Environmental Report BMW 320d

Abstract

Goal and scope:

The scope of the study is the life cycle assessment of the BMW 320d, Model Year (MY) 2011. Its purpose is to assess the environmental impacts of the entire vehicle and its components according to the product responsibility strategy of the BMW Group. The comparison of the previous and the new model of BMW 3 series clearly states the improvements in terms of environmental impact reduction. These results are important for the further development and optimization of the next BMW 3 series generation.

System boundaries:

The system boundaries consist of all material and energy flows, input and output, collected according to ISO 14040 with the following level of detail:

- From sourcing and production of raw materials to production, to use phase, to end of life (incl. transport logistic).
- Use phase: assumed mileage 200.000 km (new European driving cycle)
- Software and database GaBi 4.3
- Material data from material balance BMW 320d
- The impact assessment is based on the method CML 2001 (November 2009) developed at Leiden University in the Netherlands (Guinée and Lindeijer 2002).
- A critical review of the environmental report is done by an external auditor.
- The compilation and assessment process was verified by TÜV SÜD assessing compliance with the internal process description as well as verifying data and environmental information used (validation attached)

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The functional unit and the reference flow are defined as the BMW 320d vehicle, at SOP (start of production) in 2012 and 2015, with a 4-cylinder diesel engine as an ECE basis version with a use phase of 200.000km according to the new European driving cycle.

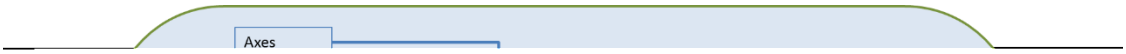

Fig. 1: Flowchart input / output data of the BMW 3 Series

The LCA according to ISO 14040/44 refers to environmental aspects and potential environmental impacts along the life cycle of a product from the raw material extraction and manufacturing processes to the use phase, and to the recycling at the end of the vehicle´s life.

Facts:

The life cycle assessment (LCA) BMW 320d and its predecessor shows the following environmental impacts across the whole life cycle in terms of Global Warming Potential (GWP 2) (fig.). The environmental impacts determined by the LCA are measured in different units. The GWP, for example, is stated in kilogram CO_2-equivalents (kg CO_2eq).

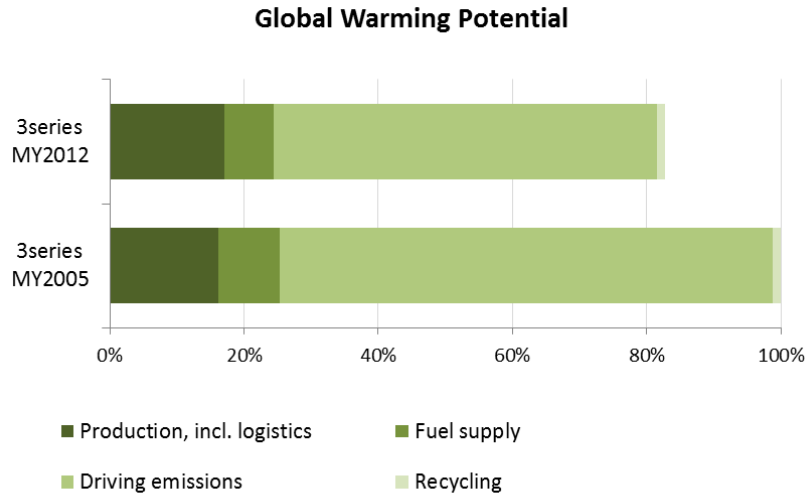

Fig. 2:Distribution of global warming potential over life cycle of BMW 3series

Although the considered BMW 320d shows slightly higher loads in the manufacturing phase compare its predecessor, these are overcompensated by lower environmental impact during the use phase. overall result for the BMW 320d is a significant reduction of about 15% of global warming potential (fig. 3). This effect is mainly due to the new generation of diesel engines, which has been installed since 20 the BMW 3series.

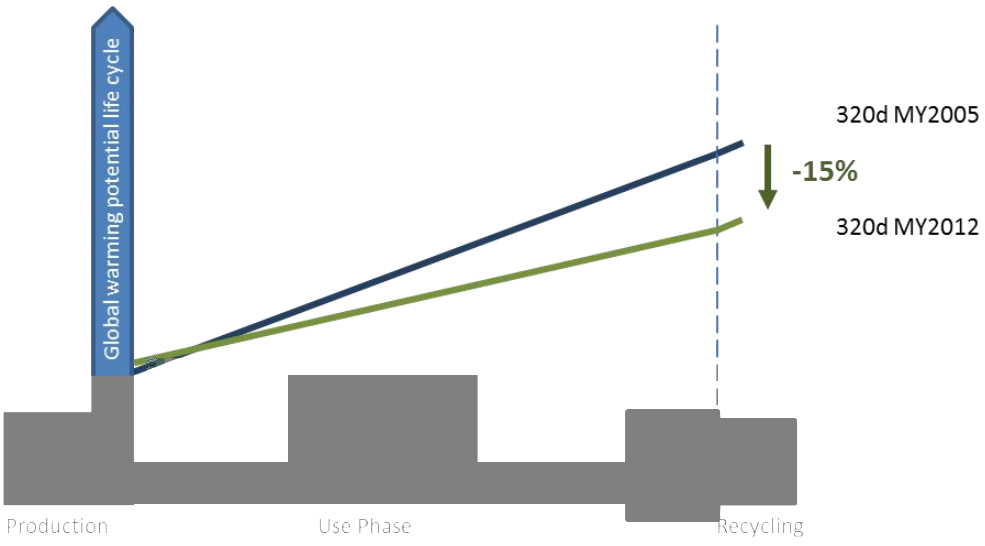

Fig. 3:Global warming potential of BMW 320d along the life cycle