

# The new Audi Q7

Life Cycle Assessment



Vorsprung durch Technik

Audi



# Audi Q7 – the life cycle assessment



Audi has compiled a detailed life cycle assessment für the new Audi Q7. One of the bestselling models of the previous model series, the Audi Q7 3.0 TDI quattro 180 kW tiptronic\* (hereinafter: predecessor), was compared with its counterpart in the new model series, the Audi Q7 3.0 TDI quattro 200 kW tiptronic\*\* (hereinafter: new Audi Q7).

Thanks to enhanced lightweight construction measures in all vehicle areas, the new model is up to 325 kg lighter than its predecessor. The main contribution herefore ist made by the aluminiumintensive body and the chassis, as shown in the graph at the right.

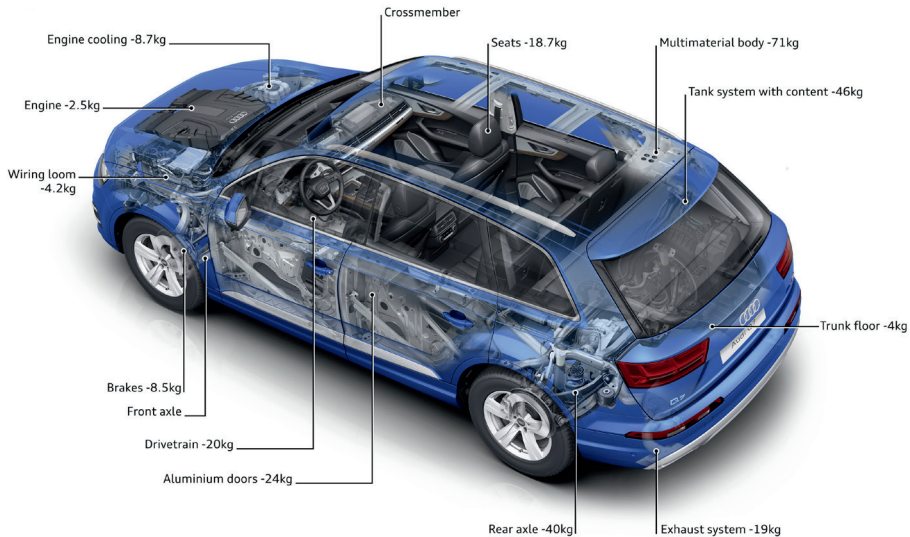
What effect the changes in weight – and also in the material mix and engine efficiency – have on the life cycle assessment is described and explained in more detail on the following pages.

fuel consumption and emission values:

\*Audi Q7 3.0 TDI quattro 180 kW tiptronic (predecessor): fuel consumption: urban: 8,6l/100 km, country: 6,7l/100 km, combiend: 7,4l/100 km; CO<sub>2</sub> emissions combiend: 195 g/km; efficiency category B

\*\*Audi Q7 3.0 TDI quattro 200 kW tiptronic (new model): fuel consumption: urban: 6,5 – 6,2l/100 km, country: 5,8 – 5,4l/100 km, combined: 6,1 – 5,7l/100 km, CO<sub>2</sub> emissions combiend: 159 – 149 g/km; efficiency category A

## Weight reduction in the new Audi Q7



# Audi Q7 – the materials

The materials that are used have a major influence on the results of the life cycle assessment. For example, more energy is consumed when producing light metals such as aluminium and magnesium than for steel; this has the effect of increasing greenhouse gas emissions during their production phase, but thanks of the underconsumption also of reducing the emissions during their use phase.

The inventory of materials was determined for the models under examination and summarized according to VDA classification 231–106.

The substantial weight reduction on the new Audi Q7\*\* was achieved through the increased usage of aluminium. This is also reflected in the material inventory. The proportion of light metals is now 12 % higher, by contrast, the proportion of steel and ferrous materials has been reduced. In addition to the light metals, a small portion of the steel and ferrous materials has also been replaced with polymer materials.

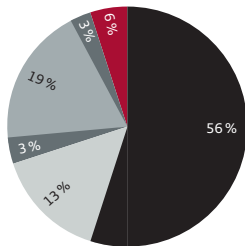
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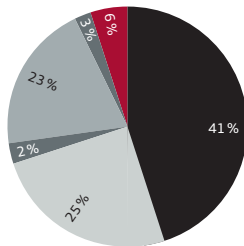
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## Material inventory of the analysed models

**Audi Q7 3.0 TDI quattro 180 kW  
tiptronic (predecessor)\***



**Audi Q7 3.0 TDI quattro 200 kW  
tiptronic (new Audi Q7)\*\***



- 1. steel/iron
- 2. Light metals
- 3. Non-ferrous
- 4. Special purpose metals
- 5. Polymers
- 6. Process polymers
- 7. Other materials
- 8. Electronics/electrics
- 9. Fuels and auxiliary means

fuel consumption and emission values:

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# Audi Q7 – the results of the life cycle assessment

Over its entire life cycle, the new Audi Q7\*\* causes 8.5 fewer tonnes of greenhouse gas emissions than its predecessor\*, which represents a reduction of around 16 %.

Despite the substantially higher proportion of light metals, the break-even, the point where the additional burden of the production phase is written off, is already achieved at just under 34,000km. Thanks to weight reduction and more efficient engines, the substantially lower fuel consumption during operation consistently improves the life cycle assessment with every kilometre driven from this point on. While the predecessor\* still generated around 54.6 t of CO<sub>2</sub> equivalents across the entire life cycle, the new Audi Q7\*\* only produces around 46.1 t of greenhouse gases.

The environmental impact has also been reduced in all other analysed categories thanks to the intelligent choice of materials and the lower fuel consumption.

## Reduction in all the assessed effect categories:

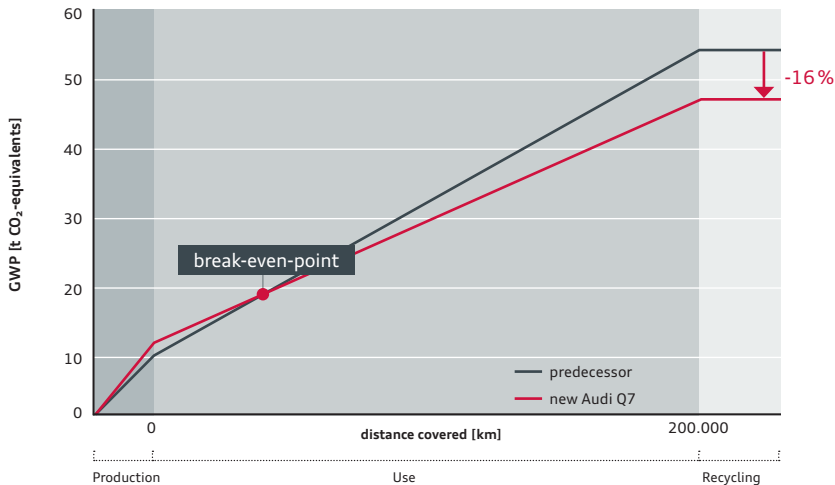
Greenhouse gas potential	- 16 %
Eutrophication potential	- 21 %
Ozone depletion potential	- 8 %
Photochemical ozone creation potential	- 16 %
Acidification potential	- 5 %

fuel consumption and emission values:

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## Greenhouse gas emission value for the entire life cycle of the Audi Q7



The additional burden caused by more lightweight construction during the production phase is written off just under 34.000 kilometres.

# Conclusion

The public today tends to judge vehicles to a large extent by their fuel consumption. Here too, Audi looks one step ahead. Its life cycle assessment analyzes effects on the environment for the vehicle's entire lifetime. The use of sustainable materials and manufacturing processes can greatly reduce these effects.

The life cycle assessment prepared by Audi for the new Audi Q7\*\* shows, that the new model has improved in all of the relevant environmental categories. This example illustrates, that the lightweight design measures Audi has adopted quickly pay for themselves during the use phase, despite the energy consumption they entail. The weight advantage soon makes itself felt as a worthwhile reduction in CO<sub>2</sub> emissions – an admirable example of environmentally acceptable lightweight design as Audi understands it.

These results demonstrate that Audi is on the right track towards sustainable and resource-conserving mobility.

fuel consumption and emission values:

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Further information on official fuel consumption figures and the official specific CO<sub>2</sub> emissions of new passenger cars can be found in the “Guide on the fuel economy, CO<sub>2</sub> emissions and power consumption of all new passenger car models,” which is available free of charge at all sales dealerships and from DAT Deutsche Automobil Treuhand GmbH, Hellmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen, Germany ([www.dat.de](http://www.dat.de)).