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The Next Fifty Years: Electricity, Storage and Sustainability

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Energy since the industrial revolution has been marked by historic transitions in sources, carriers and impacts, with each transition requiring a fifty-year time scale. Sustainability and clean energy, emergent themes with origins in the 1970s, are receiving increasing attention as climate change becomes more urgent. Transportation and the electricity grid, which account for nearly two thirds of carbon emissions, are ready for transitions to cleaner and more sustainable operation driven by electricity storage. The development of the lithium-ion battery and prospects for next generation beyond lithium-ion technology with the potential to electrify transportation and accelerate the deployment of renewable wind and solar will be discussed.

The energy storage frontier: lithium ion batteries and beyond, George Crabtree, Elizabeth Kocs, Lynn Trahey, MRS Bulletin 40, 1067 (2015)

Energy, society and science: the next fifty years, George Crabtree, Elizabeth Kocs, Thomas Alaan, Futures 58, 53 (2014)