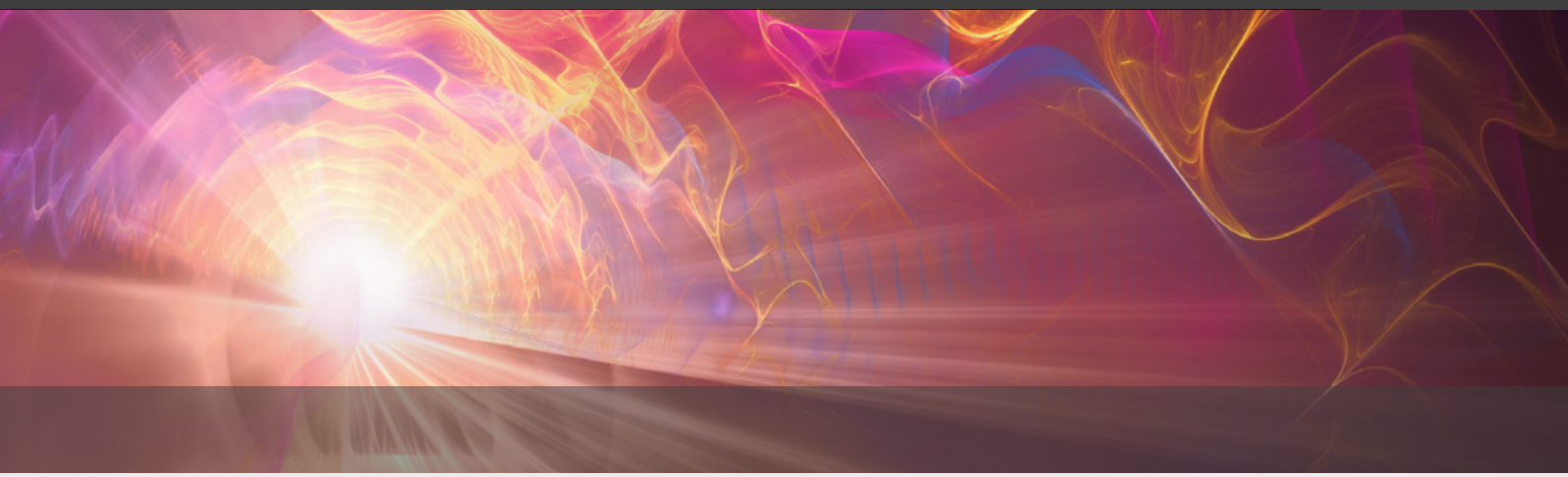
# Technology Radar - Low Carbon

**Executive summary**



## With a global agreement in place on the reduction of climate change, the conditions have never been better for low carbon power.

Technological developments, meanwhile, are making a low carbon future increasingly viable. In renewables, strides have been made in bringing down costs and achieving grid parity with fossil fuel generation. While engineers work towards the next generation of energy storage solutions, software advances improve the efficiency of existing technology. And in transmission and distribution, blockchain points to a future of peer-to-peer renewable energy grids.

## The survey: aims and method

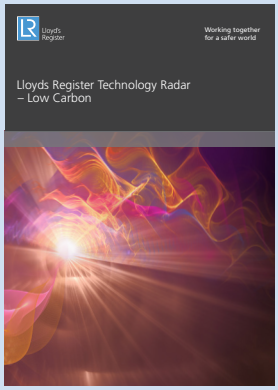
Lloyd's Register's first Technology Radar – Low Carbon is a timely response to this momentum building across the sector and beyond. The research examines the technological future of low carbon across the value chain: generation, transmission, distribution and energy storage. Our findings show that industry experts are optimistic about the pace of innovation in the low carbon space, and shed light on which technologies will have the most impact on the sector.

The research is based on the opinions of nearly 600 professionals across the low carbon industry – from energy utilities and distributors through to equipment manufacturers. Respondents were asked to rate a number of technologies in terms of their potential impact, the amount of time it would take for these technologies to hit the market, and how likely they are to be adopted once they do. They were also asked on reflect on the pace and success of innovation in their sector - and what they see as the major drivers and blockers. From their responses, and insight from a number of leading industry experts, a number of key findings have emerged.

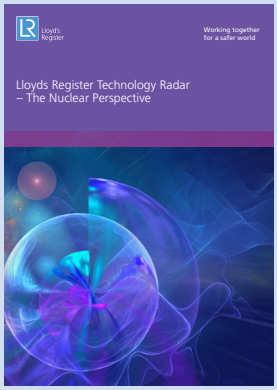
# Key findings

- Cost is no longer the main barrier for low carbon. 70% of renewables respondents say that renewables are reaching cost parity with fossil fuels.
- Solar cell technology is likely to have a major impact, and soon. Respondents are most optimistic about the potential of advances in solar cell technology - and the likelihood of adoption.
- Software advances will be instrumental in transmission and distribution. They are seen by respondents as the innovation that will be the quickest to arrive and the most likely to be adopted. Indeed, blockchain could reshape the way we think about the transmission and distribution of power by enabling a new era of peer-to-peer low carbon generation.
- It is electrical technologies that will transform storage, rather than mechanical storage or chemical technology innovations. In particular, respondents expect supercapacitors, which will rapidly speed up charging times for large batteries, to have the greatest impact on storage.
- Deployment is a major barrier. Implementation of technology is hindered by deployment, and each sector faces its own distinct challenges here.
- Standardisation as a much-needed development for the low carbon sector. Industry experts agree that regional and global consensus on regulations could speed up deployment and further reduce costs.

## The research is published in two companion reports




**Lloyd's Register Technology Radar – Low Carbon** provides an overview report covering renewables, energy storage, grid/ infrastructure and nuclear.




**Lloyd's Register Technology Radar – The Nuclear Perspective,** offers a detailed look at the nuclear power sector.

**To download the reports in full, visit info.lr.org/techradarlowcarbon**

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Feb 2017 - JPM001 -02022017