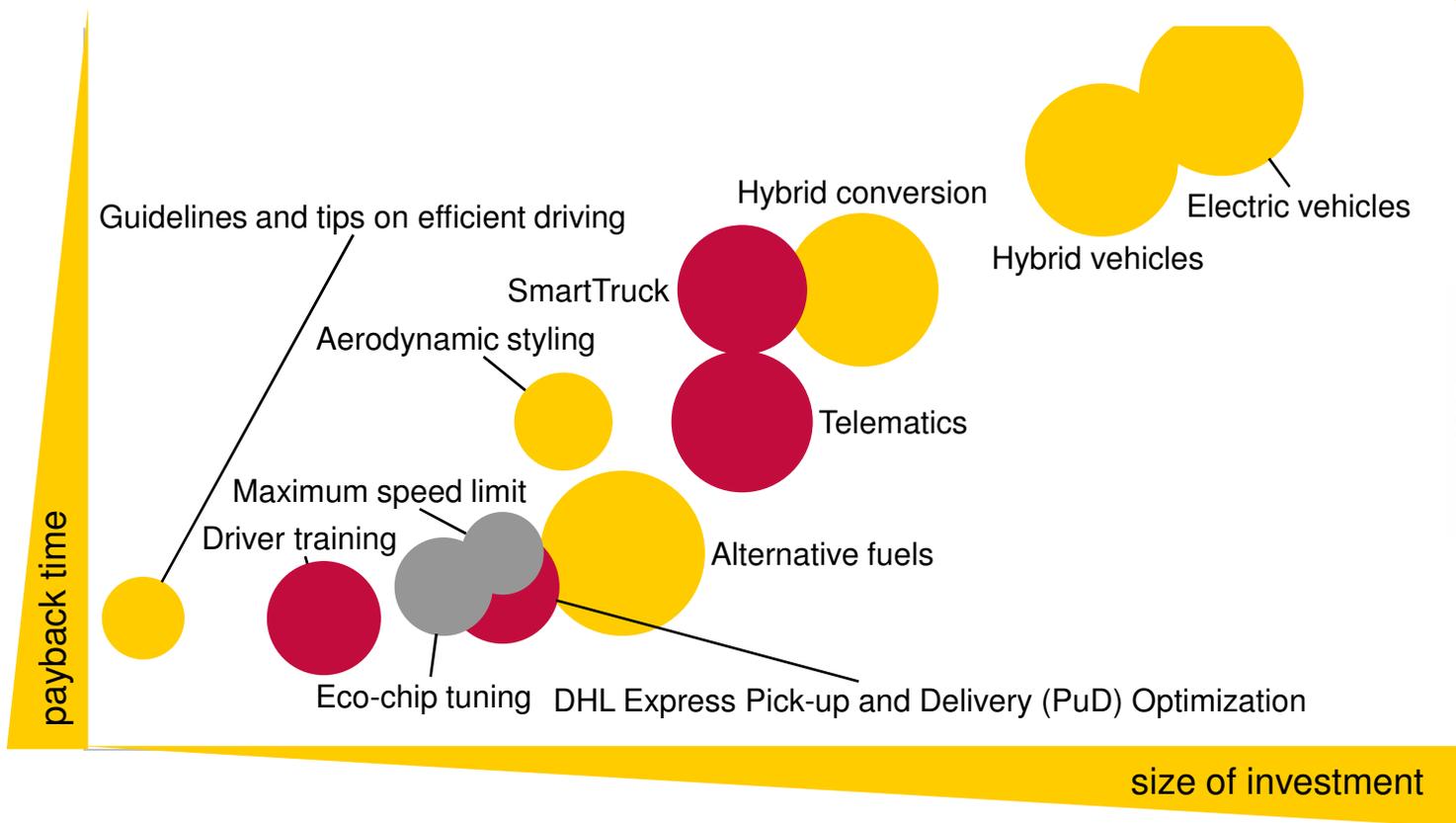
- Consolidation points such as Packstation
- Network & route optimization
- Modal shift, e.g. air to road
- Load factor/ capacity optimization
- Supplier Management



DPDHL Technology Roadmap – Project Cluster

Detected innovations and technologies along driving cycles and vehicle types vary in their impact on CO₂ efficiency

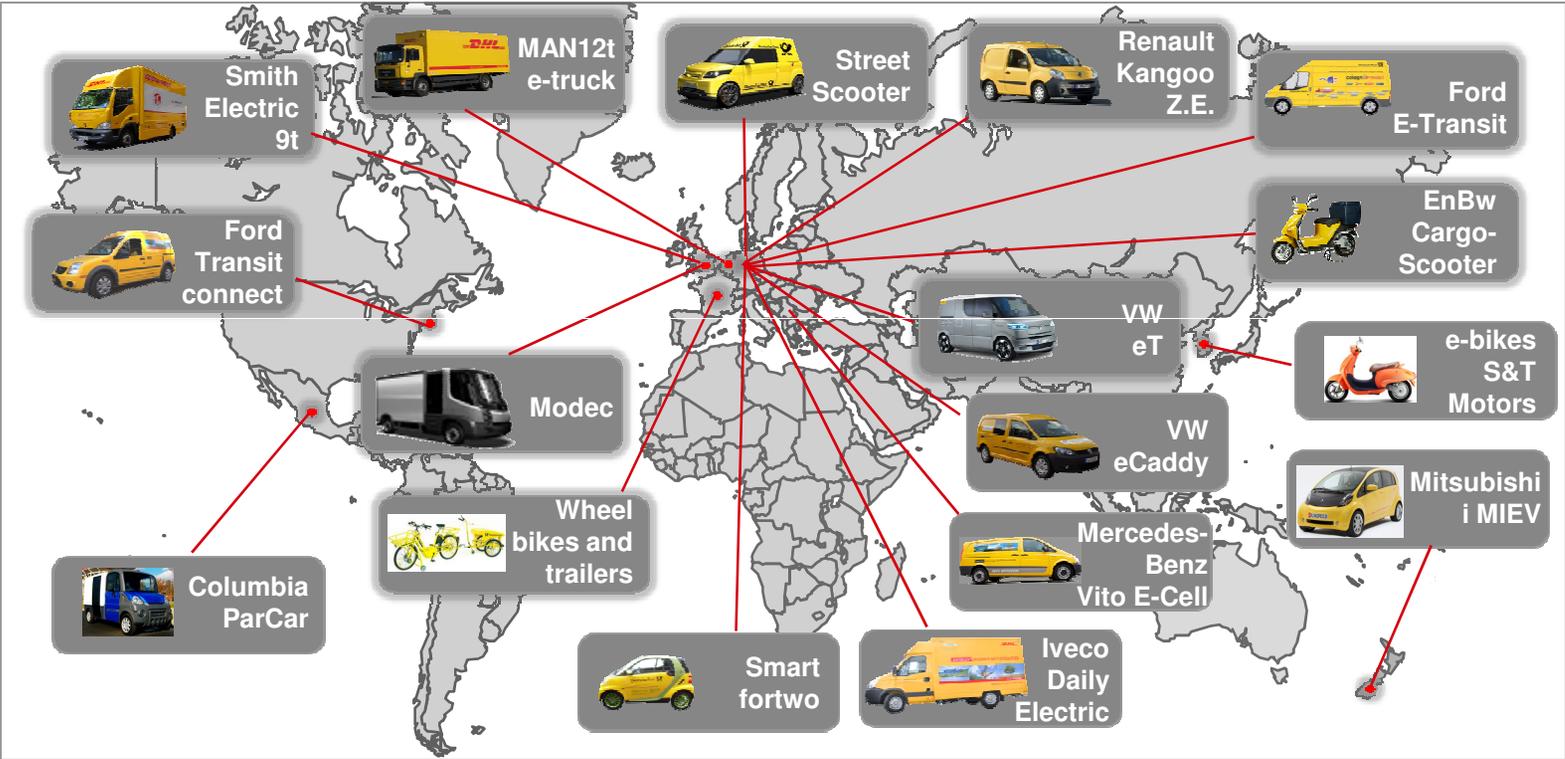
- Quick wins
- Long term engagement
- Medium effort
- High CO₂ reduction
- Low CO₂ reduction



Source: The GoGreen road abatement database, DPDHL, 2010.

E-Mobility Projects in DPDHL

Electric vehicles offer benefits especially in the short and start-stop intensive driving cycles in “Last Mile” delivery



A systematic testing of more than 130 vehicles across all classes and manufacturers shows future potentials but also challenges

Source: GoGreen, Deutsche Post DHL

Transport Efficiency - Express

DHL Express with 100% green fleet of electric and hybrid vehicles in Manhattan

- Million-dollar investment in the United States
- Conversion of the DHL Express station in Manhattan to a 100% green fleet
- 30 electric and 50 hybrid vehicles
- Vehicles from the manufacturer Ford and Azure Dynamics
- Green power with renewable energies
- Overall carbon savings of more than 50% per year expected

Couriers' feedback on E-Vehicles

- The drive is not surprisingly different than other gas-powered vehicles
- Its quick acceleration and the regenerative braking is more responsive than anticipated
- Easier to navigate around busy city traffic and in and out of shipping docks based on smaller size than conventional vans
- Initially, couriers needed to get used to the silent nature of the van and paying more attention to the interior dashboard to confirm the vehicle is in the "on" position



Benefits and challenges of E-Vehicles

Battery technology is improving but needs further development to achieve the cost and performance requirements of the transportation industry

Benefits

- **High durability** - no major breakdowns during vehicle testings
- **Highly efficient** at low speeds and idling
- **Low noise** level
- **low operational costs**
- **Free access** to urban environmental zones
- **No need for gearing** which reduces friction losses between the engine and wheel
- **Regenerative braking** can capture a significant portion of the kinetic energy
- **sufficient range** for standard delivery procedure
- CO₂ –Efficiency up to 100% (using renewable energy)

Challenges

- **Low range** safety margins in **winter operations** due to high energy demand of auxiliary consumers (e.g. heating) and low battery performance in cold outside temperatures
- Total cost of ownership is typically twice as high as an ICE, **high costs** for **charging infrastructure** hardware and installation
- **Vehicle charge time** needs to be planned
- Demand for intelligent strategies for charging of large vehicle fleets (> 20-50 vehicles) due to **high local energy demands**
- **Payload loss** leads to process implications in operations with 3,5t class due to driver license issues
- Limited to vehicles up to 12 ton

Source: GoGreen, Deutsche Post DHL

Summary

DPDHL is supporting the industry to develop the needed E-Vehicles



- E-Vehicles are generally operationally suitable for inner city delivery and offer significant emissions reductions
- Remaining challenges besides costs are the implications of winter operations and the development of dedicated charging infrastructure solutions for large fleets
- E-Vehicles do not offer improvements to the challenge of increasing traffic density in urban areas. A combination with additional levers is therefore mandatory for a sustainable city logistic approach
- Researchers are working on improved battery technologies to increase driving range and decrease recharging time, weight, and cost. These factors will ultimately determine the future of E-Vehicles

Thank you for your attention



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GOGREEN

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More about GoGreen: <http://www.dp-dhl.com/en/responsibility>