



Development and perspectives of the German energy storage industry

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TEAM CONSULT – Expert for the energy sector

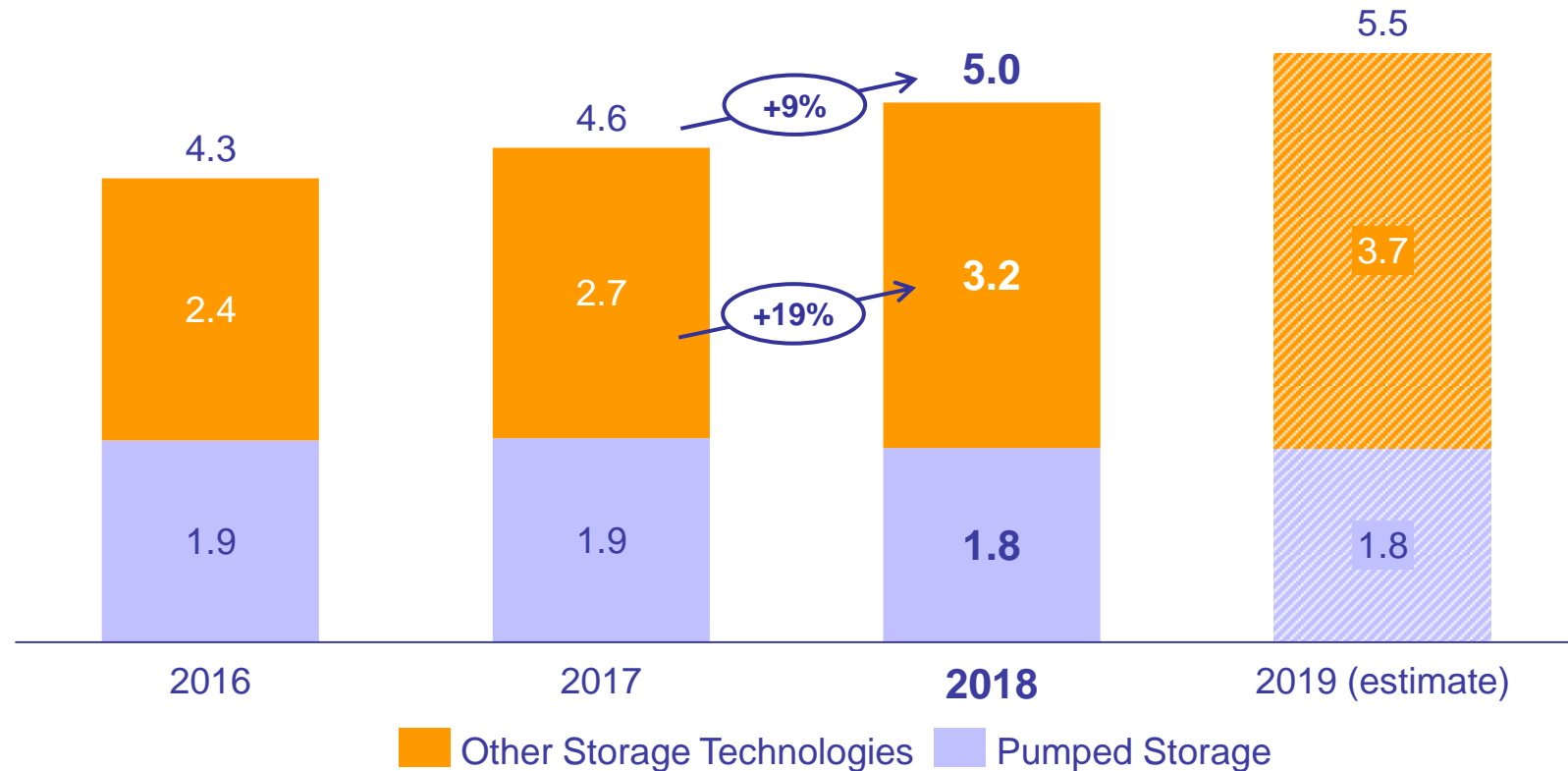
Reliability through expertise

- Consulting for the energy sector for 30 years.
- Founded in Hamburg, office in Berlin since 2004
- Experts with background of the energy sector
- International and national projects
- Cooperative partnership with the industry on eye-level



The German energy storage industry reaches the revenue mark of five billion Euro in 2018; growth takes place out of pumped hydro business

Revenues of the German energy storage industry* (in bil. €) 2016 - 2019

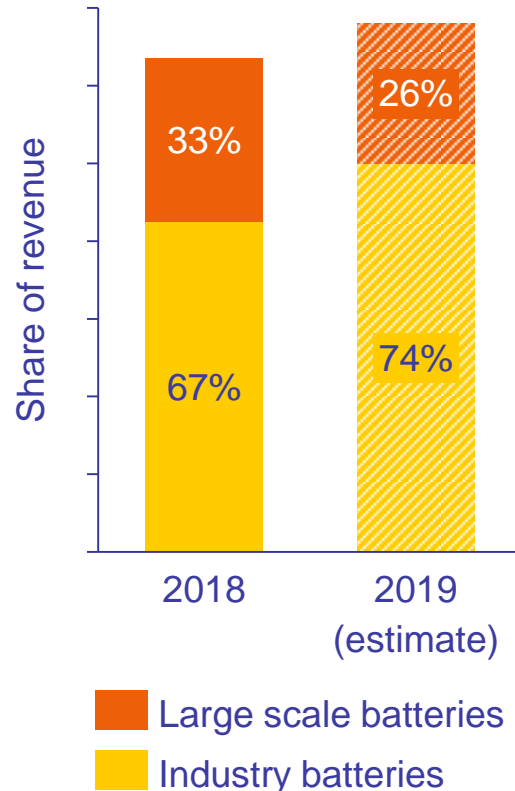


Source: Analysis of Team Consult in co-operation with BVES

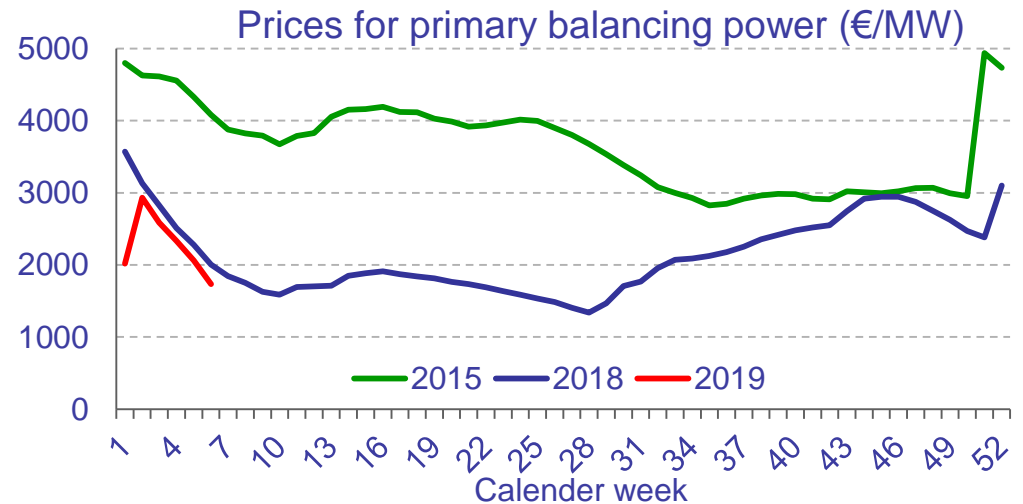
*Revenue generated in Germany and abroad of companies located in Germany

The growth of industry batteries compensates the declining revenue development in the large scale battery segment

Revenue development in the large scale and industry battery segment



Source: Analysis of Team Consult in co-operation with BVES

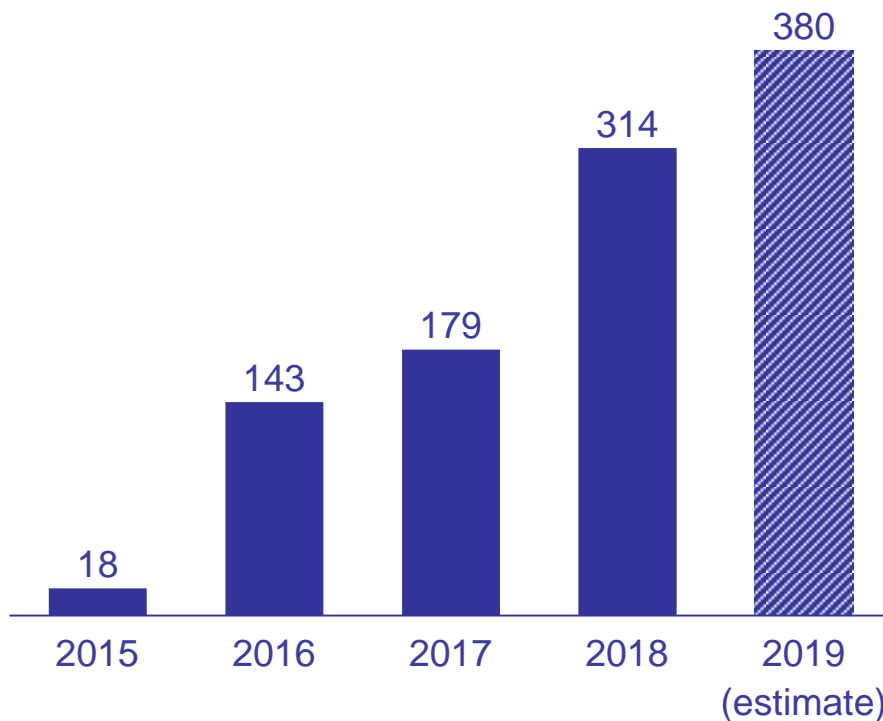


- Large scale batteries, which provide primary balancing power face a saturated market and decreasing balancing power prices
- Growth is driven by industry batteries with a variety of different applications

While the growth in the home battery segment continues, probably only few large scale battery projects will be realised in 2019

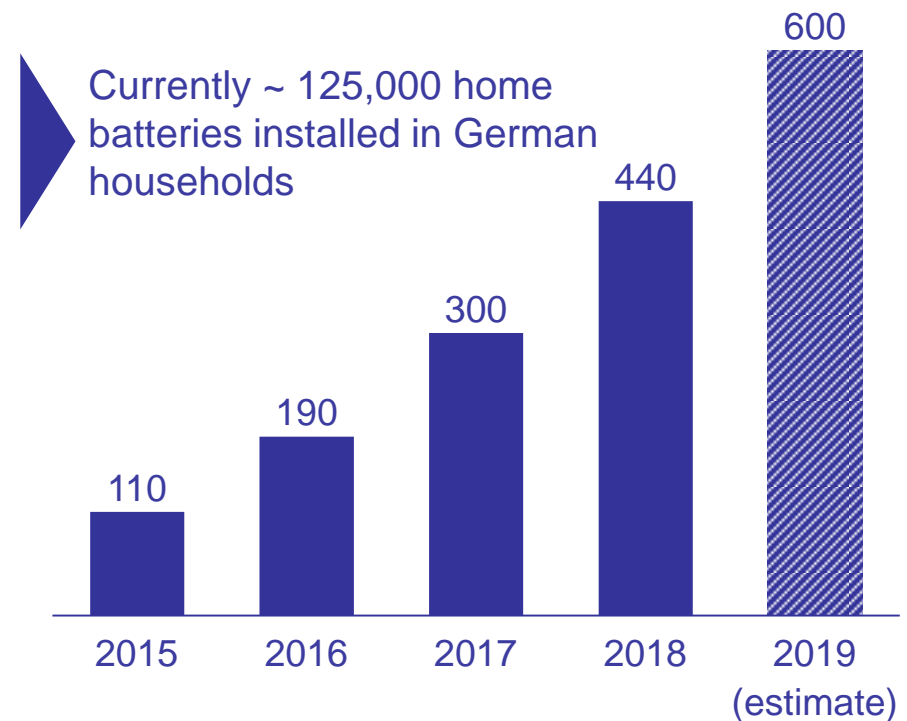
Installed battery capacities of large scale and home batteries in Germany (MW)

Large batteries for grid stabilization (MW)



Source: Analysis of Team Consult in co-operation with BVES

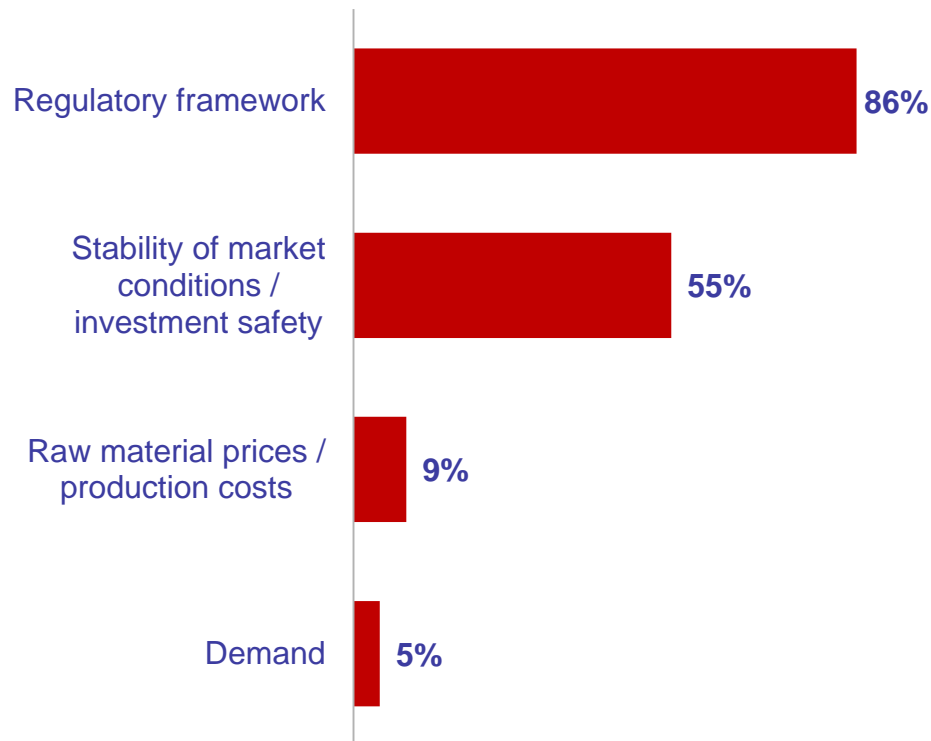
Home batteries*



*rounded with a presumed average power output of 3.5 kW

The regulatory framework in Germany is seen as the biggest market barrier by the energy storage industry

What market barriers does your company face in Germany?



Source: Analysis of Team Consult in co-operation with BVES

- Market barriers exist above all due to the regulatory framework, especially in form of:
 - Classification as producer and consumer
 - Restrictions of multi-use applications
 - Lack of transparency of legal provisions
 - Long approval procedures
 - Complicated application procedure in order to receive funding as an enduser
- Lack of investment safety as well as stability of market conditions are seen as relevant market barriers too
- In terms of demand and supply there are hardly any market barriers

Outlook of the energy storage industry for the year 2019

- Further growth in terms of sales numbers, revenues and employees for almost all storage technologies expected; dynamic growth takes place especially in foreign markets
- Pumped hydro faces a difficult market environment in Germany and Europe. A positive market outlook however can be given for several non-European markets
- The growth of the energy storage industry is especially driven by:
 - Increase of e-mobility and the subsequent demand of high charging capacity
 - Electrification of final application and sector coupling, especially in form of power-to-heat
 - Decarbonisation of the mobility sector (including shipping and rail traffic as well as heavy duty road transport)
 - Decreasing costs of storage technologies leading to an expansion of potential customer groups
- Large scale battery projects will probably be increasingly used for the optimisation and flexibilisation of power plants; the provision of primary balancing power itself will hardly be a viable business model for new projects



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