

Energy Transition and Electric Mobility: A Challenge for German Ecosystem between Science and Industry

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In 2010 the German government decided to reduce the domestic greenhouse gas emissions to 80 – 95 % of the 1990 values by the year 2050. An appropriate contribution for the implementation of the Paris commitment will be achieved within this framework, as well as the attaining of global greenhouse gas neutrality during the course of the second half of the century in accordance with the Paris Agreement.

With its “Klimaschutzplan 2050” (Climate Action Plan 2050) of 2016 [1], the German Government adopted sectoral targets which form a policy framework for the proportional reduction of greenhouse gas emissions in the considered action areas until the year 2030. Thus, the target is to reduce CO₂ emissions by 40 – 62 % in respect of the value for 1990 for the areas of energy production, industry and transport alone. In order to reach these ambitious goals, it is necessary to undertake enormous efforts to transfer the economy to a really clean economy. At the same time the energy supply must be assured at all times, it must be affordable so as not to endanger Germany’s competitiveness and it must also be ensured that the required technological expertise is at Germany’s disposal.

Germany is one of the leading industrial nations worldwide with, among others, the chemical industry, machine and plant engineering and the automotive industry and its supplier companies being major pillars of its economy. The change in energy policy and the transformation to electromobility necessitate technology changes. A major focus is the efficient storage of energy for grids and in particular for vehicles and industrial applications. Electrochemical energy storage units in the form of high-performance batteries are particularly promising for this purpose. In order to continue to be globally successful, it is essential to be able to govern all parts of the industrial value chain and due to this reason, the German Federal Ministry of Education and Research has supported battery research, from materials and process development to cell production, through various funding initiatives since 2008 at high-level.

In addition to examining Germany’s strategy and goals with respect to battery technologies, the presentation will describe the approach to accelerate battery innovations, current funding initiatives and portray selected project findings.

Sector Targets 2030 [1].

Sector	1990 (mio. t CO ₂ - equiv.)	2014 (mio. t CO ₂ - equiv.)	2030 (mio. t CO ₂ - equiv.)	2030 (reduction in % wrt 1990)
Energy	466	358	175-183	62-61 %
Buildings	209	119	70-72	67-66 %
Transport	163	160	95-98	42-40 %
Industry	283	181	140-143	51-49 %
Agriculture	88	72	58-61	34-31 %
Other	39	12	5	87 %
Total	1.248	902	543-562	56-55 %

References:

[1] Climate Action Plan 2050 – Germany’s long-term emission development strategy.