

# To what extent are European vans related to cars?

**A T&E analysis of the assumptions from the AEA support study to the UK consultation “Determining counterfactual CO<sub>2</sub> emissions of new vans”<sup>1</sup>**

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## Summary

This paper relates to the UK consultation to European regulation on new van CO<sub>2</sub> emissions.<sup>2</sup> It demonstrates that costs to comply with the proposed EU regulation to reduce CO<sub>2</sub> emissions and fuel consumption from vans are likely to be lower than cost figures from the AEA support study to the UK Government’s Impact Assessment report, and hence also lower than cost figures from the official EU impact assessment.<sup>3</sup>

The main reason why the report overestimates these costs is that it is too pessimistic on the extent to which medium-sized and large vans can use low-CO<sub>2</sub> technologies originally developed for cars.

Our paper argues that a different definition of what is a car-derived van should be used by researchers. Other findings are:

- In accordance to the AEA findings, we have found all small vans (Class I) to be directly car derived.
- In contrast to the AEA findings, this paper shows that medium and large vans (Classes II and III) are often derived from and always related to passenger cars.

Therefore, the costs to develop specific technologies for vans are likely to be lower than the AEA report and the EU impact assessment suggest. Technologies can be carried over to a higher degree than the AEA analysis suggests.

## Definitions, assumptions and findings of the AEA support study

The proposed legislation would apply to all light commercial vehicles of category N1 with a reference mass below 2610 kg. The legal definitions of passenger vehicles (category M) and commercial vehicles (category N) are set out in the type-approval framework directive (directive 2007/46/EC). The main difference between the categories is their intended use: passenger vehicles are defined as primarily for the transport of people and commercial vehicles are primarily for the transport of goods.<sup>4</sup>

The AEA analysis categorises van models into three groups, namely:

1. vans that have no link to a car;
2. vans which are directly car-derived;
3. vans of which a van-derived car was subsequently brought to the market.

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<sup>1</sup> AEA 2010, Determining counterfactual CO<sub>2</sub> emissions of new vans, Final Report to the DfT, <http://www.dft.gov.uk/consultations/open/2010-19/aea.pdf>

<sup>2</sup> DfT 2010: <http://www.dft.gov.uk/consultations/open/2010-19/>

<sup>3</sup> Impact assessment - Setting emission performance standards for new light commercial vehicles as part of the Community’s integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2009:1454:FIN:EN:PDF>

<sup>4</sup> Directive 2007/46/EC: [http://ec.europa.eu/enterprise/sectors/automotive/documents/directives/directive-2007-46-ec\\_en.htm](http://ec.europa.eu/enterprise/sectors/automotive/documents/directives/directive-2007-46-ec_en.htm).

AEA assumes a low-carbon technology crossover at no extra cost from cars to vans if the van is linked to a car. The analysis estimates:

- 100% direct crossover for directly car-derived vans (Group 2);
- 50% crossover for vans of which a van-derived car was subsequently brought to the market (Group 3).

According to directives 70/156/EEC and 2004/3/EC, van classes are defined on the basis of reference mass. All classes mentioned here refer to N1 vehicles (see footnote below):

Class I: reference mass  $\leq$  1305 kg

Class II: 1305 kg < reference mass  $\leq$  1760 kg

Class III: reference mass > 1760 kg<sup>5</sup>

The study finds the following linkages of vans of different reference mass classes:

	Car derived van	Van derived car	No link to car
Class I vans	100%	0%	0%
Class II vans	33.4%	32.3%	34.3%
Class III vans	0%	0%	100%

The listed definitions, assumptions and findings provide a vital basis for the study's assessment of the costs to comply with the proposed EU regulation to reduce CO<sub>2</sub> emissions from vans.<sup>6</sup>

## T&E assumptions and definitions

We think that the study uses a concept of classifying car-derived vans and van-derived cars that takes insufficient account of significant market realities.

The study fails to take into account the following facts:

- the profit maximization rationale of manufacturers has led to production strategies that make use of modular platforms and drive train technology which OEMs market in both vehicle categories - vans (N1) and passenger cars (M1);
- all light commercial vehicles are on sale as passenger car variants.

For the purpose of this analysis, we will therefore classify a given van type:

- as *car-related*, if one of the three following conditions is fulfilled:
  1. the van exists as a passenger car variant;
  2. the van shares engines with other passenger car type(s);
  3. the van shares platform with other passenger car type(s).
- as *car-derived*, if one of the two following conditions is fulfilled:
  1. the passenger car variants generate more profit within the model family;
  2. the passenger car variants and other derived passenger types of the same platform are the ones that generate more profit within the model families of that platform.

This paper shows a closer relation between cars and vans, than reported in the AEA analysis. However, it does not intend to quantify by what extent this relation is closer.

<sup>5</sup> AEA 2010, <http://www.dft.gov.uk/consultations/open/2010-19/aea.pdf> (p.4)

<sup>6</sup> <http://www.dft.gov.uk/consultations/open/2010-19/aea.pdf> (p.19)

## T&E findings

In accordance to the AEA findings, we have found all small vans (Class I) to be directly car-derived.

In contrast to the AEA findings, this paper shows that medium and large vans (Classes II and III) are often derived from and always related to passenger cars.

We gathered this information by analysing manufacturers' and motor press websites. The following table outlines these links.

**Table 1: Medium and large vans from mass manufacturers**

	exists as M1 variant	shares engines with other M1 type(s)	shares platform with other M1 type(s)	M1 variant dominant	M1 variant and derived M1 types of same platform dominant
<b>Classes I and II</b>					
Fiat Doblò	x	x	x		x
<b>Class II</b>					
Ford Connect	x	x			
VW Caddy	x	x	x		x
Vauxhall Astra	x	x	x	x	
Vauxhall Combo	x	x	x		x
Citroën Berlingo / Peugeot Partner (new generation)	x	x	x	x	
<b>Classes II and III</b>					
Peugeot Expert / Citroen Dispatch / Fiat Scudo	x	x	x		x
Renault Trafic / Vauxhall Vivaro / Nissan Primarstar	x	x			
Ford Transit	x				
<b>Class III</b>					
VW Transporter	x	x		x	
MB Sprinter	x	x			
Renault Master / Vauxhall Movano	x	x			
all other Class III vans	x	not analysed	not analysed	not analysed	not analysed
			<b>CAR-RELATED VAN</b>		
			<b>CAR-DERIVED VAN</b>		

Source: T&E analysis, 2010.

All light commercial vehicles mentioned here – regardless of which class they belong to – are car-related according to our definition. They can be ordered as passenger car variants (M1) covered by the scope of the cars and CO<sub>2</sub> legislation (443/2009/EC). In the case of smaller vehicles, this M1 segment is often referred to as “small utilities”; in the case of bigger cars, these versions are often called “utilities” or “people movers”. They share platform and drivetrain as well as the basic body with their corresponding van derivatives.

**Table 2: Examples of passenger car variants of popular vans**

Ford Transit	Citroën Berlingo	VW Transporter	MB Sprinter
			

Most Class II vans are car-derived, as well as some important Class III vans.

Most Class II vans and many Class III vans are powered with engines that are also used in passenger cars of other types.

Most Class II vans and some Class III vans are based on passenger car platforms.

In many cases, the related passenger car types and the passenger car versions of the van generate more profit for the manufacturer than the goods vehicle's versions.

## Reference car-derived vans

### 1. Citroën Berlingo / Peugeot Partner

Citroën Berlingo / Peugeot Partner (new generation) are built on the same platform as passenger cars.<sup>7</sup> Also, Berlingo and Partner passenger car versions are very popular. In 2007, 128,400 van versions (N1) and 126,200 car versions (M1) were sold in Europe.<sup>8</sup>

### 2. Peugeot Expert / Citroën Dispatch / Fiat Scudo

Peugeot Expert / Citroën Dispatch / Fiat Scudo are built at Sevel Nord in Valenciennes. In this plant Fiat and PSA produce three vehicle ranges on a single assembly line.

- **N1** versions of Peugeot Expert, Citroën Dispatch, Fiat Scudo
- **M1** versions of Peugeot Expert, Citroën Dispatch, Fiat Scudo
- **M1** MPV family cars Citroën C8, Peugeot 807, Fiat Ulysse, Lancia Phedra

**Table 3: Van (N1) and car (M1) product range built at Sevel Nord**

N1 Compact light commercial vehicles for Peugeot, Citroën and Fiat	M1 Combi-vans for Peugeot, Citroën and Fiat	M1 Executive MPVs for Peugeot, Citroën, Fiat and Lancia
LCV versions Peugeot Expert, Citroën Dispatch, Fiat Scudo	Combi Van versions Peugeot Expert, Citroën Dispatch, Fiat Scudo	MPV family Citroën C8, Peugeot 807, Fiat Ulysse, Lancia Phedra
		

The fact that these N1 and M1 versions are sharing platforms is highlighted by a Sevel consortium press release:

“What is unique about Sevel Nord is the plant’s ability to manage assembly of a wide range of body styles for the two automotive groups. The site has proved extremely flexible in adjusting its production facilities and logistics chain to the ramp-up of the new model.

Over a period of ten months, the same assembly line has accommodated 21 different body styles, from the

- executive MPVs and
- the long or short wheel base versions of the previous generation of light commercial vehicles *[no longer in production]*
- to the new generations of light commercial vehicles
- and combi-vans

Successfully managing such diversity is an unprecedented achievement in the production of passenger vehicles”.<sup>9</sup>

<sup>7</sup> [http://www.vigo.psa-peugeot-citroen.com/fileadmin/sites/VIGO/Docs/02\\_Desc\\_Centro/Present\\_in.pdf](http://www.vigo.psa-peugeot-citroen.com/fileadmin/sites/VIGO/Docs/02_Desc_Centro/Present_in.pdf) (p.2)

<sup>8</sup> [http://www.psa-peugeot-citroen.com/en/psa\\_espace/press\\_releases\\_details\\_d1.php?id=759](http://www.psa-peugeot-citroen.com/en/psa_espace/press_releases_details_d1.php?id=759)

<sup>9</sup> [http://www.psa-peugeot-citroen.com/document/presse\\_dossier/DP\\_G9\\_GB1162830338.pdf](http://www.psa-peugeot-citroen.com/document/presse_dossier/DP_G9_GB1162830338.pdf) (p.5)

The engine ranges 1,6 HDi and 2,0 HDi (internal code: DV6 and DW10) are produced in cooperation with Ford. They are widely applied throughout the PSA and Ford passenger car range – as well as in models of other car makers.<sup>10</sup>

### 3. VW Caddy

The VW Caddy is car-derived. It shares its platform (PQ35) with the top-selling VW Touran passenger car.<sup>11</sup> Its diesel engines also power the Touran and Golf.<sup>12</sup>

### 4. VW T5 (Transporter, Multivan, Caravelle, Shuttle, Kombi)

The VW Transporter van is car-derived, because the passenger car variants dominate the profit within the model family.

In 2007, vehicle deliveries of total T5 model family (M1 + N1) amounted to:<sup>13</sup>

- Western Europe: 151,252
- Germany: 71,011

In Germany, which is the vehicle's core market, 2007 vehicle registrations of passenger car variants of the VW Transporter model family added up to 40,689<sup>14</sup>.

27% of the Western European deliveries and 57% of the German deliveries of the T5 were registered in Germany as passenger car versions.

Given the significantly higher retail price of the passenger car variants, one can safely assume that M1 versions of the Transporter drive profits and investment compared to their goods (N1) counterparts.

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<sup>10</sup> <http://green.autoblog.com/2010/01/19/peugeot-updates-1-6-liter-hdi-engine-to-meet-euro-v-regulations/>

<sup>11</sup> <http://www.automobil-industrie.vogel.de/neuemodelle/articles/119842/>

<sup>12</sup> <http://www.vanlocator.co.uk/van-for-sale-marques.php?van=10>

<sup>13</sup> [http://www.volkswagen.de/etc/medialib/vwcms/virtualmaster/de/Unternehmen/mobilitaet\\_und\\_nachhaltigkeit/downloads/umwelterklaerungen.Par.0086.File.pdf/uwe\\_hannover2008\\_internet.pdf](http://www.volkswagen.de/etc/medialib/vwcms/virtualmaster/de/Unternehmen/mobilitaet_und_nachhaltigkeit/downloads/umwelterklaerungen.Par.0086.File.pdf/uwe_hannover2008_internet.pdf) (p. H7)

<sup>14</sup> [http://www.kbashop.de/wcsstore/KBA/Attachment/Kostenlose\\_Produnkte/n\\_monat\\_2007\\_12.pdf](http://www.kbashop.de/wcsstore/KBA/Attachment/Kostenlose_Produnkte/n_monat_2007_12.pdf)

## Reference car-related vans

The following models share engines with other passenger car types.

### 1. Ford Connect

This van is powered with a 1.8 l diesel engine, that can be found in other Ford passenger cars.<sup>15</sup>

### 2. Renault Trafic / Vauxhall Vivaro / Nissan Primastar

The 2.0 litre dCi engine (M9R) is used for the Renault Trafic<sup>16</sup> and also propels various Renault Passenger cars.<sup>17</sup>

### 3. Renault Master / Vauxhall Movano

The new Renault Master is powered by a derivative of that same M9R engine.<sup>18</sup>

### 4. MB Sprinter

The Sprinter van can be equipped with two base engines OM651 (4 cylinder) and OM 642 (6 cylinder).<sup>19</sup>

These are common engines for the Mercedes C-class<sup>20</sup> and E-class<sup>21</sup>. The OM 651 will propel the S-Class in the near future.<sup>22</sup>

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<sup>15</sup> [http://media.fordvehicles.com/article\\_print.cfm?article\\_id=23097](http://media.fordvehicles.com/article_print.cfm?article_id=23097)

<sup>16</sup> <http://www.easier.com/13869-new-renault-traffic-and-master-ranges.html>

<sup>17</sup> [http://www.renault.com/SiteCollectionDocuments/Communiqué%20de%20presse/en-EN/Pieces%20jointes/10751\\_DP-2.0DCI\\_MOTEUR\\_GB\\_complet.pdf](http://www.renault.com/SiteCollectionDocuments/Communiqué%20de%20presse/en-EN/Pieces%20jointes/10751_DP-2.0DCI_MOTEUR_GB_complet.pdf)

<sup>18</sup> [http://www.renault.com/SiteCollectionDocuments/Communiqué%20de%20presse/en-EN/Pieces%20jointes/22239\\_S1011-CP\\_M9T\\_V3\\_ANG\\_C936F789.pdf](http://www.renault.com/SiteCollectionDocuments/Communiqué%20de%20presse/en-EN/Pieces%20jointes/22239_S1011-CP_M9T_V3_ANG_C936F789.pdf)

<sup>19</sup> <http://media.daimler.com/dcmedia/0-921-656175-1-1211039-1-0-0-0-1-11701-656174-0-1-0-0-0-0.html?TS=1275645236910>

<sup>20</sup> <http://www.carsuk.net/mercedes-blueefficiency-om651-injector-problems/>

<sup>21</sup> <http://www4.mercedes-benz.com/manual-cars/ba/cars/s212/en/transparent/index.html>

(click on engine)

<sup>22</sup> <http://eblog.mercedes-benz-passion.com/2010/02/mercedes-benz-brings-the-s-300-cdi-blueefficiency-with-4-cylinder-om651-engine/>