



Go Green – New Services - DHL Solutions

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GoGreen

The Group's
climate protection program

Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

Deutsche Post DHL aims to reduce its carbon footprint for every letter mailed, every container shipped and every square meter of warehouse space used by 30 percent by the year 2020. With this target, the No. 1 global logistics company is the first major company in its industry to set a quantifiable climate protection target.

"Go Green & New Services"

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climate protection program

Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

For years the logistics industry has benefited from fast economic growth and the increase in world trade. However, growth in industries and services comes at the cost of rising greenhouse gas emissions, which are seen as the prime cause for global warming.

With a share of 14 percent in global carbon emissions, the transport sector – and thus the logistics industry – has a special responsibility in the global battle against climate change.

2010: -30 % CO2 emission, 2012: -10 %



GoGreen

The Group's
climate protection program

Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

With annual revenue of more than 54 billion euros and over 500,000 employees in more than 220 countries and territories, Deutsche Post DHL is the No. 1 player in the logistics industry. As the leading logistics company we are prepared to be at the forefront in the global effort to cut greenhouse gas emissions.

We therefore aim to improve efficiency in regard to the carbon emissions of our own as well as our subcontractors' operations by 30 percent by 2020. That means we will reduce the carbon footprint of every letter or parcel we ship and every square meter we use by almost one-third. As a first step, we are striving to improve carbon efficiency of our own operations by 10 percent by 2012.

> [More information](#)

GoGreen

The Group's
climate protection program



Our industry

GO

Our goal

GO

Our measures

GO

Our limits

GO

At the core of our GoGreen Program is a three-pronged method of assessing, reducing and offsetting. In order to reach our own targets we will assess the carbon emissions throughout our operations on a regular basis and introduce a variety of measures to reduce them. In addition, we are offering our customers the option to offset the carbon emissions caused by the transportation of their goods.

To ensure transparency and credibility we will report on the progress we make toward reaching our targets on a regular basis.

> [More information](#)

Shipment will follow normal procedure, no special handling



CFA Tool
captures carbon
emission at
different legs

CO2
Emission

CO2
Emission

CO2
Emission

CO2
Emission

CO2
Emission

■ **ACCEPT /
OPMS**
captures
Operational Data

Distance &
Volume Weight

Volume
Weight

Route & Volume
Weight

Volume
Weight

Distance &
Volume Weight

CO2 per
shipment
weight

CO2 per
shipment
weight

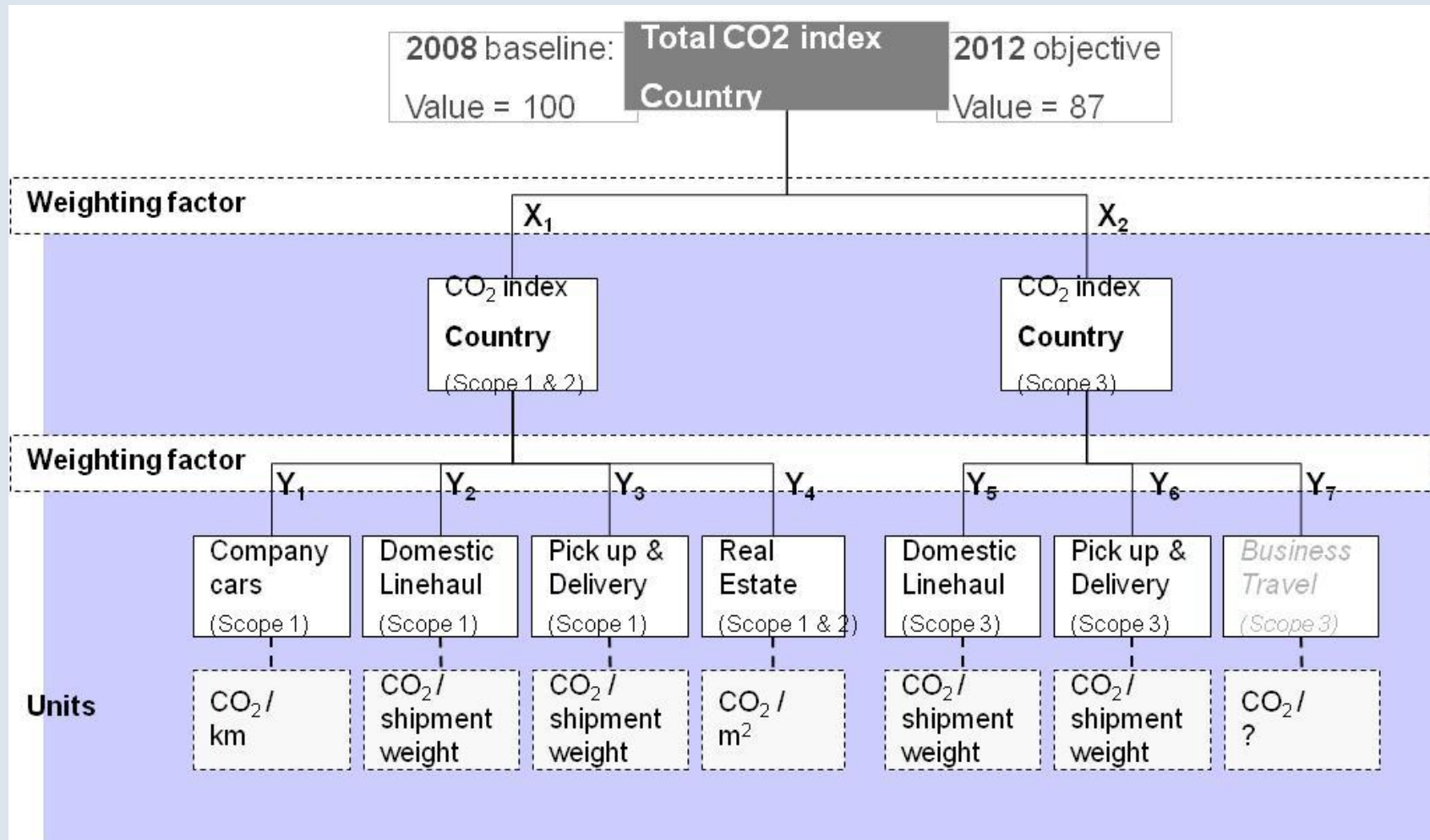
CO2 per
shipment
weight

CO2 per
shipment
weight

CO2 per
shipment
weight

Depend on the shipment route, CO2 Emission can be calculated on shipment level

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GoGreen

The Group's
climate protection program

Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

► Sharing responsibility

Fleet optimization

Energy efficiency

Innovative technology

Changing behavior

Since the Group's long-term carbon efficiency target includes subcontractors, Deutsche Post DHL will develop methods to assess those emissions and identify measures to reduce carbon emissions.

As part of the GoGreen Program, the Group will also expand its GoGreen product and services range. Deutsche Post DHL was the first logistics company to offer customers the option to send their shipments in a carbon-neutral way.

> [More information](#)

GoGreen

The Group's climate protection program

Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

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► Fleet optimization

Energy efficiency

Innovative technology

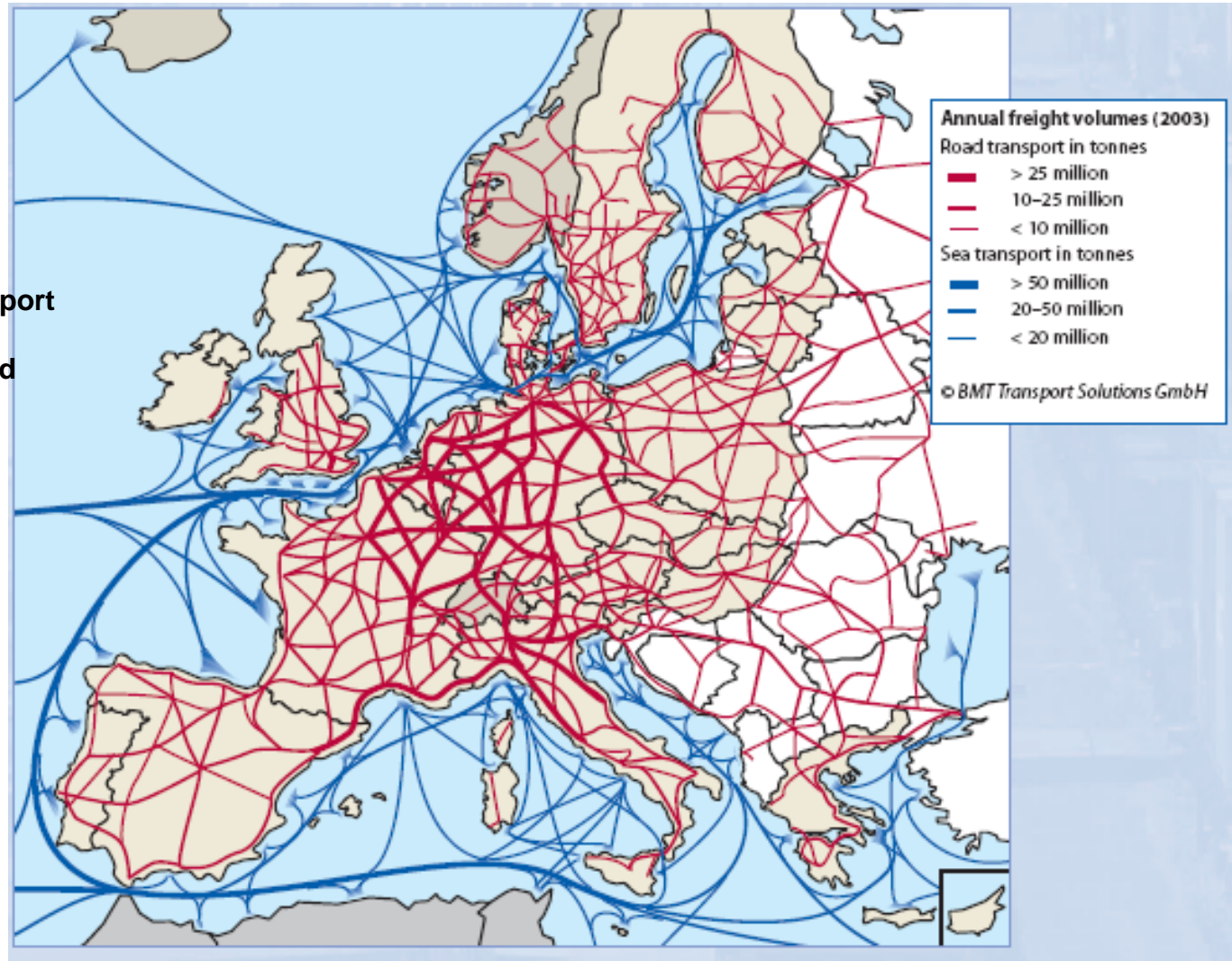
Changing behavior

Deutsche Post DHL relies on using measures of transportation such as airplanes, trucks and ships, which use fossil fuels and are responsible for the lion's share of the Group's carbon dioxide emissions.

To help reduce those emissions, Deutsche Post DHL will gradually replace its air and ground fleets. The Group also counts on a partial shift of transportation from air to ocean, road and rail to help lower carbon emissions.

> [More information](#)

- Better use of Tr. Resources
- Short-sea shipping 41% tn-km moved in EU
- Road Transport 45%
- Short-sea has not seen a rise in congestion similar to road transport
- Longer trips within EU rail, inland waterway short-sea shipping are more effective alternatives
 - More fuel-efficient
 - Less labor-intensive
 - Congestion free
- Parallel sea lanes to motorways
- Short-sea shipping service → frequent, high-quality, door2door transport services



“Go Green & New Services”

■ Models to be used trying to Re Shape the Supply chain from linear to Dynamic

- Trip Generation, Trip distribution,
- route choice, Link performance analysis,
- revenue and cost model.

■ Advanced information Technology systems

- The Fast and secure movement of goods and the continuously change of their status could be managed only

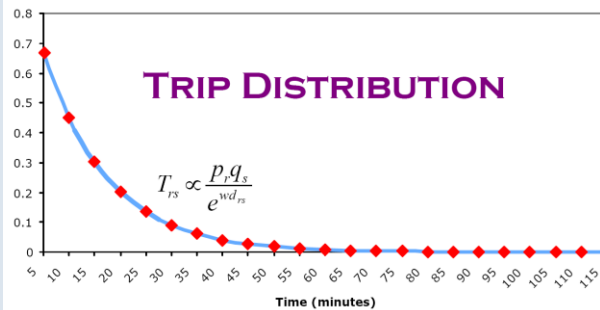
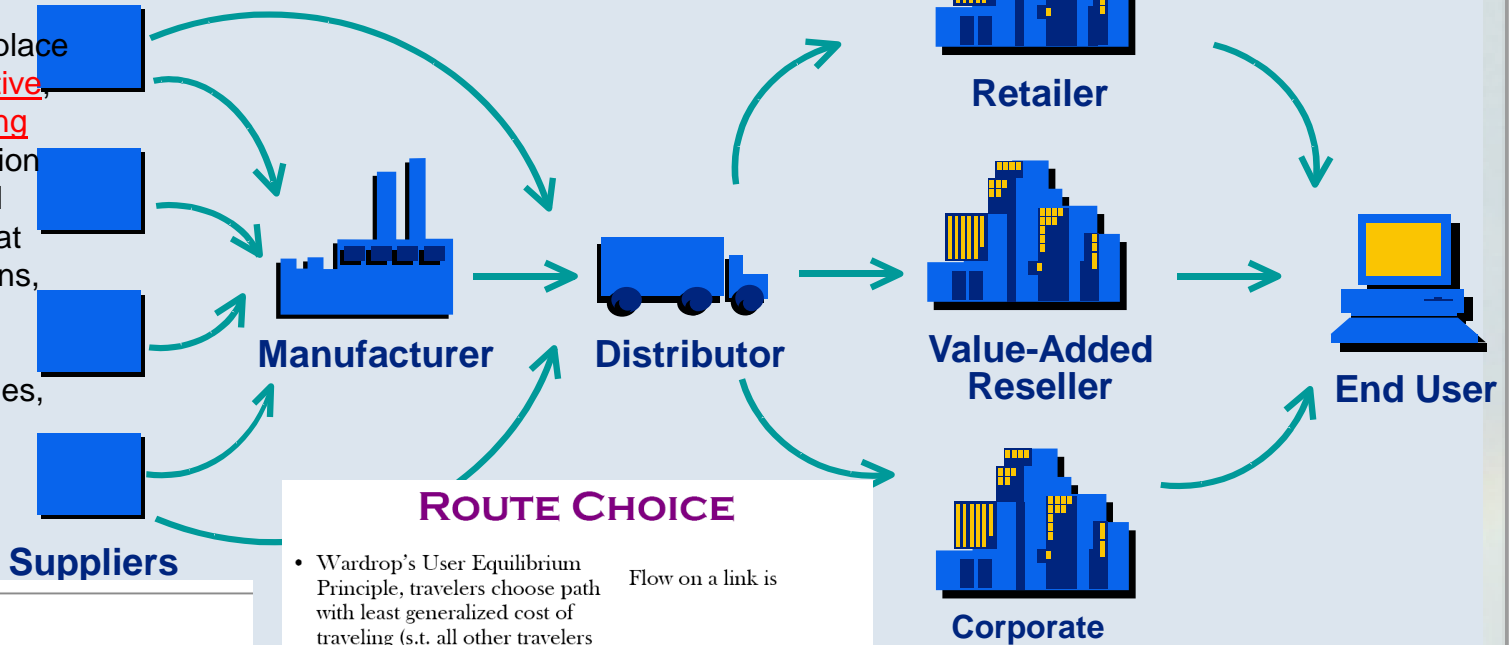
.... by exploiting theirs information for each moments (metadata)

- The management of this logical model could be realized only by a set of dynamic and advanced information systems and Telecoms

■ The Value of information is the same as the value of the transportation itself

Transition from Linear Supply Chain...

Transportation is a highly **structured** process, it takes place on **networks**, it is **time sensitive**, and it has issues with **queuing** and **congestion**. Transportation requires **space** to occur, and radically alters spaces both at nodes—the terminals, stations, interchanges, which often become important activity centers—and along links (lines, roads, tracks, etc.).



Calculates trips between network nodes

- Gravity model
- Working on agent-based trip distribution

Where:

T_{rs} is trips from origin node r to destination node s ,
 p_r is trips produced from node r ,
 q_s is trips attracted to node s ,
 d_{rs} is cost of travel between nodes r and s along shortest path
 w is "friction factor"

ROUTE CHOICE

- Wardrop's User Equilibrium
Principle, travelers choose path with least generalized cost of traveling (s.t. all other travelers also choosing the least cost path)
- Cases
 - No Congestion
 - Dijkstra's Algorithm
 - With Congestion
 - Origin Based Assignment (Boyce & Bar-Gera)
 - Stochastic User Equilibrium (Dial)
 - Agent-based Assignment (Zhang and Levinson, Zhu and Levinson)

Flow on a link is

$$f_a = \sum_{rs} T_{rs} \cdot \delta_{a,rs}$$

Where

$$\delta_{a,rs} = 1 \text{ if } a \in K_{rs}, 0 \text{ otherwise}$$

K_{rs} is a set of links along the shortest path from node r to node s ,

LINK-PERFORMANCE FUNCTION

- Generalized link travel cost function

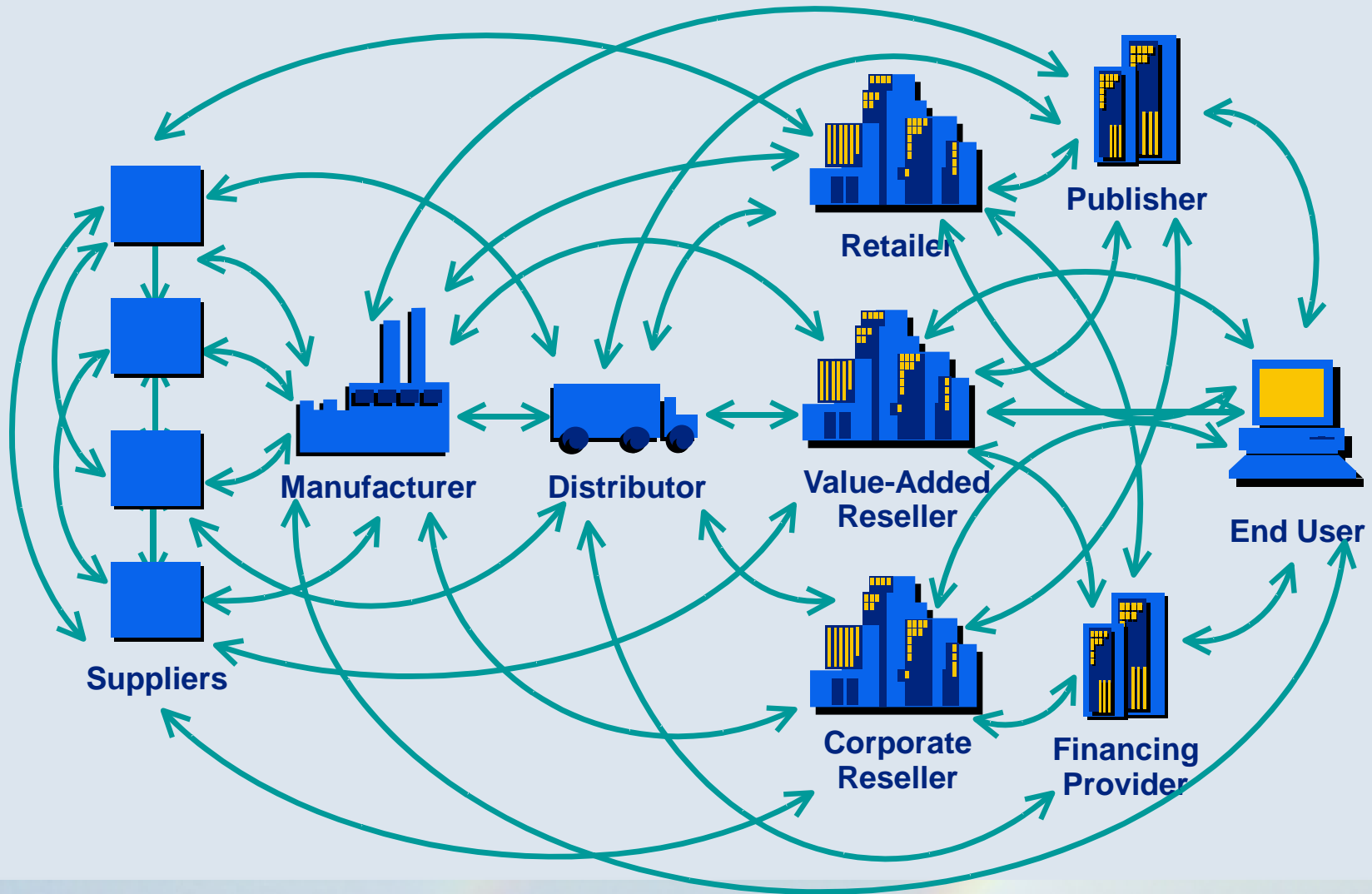
VOT•BPR travel time + Toll

$$t'_a = \lambda \cdot \frac{l_a}{v_a} \left[1 + \theta_1 \left(\frac{f_a}{F_a} \right)^{\theta_2} \right] + \tau'_a$$

l_a is length of link
 v_a is speed of link a
 λ is value of time
 τ_a is "toll"
 θ_1, θ_2 are coefficients

In No Congestion Case, $\theta_1 = 0$

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Our industry

GO

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GO

Our method

GO

Our measures

GO

Our limits

GO

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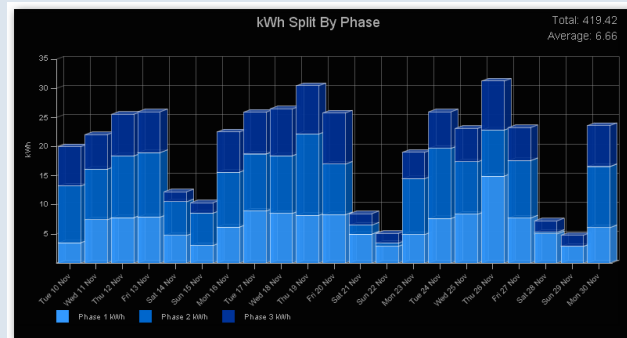
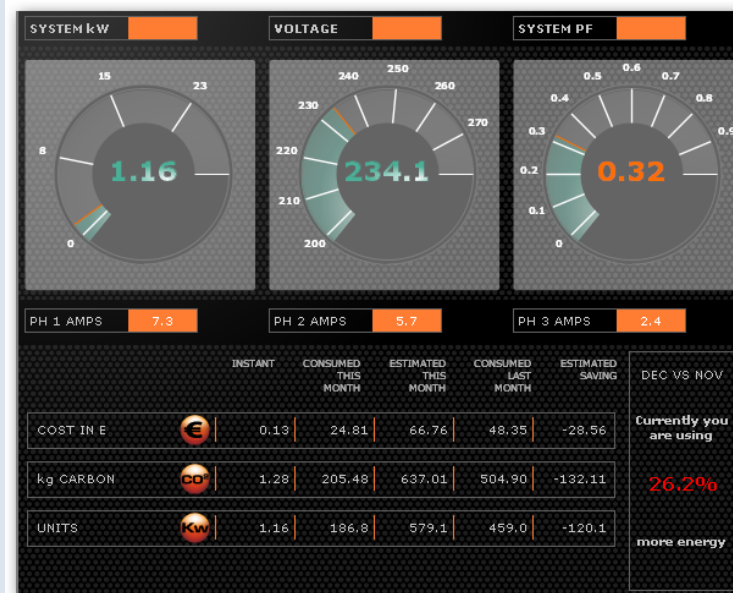
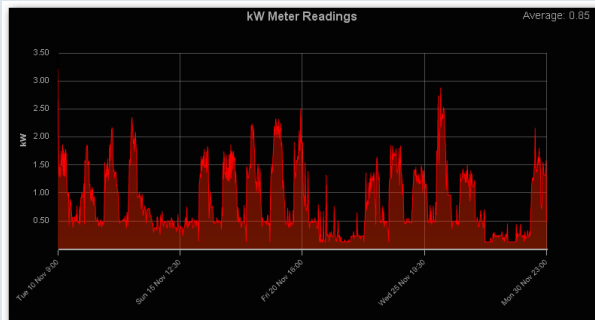
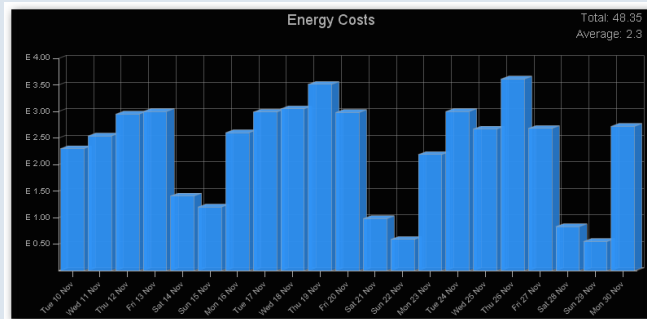
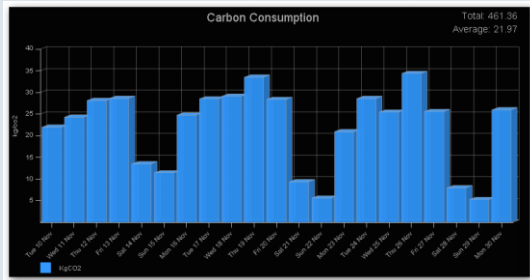
Innovative technology

Changing behavior

As part of its carbon footprint assessment, Deutsche Post DHL will thoroughly examine the energy efficiency of real estate assets from warehouses and sorting centers to hubs and retail outlets.

The Group will reduce the impact of its buildings by installing more efficient lighting and optimizing the heating and cooling systems of its existing buildings. In new buildings Deutsche Post DHL uses technical innovations to increase energy efficiency.

> [More information](#)



- Temperature
- Behaviors
- Lighting
- Effective electricity usage
- Warehouse equipment

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Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

Sharing responsibility

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Deutsche Post DHL is the only company in the logistics industry that has bundled its innovation activities in a research center aimed at developing highly innovative products based on logistics trends of the future.

With its thorough route planning and telematic solutions, the DHL Innovation Center will help raise the efficiency of the Group's fleet and offer resource-saving solutions to customers.

■ Dynamic Routing

- Trip Generation, Trip distribution,
- route choice, Link performance analysis



RFID gates in the DHL Freight Distribution Center in Cologne

■ RFID (Radio Frequency Identification)

- Smart Sensor
- Bulk Reading,



■ Telematic

- e signature
- e billing
- e trading



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Our industry

GO

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GO

Our method

GO

Our measures

GO

Our limits

GO

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▶ Changing behavior

Deutsche Post DHL is the world's sixth-largest employer and its workforce plays a key role in the GoGreen Program. The Group supports its employees in leading an environment-friendly life both at work and at home.

To raise consciousness among its staff, Deutsche Post DHL will also implement a comprehensive employee awareness program.

> [More information](#)

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Our industry

GO

Our goal

GO

Our method

GO

Our measures

GO

Our limits

GO

While implementing the GoGreen Program is an important first step, we are well aware that we are part of a worldwide effort to fight global warming and thus depend on governments, the companies we do business with and technological progress to meet our goals.

We may not have all the right answers yet, but that doesn't stop us from taking responsibility early.



...Thank you !